

MITIGATION TESTING REPORT



SYSTRA

HAYLING ISLAND MICROSIMULATION MODELLING

MITIGATION TESTING REPORT

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1. INTRODUCTION

SYSTRA was commissioned by Havant Borough Council (HBC) to develop a Paramics Discovery microsimulation model of Hayling Island in order to examine the impacts of HBC’s Local Development Plan (LDP) proposals.

A Base model was developed for the study area, encompassing the A3023 through Hayling Island, West Lane, Sea Front and in Havant the A3023 Langstone Road/Park Road North and the interchange with the A27. Details of the model development, calibration, and validation were reported in *Hayling Island Model Development Report (SYSTRA Ref. GB01T17H90_MDR_5, December 2018)*.

Two forecast scenarios were developed following the 2017 Base model development. These scenarios reflect HBC’s 2036 committed development and background traffic growth (2036 Baseline), and then add development associated with the allocated LDP sites (2036 Do-Minimum).

A number of mitigation packages were outlined by HBC to support the LDP developments and models of each of these packages were developed to examine the impact of these changes in the 2036 Do-Minimum Scenarios. These were reported in *Hayling Island LDP Forecasting Report January 2019 Final Draft (SYSTRA Ref. GB01T17H90_MIT_1, January 2019)*.

Further to the above report, additional modelling of mitigation proposals was requested. This report details the additional modelling of these proposals as well as a preferred combination of schemes.

2. REFERENCE CASES AND MODEL OUTPUTS

Two reference cases were used for the initial mitigation testing undertaken:

- 2036 Do Minimum
- 2036 M1a

The 2036 Do Minimum was consistent with that developed during the original forecasting and testing, and as detailed in the forecasting report.

The 2036 M1a network adds the “friction reducing measures” from mitigation package M1 as detailed in the forecasting report. This includes bus laybys at a number of locations, and the addition of right turn filters at a number of junctions on the A3023.

These two networks were used as the reference cases for comparison of the initial options tested.

Ten model runs for each time period were carried out for each reference case and test network and compared to see the impact the additional network modifications had on the strategic journey times and queuing.

2.1 Journey Time Routes

Seven journey time route sections were coded into the models, and are as follows:

- Route 1: Beachlands Roundabout to Manor Rd (Brights Lane), northbound and southbound
- Route 2: Sea Front/Sea Grove Avenue to St. Mary's Rd, northbound and southbound
- Route 3: A3023/West Lane to Tech Park, northbound and southbound
- Route 4: Church Road (Kings Road) to A3023 West Lane
- Route 5: Manor Road (Brights Lane) to A3023 West Lane
- Route 6: West Lane (Brights Lane) to A3023 West Lane
- Route X: Langstone Rd (Technology Park) to New Rd Roundabout
-

These seven sections were then combined into various configurations to provide longer, strategic journey time routes for comparison, stretching along the whole island. The aggregated strategic routes define three main routes heading north/south through Hayling include:

- Strategic Route 1 : Sea Front/Sea Grove Avenue to Mill Rytte to Stoke to Langstone to New Rd Roundabout
- Strategic Route 2 : Beachlands Roundabout to Mill Rytte to Stoke to Langstone to New Rd Roundabout
- Strategic Route 3 : West Lane/Brights Lane to Stoke to Langstone to New Rd Roundabout.

The journey time routes are shown in Figure 1.

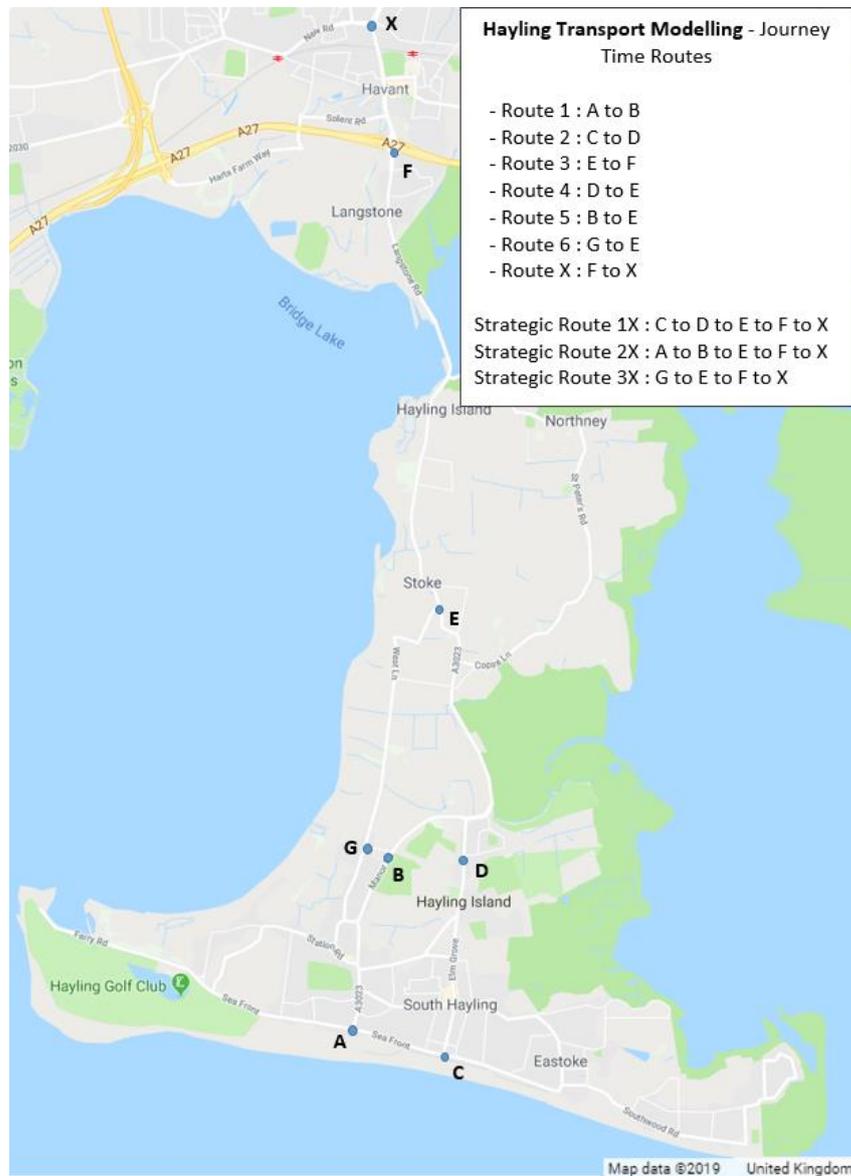


Figure 1. Journey Time Routes

3. INITIAL MODELLING

During the initial phase of the mitigation modelling HBC requested that the two reference cases, Do Min and M1a should each be modelled with two separate infrastructure improvements. These were the Mill Rythe signals, a layout replacing the Havent Rd / Church Rd / Manor Road Roundabout with a signalised junction and West Lane signals, an adjustment to the road layout at West Lane / Havant Rd with the addition of signals. These

schemes were both included as part of the mitigation packages examined as part of the previous testing programme. Therefore the initial modelling consisted of six models:

- Do Minimum ('base')
- Do Minimum + Mill Rythe
- Do Minimum + West Lane
- M1a ('base')
- M1a + Mill Rythe
- M1a + West Lane

The journey time results and queue lengths for all of the six models are presented below.

3.1 Journey Time Results

The Journey times observed in the peak hours of each period are found in Table 1 and Table 2.

Table 1. Do Minimum Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00

Journey Times (mm:ss)	Do Minimum	Do Minimum Mill	Do Minimum West
Description			
Strategic Route 1X NB	18:36	20:58	18:53
Strategic Route 1X SB	18:06	19:36	17:25
Strategic Route 2X NB	20:54	21:08	20:06
Strategic Route 2X SB	17:44	18:58	17:06
Strategic Route 3X NB	16:14	18:44	15:43
Strategic Route 3X SB	15:06	15:28	14:21

12:00 - 13:00

Journey Times (mm:ss)	Do Minimum	Do Minimum Mill	Do Minimum West
Description			
Strategic Route 1X NB	13:54	14:28	14:09
Strategic Route 1X SB	13:19	15:05	13:20
Strategic Route 2X NB	13:49	14:20	14:04
Strategic Route 2X SB	13:11	14:47	13:15
Strategic Route 3X NB	10:45	11:01	11:34
Strategic Route 3X SB	09:59	10:59	10:37

17:00 - 18:00

Journey Times (mm:ss)	Do Minimum	Do Minimum Mill	Do Minimum West
Description			
Strategic Route 1X NB	15:27	16:48	15:28
Strategic Route 1X SB	16:52	17:43	16:51
Strategic Route 2X NB	15:17	16:15	15:19
Strategic Route 2X SB	16:44	17:26	16:43
Strategic Route 3X NB	12:12	12:57	12:40
Strategic Route 3X SB	13:33	13:31	14:17

Table 2. M1a Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00			
Journey Times (mm:ss)	M1a	M1a Mill	M1a West
Description			
Strategic Route 1X NB	17:02	16:44	17:09
Strategic Route 1X SB	13:22	14:42	13:08
Strategic Route 2X NB	18:23	16:33	18:41
Strategic Route 2X SB	12:57	13:58	12:42
Strategic Route 3X NB	14:13	14:00	14:04
Strategic Route 3X SB	10:17	10:30	10:14

12:00 - 13:00			
Journey Times (mm:ss)	M1a	M1a Mill	M1a West
Description			
Strategic Route 1X NB	13:18	13:39	13:23
Strategic Route 1X SB	13:12	13:47	13:09
Strategic Route 2X NB	13:09	13:18	13:15
Strategic Route 2X SB	12:55	13:22	12:57
Strategic Route 3X NB	10:15	10:15	10:45
Strategic Route 3X SB	09:57	09:54	10:34

17:00 - 18:00			
Journey Times (mm:ss)	M1a	M1a Mill	M1a West
Description			
Strategic Route 1X NB	14:23	15:11	14:33
Strategic Route 1X SB	15:21	15:46	15:10
Strategic Route 2X NB	14:11	14:26	14:20
Strategic Route 2X SB	15:06	15:21	14:58
Strategic Route 3X NB	11:15	11:22	11:45
Strategic Route 3X SB	12:06	11:45	12:47

As would be expected, given the mitigation measures introduced, the M1a 'base' preforms better than the Do Minimum 'base' with large reductions in journey times in both the AM and PM peak hours across all paths.

