

# Fareham Local Plan

## Strategic Transport Assessment Addendum

Fareham Borough Council

10 May 2022

Final



# Notice

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### Client signoff

Client	Fareham Borough Council
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# 1. Introduction

## Purpose

- 1.1. This document is an addendum to the Fareham Local Plan Strategic Transport Assessment (TA 2020), produced for Hampshire Services, a transport planning consultancy contracted to coordinate the Strategic Transport Assessment on behalf of Fareham Borough Council (FBC). The TA (2020) forms part of the evidence base for the emerging Local Plan, by assessing the potential implications of the proposed allocations on the transport network.
- 1.2. The purpose of this addendum is to present supplementary information in response to the updated development scenario within the Revised Publication Local Plan regarding both housing and employment and to reflect any other relevant policy changes between the publication of the TA (2020) and now.
- 1.3. This report forms an Addendum to the original TA (2020), all information in the TA (2020) is relevant and still applies unless specifically updated in this document. The TA (2020) contains all necessary background information and so it has not been repeated in this Addendum. This report and the original TA (2020) should be read together; however, where the two contradict (through update, extension, or clarification) then this document should be taken as the latest version. This Strategic Transport Assessment Addendum is herein referred to as the TA (2020).
- 1.4. Chapter 3 'Existing Transport Network and Operation' and Chapter 4 'Transport Related Issues' of the TA (2020) remain largely unchanged since the TA (2020) was produced and therefore these Chapters will not be updated in this TAA. As per the TA (2020), the Modelling Methodology also remains unchanged with Scenarios 1, 2 and 3 assessed. The 1a and 2a sensitivity tests scenarios were not assessed as part of this TAA.
- 1.5. It is important to note the TA (2020) was based on data collected before the Covid pandemic, as there is still considerable uncertainty over what long-term impacts the pandemic will have on people's travel behaviours and patterns.

## Background

- 1.6. FBC is developing a new Local Plan for the Borough. The existing Development Plan for Fareham is the Fareham Core Strategy which was adopted in 2011 and covered the period to 2026.
- 1.7. Since 2015, the Council has been in the process of producing a new Local Plan. A TA was commissioned in 2019, and the modelling inputs for the draft Local Plan were specified by FBC in November 2019. In 2020, a Strategic Transport Assessment was produced in support of the draft Local Plan, which had a future year of 2036. This assessed the potential implications of the proposed potential allocations on the transport network based on a development scenario of 12,169 dwellings. Since then, there have been several changes to the growth scenario within the draft Local Plan because of changes to proposed policies regarding both housing and employment following government consultations on the Standard Methodology. This has resulted in a reduction in dwelling numbers being proposed in the Local Plan.
- 1.8. The Council published its Revised Publication Plan in June 2021. To provide clarity over the impacts of the final published development strategy, FBC commissioned further transport modelling to test the strategy.
- 1.9. This Transport Assessment Addendum provides the assessment of that further modelling work.

## 2. Policy and Strategic Context

- 2.1. This section provides an update to the TA (2020) Chapter 2 Policy and Strategic Context, describing any changes to the national, regional, and local transport related policies

### National

#### Ministry of Housing, Communities & Local Government, National Planning Policy Framework (NPPF) (2021)

- 2.2. The NPPF was revised in July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous NPPF published in March 2012, revised in July 2018, and updated in February 2019.
- 2.3. The main changes stated in the TA (2020) relate to 'Chapter 9 Promoting Sustainable Transport' relevant to this TAA are outlined below:
- 2.4. Paragraph 110 (previously 108), which sets out what should be ensured when assessing sites that may be allocated for in development plans or specific applications for development, has an additional point inserted as point C as seen below:
- 2.5. "In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:
- a) *appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
  - b) *safe and suitable access to the site can be achieved for all users;*
  - c) ***the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 46; and***
  - d) *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."*

