Portswood Corridor Traffic Modelling

Southampton City Council has undertaken extensive modelling within this corridor. The results are presented in the sections below.

A335 Thomas Lewis Way existing traffic signal performance

The council has undertaken modelling to assess the current performance of the signalised junctions along A335 Thomas Lewis Way. Modelling has been done on 2018 traffic flows (pre pandemic) which represent traffic flows above current traffic conditions.

Junction	Modelling results Practical Reserve Capacity (PRC)*	Recommendation to improve capacity
Thomas Lewis Way / Mayfield Road / Portswood Road	AM Peak **+1.3%** PM Peak **+14.7%** This junction has spare capacity to absorb additional traffic without interventions	Localised widening to create two southbound lanes and a right turn lane Upgrade traffic signal detection and controllers
Thomas Lewis Way / Link Road / Portswood Road	AM Peak **–5.3%** PM Peak **+17.3%** This junction is operating over capacity in the AM Peak and would need interventions to absorb additional traffic	Upgrade traffic signal detection and controller
Thomas Lewis Way / Dukes Road / Horsehoe Bridge	AM Peak **+2.1%** PM Peak **–3.3%** This junction is operating over capacity in the PM Peak and would need interventions to absorb additional traffic	Upgrade traffic signal detection and controller Provide advanced cycle signals on Lawn Road and Horsehoe Bridge arms
Thomas Lewis Way / Thomas Lewis Way (link to Lodge Road)	AM Peak **+35.9%** PM Peak **+53.2%** This junction has spare capacity to absorb additional traffic without interventions	None planned
Thomas Lewis Way / Bevois Hill / Bevois Valley Road	AM Peak **+86%** PM Peak **+59%** This junction has spare capacity to absorb additional traffic without interventions	Upgrade traffic signal detection and controller

*Practical Reserve Capacity (PRC) is expressed as a percentage and is a measure of how much additional traffic demand can be accommodated at the existing junction. A positive PRC indicates that there is spare capacity with the larger the number away from 0 the more capacity the junction has, a negative indicates that the junction has no spare capacity which will lead to increased queueing and delays for vehicles.

**Upgrading traffic signal detection and controller – upgrading signal controller technology is an effective and economical way to improve the operation of a signalised junction without the need to undertake expensive physical improvements. The upgraded controller allows for a more adaptive staging of traffic signals, which can change based on the different traffic flows at the approach to the junction during the day. Research carried out but the Transport Research Laboratory (TRL) indicates significant benefits in sites that have upgraded to new signal controllers, with a reduction of overall delay up to 13% for vehicles https://tsrgd.co.uk/pdf/tal/1997/tal-3-97.pdf

A335 Thomas Lewis Way / A3035 St Denys Road

The council has undertaken modelling to assess the performance of A335 Thomas Lewis Way / A3035 St Denys Road and identify potential improvements to improve the capacity of the junction as part of improvement works for the A3035 St Denys Road corridor. Modelling has been done on 2018 traffic flows (pre-pandemic) which represent traffic flows above current traffic conditions.

Scenarios were tested where the traffic signal controller was upgraded, signal staging was changed to allow main road northbound / southbound to run at the same time and the left turn lane from A335 Thomas Lewis Way southbound to A3035 St Denys Road was extended to allow for additional traffic. The results of the modelling indicate the average turning movement delay for each movement is as follows:

AM Peak hour

From	To	Existing Delay (seconds)	Proposed Delay (seconds)
North	East	40	**29**
	South	63	**51**
	West	46	**44**
East	North	39	42
	South	27	27
	West	35	36
South	North	54	**31**
	East	46	**45**
	West	50	**29**
West	North	33	51
	East	33	52
	South	54	70
Overall Delay at junction		47	**41**

PM Peak hour

From	To	Existing Delay (seconds)	Proposed Delay (seconds)
North	East	150	**35**
	South	96	**36**
	West	89	**43**
East	North	69	54
	South	16	14
	West	51	33
South	North	127	**37**
	East	114	**46**
	West	116	**33**
West	North	81	45
	East	84	43
	South	81	46
Overall Delay at junction		62	**55**

Predicted impacts of a Bus Only section on Portswood Road

The council has undertaken modelling to assess the impact of a Bus Only section on Portswood Broadway by reassigning through route traffic onto the main road A335 Thomas Lewis Way corridor. Modelling has been done on 2018 traffic flows (pre-pandemic) which represent traffic flows above current traffic conditions.

Journey Time AM Peak [m:ss]

Route	Base conditions	Scenario 1 – Bus Gates on Portswood (through traffic redirected onto A335 Thomas Lewis Way)	Scenario 2 - Bus Gates on Portswood + upgraded A335 Thomas Lewis Way	Scenario 3 - Bus Gates on Portswood + upgraded A335 Thomas Lewis Way + Increased bus patronage*
A335 Thomas Lewis Way – northbound	5:27	7:13	6:37	5:20
A335 Thomas Lewis Way - southbound	5:06	8:28	8:16	5:30

Journey Time PM Peak [m:ss]

Route	Base conditions	Scenario 1 – Bus Gates on Portswood (through traffic redirected onto A335 Thomas Lewis Way)	Scenario 2 - Bus Gates on Portswood + upgraded A335 Thomas Lewis Way	Scenario 3 - Bus Gates on Portswood + upgraded A335 Thomas Lewis Way + Increased public transport use*
A335 Thomas Lewis Way – northbound	6:30	11:51	7:26	5:31
A335 Thomas Lewis Way - southbound	10:42	16:08	6:31	4:55

*As part of the overall package of Transforming Cities Fund works, Southampton City Council is predicting a reduction in private vehicle trips and an increase in the number of trips taken by public transport. This is a result of the investment in bus priority across the city region, leading to faster and more reliable journey times for the public transport network when the programme is completed across four transport corridors and the city centre.