The Journey Times show that the Mill Rythe work package applied to the Do Minimum does very little to help journey times. Across all periods the majority of the Do Minimum Strategic routes increase in time with the Mill Rythe signals in place. In comparison, the introduction of the West lane signals more often introduces a benefit compared to the standalone Do Minimum although the difference in time between the two is much narrower and almost the same in the IP period. For example, looking at the Do Minimum Mill Rythe model we can see a dis-benefit to both the 1X and 2X routes as the signals add congestion to all of the arms, whereas we are more likely to see benefit in the West Lane

model. The un-opposed SB A3023 traffic sees the benefit of not being held up by right turners and the NB traffic (Route 3X) also sees a benefit now that traffic does not have to give way to the major movement on West Lane.

In the M1a Models, the AM period is either similar to the ‘base’ M1a or quicker with both the Mill Rythe and West Lane schemes in place. Notably, journey times on route 2X northbound sees a journey time improvement of around 2 minutes with the Mill Rythe signals in place, as a result of the reduction of delays on Church Road introduced by the signals. The IP peak shows again that the introduction of signals is more likely to slow down traffic at times when there is not enough demand to warrant signals, this affects both Route 1X/Route 2X (Mill Rythe) and Route 3X (West Lane) . In the vast majority of the routes in the PM, journey times become marginally slower.

3.2 Queue Length Comparisons

Given the size of the queue length comparison tables, these are provided in the appendix. The tables show the average maximum length of a queue at each arm of significant junctions.

The Queue length comparisons broadly reflect the journey time comparisons.

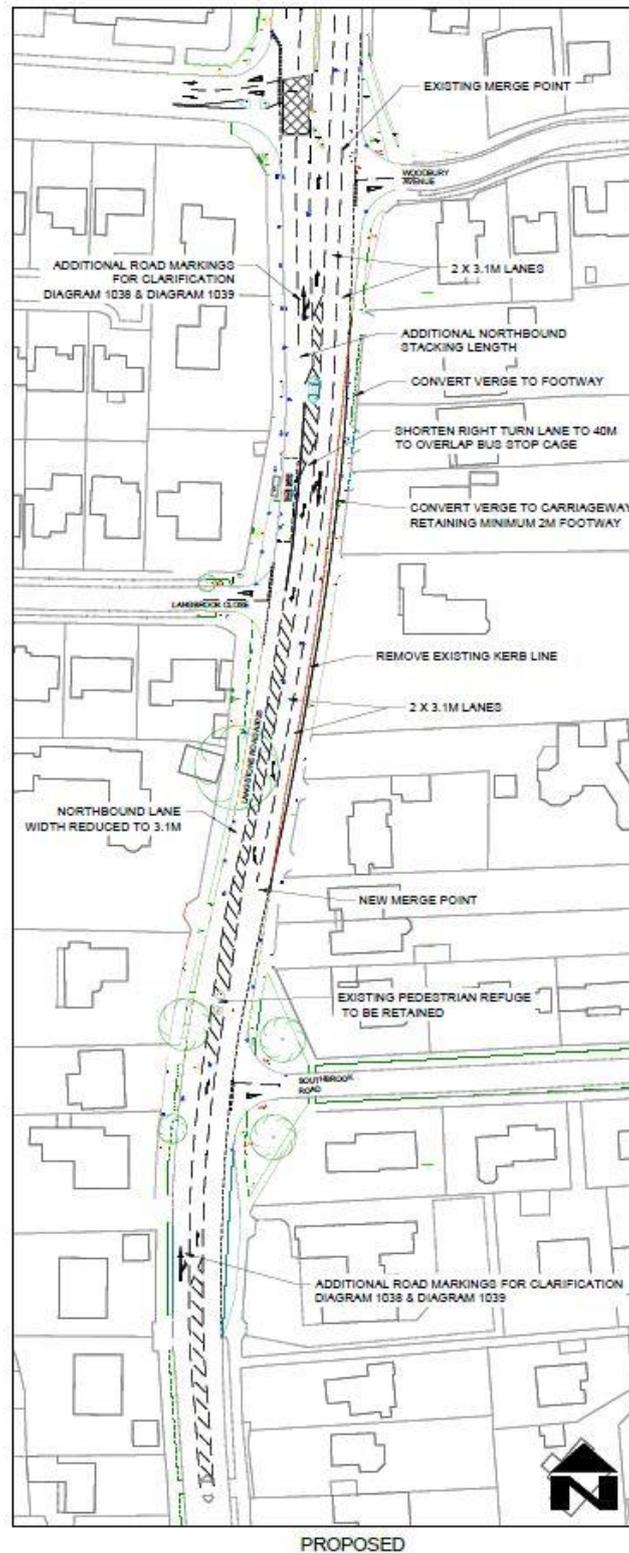
Looking at both the Do Minimum and M1a, the queues show queueing impacts are as would be expected from the proposed works. At the Mill Rythe junction (Junction 6A) we see larger queues on all arms across all periods in the Do Minimum and similarly in the M1a with the exception of Manor Rd (in M1a) . Although the queueing is larger it is much more equal across the three arms, this comparably benefits the Church Rd arm. These results show that a large amount of traffic is being held at the signals but then being completely released on green, hence why there is a relatively large amount of queueing but the journey times of both models remain similar to their bases. However the new signals and road layout at the West Lane / A3023 (Junction 2A) causes much less queueing on the SB arm, now that this is separated from the right-turners heading to West Lane. The West Lane arm sees no change in queueing whereas now that the NB traffic is opposed by signals, there is a much greater amount of congestion. This is consistent through all periods.

4. SECONDARY MODELLING

After a pause in work, in which HBC reflected on the initial results, further tests and scenarios were requested. These included;

- Do Min Langstone; provides additional lane capacity heading southbound on Langstone Rd between the Technology Park and Southbrook Rd, See Figure 2.
- M1a Langstone; same as above applied to the M1a model
- M1a Northney Fold; adjustment of the Havant Rd / Northney Rd Junction to allow right turners to stack. See Figure 3.

- M1a Northney Gyratory; a gyratory around the Petrol Station at the junction of Havant Rd / Northney Rd. See Figure 4.
- M1a Northney Sigs; adding signals to the Havant Rd / Northney Rd Junction while maintaining the current layout, consistent with those included in package M2 tested previously.
- M1a Technology Park; adding a signalised junction(s) at the Technology Park and Woodbury Ave consistent with those included in package M1 tested previously.