#### Department for Transport, Decarbonising transport: a better, greener Britain (2021)

- 2.6. This plan follows on from 'Decarbonising transport: setting the challenge', published in March 2020, which laid out the scale of additional reductions needed to deliver transport's contribution to legally binding carbon budgets and delivering net zero by 2050.
- 2.7. The Plan outlines strategic priorities to achieve net zero these are; to accelerate mode shift to public and active transport; decarbonise road transport and decarbonise how we deliver goods. The plan sets out how the government will improve public transport and increase support for active travel to make these the natural first choice for all who can take them. The plan sets out the government's commitments and the actions needed to decarbonise the entire transport system in the UK.
- 2.8. The document focuses on increasing cycling and walking by delivering the Prime Minister's bold vision for cycling and walking investing £2 billion over five years with the aim that half of all journeys in towns and cities will be cycled or walked by 2030.
- 2.9. In addition, the document focuses on commitments for zero emission buses and coaches by delivering 4,000 new zero emission buses and the infrastructure needed to support them, as well as the first All-Electric Bus Town or City and a phasing of new non-zero emission buses.
- 2.10. The Plan also focuses on decarbonising the railways by delivering a net zero railway network by 2050, with sustained carbon reductions in rail along the way. This would include the aim to remove all diesel-only trains (passenger and freight) from the network by 2040.

## Regional and Sub-Regional

### Hampshire Local Transport Plan (LTP4)

- 2.11. Hampshire County Council has a statutory requirement to have in place a Local Transport Plan (LTP). The current LTP (LTP3) was produced in 2011 and was subject to a minor review in 2013. The new Transport Plan (LTP4) will supersede the current LTP and will form the primary transport policy for Hampshire County Council to 2050.
- 2.12. To develop the plan, HCC has considered the evidence gathered from the Hampshire 2050 Commission of Inquiry, and identified drivers of change. This will then be used in setting the vision, outcomes, and guiding principles for the new Local Transport Plan.
- 2.13. The new LTP4 has the following proposed vision for transport:
- 2.14. “A carbon neutral and resilient transport system designed around people, which: supports health, wellbeing, and quality of life for all; connects thriving places; and respects Hampshire’s unique environment.”
- 2.15. Key findings of Initial Engagement suggest two key guiding principles:
  - Significantly reduce dependency on the private car and need to travel; and
  - Create high quality transport system that puts people first.

### HCC Local Cycling and Walking Infrastructure Plans

- 2.16. Fareham is working with Hampshire County Council and Sustrans to produce a Local Cycling and Walking Infrastructure Plan (Fareham LCWIP). LCWIPs are a new approach to identifying cycling and walking improvements required at the local level. They enable a long-term approach to developing local cycling and walking networks, ideally over a 10-year period, and form a vital part of the Government’s strategy to increase the number of trips made on foot or by cycle.
- 2.17. Fareham’s LCWIP consultation ran from 6 September 2021 for eight weeks. Prioritisation of the measures within the Fareham LCWIP will take place following consultation, so that all feedback received is considered at that stage. All cycling related measures will also be amended to meet the new Local Transport Note 1 / 20; the government’s new Cycle Infrastructure Design guidance released in 2020. The results of the prioritisation, and the final Fareham LCWIP report will be subject to formal adoption through normal Council processes in due course.

### HCC A27 Corridor Study (2020)

- 2.18. In April 2020 HCC commissioned a study of the A27 corridor. The aim of the study is to develop a multi-modal transport strategy for the A27 corridor in Fareham district. The first stage of the study is to collate information to support the strategy which includes classifying the previous types of measures and aspirations proposed along the A27 corridor. The second stage will develop strategy options and potential schemes for a phased programme of delivery. Development sites will need to account for this study in their site-specific transport assessments.

### Fareham Borough Council, Revised Publication Fareham Local Plan (2021)

- 2.19. As stated in Paragraph 102 of the NPPF, local authorities need to ensure the identification of transport issues are considered from the earliest stages of plan making. The Revised Publication Fareham Local Plan (2021) identifies the following policies relevant to this TAA:
  - Policy TIN1: Sustainable Transport outlines how new development should reduce the need to travel by motorised vehicle through the promotion of sustainable and active travel modes, offering a genuine choice of mode of travel.
  - Policy TIN2: Development will be permitted where: a) There is no unacceptable impact on highway safety, and the residual cumulative impact on the road networks is not severe; and b) The impacts on the local and strategic highway network arising from the development itself or the cumulative effects of development on the network are mitigated through a sequential approach consisting of measures that would avoid / reduce the need to travel, active travel, public transport, and provision of improvements and enhancements to the local network or contributions towards necessary or relevant off-site transport improvement schemes.



