Local Plan 2036

Havant BOROUGH COUNCIL

Hayling Island Infrastructure Advisory Committee

Hayling Island Microsimulation Transport Model and the Hayling Island Transport Assessment

16th January 2019

Local Plan 2036

Havant
BOROUGH COUNCIL

Hayling Island Infrastructure Advisory Group

16 January 2019, 1430-1700

Tournerbury Room, The Plaza, Civic Centre Road, Havant, PO9 2AX

Agenda

1. Introductions
Introduction to the meeting: format and rules of engagement - Councillor Michael Wilson, Chair.

2. Notes of the two previous meetings and matters arising

3. National policy and context and the role of a Transport Assessment in developing a Local Plan (Chris Stanyard (Campbell Reith)) & David Hayward
The definition of 'severe highway impact' in the National Planning Policy Framework and examples from elsewhere in the country.

4. The Hayling Island microsimulation model and outputs of the modelling runs (Chris Shaw (Systra))
An overview of the Hayling Island Microsimulation Model (the Paramics model), how it was built, the inputs used and results of the modelling.

5. Implications for the Local Plan (David Hayward)
Detail on how the Local Plan has taken on the results of the transport modelling.

6. Next steps for the Local Plan (David Hayward)
Details of the next steps for the Havant Borough Local Plan 2036.

7. The role of the group moving forward (all)
A discussion of the role of the group moving forward and future topics of discussion.

8. Date of next meeting and any other business

Close.

National Planning Policy Framework (2012 and 2018)

- In March 2012 the National Planning Policy Framework introduced the following statement:

  "Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe"

- Since then there has been substantial uncertainty with regard to what constitutes a "severe impact" and how it can be appropriately quantified;
- The update in July 2018 made little attempt to clarify the terminology:

  "Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe"

- Local Plan Inspector Reports and Appeal Decisions continue to be regularly monitored to understand appropriate interpretation and application of the 'severe impact'.

Planning Appeals and Local Plan Inspector Reports

<u>Appeal References:</u>

- Inspector Mike Fox summarized his interpretation of a 'severe impact' which acts as a useful reference point for decision makers:

  "The Council agreed that mere congestion and inconvenience was not sufficient to trigger the 'severe' test but rather it was a question of the consequences of such congestion".

- These consequences relate to the following associated considerations:

  - Highway safety (collision trends) or blocking of adjacent junctions;
  - Ease of access from side roads and route choice;
  - Safe and convenient pedestrian / cycle facilities.

- New development often provides an opportunity to mitigate the transport impact of the background traffic growth as well as new development traffic through mitigation measures which would otherwise not come forward.

Road Traffic Forecasts (2018)

- The Department for Transport (DfT) produced the Road Traffic Forecasts document in July 2018. This seeks to predict the likely increase in background traffic between now and 2050:

Traffic levels are forecast to rise by between **17% and 51%** by 2050.
The key drivers of growth are increases in population and decreases in vehicle running costs

By 2050, on the Strategic Road Network

an **additional 1 to 2 vehicles** forecast for every 3 cars currently using these roads

- While it is noted that Hayling Island does not suffer from background traffic growth in the same way the mainland does, there will be an element of increased traffic due to population increases and vehicle users continue to drive for longer.
- Journey time impact on the Strategic Road Network is likely to be affected by background traffic growth in the future.

New vehicle technology has the potential to transform road traffic and congestion.

However there is great uncertainty as to what effects this will have.

The methodology of a transport assessment

Baseline

- Development with planning permission
- Development outside of the Borough

Do minimum
Do nothing

Baseline PLUS
- Proposed allocation sites
- Committed Transport Schemes

Do something

Do Minimum PLUS
- Transport mitigation schemes

Further modelling and feasibility

- If needed to refine the mitigation package

The methodology of a transport assessment

- Part of the required evidence base for a Local Plan
- There is a methodology in the Planning Practice Guidance
- Assesses the impact of development against the tests in the NPPF
- It is a Borough Council assessment, however important to involve the Transport Authority as much as possible
- It is <u>not</u> intended to show how background traffic growth or pre-existing issues should be addressed
- It is <u>not</u> intended to do a feasibility study or detailed design for the mitigation…shows that <u>a</u> solution can be put in place, doesn't necessarily show <u>the</u> solution

Hayling Island Transport Assessment (T.A.)

- TA reviews existing traffic and transport infrastructures & networks;
- Examines and predicts future demand;
- Establishes impact of proposed development in the Local Plan on road network
- Identifies any required mitigation and improvements to accommodate proposed development;
- Recommends public transport network improvements & methods to encourage modal switch.

Hayling LDP Scenario Microsimulation Modelling

SYSTRA

Introduction

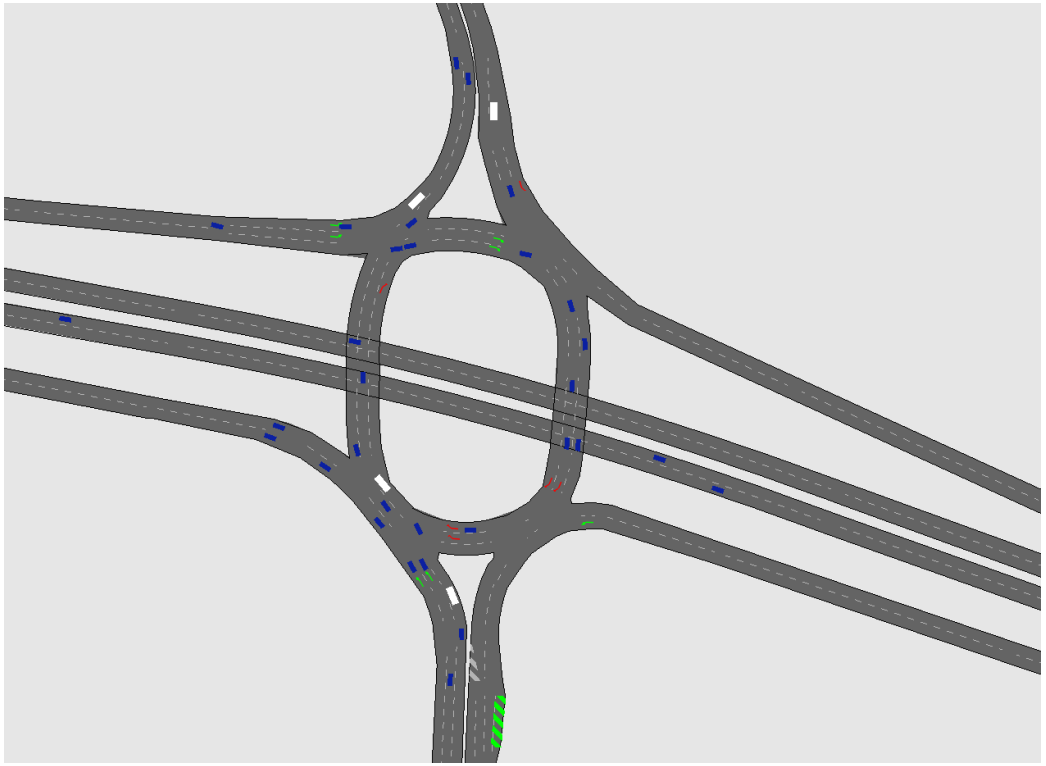
- Overview of Paramics Discovery
- Model Development Dataset
- Model Development
- Model Calibration/Validation
- Future Year Model Development
- Future Year Baseline and Do Minimum Results
- Mitigation Packages
- Results of Mitigation Testing

Paramics Discovery

What is Paramics Discovery?