PROPOSED

THE PROPOSED WORKS EXTENDS THE LENGTH OF TWO-LANE CARRIAGEWAY BY 170M

Figure 2. Langstone Proposed Layout

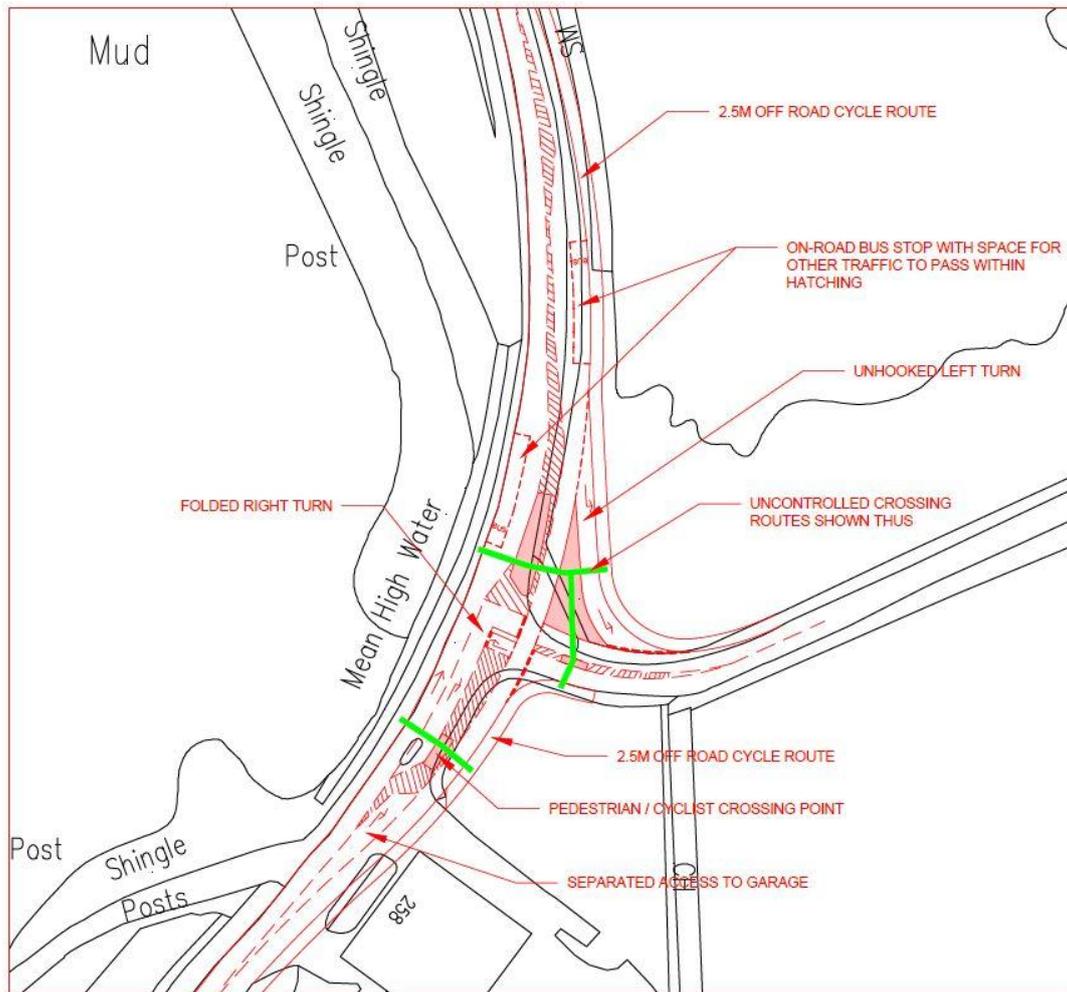


Figure 3. Northney Fold Proposed Layout

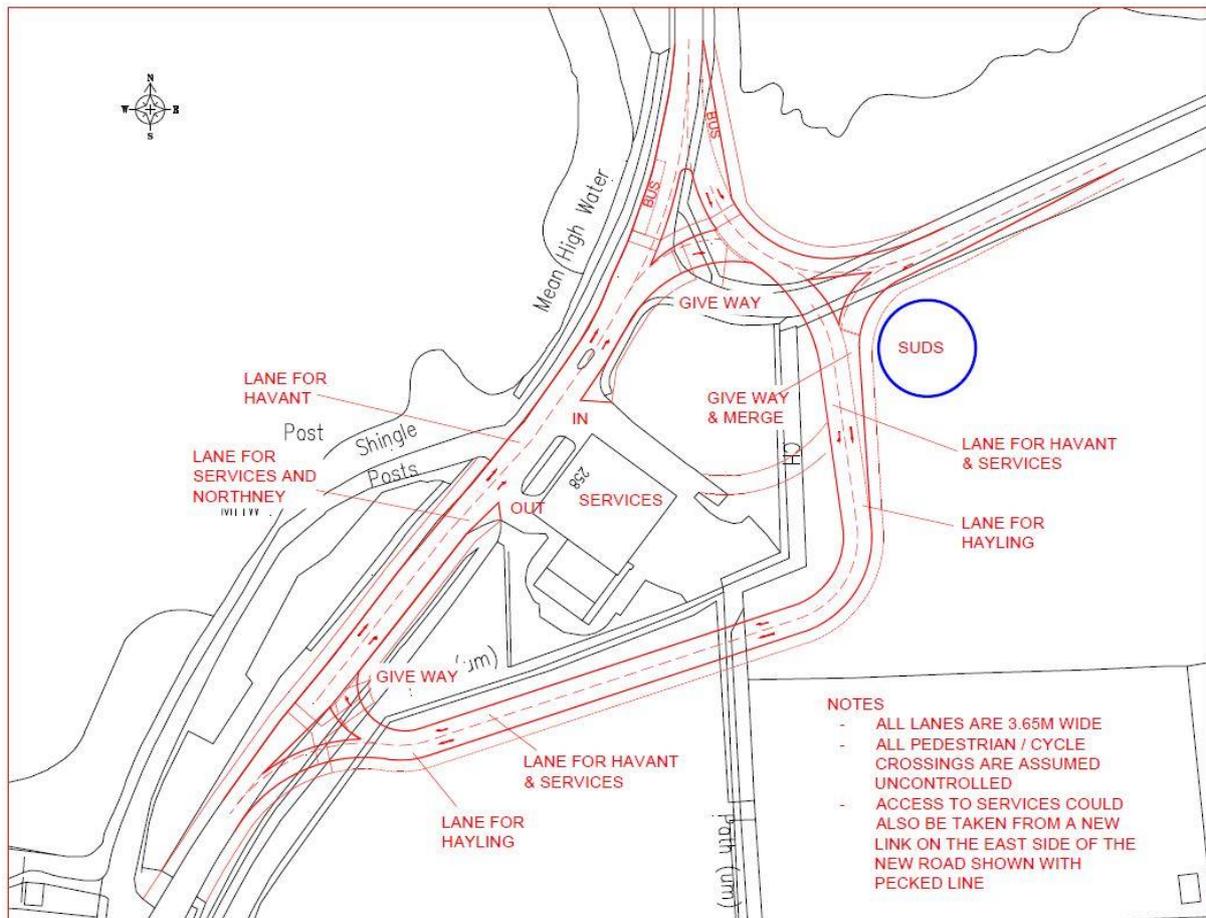


Figure 4. Northney Gyratory Proposed Layout

The journey time results and queue lengths for all of the six models are presented below.

4.1 Journey Times

The Journey times observed in the peak hours of each period are found in Table 3 and Table 4.

Table 3. Do Minimum Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	Langstone
Description		
Strategic Route 1X NB	18:36	17:39
Strategic Route 1X SB	18:06	16:39
Strategic Route 2X NB	20:54	19:20
Strategic Route 2X SB	17:44	16:17
Strategic Route 3X NB	16:14	15:10
Strategic Route 3X SB	15:06	13:33

12:00 - 13:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	Langstone
Description		
Strategic Route 1X NB	13:54	13:46
Strategic Route 1X SB	13:19	13:17
Strategic Route 2X NB	13:49	13:41
Strategic Route 2X SB	13:11	13:08
Strategic Route 3X NB	10:45	10:42
Strategic Route 3X SB	09:59	09:57

17:00 - 18:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	Langstone
Description		
Strategic Route 1X NB	15:27	15:18
Strategic Route 1X SB	16:52	16:55
Strategic Route 2X NB	15:17	15:10
Strategic Route 2X SB	16:44	16:45
Strategic Route 3X NB	12:12	12:04
Strategic Route 3X SB	13:33	13:37

Table 4. M1a Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00							
Journey Times (mm:ss)		M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park
Description	M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park	M1a Technology Park
Strategic Route 1X NB	17:02	16:04	16:02	16:18	20:01	18:42	
Strategic Route 1X SB	13:22	13:19	13:10	13:43	13:44	13:30	
Strategic Route 2X NB	18:23	17:29	17:11	17:42	21:29	19:59	
Strategic Route 2X SB	12:57	12:54	12:46	13:20	13:21	13:02	
Strategic Route 3X NB	14:13	13:17	13:09	13:33	17:33	15:50	
Strategic Route 3X SB	10:17	10:12	10:05	10:39	10:47	10:23	

12:00 - 13:00							
Journey Times (mm:ss)		M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park
Description	M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park	M1a Technology Park
Strategic Route 1X NB	13:18	13:15	13:15	13:16	13:29	13:34	
Strategic Route 1X SB	13:12	13:06	12:56	13:12	13:17	13:11	
Strategic Route 2X NB	13:09	13:08	13:09	13:10	13:22	13:27	
Strategic Route 2X SB	12:55	12:52	12:40	12:57	13:04	12:58	
Strategic Route 3X NB	10:15	10:14	10:15	10:16	10:28	10:33	
Strategic Route 3X SB	09:57	09:51	09:45	10:02	10:05	09:57	

17:00 - 18:00							
Journey Times (mm:ss)		M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park
Description	M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park	M1a Technology Park
Strategic Route 1X NB	14:23	14:23	14:32	14:23	15:14	14:50	
Strategic Route 1X SB	15:21	15:04	14:39	14:57	15:25	15:00	
Strategic Route 2X NB	14:11	14:12	14:22	14:13	15:05	14:39	
Strategic Route 2X SB	15:06	14:50	14:24	14:42	15:09	14:47	
Strategic Route 3X NB	11:15	11:16	11:26	11:17	12:04	11:42	
Strategic Route 3X SB	12:06	11:48	11:21	11:40	12:08	11:44	

The journey times show that the Langstone scheme within the Do Minimum provides reduced journey times in the southbound direction as would be expected but also in the northbound direction. The increase in capacity heading southbound means SB traffic is less likely to be held up behind right turners heading to the Technology Park, hence blocks back less significantly to the A27 roundabout.

The M1a packages improve journey times to the greatest extent in the Langstone, Northney Fold and Northney Gyratory models. The Northney fold provides more capacity for right-turners to wait so does not as significantly impede NB traffic heading off the island thus leading to a journey time improvement. The Gyratory performs similarly to the Northney Fold although some journey times are increased with this option in place due to the extra distance travelled. The signals at the Technology park signals tend to slow the

journey times in the AM and IP in both directions while providing some benefit to SB traffic in the PM.

4.2 Queue Length Comparisons

Given the size of the queue length comparison tables these are provided in the appendix. The tables show the average maximum length of a queue at each arm of specific/important junctions.

The queueing in the Do Min Langstone model echoes what is seen in the journey times with less queueing northbound in the AM and less queueing southbound in the PM (Junction 3A).

The M1a models also shows queueing consistent with the journey times and what would be expected considering the nature of the schemes. The Langstone model shows more favourable queues in the PM period and indifferent queues in the AM and IP. Of the three Northney models, the folded turn and the Gyratory reduce queueing. The folded turn reduces NB traffic in all periods as well as traffic from Northney Rd all be it to a lesser extent (Junction 1A). The Gyratory improves queueing for all arms but especially for the NB traffic which no longer has to wait behind right-turners. The introduction of signals at the Northney junction creates a lot more queueing across all periods and arms. Finally the proposed signals at the Technology Park (Junction 3A) has a similar effect as the signals do at Northney Rd, in which the traffic is being held back when it potentially could be making the movement, ultimately adding to the queueing.

5. COMBINATION MODELLING

After reflection on the initial and secondary model tests, HBC decided to put forward two combination models. These two models combine the three best/most viable work packages applied to the Do Min and M1a scenarios. These were;

- Do Min + West Lane + Northney Fold + Langstone
- M1a + West Lane + Northney Fold + Langstone

The advantages of the West Lane option were discovered in the initial testing and the Northney Fold and Langstone options were the most viable in the secondary modelling. The journey time results and queue lengths for all four models are presented below.

5.1 Journey Times

The Journey times observed in the peak hours of each period are found in Table 5 and Table 6.