- Where applications are shown to impact on one or more of the five junctions identified in the Strategic Transport Assessment, contributions will be sought to deliver mitigation schemes in line with this Policy TIN2.
- Policy TIN3: Safeguarded Routes highlights that development will not be permitted where proposals may compromise the ability of the Highway Authority (HA (HCC)) to deliver public transport highway interventions at Delme Roundabout, the A27 from Delme Roundabout to Portsmouth boundary, Quay Street Roundabout and Fareham Bus Station.
- Policy TIN4: Infrastructure Delivery outlines how developments will be required to provide and contribute towards the delivery of new or improved infrastructure, or other mitigation, to mitigate the impacts of the development.

2.20. In response to engagement from FBC, the HA (HCC) has confirmed that its preferred approach to mitigation of highway impacts is to focus on access to local services via active and sustainable modes of travel and reducing the need to travel by private motor vehicle except for on routes to the Strategic Road Network (SRN) where highway capacity should be considered to enable longer distance trips. Motor vehicle traffic capacity enhancements at junctions away from routes to the SRN should be considered as the last resort form of mitigation scenario.

2.21. The routes to the SRN include the A27 Southampton Road, B334 Titchfield Road, Stubbington Bypass, B3385 Newgate Lane east, Newgate Lane, and Gosport Road. These are also shown on Figure 8-1.

### HCC Bus Service improvement Plan (2021)

2.22. The Bus Service Improvement Plan (BSIP) sets out HCC's high-level vision for Hampshire's bus network, including journey time and reliability targets, and plans to deliver them.

2.23. HCC has delivered several initiatives which have helped to improve the quality and the attractiveness of local bus services which will be built upon through the BSIP. Most notably the development of the Eclipse BRT busway between Gosport and Fareham, which avoids congested sections of the A32 corridor, and further measures currently being delivered on key commuter corridors from Fareham to Portsmouth.

2.24. Appendix 1 of the BSIP sets out the full list of potential bus infrastructure options currently under consideration by HCC. It summarises the bus infrastructure that has been proposed by bus operators and identifies those sections of the highway network where operators know that bus services are currently experiencing regular delays due to queuing traffic and congestion and the infrastructure solutions that operators are proposing should be considered as potential options for addressing these issues.

2.25. There are several measures outlined in Appendix 1 for Fareham which aim to provide faster journeys:

- Enlarge and reconfigure Fareham bus station which serves 50+ buses per hour to provide drive-in /drive-out bus bays.
- Extend existing Eclipse BRT busway which is used by eight buses per hour each way from Redlands Lane to Fareham Rail station.

# 3. Sustainable Transport Infrastructure Assessment

## South East Hampshire Rapid Transit (SEHRT)

- 3.1. This section provides an update on how the government's Transforming Cities Fund (TCF) is to be delivered in Hampshire, and its impacts in Fareham.
- 3.2. SEHRT received the full ask of £4 million from the 'Tranche 1' TCF fund. This enabled the upgrade of three busy junctions in Portsmouth and installation of Real Time Information at bus stops across Portsmouth, Havant, and Waterlooville. In addition, £1.4 million was used to support the extension of the Eclipse bus route in Gosport.
- 3.3. Tranche 2 investment totalled just under £56 million and will fund 23 schemes to improve public transport and active travel infrastructure, while supporting the next phase of South East Hampshire Rapid Transit.
- 3.4. The following two schemes in Fareham and Portchester seek to reduce journey times and improve service reliability for buses and enhance connectivity for pedestrians and cyclists. These schemes have also been added to the revised Baseline for the SRTM modelling.