- Industry Standard Traffic Microsimulation Software used extensively in the UK and beyond
- Reproduces real world traffic conditions in a computer model by simulating detailed individual vehicle behaviour on a user-defined road network

Example – A27/A3023 Roundabout



Model Development Dataset

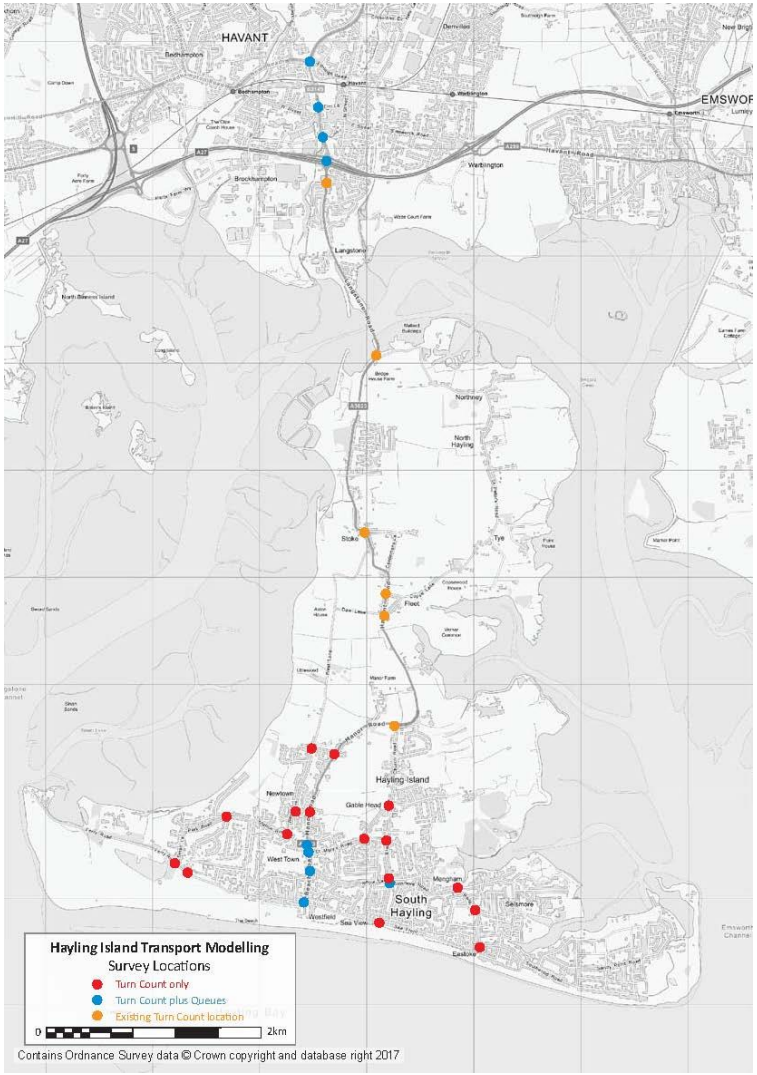
Various traffic datasets were collected and collated:

- Junction Turn Counts
- Bluetooth Journey Times
- Moving Observer Journey Times
- Queue Lengths
- Video Surveys

Model Development Dataset

Turn Count/Queue Length:

- 6 locations surveyed manually by HBC in June 2017, turn counts only (orange)
- 9 locations surveyed by video in September 2017, turns and queues (blue)
- 16 locations surveyed by video in September 2017, turns only (red)



Model Development Dataset

Journey Times:

- 2 routes surveyed by moving observer, September 2017 (green, orange)
- 2 routes defined using HBC Bluetooth system, June 2017 (blue, red)

Model Development Dataset

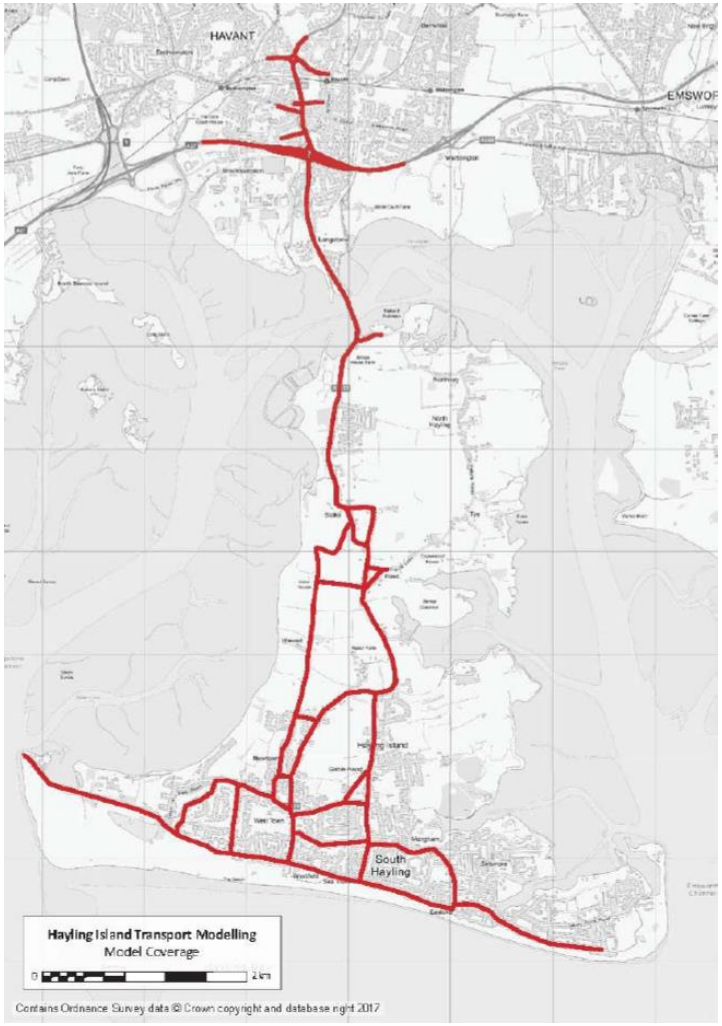
Videos:

- Videos provided from all September 2017 turn count/queue length surveys
- Video provided from all September 2017 journey time surveys
- Additional video surveys undertaken in October 2018 to observe traffic behaviour and conditions between Northney Road and Woodbury Avenue on the A3023

Model Development

The model covers the area shown and reflects three time periods for a neutral month weekday:

- AM Weekday 07:00 – 10:00 (3Hr)
- IP Weekday 10:00-16:00 (6Hr)
- PM Weekday 16:00 – 19:00 (3Hr)



Model Development

- Road outlines and geometry coded using OS mapping provided by HBC
- Speed limits defined to reflect on street signage
- Traffic signals coded using signal specifications provided by HBC
- School patrol crossings coded in locations defined by HBC
- Bus routes and timetables coded using Traveline information
- Route choice parameters consistent with strategic SRTM model where relevant
- Localised behaviour was calibrated as required based on survey video observations

Model Development

Five vehicle types are reflected in the model:

- Car
- Light Goods Vehicles
- Rigid Axle Heavy Vehicles
- Articulated Heavy vehicles
- Bus (fixed route timetabled services)

Model Development

- Traffic demands for the model were developed for Car, LGV and HGV vehicles separately
- The traffic demand matrix was generated using the surveyed count dataset and information from SRTM regarding traffic distributions for the study area
- The build up and dissipation of traffic within the study area is reflected in the model using a number of demand release profiles, developed from the survey count dataset

Model Calibration/Validation

- The guidance in WebTAG Unit M3.1 and DMRB Volume 12 was used as the basis for the calibration and validation of the base model
- Comparisons between the modelled and observed turn counts, journey times and queue lengths were undertaken
- These comparisons show that the model reflects the observed data well

Model Calibration/Validation

The GEH statistic is used to compare modelled and observed flows at an hourly level – Guidance suggest that 85% of comparisons should have a value of 5 or less model wide

Period	Time (HH:MM)	Eligible Comparisons	GEH < 3 %	GEH < 5 %	GEH < 7 %
AM	07:00 - 08:00	252	83%	94%	98%
	08:00 - 09:00	252	79%	92%	96%
	09:00 - 10:00	252	75%	91%	99%
IP	10:00 - 11:00	252	83%	96%	99%
	11:00 - 12:00	252	86%	96%	98%
	12:00 - 13:00	252	87%	97%	99%
	13:00 - 14:00	252	89%	97%	99%
	14:00 - 15:00	252	85%	96%	99%
	15:00 - 16:00	252	74%	95%	100%
PM	16:00 - 17:00	252	80%	94%	99%
	17:00 - 18:00	252	76%	94%	98%
	18:00 - 19:00	252	81%	98%	99%

Model Calibration/Validation

- WebTAG criteria suggests that modelled journey times should be within the greater of 15% or 1 minute of observed
- The model achieves this for all four journey time routes in all four hours
- Additional comparisons were undertaken for the two Bluetooth routes to ensure that journey times were also matching well by section

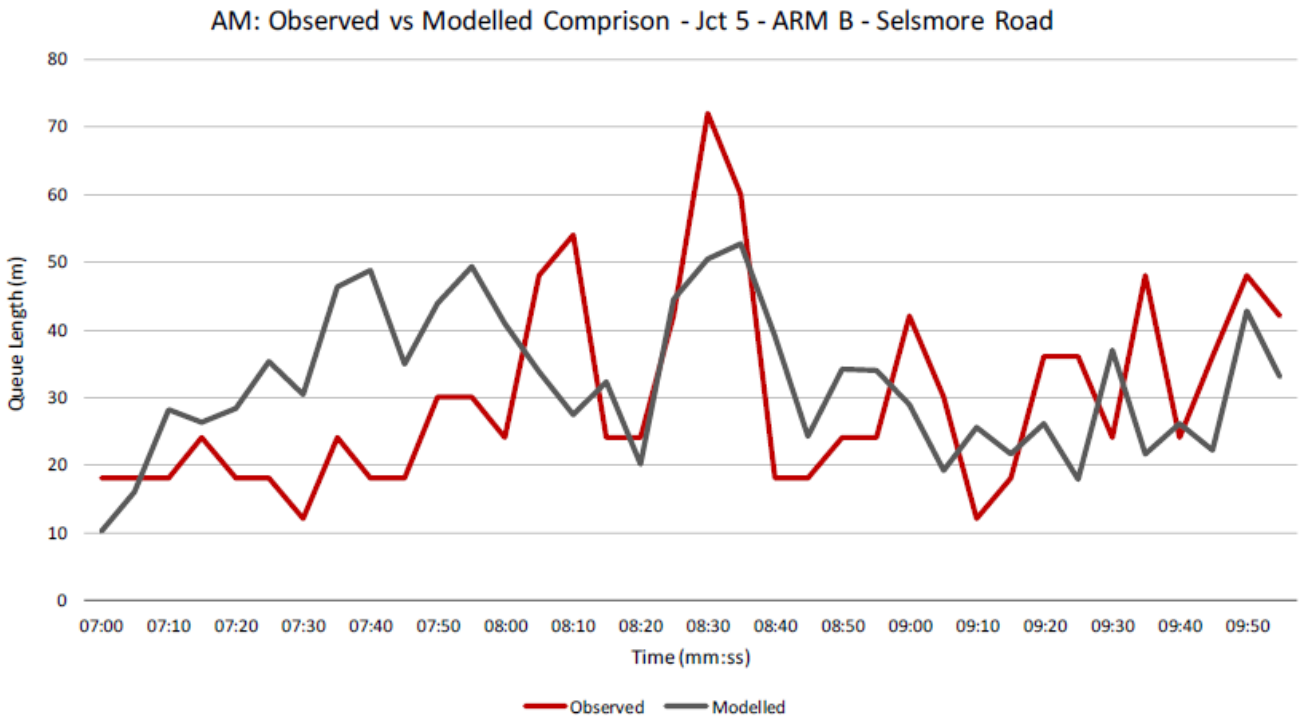
Model Calibration/Validation

Sectional Journey Time comparison example:

Model Calibration/Validation

- No WebTAG/DMRB criteria exists for queue comparisons
- Comparisons were undertaken for 5 of the 9 junctions surveyed for queue length, where queueing of significance was observed
- Comparisons showed a generally good match between model and observed

Queue Comparison – Example



Future Year Model Development

- Two future year networks were developed to establish the impact of development on the island
- The 2036 baseline reflects currently committed development (77 residential dwellings & Lidl – 1,340sqm)
- The 2036 Do Minimum reflects this, plus the proposed LDP developments (1087 residential dwellings)