Table 5. Do Minimum Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	West+Fold+Langstone
Description		
Strategic Route 1X NB	18:36	17:35
Strategic Route 1X SB	18:06	15:51
Strategic Route 2X NB	20:54	19:01
Strategic Route 2X SB	17:44	15:32
Strategic Route 3X NB	16:14	14:25
Strategic Route 3X SB	15:06	12:50

12:00 - 13:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	West+Fold+Langstone
Description		
Strategic Route 1X NB	13:54	13:51
Strategic Route 1X SB	13:19	13:01
Strategic Route 2X NB	13:49	13:47
Strategic Route 2X SB	13:11	12:54
Strategic Route 3X NB	10:45	11:13
Strategic Route 3X SB	09:59	10:21

17:00 - 18:00		
Journey Times (mm:ss)	Do Minimum	
	Do Minimum	West+Fold+Langstone
Description		
Strategic Route 1X NB	15:27	15:17
Strategic Route 1X SB	16:52	16:33
Strategic Route 2X NB	15:17	15:08
Strategic Route 2X SB	16:44	16:25
Strategic Route 3X NB	12:12	12:27
Strategic Route 3X SB	13:33	14:02

Table 6. M1a Journey Time Comparison for Strategic Routes in All Peak Hours

08:00 - 09:00		
Journey Times (mm:ss)	M1a	
	M1a	West+Fold+Langstone
Description		
Strategic Route 1X NB	17:02	16:23
Strategic Route 1X SB	13:22	13:02
Strategic Route 2X NB	18:23	17:42
Strategic Route 2X SB	12:57	12:38
Strategic Route 3X NB	14:13	13:17
Strategic Route 3X SB	10:17	10:13

12:00 - 13:00		
Journey Times (mm:ss)	M1a	
	M1a	West+Fold+Langstone
Description		
Strategic Route 1X NB	13:18	13:17
Strategic Route 1X SB	13:12	12:57
Strategic Route 2X NB	13:09	13:09
Strategic Route 2X SB	12:55	12:42
Strategic Route 3X NB	10:15	10:41
Strategic Route 3X SB	09:57	10:32

17:00 - 18:00		
Journey Times (mm:ss)	M1a	
	M1a	West+Fold+Langstone
Description		
Strategic Route 1X NB	14:23	14:25
Strategic Route 1X SB	15:21	14:40
Strategic Route 2X NB	14:11	14:13
Strategic Route 2X SB	15:06	14:26
Strategic Route 3X NB	11:15	11:43
Strategic Route 3X SB	12:06	12:07

The journey times show that the options in both the Do Minimum and the M1a improve the journey times across most of the routes in all of the periods. The IP period shows the smallest change and it could be said that the work packages have little to no effect during this time, as the congestion issues are not significant. The only route that seems to be negatively affected by the options, in the IP and PM, is the strategic 3X route (10:15/10:41 IP 11:15/11:43 PM). This is a result of the West Lane signals giving precedence to vehicles travelling along the A3023 as opposed to vehicles joining from West Lane. The journey time increases as vehicles have to wait on lights as opposed to just giving way. The combination of the folded turn at Northney and Langstone improvement works provide consistently improved journey times for NB traffic in the AM peak.

5.2 Queue Length Comparisons

Given the size of the queue length comparison tables these are provided in the appendix. The tables show the average maximum length of a queue at each arm of specific/important junctions.

The Queue length comparisons follow similar to what was found in the initial and secondary testing, where there is general reduction in the queueing that depends the direction of flow. The significant junctions (1A, 2A, 3A) mostly get better with the IP period receiving the least benefit, as discussed above.

6. RESULTS SUMMARY

The M1a friction measures bring significant benefit to the strategic journey times when compared to Do Minimum scenario, most significantly in the AM and PM periods. Introducing further schemes on top of these improvements can generate further improvement in strategic journey times, as well as localised queueing benefits.

The West Lane, Northney Folded turn and Langstone improvements were tested individually against both the Do Minimum and M1a networks, along with other options, and shown generally to provide, individually, benefit in terms of strategic journey times and localised queueing. As a result these options were combined into one package, both with and without the M1a friction measures, and their combined impacts examined.

The results of this combined testing show that both with and without the M1a measures, this combined package provides strategic journey time impacts in the AM and PM periods, while also addressing localised queueing issues at both Northney and West Lane. The overall impact of the package in terms of strategic journey times is less when compared against the M1a network, as the introduction of the friction measures themselves provide significant benefit, and thus less scope to provide improvement.

The combined package when combined with the M1a measures provides significant strategic journey time improvements when compared to the Do Minimum network, as well as introducing localised queueing benefits to side arms at the West Lane and Northney junctions.

7. APPENDIX

Table 7. Initial AM Do Minimum Average Max Queue Lengths (m)

	AM Period			
	Movement	DoMin	DoMin_Mill	DoMin_West
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	177	176
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	145	136	63
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	69	55	62
Jct 1 - New Road	New Road at Park Road North Roundabout	158	158	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	352	344	134
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	219	217	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	163	153	177
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	137	138	135
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	373	349	116
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	178	214	171
Jct 3 - Solent	Solent at Park Road South/ Solent Road	212	212	149
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	239	224	109
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	224	286	85
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	178	171	68
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	483	463	99
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	-	-	-
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	64	64	66
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	4	3	4
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	8	14	15
Jct 7 - north	north at Manor Road/Newton Lane	29	26	7
Jct 7 - south	south at Manor Road/Newton Lane	36	22	52
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	9	5
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	5	3
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	8	4	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	3	4
Jct 15 - north	north at Manor Road/St Mary's Road	4	4	-
Jct 15 - south	south at Manor Road/St Mary's Road	2	8	7
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	10	7
Jct 16 - north	north at Manor Road/Station Road	56	79	51
Jct 16 - Station	Station at Manor Road/Station Road	30	26	19
Jct 16 - south	south at Manor Road/Station Road	-	-	-
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	10	7	7
Jct 18 - north	north at Church Road/St Mary's Road	19	2	27
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	17	18
Jct 18 - south	south at Church Road/St Mary's Road	2	3	1
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	16	15	17
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	27	29	56
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	72	72	114
Jct 1A - north	north at Northney Junction	120	111	108
Jct 1A - south	south at Northney Junction	277	284	271
Jct 1A - Northney Rd	Northney Rd at Northney Junction	171	168	161
Jct 2A - south	south at A3023/West Lane	238	232	146
Jct 2A - north	north at A3023/West Lane	264	276	27
Jct 2A - West Ln	West Ln at A3023/West Lane	105	128	57
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	39	35	22
Jct 3A - north	north at Tech Park/Woodbury Road	105	73	96
Jct 3A - south	south at Tech Park/Woodbury Road	168	153	3
Jct 4A - south	south at A3023/ Yew Tree Road	189	175	96
Jct 4A - north	north at A3023/ Yew Tree Road	-	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	6	11	7
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	11	12	7
Jct 5A - south	south at A3023/Copse Lane	90	95	55
Jct 5A - north	north at A3023/Copse Lane	42	56	10
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	108	239	111
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	368	193	256
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	34	173	46

Table 8. Initial IP Do Minimum Average Max Queue Lengths (m)

IP Period		DoMin	DoMin_Mill	DoMin_West
	Movement			
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	176	176
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	188	187
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	89	75	90
Jct 1 - New Road	New Road at Park Road North Roundabout	138	142	139
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	192	351	192
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	216	216
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	181	162	171
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144	143
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	118	116	117
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	140	145	153
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	209	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	120	116
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	76	81
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	115	120	110
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	135	131	146
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	52	53	51
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	8	7
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	14	18	16
Jct 7 - north	north at Manor Road/Newton Lane	55	46	6
Jct 7 - south	south at Manor Road/Newton Lane	29	32	61
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	10	15	13
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	12	9
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	11	10
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	6	5
Jct 15 - north	north at Manor Road/St Mary's Road	6	6	6
Jct 15 - south	south at Manor Road/St Mary's Road	4	7	6
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	11	14
Jct 16 - north	north at Manor Road/Station Road	106	97	95
Jct 16 - Station	Station at Manor Road/Station Road	31	33	39
Jct 16 - south	south at Manor Road/Station Road	6	5	5
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	12	9	14
Jct 18 - north	north at Church Road/St Mary's Road	23	10	51
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	11	11	12
Jct 18 - south	south at Church Road/St Mary's Road	4	3	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	14	10	15
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	70	76
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	73	64	99
Jct 1A - north	north at Northney Junction	122	132	124
Jct 1A - south	south at Northney Junction	130	128	113
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	45	32
Jct 2A - south	south at A3023/West Lane	7	8	76
Jct 2A - north	north at A3023/West Lane	170	162	34
Jct 2A - West Ln	West Ln at A3023/West Lane	28	25	21
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	38	40	31
Jct 3A - north	north at Tech Park/Woodbury Road	29	29	33
Jct 3A - south	south at Tech Park/Woodbury Road	6	9	3
Jct 4A - south	south at A3023/ Yew Tree Road	132	111	120
Jct 4A - north	north at A3023/ Yew Tree Road	8	7	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	8	8	11
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	14	11
Jct 5A - south	south at A3023/Copse Lane	62	50	62
Jct 5A - north	north at A3023/Copse Lane	80	59	45
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	147	49
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	102	162	129
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	75	186	67

Table 9. Initial PM Do Minimum Average Max Queue Lengths (m)

		PM Period		
	Movement	DoMin	DoMin_Mill	DoMin_West
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	150	141	149
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	187	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	179	172	173
Jct 1 - New Road	New Road at Park Road North Roundabout	148	141	145
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	134	151	146
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	208	211	210
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	193	189	198
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144	145
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	101	100	96
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	91	93	92
Jct 3 - Solent	Solent at Park Road South/ Solent Road	208	208	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	154	152	156
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	126	133	137
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	130	131	120
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	95	104	104
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	-	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	41	41	38
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	12	9
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	12	14	11
Jct 7 - north	north at Manor Road/Newton Lane	46	31	4
Jct 7 - south	south at Manor Road/Newton Lane	12	10	36
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	9	9	7
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	3	9	8
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	9	9	7
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	5	5	5
Jct 15 - north	north at Manor Road/St Mary's Road	5	8	5
Jct 15 - south	south at Manor Road/St Mary's Road	4	4	3
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	8	11	7
Jct 16 - north	north at Manor Road/Station Road	68	64	70
Jct 16 - Station	Station at Manor Road/Station Road	21	21	17
Jct 16 - south	south at Manor Road/Station Road	-	-	-
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	12	10	14
Jct 18 - north	north at Church Road/St Mary's Road	43	12	26
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	12	12	10
Jct 18 - south	south at Church Road/St Mary's Road	5	4	4
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	10	9	10
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	93	62	88
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	48	59	93
Jct 1A - north	north at Northney Junction	307	217	140
Jct 1A - south	south at Northney Junction	106	99	82
Jct 1A - Northney Rd	Northney Rd at Northney Junction	92	79	55
Jct 2A - south	south at A3023/West Lane	5	9	62
Jct 2A - north	north at A3023/West Lane	131	133	58
Jct 2A - West Ln	West Ln at A3023/West Lane	14	14	18
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	98	97	86
Jct 3A - north	north at Tech Park/Woodbury Road	66	52	70
Jct 3A - south	south at Tech Park/Woodbury Road	17	19	6
Jct 4A - south	south at A3023/ Yew Tree Road	96	108	82
Jct 4A - north	north at A3023/ Yew Tree Road	14	13	8
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	12	13	13
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	8	13	10
Jct 5A - south	south at A3023/Copse Lane	30	31	38
Jct 5A - north	north at A3023/Copse Lane	80	64	35
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	43	179	44
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	53	132	75
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	76	164	64

Table 10. Initial AM M1a Average Max Queue Lengths (m)