## A27 Delme Roundabout to Downend Road Junction Improvement

- 3.5. The key aims of the scheme are:
  - To reduce public transport journey times and increase service reliability through the introduction of a westbound bus lane with a bus gate on the approach to the Delme Roundabout gyratory;
  - To address walking and cycling road safety concerns by introducing improvements to eastbound and westbound walking and cycling routes;
  - Improve pedestrian and cycle access to Cams Hill School; and
  - Increase traffic capacity on the Delme roundabout gyratory to accommodate predicted increased traffic flows because of proposed local developments such as at Welborne and at several locations in Portchester.
  - The proposed scheme consists of the following enhancements:
    - Provision of a bus lane and bus priority signals on the eastbound approach to the Delme Roundabout;
    - Provision of a two-way segregated cycle track adjacent to the westbound carriageway;
    - Improved southern footway adjacent to the westbound carriageway with a shared-use path for pedestrians and cyclists to the south of the segregated cycle track;
    - Conversion of the existing crossing at the Cams Hall Estate junction to a toucan crossing;
    - Northern footway widened to create a shared-use path between St Catherines Way and the Downend Road signalised junction; and
    - Provision of cycle access to Cams Hill 'service road' on the northern side of the A27, linking to a shared-use path to the east, adjacent to the A27.

## The Castle Street Roundabout - Portchester scheme

- 3.6. This scheme is in the bus stop for Portchester Precinct at Castle Street Roundabout in Portchester. Portchester is a key location on the A27 between Fareham and Portsmouth for public transport services. This scheme aims to improve the bus services using the Portchester Precinct Bus Stop for journeys between Portsmouth and Fareham; providing additional benefits for linked services from Fareham and Portsmouth.
- 3.7. The scheme seeks to add bus priority to the existing bus stop and the proposed scheme consists of the following elements:
  - Installation of bus priority traffic signals on Castle Street Roundabout adjacent to the Bus Stop, allowing easier movements for buses exiting the stop onto the roundabout; and

- Introduction of restriction on the use of the bus stop, so that only buses (and market vehicles on Wednesdays) may use the stop, providing easier access for buses with no obstructions in the bus lane.

3.8. Further details of this scheme will be available once the detailed design stage has been complete.

## HCC Local Cycling and Walking Infrastructure Plan (Fareham LCWIPs)

3.9. In June 2019, Hampshire County Council declared a Climate Emergency, joining more than 70 local authorities across the country in committing to put environmental issues at the heart of everything it does. With around a third of carbon emissions in Great Britain coming from road transport, the Fareham LCWIP supports important mitigation to climate change, by reducing the reliance on motor vehicles.

3.10. Fareham's LCWIP set out walking and cycling improvements required at the local level, with the aim to increase the proportion of journeys made by walking and cycling. The following three key routes and their respective improvements have been considered when mitigating the impacts of the local plan growth in this TAA. More detail on the impacts and mitigation is contained in Chapter 6 and the draft Fareham LCWIP document.

### Route 270: River Hamble – Portchester

3.11. Route 270 provides a link across the borough of Fareham between the border with Eastleigh Borough at the River Hamble, and the border with Portsmouth City on the A27 east of Portchester. It follows the A27 which runs broadly on an east to west alignment through the borough. At approximately 15km in length, the route provides a connection between Lower Swanwick, Park Gate, Segensworth, Titchfield, Fareham, and Portchester.

### Route 271: Bridgemark - Lower Swanwick

3.12. Providing a link from Lower Swanwick to Brockhurst, this route is approximately 12.9km long. The route consists primarily of residential roads, but also includes some country lanes and industrial estates.

### Route 275 Highlands Road – A27 The Avenue

3.13. This is a secondary north-south route connecting Highlands Road and the A27, via Gudge Heath Lane. The route is 1.5km in length and consists almost entirely of residential land use, except for its northern most point, where there is an avenue of high street shops.

3.14. Route 275 is currently all on-road cycling, connecting to a shared use pathway on The Avenue to the south.

## 4. Local Plan Growth

- 4.1. This section outlines the changes in inputs from the TA (2020) in terms of the likely transport related impacts arising from the emerging Local Plan in terms of both future population and economic growth within Fareham and beyond. Throughout this Chapter, where possible the original TA (2020) figures have been compared against those now proposed for the TAA.