Future Year Model Development

- Traffic demands associated with these developments were added to the base year model
- The TRICS database was used to derive trip rates for each development
- The distribution of traffic for each development was based on the base model demand matrices
- The proposed Lidl development was added to the model using information taken directly from the development TA
- The increase in traffic to 2036 between non island zones was derived from SRTM

Future Year Model Development

Resulting car trips

Period	Demand Type	Car Trip Totals
AM	2036 (matrix 1)	30,535
	2036 (matrix 1 adjusted)	30,463
	Com Dev (matrix 4)	141
	LDP (matrix 5)	732
	Rook Farm (matrix 6)	485
	Total	31,337
IP	2036 (matrix 1)	70,904
	2036 (matrix 1 adjusted)	70,392
	Com Dev (matrix 4)	848
	LDP (matrix 5)	1,323
	Rook Farm (matrix 6)	792
	Total	72,563
PM	2036 (matrix 1)	36,509
	2036 (matrix 1 adjusted)	36,267
	Com Dev (matrix 4)	394
	LDP (matrix 5)	794
	Rook Farm (matrix 6)	494
	Total	37,455

Future Year Baseline and Do Minimum Results

- Comparison between the 2036 Baseline and Do Minimum demonstrates the impact of the addition of the LDP development traffic on traffic conditions
- Increases in journey times on strategic routes are observed resulting from increases in flow breakdown on A3023
- Significant increases are noted in queues on many side arms, such as Northney Road, as well as an increase in queueing on Manor Road at the Mill Rythe Roundabout

Future Year Baseline and Do Minimum Results

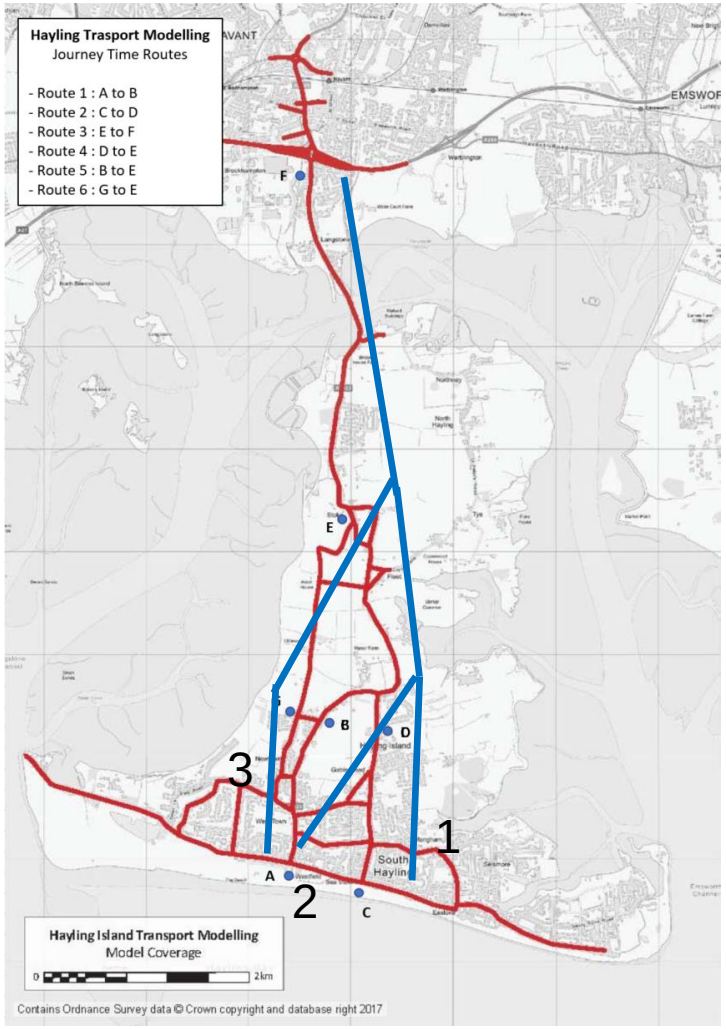
Journey Time Impacts

08:00 - 09:00

Journey Times (mm:ss) Description	Baseline	Do Minimum no Mitigation	Difference (mm:ss)	Difference (%)
Strategic Route 1 NB	11:58	14:01	02:03	17%
Strategic Route 1 SB	10:30	11:15	00:45	7%
Strategic Route 2 NB	12:25	16:48	04:23	35%
Strategic Route 2 SB	10:10	10:56	00:46	8%
Strategic Route 3 NB	08:57	11:21	02:24	27%
Strategic Route 3 SB	07:23	08:16	00:53	12%