AM Period		M1a	M1a_Mill	M1a_West
Movement				
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	177	177	176
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	62	65	63
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	73	64	62
Jct 1 - New Road	New Road at Park Road North Roundabout	158	159	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	134	135	134
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	217	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	165	172	177
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	134	136	135
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	115	118	116
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	170	173	171
Jct 3 - Solent	Solent at Park Road South/ Solent Road	145	157	149
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	98	113	109
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	89	85
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	66	68	68
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	115	96	99
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5	-
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	59	66	66
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	6	6	4
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	10	13	15
Jct 7 - north	north at Manor Road/Newton Lane	7	6	7
Jct 7 - south	south at Manor Road/Newton Lane	49	50	52
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	8	9	5
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	3	3
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	5	6	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	2	3	4
Jct 15 - north	north at Manor Road/St Mary's Road	-	-	-
Jct 15 - south	south at Manor Road/St Mary's Road	6	7	7
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	8	7
Jct 16 - north	north at Manor Road/Station Road	35	32	51
Jct 16 - Station	Station at Manor Road/Station Road	25	31	19
Jct 16 - south	south at Manor Road/Station Road	-	6	-
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	6	9	7
Jct 18 - north	north at Church Road/St Mary's Road	34	4	27
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	15	18
Jct 18 - south	south at Church Road/St Mary's Road	1	1	1
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	17	17
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	49	38	56
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	111	114
Jct 1A - north	north at Northney Junction	103	101	108
Jct 1A - south	south at Northney Junction	268	253	271
Jct 1A - Northney Rd	Northney Rd at Northney Junction	162	153	161
Jct 2A - south	south at A3023/West Lane	30	26	146
Jct 2A - north	north at A3023/West Lane	141	168	27
Jct 2A - West Ln	West Ln at A3023/West Lane	81	109	57
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	21	23	22
Jct 3A - north	north at Tech Park/Woodbury Road	72	102	96
Jct 3A - south	south at Tech Park/Woodbury Road	6	7	3
Jct 4A - south	south at A3023/ Yew Tree Road	124	69	96
Jct 4A - north	north at A3023/ Yew Tree Road	-	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	4	6	7
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	7	14	7
Jct 5A - south	south at A3023/Copse Lane	52	47	55
Jct 5A - north	north at A3023/Copse Lane	3	9	10
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	92	205	111
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	228	115	256
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	29	192	46

Table 11. Initial IP M1a Average Max Queue Lengths (m)

IP Period		M1a	M1a_Mill	M1a_West
Movement				
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	175	174	176
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	187	187
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	82	82	90
Jct 1 - New Road	New Road at Park Road North Roundabout	134	142	139
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	200	192	192
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	216	216	216
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	177	164	171
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	143	143
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	116	119	117
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	142	141	153
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	210	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	116	116
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	81	77	81
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	107	107	110
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	127	130	146
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	48	52	51
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	10	8	7
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	16	13	16
Jct 7 - north	north at Manor Road/Newton Lane	7	6	6
Jct 7 - south	south at Manor Road/Newton Lane	56	50	61
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	14	12	13
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	7	9	9
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	10	12	10
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	7	5
Jct 15 - north	north at Manor Road/St Mary's Road	12	4	6
Jct 15 - south	south at Manor Road/St Mary's Road	5	9	6
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	15	14
Jct 16 - north	north at Manor Road/Station Road	84	92	95
Jct 16 - Station	Station at Manor Road/Station Road	31	41	39
Jct 16 - south	south at Manor Road/Station Road	3	5	5
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	13	15	14
Jct 18 - north	north at Church Road/St Mary's Road	28	13	51
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	10	13	12
Jct 18 - south	south at Church Road/St Mary's Road	3	3	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	13	13	15
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	66	76
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	112	99
Jct 1A - north	north at Northney Junction	123	123	124
Jct 1A - south	south at Northney Junction	121	102	113
Jct 1A - Northney Rd	Northney Rd at Northney Junction	31	34	32
Jct 2A - south	south at A3023/West Lane	5	10	76
Jct 2A - north	north at A3023/West Lane	116	114	34
Jct 2A - West Ln	West Ln at A3023/West Lane	22	50	21
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	34	39	31
Jct 3A - north	north at Tech Park/Woodbury Road	32	28	33
Jct 3A - south	south at Tech Park/Woodbury Road	6	3	3
Jct 4A - south	south at A3023/ Yew Tree Road	81	86	120
Jct 4A - north	north at A3023/ Yew Tree Road	-	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	10	7	11
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	10	11
Jct 5A - south	south at A3023/Copse Lane	35	30	62
Jct 5A - north	north at A3023/Copse Lane	9	15	45
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	52	176	49
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	92	92	129
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	55	165	67

Table 12. Initial PM M1a Average Max Queue Lengths (m)

PM Period		M1a	M1a_Mill	M1a_West
Movement				
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	149	160	149
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	188	187	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	178	172	173
Jct 1 - New Road	New Road at Park Road North Roundabout	143	141	145
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	141	140	146
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	208	212	210
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	202	205	198
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144	145
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	96	96	96
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	90	93	92
Jct 3 - Solent	Solent at Park Road South/ Solent Road	208	207	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	156	155	156
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	132	136	137
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	122	123	120
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	95	93	104
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	-	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	38	45	38
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	10	9
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	11	15	11
Jct 7 - north	north at Manor Road/Newton Lane	3	5	4
Jct 7 - south	south at Manor Road/Newton Lane	34	39	36
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	7	7
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	8	8
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	13	7
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	3	5
Jct 15 - north	north at Manor Road/St Mary's Road	8	6	5
Jct 15 - south	south at Manor Road/St Mary's Road	2	5	3
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	8	13	7
Jct 16 - north	north at Manor Road/Station Road	66	62	70
Jct 16 - Station	Station at Manor Road/Station Road	19	21	17
Jct 16 - south	south at Manor Road/Station Road	-	-	-
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	12	12	14
Jct 18 - north	north at Church Road/St Mary's Road	30	6	26
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	9	10	10
Jct 18 - south	south at Church Road/St Mary's Road	3	5	4
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	13	10
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	84	84	88
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	93	92	93
Jct 1A - north	north at Northney Junction	140	139	140
Jct 1A - south	south at Northney Junction	83	56	82
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	40	55
Jct 2A - south	south at A3023/West Lane	4	8	62
Jct 2A - north	north at A3023/West Lane	106	102	58
Jct 2A - West Ln	West Ln at A3023/West Lane	11	25	18
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	84	80	86
Jct 3A - north	north at Tech Park/Woodbury Road	68	65	70
Jct 3A - south	south at Tech Park/Woodbury Road	8	9	6
Jct 4A - south	south at A3023/ Yew Tree Road	81	64	82
Jct 4A - north	north at A3023/ Yew Tree Road	4	-	8
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	11	11	13
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	9	10
Jct 5A - south	south at A3023/Copse Lane	43	31	38
Jct 5A - north	north at A3023/Copse Lane	21	6	35
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	155	44
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	50	71	75
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	61	165	64

Table 13. Secondary AM Do Minimum Average Max Queue Lengths (m)

AM Period		DoMin	DoMin_Langstone
Movement			
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	178
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	145	88
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	69	61
Jct 1 - New Road	New Road at Park Road North Roundabout	158	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	352	270
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	219	219
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	163	163
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	137	134
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	373	317
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	178	187
Jct 3 - Solent	Solent at Park Road South/ Solent Road	212	205
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	239	234
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	224	154
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	178	161
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	483	378
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	-	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	64	62
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	4	4
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	8	10
Jct 7 - north	north at Manor Road/Newton Lane	29	28
Jct 7 - south	south at Manor Road/Newton Lane	36	25
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	5
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	5
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	8	7
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	5
Jct 15 - north	north at Manor Road/St Mary's Road	4	4
Jct 15 - south	south at Manor Road/St Mary's Road	2	2
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	8
Jct 16 - north	north at Manor Road/Station Road	56	46
Jct 16 - Station	Station at Manor Road/Station Road	30	21
Jct 16 - south	south at Manor Road/Station Road	-	-
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	10	7
Jct 18 - north	north at Church Road/St Mary's Road	19	16
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	14
Jct 18 - south	south at Church Road/St Mary's Road	2	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	16	11
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	27	42
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	72	75
Jct 1A - north	north at Northney Junction	120	103
Jct 1A - south	south at Northney Junction	277	232
Jct 1A - Northney Rd	Northney Rd at Northney Junction	171	144
Jct 2A - south	south at A3023/West Lane	238	215
Jct 2A - north	north at A3023/West Lane	264	280
Jct 2A - West Ln	West Ln at A3023/West Lane	105	111
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	39	39
Jct 3A - north	north at Tech Park/Woodbury Road	105	104
Jct 3A - south	south at Tech Park/Woodbury Road	168	98
Jct 4A - south	south at A3023/ Yew Tree Road	189	181
Jct 4A - north	north at A3023/ Yew Tree Road	-	3
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	6	6
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	11	8
Jct 5A - south	south at A3023/Copse Lane	90	79
Jct 5A - north	north at A3023/Copse Lane	42	42
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	108	84
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	368	307
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	34	39

Table 14. Secondary IP Do Minimum Average Max Queue Lengths (m)

IP Period		DoMin	DoMin_Langstone
Movement			
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	174
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	89	84
Jct 1 - New Road	New Road at Park Road North Roundabout	138	132
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	192	198
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	215
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	181	171
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	118	118
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	140	155
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	210
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	119
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	81
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	115	116
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	135	126
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	52	56
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	8
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	14	18
Jct 7 - north	north at Manor Road/Newton Lane	55	44
Jct 7 - south	south at Manor Road/Newton Lane	29	25
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	10	13
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	7
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	18
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	5
Jct 15 - north	north at Manor Road/St Mary's Road	6	6
Jct 15 - south	south at Manor Road/St Mary's Road	4	6
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	12
Jct 16 - north	north at Manor Road/Station Road	106	99
Jct 16 - Station	Station at Manor Road/Station Road	31	34
Jct 16 - south	south at Manor Road/Station Road	6	6
Jct 18 - Tournurbury	Tournurbury at Church Road/St Mary's Road	12	12
Jct 18 - north	north at Church Road/St Mary's Road	23	31
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	11	11
Jct 18 - south	south at Church Road/St Mary's Road	4	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	14	15
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	88
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	73	81
Jct 1A - north	north at Northney Junction	122	131
Jct 1A - south	south at Northney Junction	130	130
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	37
Jct 2A - south	south at A3023/West Lane	7	13
Jct 2A - north	north at A3023/West Lane	170	159
Jct 2A - West Ln	West Ln at A3023/West Lane	28	30
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	38	39
Jct 3A - north	north at Tech Park/Woodbury Road	29	21
Jct 3A - south	south at Tech Park/Woodbury Road	6	10
Jct 4A - south	south at A3023/ Yew Tree Road	132	171
Jct 4A - north	north at A3023/ Yew Tree Road	8	6
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	8	9
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	11
Jct 5A - south	south at A3023/Copse Lane	62	59
Jct 5A - north	north at A3023/Copse Lane	80	63
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	59
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	102	121
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	75	68