### Population, Dwellings, Jobs

- 4.2. The Local Economic Impact Model makes up part of the Sub Regional Transport Model and uses inputs including transport costs to forecast the quantum and location of households, populations, and jobs.
- 4.3. Table 4-1 and Table 4-2 summarise the forecasts produced by the Local Economic Impact Model (LEIM) module of the Sub-Regional Transport Model (SRTM), for the population, number of dwellings, and number of jobs within the Fareham Borough. In the table the 2036 Do Minimum scenario has been compared against the 2036 Baseline scenario, comparing the TA (2020) to the new inputs for the TAA.
- 4.4. The TA (2020) initially proposed an increase of approximately 6,000 households; however, this has now reduced to 5,600 households in the Revised Publication Local Plan between 2019 and 2036, over the baseline growth which includes permitted developments not yet built. The additional employment land use included in the Plan provides approximately 5,600 jobs in the Borough during the same period.

**Table 4-1 – TA (2020) 2036 Do Minimum vs 2036 Baseline outputs**

	2036 Scenario 1 Baseline	2036 Scenario 2 Do Minimum Option 1	Difference	% Difference
Population	117,008	131,229	14,221	12
Dwellings	54,255	60,306	6,051	11
Jobs	57,250	60,208	2,958	5

**Table 4-2 – TAA (new) 2036 Do Minimum vs 2036 Baseline outputs**

	2036 Scenario 1 Baseline	2036 Scenario 2 Do Minimum Option 1	Difference	% Difference
Population	127,534	139,813	12,278	9
Dwellings	59,045	64,621	5,576	9
Jobs	64,986	70,545	5,559	8

### Total Person Trips and Mode Share

- 4.5. The total person trips by mode of transport to and from, Fareham Borough for a 24-hour period are summarised in Table 4-3 and Table 4-4. These tables show the new trips associated directly with the Local Plan (Do Minimum scenario) against the 2036 Baseline, comparing the TA (2020) to the new inputs for the TAA. The Do Minimum scenario includes for an increase in dwellings within Fareham when compared to the Baseline. This is reflected by the number of person trips to / from and within Fareham over a 24-hour period.
- 4.6. Table 4-3 shows that for the TA (2020) in the Baseline there were 32% of trips by active modes, and in the Do Minimum scenario this increased to 36%. Table 4-4 shows that the Baseline percentage has remained unchanged, but the Do Minimum scenario has reduced from 36% to 34%.
- 4.7. This 2% mode share shift is a result of people deciding they would rather use active travel than sit in congestion and queuing. The Do Something scenario is not expected to have a significant impact on mode share or distribution of trips compared to the Do Minimum scenario.

**Table 4-3 – TA (2020) Person Trips to / from Fareham 2036 Do Minimum versus 2036 Baseline outputs**

	Scenario	From Fareham			To Fareham		
		Highway	Public Transport	Active modes	Highway	Public Transport	Active modes
<b>Absolute trip numbers</b>	2036 Scenario 1 Baseline	280,328	10,389	55,641	282,055	10,531	55,554
	2036 Scenario 2 Do Minimum	304,967	11,966	68,361	307,364	12,138	68,273
	Difference	24,639	1,577	12,720	25,309	1,607	12,719
<b>Mode Share (%)</b>	2036 Scenario 1 Baseline	81%	3%	16%	81%	3%	16%
	2036 Scenario 2 Do Minimum	79%	3%	18%	79%	3%	18%
	Difference	-2%	0%	2%	-2%	0%	2%

**Table 4-4 – TAA (new) Person Trips to / from Fareham 2036 Do Minimum versus 2036 Baseline outputs**

	Scenario	From Fareham			To Fareham		
		Highway	Public Transport	Active modes	Highway	Public Transport	Active modes
<b>Absolute trip numbers</b>	2036 Scenario 1 Baseline	321,442	12,559	62,821	323,532	12,797	62,724
	2036 Scenario 2 Do Minimum	344,482	14,483	71,699	345,860	14,700	71,574
	Difference	23,040	1,924	8,868	22,328	1,903	8,850
<b>Mode Share (%)</b>	2036 Scenario 1 Baseline	81%	3%	16%	81%	3%	16%
	2036 Scenario 2 Do Minimum	80%	3%	17%	80%	3%	17%
	Difference	-1%	0%	1%	-1%	0%	1%