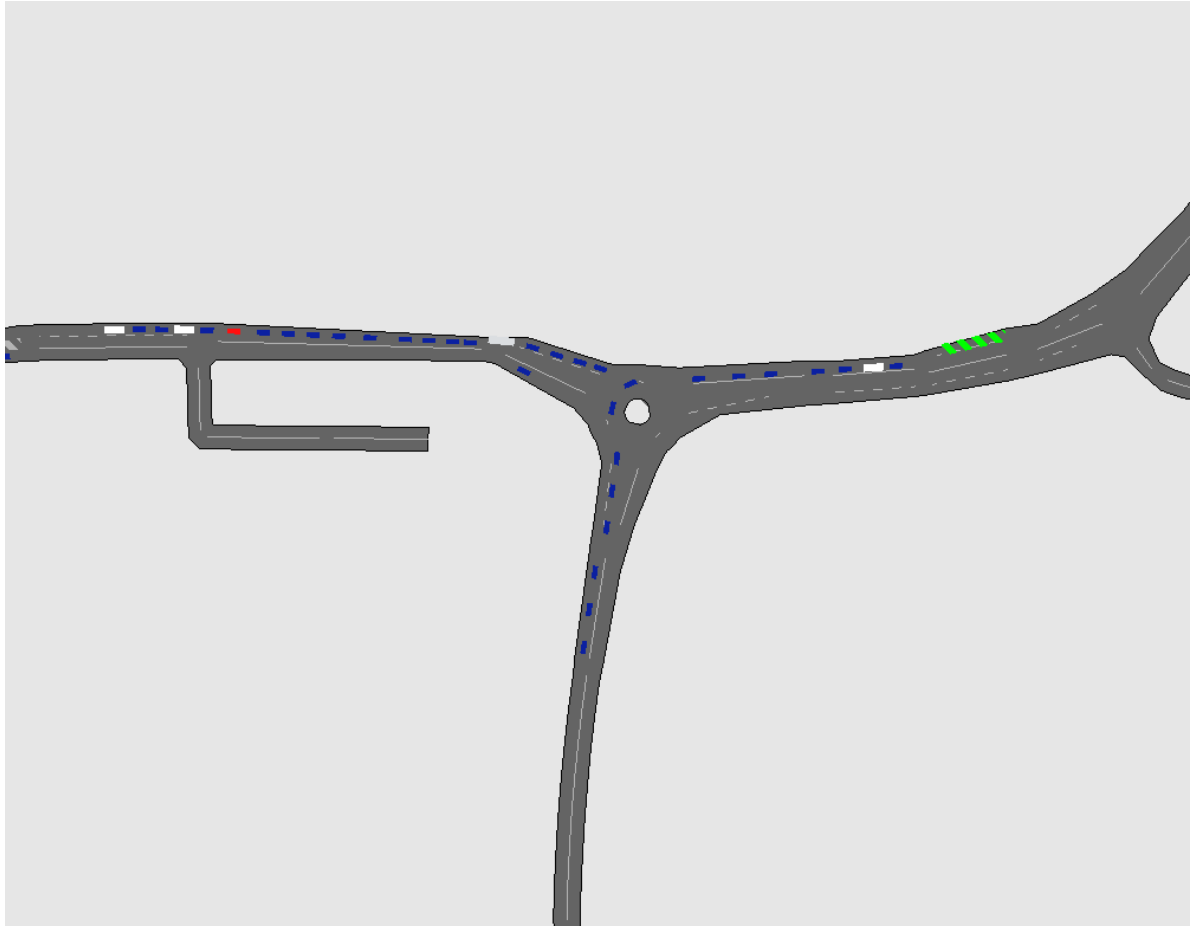
17:00 - 18:00

Journey Times (mm:ss) Description	Baseline	Do Minimum no Mitigation	Difference (mm:ss)	Difference (%)
Strategic Route 1 NB	10:21	12:09	01:48	17%
Strategic Route 1 SB	11:05	13:24	02:19	21%
Strategic Route 2 NB	10:14	12:03	01:49	18%
Strategic Route 2 SB	10:57	13:14	02:17	21%
Strategic Route 3 NB	07:17	09:03	01:46	24%
Strategic Route 3 SB	07:49	10:07	02:18	29%



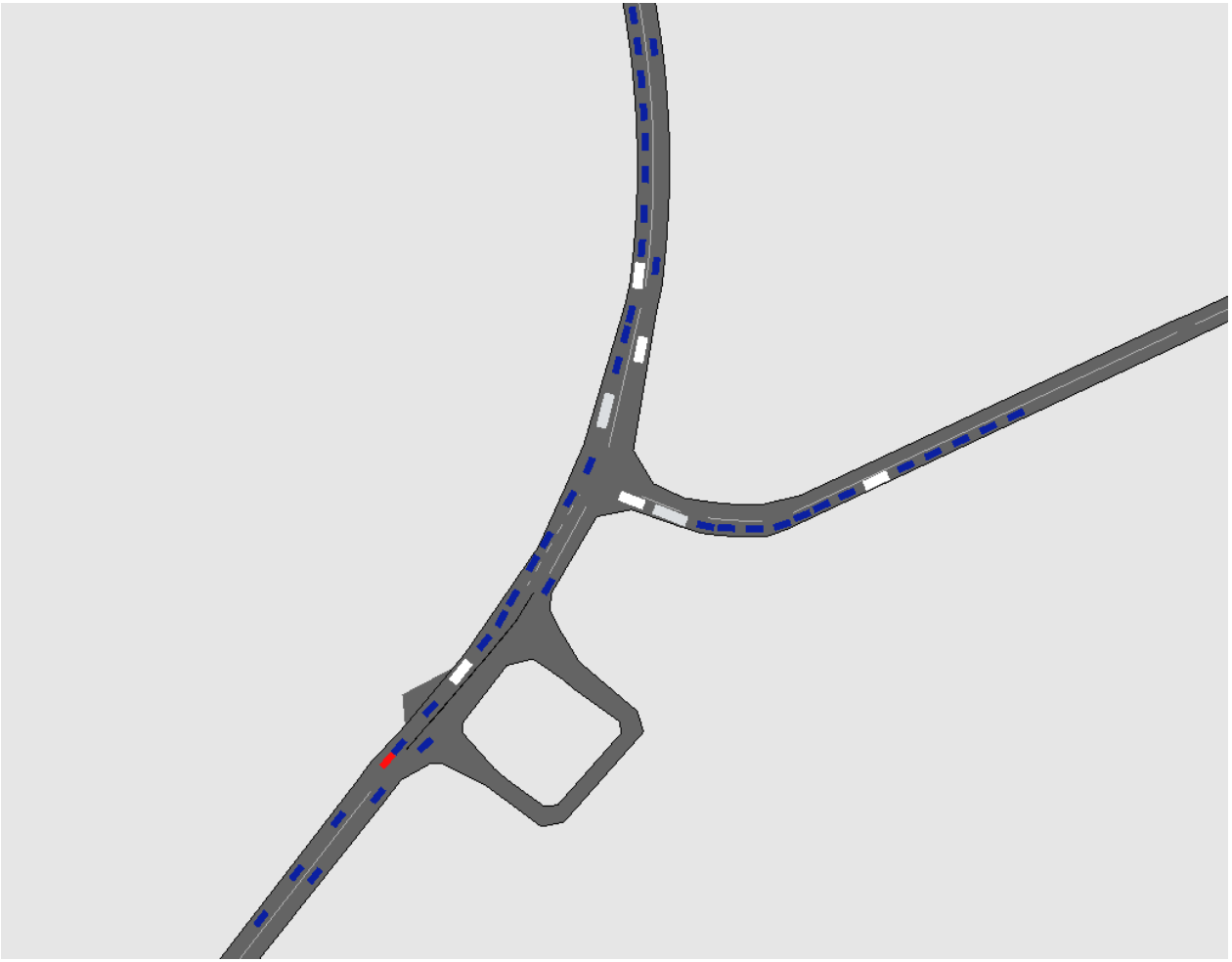
Future Year Baseline and Do Minimum Results

- Do Min Queueing Examples – Mill Rythe AM



Future Year Baseline and Do Minimum Results

- Do Min Queueing Examples – Northney Road AM



Future Year Baseline and Do Minimum Results

- Link Flows, Journey Times & Queue Lengths all increase in Do Minimum Scenario.
- Greatest increase is northbound on Strategic Route 2 (Beachlands Roundabout – Mill Rythe Roundabout - Stoke – Langstone) in the AM. Max journey time increases by 4 mins 23 secs (35%).
- No significant increases in IP.
- Largest PM increase on Strategic Route 3 (West Lane – Brights Lane – Stoke – Langstone A3023) north & southbound. Max journey time increases by 2 mins 18 secs (29%).
- Largest queue length increases in AM:

  North on West Lane junction with A3023 - 165 metres.

  A27 Havant Bypass (West) at Havant Bypass

  On Manor Rd at Mill Rythe Roundabout – 153 metres

  On Northney Rd junction with A3023 - 124 metres.
- Largest queue length increases in PM:

  North on Northney Rd junction with A3023 - 51 metres.