Table 15. Secondary PM Do Minimum Average Max Queue Lengths (m)

Jct	PM Period	Movement	DoMin	
			DoMin	DoMin_Langstone
Jct 1 - B2199 Petersfield Road		B2199 Petersfield Road at Park Road North Roundabout	150	156
Jct 1 - Elmleigh Road		Elmleigh Road at Park Road North Roundabout	187	187
Jct 1 - Park Road North		Park Road North at Park Road North Roundabout	179	189
Jct 1 - New Road		New Road at Park Road North Roundabout	148	149
Jct 2 - B2149 Park Road (North)		B2149 Park Road (North) at Park Road North/Elm Lane	134	139
Jct 2 - Elm Lane		Elm Lane at Park Road North/Elm Lane	208	207
Jct 2 - B2149 Park Road (South)		B2149 Park Road (South) at Park Road North/Elm Lane	193	190
Jct 2 - Park Way		Park Way at Park Road North/Elm Lane	144	144
Jct 3 - B2149 Park Road South (North)		B2149 Park Road South (North) at Park Road South/ Solent Road	101	95
Jct 3 - B2149 Park Road South (South)		B2149 Park Road South (South) at Park Road South/ Solent Road	91	90
Jct 3 - Solent		Solent at Park Road South/ Solent Road	208	208
Jct 4 - B2149 Park Road South		B2149 Park Road South at Havant Bypass	154	148
Jct 4 - A27 Havant Bypass (East)		A27 Havant Bypass (East) at Havant Bypass	126	135
Jct 4 - A3023 Langstone Road		A3023 Langstone Road at Havant Bypass	130	134
Jct 4 - A27 Havant Bypass (West)		A27 Havant Bypass (West) at Havant Bypass	95	94
Jct 5 - Sea Grove Avenue (North)		Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5
Jct 5 - Selsmore Road		Selsmore Road at Sea Grove Avenue/Selsmore Road	41	39
Jct 5 - Sea Grove Avenue (South)		Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	8
Jct 7 - Newton Ln		Newton Ln at Manor Road/Newton Lane	12	8
Jct 7 - north		north at Manor Road/Newton Lane	46	53
Jct 7 - south		south at Manor Road/Newton Lane	12	15
Jct 13 - beachlands west		beachlands west at Beechlands Roundabout	9	9
Jct 13 - beachlands south		beachlands south at Beechlands Roundabout	3	6
Jct 13 - beachlands east		beachlands east at Beechlands Roundabout	9	5
Jct 13 - beachlands north		beachlands north at Beechlands Roundabout	5	3
Jct 15 - north		north at Manor Road/St Mary's Road	5	-
Jct 15 - south		south at Manor Road/St Mary's Road	4	4
Jct 15 - St Marys		St Marys at Manor Road/St Mary's Road	8	9
Jct 16 - north		north at Manor Road/Station Road	68	69
Jct 16 - Station		Station at Manor Road/Station Road	21	24
Jct 16 - south		south at Manor Road/Station Road	-	-
Jct 18 - Tournerbury		Tournerbury at Church Road/St Mary's Road	12	15
Jct 18 - north		north at Church Road/St Mary's Road	43	36
Jct 18 - St Marys		St Marys at Church Road/St Mary's Road	12	10
Jct 18 - south		south at Church Road/St Mary's Road	5	4
Jct 19 - Cherrywood		Cherrywood at Elm Grove/Cherrywood Gardens	10	11
Jct 19 - north		north at Elm Grove/Cherrywood Gardens	93	79
Jct 19 - south		south at Elm Grove/Cherrywood Gardens	48	57
Jct 1A - north		north at Northney Junction	307	322
Jct 1A - south		south at Northney Junction	106	108
Jct 1A - Northney Rd		Northney Rd at Northney Junction	92	112
Jct 2A - south		south at A3023/West Lane	5	9
Jct 2A - north		north at A3023/West Lane	131	157
Jct 2A - West Ln		West Ln at A3023/West Lane	14	18
Jct 3A - tech park		tech park at Tech Park/Woodbury Road	98	99
Jct 3A - north		north at Tech Park/Woodbury Road	66	21
Jct 3A - south		south at Tech Park/Woodbury Road	17	18
Jct 4A - south		south at A3023/ Yew Tree Road	96	120
Jct 4A - north		north at A3023/ Yew Tree Road	14	12
Jct 4A - Yew Tree		Yew Tree at A3023/ Yew Tree Road	12	15
Jct 5A - Copse Ln		Copse Ln at A3023/Copse Lane	8	10
Jct 5A - south		south at A3023/Copse Lane	30	30
Jct 5A - north		north at A3023/Copse Lane	80	75
Jct 6A - Church Rd		Church Rd at Mill Rythe Roundabout	43	44
Jct 6A - Manor Rd		Manor Rd at Mill Rythe Roundabout	53	63
Jct 6A - Havant Rd		Havant Rd at Mill Rythe Roundabout	76	85

Table 16. Secondary AM M1a Average Max Queue Lengths (m)

AM Period		M1a	M1a Langstone	M1a NorthFold	M1a NorthGyratory	M1a NorthSignals	M1a Technology Park
Movement							
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	177	177	177	177	176	177
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	62	69	59	74	59	72
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	73	63	60	60	67	64
Jct 1 - New Road	New Road at Park Road North Roundabout	158	159	158	158	159	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	134	134	142	135	140	133
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	218	218	218	217	218
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	165	158	172	168	187	164
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	134	131	138	134	137	133
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	115	114	117	115	118	115
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	170	173	177	177	180	173
Jct 3 - Solent	Solent at Park Road South/ Solent Road	145	160	133	144	147	139
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	98	108	108	114	97	108
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	81	85	82	81	77
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	66	70	69	77	68	98
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	115	111	87	89	94	89
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	-	5	5	-	-
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	59	66	61	66	72	79
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	6	4	6	4	4	4
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	10	15	15	13	12	10
Jct 7 - north	north at Manor Road/Newton Lane	7	9	9	7	12	8
Jct 7 - south	south at Manor Road/Newton Lane	49	52	59	49	59	44
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	8	6	6	6	10	5
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	4	4	2	3	7
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	5	5	6	5	5	8
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	2	3	2	4	2	2
Jct 15 - north	north at Manor Road/St Mary's Road	-	-	-	-	-	-
Jct 15 - south	south at Manor Road/St Mary's Road	6	4	7	4	6	4
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	7	7	7	9	7
Jct 16 - north	north at Manor Road/Station Road	35	36	48	37	47	33
Jct 16 - Station	Station at Manor Road/Station Road	25	23	19	21	29	20
Jct 16 - south	south at Manor Road/Station Road	-	-	-	-	-	-
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	6	7	8	11	12	6
Jct 18 - north	north at Church Road/St Mary's Road	34	22	15	19	21	22
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	19	20	19	20	22
Jct 18 - south	south at Church Road/St Mary's Road	1	1	2	1	1	2
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	16	19	13	19	14
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	49	63	44	42	54	51
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	112	106	111	107	112
Jct 1A - north	north at Northney Junction	103	109	1	87	136	126
Jct 1A - south	south at Northney Junction	268	226	194	1	268	299
Jct 1A - Northney Rd	Northney Rd at Northney Junction	162	116	77	87	63	171
Jct 2A - south	south at A3023/West Lane	30	28	25	25	317	190
Jct 2A - north	north at A3023/West Lane	141	154	122	157	247	299
Jct 2A - West Ln	West Ln at A3023/West Lane	81	92	73	82	184	60
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	21	33	31	19	23	34
Jct 3A - north	north at Tech Park/Woodbury Road	72	94	98	95	85	93
Jct 3A - south	south at Tech Park/Woodbury Road	6	11	6	5	3	24
Jct 4A - south	south at A3023/ Yew Tree Road	124	107	119	94	218	89
Jct 4A - north	north at A3023/ Yew Tree Road	-	-	-	-	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	4	10	5	8	5	5
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	7	13	8	8	10	10
Jct 5A - south	south at A3023/Copse Lane	52	50	72	41	190	68
Jct 5A - north	north at A3023/Copse Lane	3	7	-	4	38	25
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	92	95	78	107	74	96
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	228	267	201	267	261	208
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	29	47	42	38	37	43

Table 17. Secondary IP M1a Average Max Queue Lengths (m)

IP Period		M1a	M1a Langstone	M1a NorthFold	M1a NorthGytratory	M1a NorthSignals	M1a Technology Park
Movement							
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	175	174	175	175	175	174
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	187	188	188	188	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	82	85	87	80	83	88
Jct 1 - New Road	New Road at Park Road North Roundabout	134	135	139	127	121	136
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	200	190	190	189	195	191
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	216	216	217	216	218	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	177	168	171	165	162	173
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	142	144	144	144	143
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	116	117	117	118	118	117
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	142	152	134	140	130	149
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	210	210	209	209	210
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	121	126	121	125	120
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	81	81	76	76	77	77
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	107	99	115	102	111	169
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	127	136	135	139	154	141
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	6	5	5	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	48	49	51	51	50	49
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	10	9	8	8	9	8
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	16	11	12	15	16	16
Jct 7 - north	north at Manor Road/Newton Lane	7	4	7	7	3	7
Jct 7 - south	south at Manor Road/Newton Lane	56	58	58	60	52	58
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	14	11	12	14	14	13
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	7	9	10	8	5	13
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	10	11	11	9	8	8
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	6	7	6	6	4
Jct 15 - north	north at Manor Road/St Mary's Road	12	3	6	6	6	-
Jct 15 - south	south at Manor Road/St Mary's Road	5	10	6	5	5	7
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	14	12	11	10	12
Jct 16 - north	north at Manor Road/Station Road	84	82	102	91	93	100
Jct 16 - Station	Station at Manor Road/Station Road	31	37	37	30	33	31
Jct 16 - south	south at Manor Road/Station Road	3	-	2	-	-	11
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	13	11	9	10	11	11
Jct 18 - north	north at Church Road/St Mary's Road	28	44	31	44	30	54
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	10	11	12	13	12	10
Jct 18 - south	south at Church Road/St Mary's Road	3	6	2	2	4	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	13	17	12	14	12	12
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	79	74	74	74	81
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	95	104	101	98	104
Jct 1A - north	north at Northney Junction	123	122	6	20	194	125
Jct 1A - south	south at Northney Junction	121	104	3	-	166	125
Jct 1A - Northney Rd	Northney Rd at Northney Junction	31	32	12	20	63	33
Jct 2A - south	south at A3023/West Lane	5	7	8	8	7	8
Jct 2A - north	north at A3023/West Lane	116	117	99	99	116	117
Jct 2A - West Ln	West Ln at A3023/West Lane	22	19	17	17	21	22
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	34	34	30	36	38	52
Jct 3A - north	north at Tech Park/Woodbury Road	32	12	31	30	34	33
Jct 3A - south	south at Tech Park/Woodbury Road	6	4	4	4	3	50
Jct 4A - south	south at A3023/ Yew Tree Road	81	82	62	75	105	103
Jct 4A - north	north at A3023/ Yew Tree Road	-	4	-	-	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	10	9	9	8	10	8
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	10	12	9	11	12
Jct 5A - south	south at A3023/Copse Lane	35	37	35	32	52	41
Jct 5A - north	north at A3023/Copse Lane	9	18	7	9	24	16
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	52	47	44	45	45	45
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	92	94	90	87	89	94
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	55	73	56	44	57	60

Table 18. Secondary PM M1a Average Max Queue Lengths (m)

PM Period		M1a	M1a Langstone	M1a NorthFold	M1a NorthGytratory	M1a NorthSignals	M1a Technology Park
Movement							
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	149	155	148	152	156	165
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	188	187	187	186	187	187
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	178	160	166	165	165	178
Jct 1 - New Road	New Road at Park Road North Roundabout	143	142	154	135	153	146
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	141	141	146	142	135	141
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	208	206	209	211	210	209
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	202	199	193	212	196	201
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144	144	145	145	144
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	96	97	97	92	95	96
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	90	92	93	94	92	90
Jct 3 - Solent	Solent at Park Road South/ Solent Road	208	208	208	209	207	207
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	156	149	152	150	159	155
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	132	152	130	132	118	146
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	122	120	120	116	121	157
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	95	95	98	94	91	95
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	4	5	5	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	38	41	42	41	39	40
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	13	9	10	7	9
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	11	11	13	8	8	7
Jct 7 - north	north at Manor Road/Newton Lane	3	3	3	6	2	3
Jct 7 - south	south at Manor Road/Newton Lane	34	43	44	34	42	33
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	11	10	12	12	5
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	5	8	4	10	7
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	5	4	5	5	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	3	5	5	6	4
Jct 15 - north	north at Manor Road/St Mary's Road	8	4	-	3	-	-
Jct 15 - south	south at Manor Road/St Mary's Road	2	4	2	4	6	5
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	8	13	7	6	7	8
Jct 16 - north	north at Manor Road/Station Road	66	91	71	61	63	93
Jct 16 - Station	Station at Manor Road/Station Road	19	27	22	24	24	18
Jct 16 - south	south at Manor Road/Station Road	-	-	-	-	-	-
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	12	15	11	14	12	14
Jct 18 - north	north at Church Road/St Mary's Road	30	39	21	42	42	55
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	9	12	11	10	12	11
Jct 18 - south	south at Church Road/St Mary's Road	3	6	6	3	5	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	11	11	13	12	11
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	84	84	85	85	90	80
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	93	83	88	91	96	91
Jct 1A - north	north at Northney Junction	140	145	8	20	241	143
Jct 1A - south	south at Northney Junction	83	73	-	1	188	72
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	48	12	20	59	51
Jct 2A - south	south at A3023/West Lane	4	3	3	5	5	4
Jct 2A - north	north at A3023/West Lane	106	107	111	108	108	130
Jct 2A - West Ln	West Ln at A3023/West Lane	11	14	13	12	13	14
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	84	73	79	78	78	106
Jct 3A - north	north at Tech Park/Woodbury Road	68	14	62	60	59	43
Jct 3A - south	south at Tech Park/Woodbury Road	8	6	9	7	10	39
Jct 4A - south	south at A3023/ Yew Tree Road	81	113	70	80	95	86
Jct 4A - north	north at A3023/ Yew Tree Road	4	-	2	-	-	4
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	11	12	10	10	9	9
Jct 5A - Cope Ln	Cope Ln at A3023/Copse Lane	10	9	8	11	9	10
Jct 5A - south	south at A3023/Copse Lane	43	39	48	38	41	34
Jct 5A - north	north at A3023/Copse Lane	21	21	11	9	16	22
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	45	44	44	44	44
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	50	61	49	47	56	50
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	61	61	66	61	67	60

Table 19. Combination AM Do Minimum Average Max Queue Lengths (m)

	AM Period		
	Movement	Do Min	DoMin+ West+Fold+Langstone
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	177
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	145	66
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	69	65
Jct 1 - New Road	New Road at Park Road North Roundabout	158	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	352	262
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	219	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	163	166
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	137	130
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	373	301
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	178	180
Jct 3 - Solent	Solent at Park Road South/ Solent Road	212	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	239	217
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	224	125
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	178	152
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	483	352
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	-	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	64	70
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	4	4
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	8	13
Jct 7 - north	north at Manor Road/Newton Lane	29	29
Jct 7 - south	south at Manor Road/Newton Lane	36	25
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	7
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	3
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	8	7
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	2
Jct 15 - north	north at Manor Road/St Mary's Road	4	-
Jct 15 - south	south at Manor Road/St Mary's Road	2	3
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	7
Jct 16 - north	north at Manor Road/Station Road	56	48
Jct 16 - Station	Station at Manor Road/Station Road	30	26
Jct 16 - south	south at Manor Road/Station Road	-	-
Jct 18 - Tournerville	Tournerville at Church Road/St Mary's Road	10	9
Jct 18 - north	north at Church Road/St Mary's Road	19	24
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	15
Jct 18 - south	south at Church Road/St Mary's Road	2	2
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	16	12
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	27	48
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	72	110
Jct 1A - north	north at Northney Junction	120	4
Jct 1A - south	south at Northney Junction	277	196
Jct 1A - Northney Rd	Northney Rd at Northney Junction	171	87
Jct 2A - south	south at A3023/West Lane	238	186
Jct 2A - north	north at A3023/West Lane	264	31
Jct 2A - West Ln	West Ln at A3023/West Lane	105	68
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	39	51
Jct 3A - north	north at Tech Park/Woodbury Road	105	103
Jct 3A - south	south at Tech Park/Woodbury Road	168	58
Jct 4A - south	south at A3023/ Yew Tree Road	189	174
Jct 4A - north	north at A3023/ Yew Tree Road	-	4
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	6	11
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	11	9
Jct 5A - south	south at A3023/Copse Lane	90	131
Jct 5A - north	north at A3023/Copse Lane	42	39
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	108	93
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	368	254
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	34	43

Table 20. Combination IP Do Minimum Average Max Queue Lengths (m)

	IP Period		
	Movement	Do Min	DoMin+ West+Fold+Langstone
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	176	174
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	89	89
Jct 1 - New Road	New Road at Park Road North Roundabout	138	132
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	192	199
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	181	171
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	118	117
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	140	136
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	127
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	79
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	115	132
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	135	140
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	6
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	52	53
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	8
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	14	18
Jct 7 - north	north at Manor Road/Newton Lane	55	63
Jct 7 - south	south at Manor Road/Newton Lane	29	35
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	10	14
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	9
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	9
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	4
Jct 15 - north	north at Manor Road/St Mary's Road	6	6
Jct 15 - south	south at Manor Road/St Mary's Road	4	4
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	16
Jct 16 - north	north at Manor Road/Station Road	106	82
Jct 16 - Station	Station at Manor Road/Station Road	31	38
Jct 16 - south	south at Manor Road/Station Road	6	5
Jct 18 - Tournerbury	Tournerbury at Church Road/St Mary's Road	12	9
Jct 18 - north	north at Church Road/St Mary's Road	23	33
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	11	11
Jct 18 - south	south at Church Road/St Mary's Road	4	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	14	17
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	88
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	73	112
Jct 1A - north	north at Northney Junction	122	4
Jct 1A - south	south at Northney Junction	130	3
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	13
Jct 2A - south	south at A3023/West Lane	7	93
Jct 2A - north	north at A3023/West Lane	170	37
Jct 2A - West Ln	West Ln at A3023/West Lane	28	30
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	38	42
Jct 3A - north	north at Tech Park/Woodbury Road	29	25
Jct 3A - south	south at Tech Park/Woodbury Road	6	27
Jct 4A - south	south at A3023/ Yew Tree Road	132	154
Jct 4A - north	north at A3023/ Yew Tree Road	8	17
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	8	9
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	9
Jct 5A - south	south at A3023/Copse Lane	62	60
Jct 5A - north	north at A3023/Copse Lane	80	92
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	61
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	102	148
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	75	70

Table 21. Combination PM Do Minimum Average Max Queue Lengths (m)

	PM Period		
	Movement	Do Min	DoMin+ West+Fold+Langstone
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	150	152
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	186
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	179	210
Jct 1 - New Road	New Road at Park Road North Roundabout	148	150
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	134	138
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	208	210
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	193	196
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	144
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	101	93
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	91	99
Jct 3 - Solent	Solent at Park Road South/ Solent Road	208	209
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	154	153
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	126	140
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	130	130
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	95	95
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	-
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	41	43
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	10
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	12	11
Jct 7 - north	north at Manor Road/Newton Lane	46	55
Jct 7 - south	south at Manor Road/Newton Lane	12	14
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	9	6
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	3	5
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	9	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	5	4
Jct 15 - north	north at Manor Road/St Mary's Road	5	2
Jct 15 - south	south at Manor Road/St Mary's Road	4	2
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	8	6
Jct 16 - north	north at Manor Road/Station Road	68	86
Jct 16 - Station	Station at Manor Road/Station Road	21	24
Jct 16 - south	south at Manor Road/Station Road	-	-
Jct 18 - Tournerville	Tournerville at Church Road/St Mary's Road	12	16
Jct 18 - north	north at Church Road/St Mary's Road	43	31
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	12	10
Jct 18 - south	south at Church Road/St Mary's Road	5	4
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	10	14
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	93	81
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	48	87
Jct 1A - north	north at Northney Junction	307	186
Jct 1A - south	south at Northney Junction	106	-
Jct 1A - Northney Rd	Northney Rd at Northney Junction	92	53
Jct 2A - south	south at A3023/West Lane	5	70
Jct 2A - north	north at A3023/West Lane	131	46
Jct 2A - West Ln	West Ln at A3023/West Lane	14	19
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	98	97
Jct 3A - north	north at Tech Park/Woodbury Road	66	22
Jct 3A - south	south at Tech Park/Woodbury Road	17	18
Jct 4A - south	south at A3023/ Yew Tree Road	96	121
Jct 4A - north	north at A3023/ Yew Tree Road	14	9
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	12	10
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	8	15
Jct 5A - south	south at A3023/Copse Lane	30	47
Jct 5A - north	north at A3023/Copse Lane	80	109
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	43	45
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	53	73
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	76	78