  A27 Havant Bypass West – 39 metres East – 50 metres

SYSTRA

Results of Mitigation Testing

- Comparison between the 2036 Do Minimum and Mitigation Models demonstrates the impact of the addition of the packages on traffic conditions
- In the PM, the packages provide improvements to strategic journey times compared to the Do Minimum
- In the AM some strategic journey times are improved by the packages, others are worsened due to the increased delays introduced by traffic signals
- The introduction of traffic signals generally improves the queueing on the side arms at problem locations, for example at Northney Road

Results of Mitigation Testing

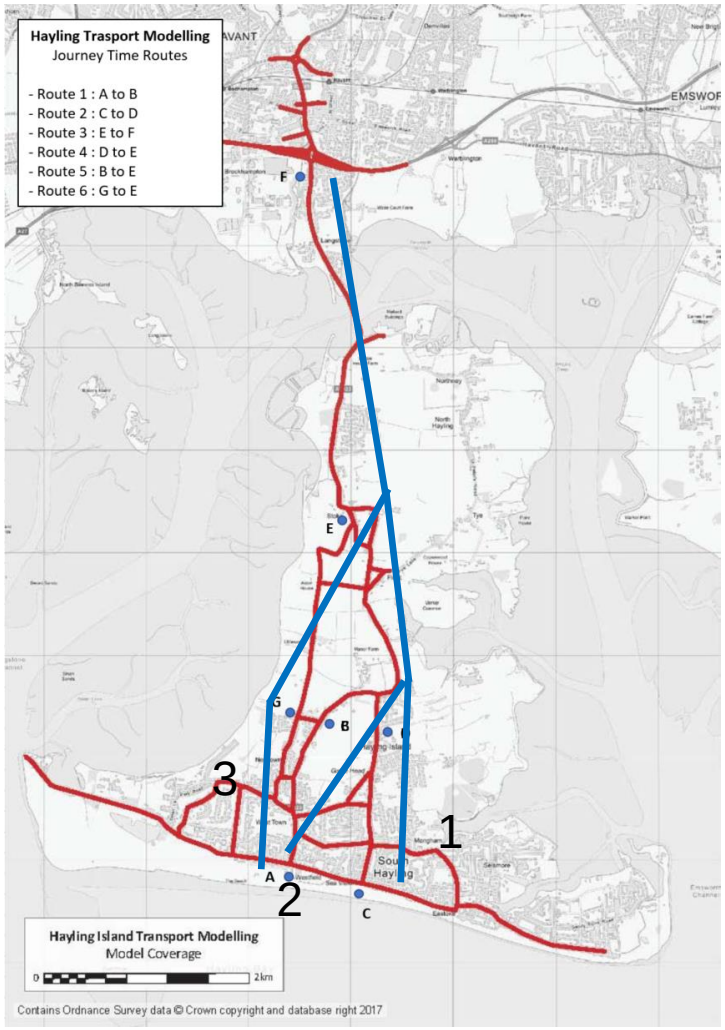
Journey Time Impacts

08:00 - 09:00

Journey Times (mm:ss) Description	Baseline	Do Minimum no Mitigation	Do Minimum Package 1	Do Minimum Package 2	Do Minimum Package 3
Strategic Route 1 NB	11:58	14:01	15:23	16:16	15:33
Strategic Route 1 SB	10:30	11:15	12:01	11:55	11:22
Strategic Route 2 NB	12:25	16:48	15:24	16:13	13:55
Strategic Route 2 SB	10:10	10:56	11:23	11:15	09:34
Strategic Route 3 NB	08:57	11:21	12:01	12:42	12:54
Strategic Route 3 SB	07:23	08:16	07:58	07:55	07:23