Table 22. Combination AM M1a Average Max Queue Lengths (m)

AM Period		M1a	M1a+ West+Fold+Langstone
	Movement		
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	177	177
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	62	72
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	73	67
Jct 1 - New Road	New Road at Park Road North Roundabout	158	158
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	134	132
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	217	217
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	165	178
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	134	135
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	115	118
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	170	183
Jct 3 - Solent	Solent at Park Road South/ Solent Road	145	162
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	98	109
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	79	84
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	66	69
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	115	86
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	6
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	59	68
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	6	3
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	10	13
Jct 7 - north	north at Manor Road/Newton Lane	7	7
Jct 7 - south	south at Manor Road/Newton Lane	49	58
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	8	6
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	2	3
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	5	7
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	2	4
Jct 15 - north	north at Manor Road/St Mary's Road	-	7
Jct 15 - south	south at Manor Road/St Mary's Road	6	6
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	7	6
Jct 16 - north	north at Manor Road/Station Road	35	42
Jct 16 - Station	Station at Manor Road/Station Road	25	19
Jct 16 - south	south at Manor Road/Station Road	-	-
Jct 18 - Tournerville	Tournerville at Church Road/St Mary's Road	6	8
Jct 18 - north	north at Church Road/St Mary's Road	34	18
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	17	16
Jct 18 - south	south at Church Road/St Mary's Road	1	2
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	11
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	49	41
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	104
Jct 1A - north	north at Northney Junction	103	2
Jct 1A - south	south at Northney Junction	268	254
Jct 1A - Northney Rd	Northney Rd at Northney Junction	162	115
Jct 2A - south	south at A3023/West Lane	30	151
Jct 2A - north	north at A3023/West Lane	141	29
Jct 2A - West Ln	West Ln at A3023/West Lane	81	51
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	21	30
Jct 3A - north	north at Tech Park/Woodbury Road	72	99
Jct 3A - south	south at Tech Park/Woodbury Road	6	5
Jct 4A - south	south at A3023/ Yew Tree Road	124	73
Jct 4A - north	north at A3023/ Yew Tree Road	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	4	7
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	7	13
Jct 5A - south	south at A3023/Copse Lane	52	57
Jct 5A - north	north at A3023/Copse Lane	3	9
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	92	96
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	228	247
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	29	22

Table 23. Combination IP M1a Average Max Queue Lengths (m)

	IP Period		
	Movement	M1a	M1a+ West+Fold+Langstone
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	175	175
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	187	188
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	82	77
Jct 1 - New Road	New Road at Park Road North Roundabout	134	137
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	200	199
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	216	216
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	177	175
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	143
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	116	118
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	142	145
Jct 3 - Solent	Solent at Park Road South/ Solent Road	210	210
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	119	121
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	81	79
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	107	104
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	127	129
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	6
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	48	53
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	10	7
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	16	17
Jct 7 - north	north at Manor Road/Newton Lane	7	7
Jct 7 - south	south at Manor Road/Newton Lane	56	68
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	14	16
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	7	12
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	10	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	6	5
Jct 15 - north	north at Manor Road/St Mary's Road	12	6
Jct 15 - south	south at Manor Road/St Mary's Road	5	6
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	15	11
Jct 16 - north	north at Manor Road/Station Road	84	89
Jct 16 - Station	Station at Manor Road/Station Road	31	42
Jct 16 - south	south at Manor Road/Station Road	3	6
Jct 18 - Tournerville	Tournerville at Church Road/St Mary's Road	13	11
Jct 18 - north	north at Church Road/St Mary's Road	28	36
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	10	15
Jct 18 - south	south at Church Road/St Mary's Road	3	3
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	13	13
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	89	73
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	107	101
Jct 1A - north	north at Northney Junction	123	2
Jct 1A - south	south at Northney Junction	121	-
Jct 1A - Northney Rd	Northney Rd at Northney Junction	31	10
Jct 2A - south	south at A3023/West Lane	5	79
Jct 2A - north	north at A3023/West Lane	116	30
Jct 2A - West Ln	West Ln at A3023/West Lane	22	24
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	34	34
Jct 3A - north	north at Tech Park/Woodbury Road	32	14
Jct 3A - south	south at Tech Park/Woodbury Road	6	5
Jct 4A - south	south at A3023/ Yew Tree Road	81	99
Jct 4A - north	north at A3023/ Yew Tree Road	-	-
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	10	8
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	12
Jct 5A - south	south at A3023/Copse Lane	35	70
Jct 5A - north	north at A3023/Copse Lane	9	17
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	52	60
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	92	108
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	55	47

Table 24. Combination PM M1a Average Max Queue Lengths (m)

	PM Period		
	Movement	M1a	M1a+ West+Fold+Langstone
Jct 1 - B2199 Petersfield Road	B2199 Petersfield Road at Park Road North Roundabout	149	156
Jct 1 - Elmleigh Road	Elmleigh Road at Park Road North Roundabout	188	187
Jct 1 - Park Road North	Park Road North at Park Road North Roundabout	178	176
Jct 1 - New Road	New Road at Park Road North Roundabout	143	143
Jct 2 - B2149 Park Road (North)	B2149 Park Road (North) at Park Road North/Elm Lane	141	148
Jct 2 - Elm Lane	Elm Lane at Park Road North/Elm Lane	208	208
Jct 2 - B2149 Park Road (South)	B2149 Park Road (South) at Park Road North/Elm Lane	202	206
Jct 2 - Park Way	Park Way at Park Road North/Elm Lane	144	145
Jct 3 - B2149 Park Road South (North)	B2149 Park Road South (North) at Park Road South/ Solent Road	96	96
Jct 3 - B2149 Park Road South (South)	B2149 Park Road South (South) at Park Road South/ Solent Road	90	97
Jct 3 - Solent	Solent at Park Road South/ Solent Road	208	207
Jct 4 - B2149 Park Road South	B2149 Park Road South at Havant Bypass	156	154
Jct 4 - A27 Havant Bypass (East)	A27 Havant Bypass (East) at Havant Bypass	132	137
Jct 4 - A3023 Langstone Road	A3023 Langstone Road at Havant Bypass	122	121
Jct 4 - A27 Havant Bypass (West)	A27 Havant Bypass (West) at Havant Bypass	95	97
Jct 5 - Sea Grove Avenue (North)	Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Road	5	5
Jct 5 - Selsmore Road	Selsmore Road at Sea Grove Avenue/Selsmore Road	38	48
Jct 5 - Sea Grove Avenue (South)	Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Road	9	9
Jct 7 - Newton Ln	Newton Ln at Manor Road/Newton Lane	11	12
Jct 7 - north	north at Manor Road/Newton Lane	3	7
Jct 7 - south	south at Manor Road/Newton Lane	34	32
Jct 13 - beachlands west	beachlands west at Beechlands Roundabout	6	8
Jct 13 - beachlands south	beachlands south at Beechlands Roundabout	6	4
Jct 13 - beachlands east	beachlands east at Beechlands Roundabout	7	6
Jct 13 - beachlands north	beachlands north at Beechlands Roundabout	4	4
Jct 15 - north	north at Manor Road/St Mary's Road	8	4
Jct 15 - south	south at Manor Road/St Mary's Road	2	3
Jct 15 - St Marys	St Marys at Manor Road/St Mary's Road	8	5
Jct 16 - north	north at Manor Road/Station Road	66	63
Jct 16 - Station	Station at Manor Road/Station Road	19	18
Jct 16 - south	south at Manor Road/Station Road	-	-
Jct 18 - Tournerville	Tournerville at Church Road/St Mary's Road	12	18
Jct 18 - north	north at Church Road/St Mary's Road	30	32
Jct 18 - St Marys	St Marys at Church Road/St Mary's Road	9	8
Jct 18 - south	south at Church Road/St Mary's Road	3	7
Jct 19 - Cherrywood	Cherrywood at Elm Grove/Cherrywood Gardens	15	14
Jct 19 - north	north at Elm Grove/Cherrywood Gardens	84	84
Jct 19 - south	south at Elm Grove/Cherrywood Gardens	93	97
Jct 1A - north	north at Northney Junction	140	5
Jct 1A - south	south at Northney Junction	83	1
Jct 1A - Northney Rd	Northney Rd at Northney Junction	45	13
Jct 2A - south	south at A3023/West Lane	4	70
Jct 2A - north	north at A3023/West Lane	106	44
Jct 2A - West Ln	West Ln at A3023/West Lane	11	16
Jct 3A - tech park	tech park at Tech Park/Woodbury Road	84	80
Jct 3A - north	north at Tech Park/Woodbury Road	68	15
Jct 3A - south	south at Tech Park/Woodbury Road	8	7
Jct 4A - south	south at A3023/ Yew Tree Road	81	83
Jct 4A - north	north at A3023/ Yew Tree Road	4	3
Jct 4A - Yew Tree	Yew Tree at A3023/ Yew Tree Road	11	13
Jct 5A - Copse Ln	Copse Ln at A3023/Copse Lane	10	8
Jct 5A - south	south at A3023/Copse Lane	43	43
Jct 5A - north	north at A3023/Copse Lane	21	37
Jct 6A - Church Rd	Church Rd at Mill Rythe Roundabout	45	44
Jct 6A - Manor Rd	Manor Rd at Mill Rythe Roundabout	50	56
Jct 6A - Havant Rd	Havant Rd at Mill Rythe Roundabout	61	57

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