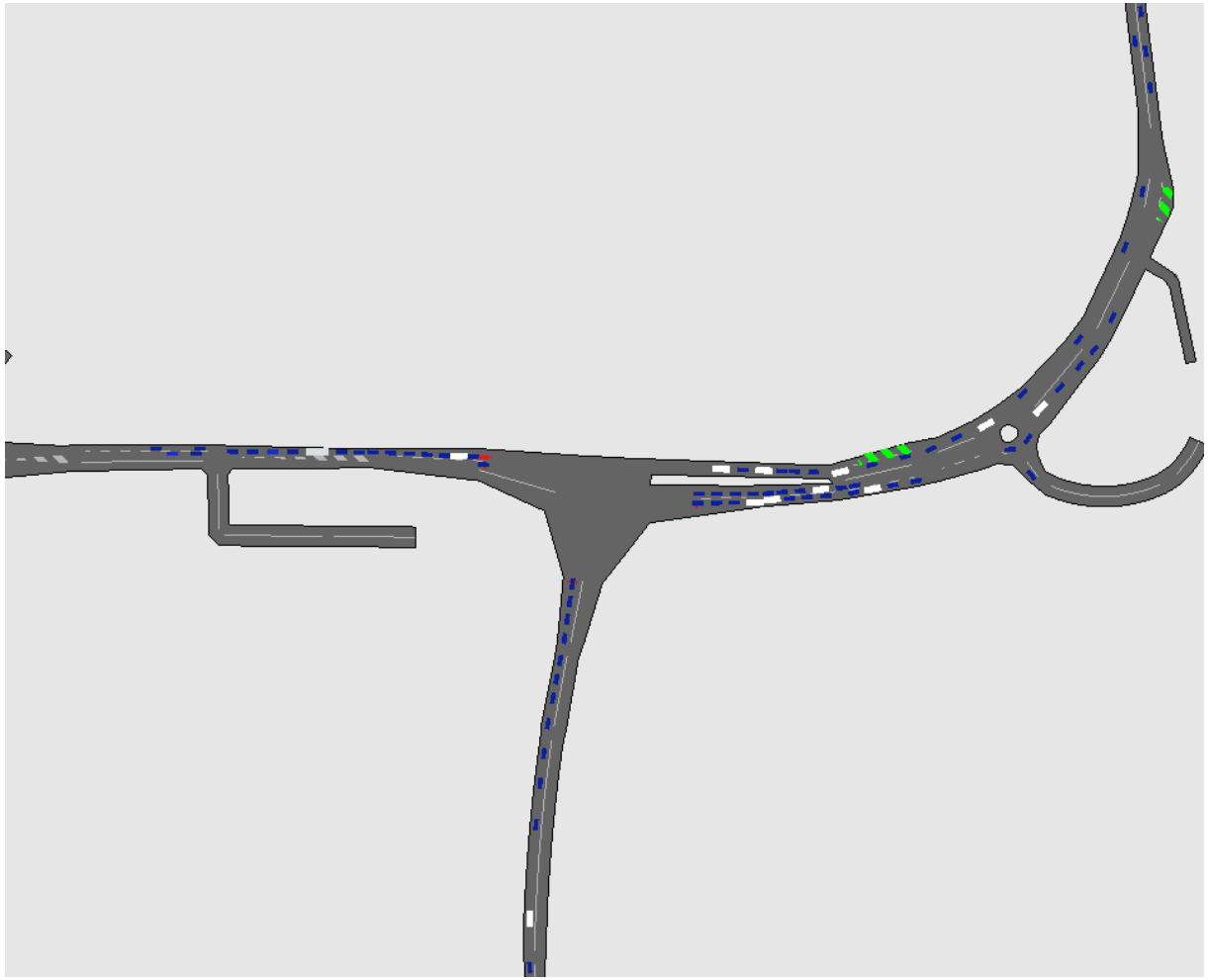
17:00 - 18:00

Journey Times (mm:ss) Description	Baseline	Do Minimum no Mitigation	Do Minimum Package 1	Do Minimum Package 2	Do Minimum Package 3
Strategic Route 1 NB	10:21	12:09	10:58	11:15	10:43
Strategic Route 1 SB	11:05	13:24	12:42	12:53	12:24
Strategic Route 2 NB	10:14	12:03	10:19	10:27	08:51
Strategic Route 2 SB	10:57	13:14	12:20	12:25	10:46
Strategic Route 3 NB	07:17	09:03	07:08	07:43	07:12
Strategic Route 3 SB	07:49	10:07	08:43	08:57	08:42



Results of Mitigation Testing

- Mitigation Queueing Examples – Package 2, Mill Rythe AM

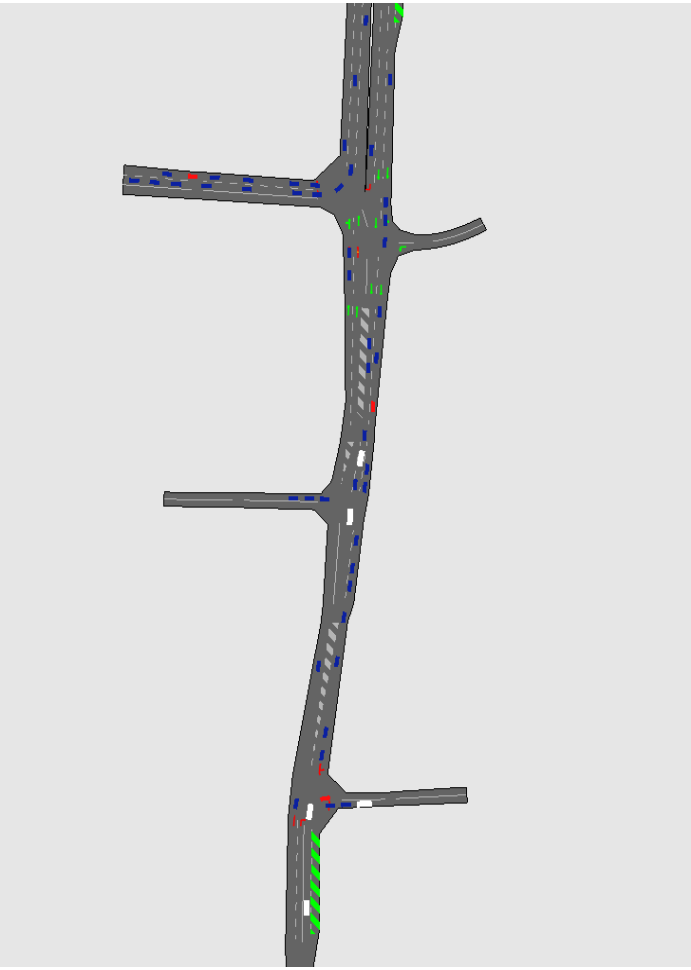


Results of Mitigation Testing

- Mitigation Queueing Examples – Package 2, Northney Road AM

Results of Mitigation Testing

- Mitigation Queueing Examples – Package 2, Woodbury Junction AM, PM



Results of Mitigation Testing

- Example Outputs – AM Link flows and Queues (see handout)

08:00 Peak Hour Location	Direction	Do Minimum no Mitigation	Do Minimum Package 1	Do Minimum Package 2	Do Minimum Package 3
Park Rd North	NB	1037	1064	1060	1065
Park Rd North	SB	1112	1107	1111	1110
Park Rd South	NB	1454	1485	1472	1489
Park Rd South	SB	717	768	772	772
A27 EB off ramp	EB	1516	1568	1558	1569
A27 EB on ramp	EB	422	437	434	440
A27 WB off ramp	WB	433	438	432	443
A27 WB on ramp	WB	1114	1117	1108	1128
A3023 Langstone Road	NB	1429	1413	1398	1418
A3023 Langstone Road	SB	778	830	829	830
A3023 Langstone Bridge	NB	1423	1404	1386	1405
A3023 Langstone Bridge	SB	720	771	776	779
A3023 Havant Rd N of West Ln	NB	1345	1350	1324	1343
A3023 Havant Rd N of West Ln	SB	652	681	685	704
A3023 Havant Rd S of West Ln	NB	1201	1191	1175	112
A3023 Havant Rd S of West Ln	SB	581	583	583	125
West Ln at Havant Rd A3023	NB	152	165	162	1250
West Ln at Havant Rd A3023	SB	70	96	96	578
Mill Rythe Rbt Havant Rd	EB	1170	1167	1171	130
Mill Rythe Rbt Havant Rd	WB	655	617	616	166
Mill Rythe Rbt Manor Rd	EB	327	412	412	183
Mill Rythe Rbt Manor Rd	WB	246	232	229	435
Mill Rythe Rbt Church Rd	NB	866	807	808	519
Mill Rythe Rbt Church Rd	SB	428	434	434	307
A3023 N of Newtown Ln	NB	325	389	393	796
A3023 N of Newtown Ln	SB	265	236	236	393
A3023 N of Sea Front	NB	186	200	207	355
A3023 N of Sea Front	SB	175	171	178	229
West Ln north of Newtown Ln	NB	219	199	199	70
West Ln north of Newtown Ln	SB	113	146	143	98
Station Rd W of West Ln	EB	273	275	281	263
Station Rd W of West Ln	WB	212	219	221	216
Staunton Ave	NB	60	56	57	46
Staunton Ave	SB	45	49	46	43
Ferry Rd	EB	44	44	44	45
Ferry Rd	WB	58	60	60	59
Sea Front E of A3023	EB	152	150	154	168
Sea Front E of A3023	WB	159	154	157	153
Sea Front W of A3023	EB	132	129	130	181
Sea Front W of A3023	WB	147	160	159	295
Sea Front W of Sea Grove Ave	EB	136	130	133	176
Sea Front W of Sea Grove Ave	WB	151	160	159	283
Sea Front E of Sea Grove Ave	EB	171	173	178	186
Sea Front E of Sea Grove Ave	WB	376	370	377	373
Sea Grove Ave N of Sea Front	NB	317	295	304	189
Sea Grove Ave N of Sea Front	SB	128	129	130	107
Southwood Rd	EB	184	188	185	190
Southwood Rd	WB	344	344	341	343
Selsmore E of Sea Grove Ave	EB	257	259	251	249
Selsmore E of Sea Grove Ave	WB	430	435	426	431
St Mary's Rd W of Elm Grove	NB	182	182	180	164
St Mary's Rd W of Elm Grove	SB	88	86	90	86
Elm Grove at Cherrywood Gdns	NB	691	637	635	371
Elm Grove at Cherrywood Gdns	SB	413	413	405	298

AM Period

Movement	Do Minimum	Package 1	Package 2	Package 3
B2199 Petersfield Road at Park Road North Roundabout	177	177	177	178
Elmleigh Road at Park Road North Roundabout	78	62	58	66
Park Road North at Park Road North Roundabout	67	61	65	66
New Road at Park Road North Roundabout	158	159	158	159
B2149 Park Road (North) at Park Road North/Elm Lane	241	135	133	129
Elm Lane at Park Road North/Elm Lane	218	217	217	216
B2149 Park Road (South) at Park Road North/Elm Lane	168	172	175	170
Park Way at Park Road North/Elm Lane	136	141	138	135
B2149 Park Road South (North) at Park Road South/ Solent R	329	117	117	118
B2149 Park Road South (South) at Park Road South/ Solent R	181	178	170	181
Solent at Park Road South/ Solent Road	207	149	150	130
B2149 Park Road South at Havant Bypass	221	110	114	117
A27 Havant Bypass (East) at Havant Bypass	144	77	97	80
A3023 Langstone Road at Havant Bypass	132	105	103	103
A27 Havant Bypass (West) at Havant Bypass	335	89	142	87
Sea Grove Avenue (North) at Sea Grove Avenue/Selsmore Rc	8	-	-	-
Selsmore Road at Sea Grove Avenue/Selsmore Road	63	62	73	50
Sea Grove Avenue (South) at Sea Grove Avenue/Selsmore Rc	4	3	4	4
Newton Ln at Manor Road/Newton Lane	16	14	9	30
north at Manor Road/Newton Lane	21	5	3	7
south at Manor Road/Newton Lane	24	56	63	96
beachlands west at Beechlands Roundabout	7	8	6	12
beachlands south at Beechlands Roundabout	6	6	5	10
beachlands east at Beechlands Roundabout	7	7	5	19
beachlands north at Beechlands Roundabout	4	3	3	4
north at Manor Road/St Mary's Road	7	-	-	14
south at Manor Road/St Mary's Road	3	5	5	4
St Marys at Manor Road/St Mary's Road	9	11	8	24
north at Manor Road/Station Road	73	35	40	112
Station at Manor Road/Station Road	27	26	20	42
south at Manor Road/Station Road	-	-	-	8
Tournerbury at Church Road/St Mary's Road	7	9	9	10
north at Church Road/St Mary's Road	22	7	17	2
St Marys at Church Road/St Mary's Road	32	30	31	21
south at Church Road/St Mary's Road	2	3	1	3
Cherrywood at Elm Grove/Cherrywood Gardens	18	12	15	6
north at Elm Grove/Cherrywood Gardens	39	27	26	16
south at Elm Grove/Cherrywood Gardens	91	83	74	50
north at Northney Junction	97	105	114	140
south at Northney Junction	246	304	70	302
Northney Rd at Northney Junction	157	172	67	66
south at A3023/West Lane	138	165	224	137
north at A3023/West Lane	280	264	35	8
West Ln at A3023/West Lane	68	64	-	-
tech park at Tech Park/Woodbury Road	36	32	35	29
north at Tech Park/Woodbury Road	104	78	87	84
south at Tech Park/Woodbury Road	68	2	22	6
south at A3023/ Yew Tree Road	176	87	125	6
north at A3023/ Yew Tree Road	-	-	-	-
Yew Tree at A3023/ Yew Tree Road	6	7	6	-
Copse Ln at A3023/Copse Lane	15	9	5	5
south at A3023/Copse Lane	77	40	127	6
north at A3023/Copse Lane	32	6	7	12
Church Rd at Mill Rythe Roundabout	113	241	257	156
Manor Rd at Mill Rythe Roundabout	296	185	195	84
Havant Rd at Mill Rythe Roundabout	40	170	165	89

SYSTRA

Results of Mitigation Testing

- Link Flows, Journey Times & Queue Lengths generally consistent with Do Minimum Scenario except for Mitigation Package 3, which includes the Stoke Bypass.
- Journey times improved for Strategic Route 2 in all time periods.
- Journey times generally increased on Strategic Routes 1 & 3 for all three Mitigation Packages in the AM.
- All journey times for all Strategic Routes improved in the PM.
- Journey time & queue length increases from Do Minimum Scenario to Mitigation scenarios resulted from the introduction of traffic signals at various junctions.
- Traffic Signals redistribute delay throughout the junction. Longer delays on side roads in Do Minimum Scenario rebalanced.

Conclusions

- Link Flows, Journey Times & Queue Lengths increase in 2036. Most significant increases on roads immediately adjacent to new LDP developments in Do Minimum & Mitigation Scenarios.
- Impact of LP development can be mitigated effectively to an acceptable degree and the increased journey times are not considered to represent a severe cumulative impact on the road network.
- Mitigation Packages demonstrate some positive improvements in reducing journey times & queue lengths.
- The introduction of traffic signals at junctions, in all 3 Mitigation Packages, redistributed overall delay at a junction, but have increased some queue lengths & journey times. Package 3 includes Stoke Bypass, thereby, reducing journey times on some route sections.
- The introduction of Traffic signals should improve journey time reliability & improve crossing facilities for pedestrians & cyclists.

Next Steps for Mitigation

- Each of the 3 Mitigation Packages combines a No. of schemes.
- Further model iterations required to identify the best combination of schemes for greater refinement and optimum solution.
- Once finalised, detailed junction modelling of the key junctions would offer greater detail in junction operation and identify whether the junction holds available capacity, or if it is over capacity.

Implications for the Local Plan

- Proceeding with development on Hayling Island results in the Borough having a five year supply, removing it means that the Borough would not have a five year supply
- It is considered that development on Hayling Island would not cause a severe impact on the highway network
- Development on Hayling Island is likely to be sound in transport terms

Next steps for the Local Plan

- Intending to hold a meeting of the Cabinet and Council on 30th January
- The Full Council meeting is where the decisions are ultimately made
- There will be an email mailout highlighting:
  - That the meeting is taking place, when and where
  - That it will be streamed on Facebook Live
  - Arrangements for making a deputation
- If the Council choose to proceed, pre-submission consultation from 4th February to 18th March
- This consultation would be different from the ones before