## Land Use Modelling Assumptions

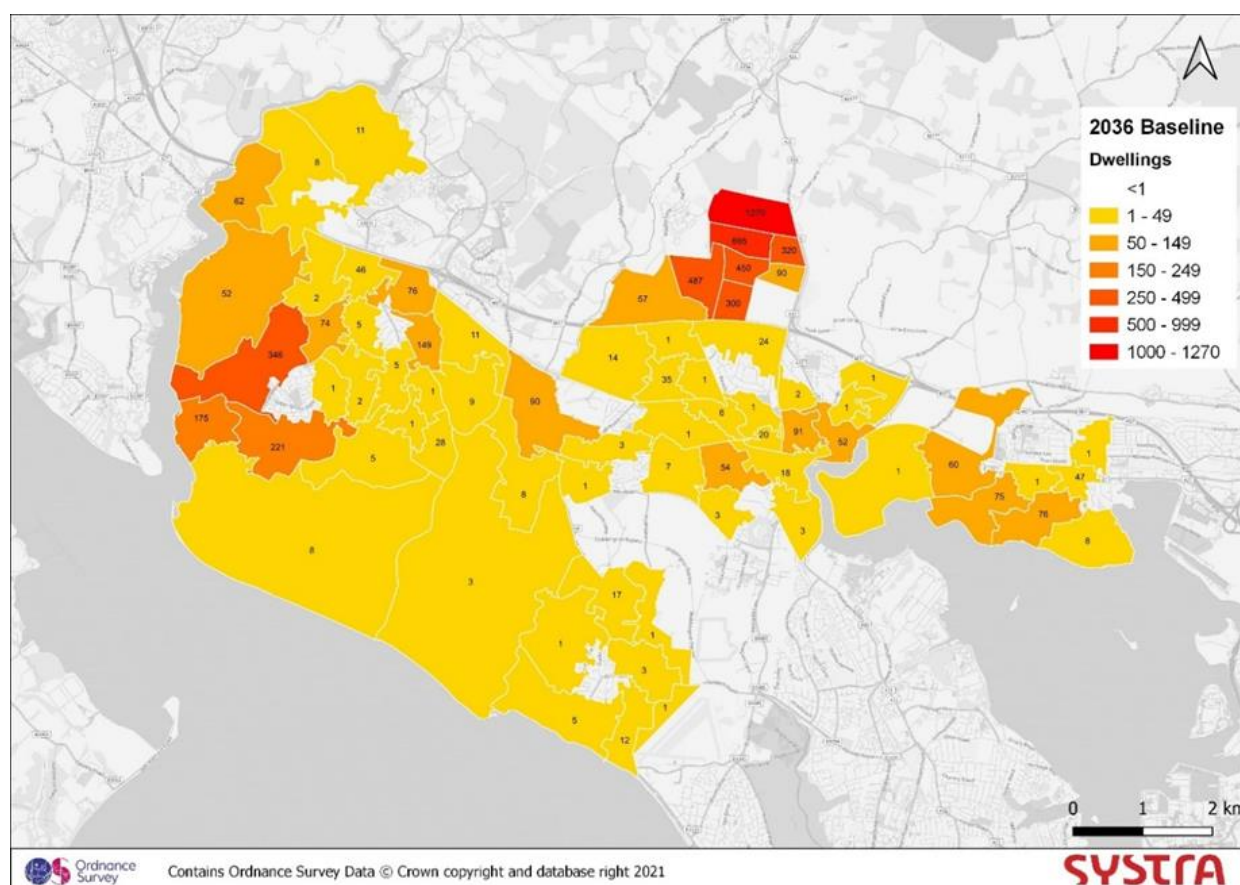
### 2036 Scenario 1 Baseline

#### Land Use Assumptions

- 4.8. The model is based on the assumed change in land use on sites across Fareham, and the anticipated travel implications of that change. The total completions and total development, those with permission or resolution to grant, for Fareham Borough are summarised in Table 4-5 below.
- 4.9. Figure 4-1 shows the location of the residential developments within the Borough.

**Table 4-5 – Baseline Fareham Land Use Inputs 2015-2036**

	Land Use	TAA (new)
<b>Residential</b>	Dwellings	5,718
<b>Employment (m<sup>2</sup>)</b>	Retail	4,736
	Office	33,888
	Industrial	72,099
	Warehousing	27,370
	Primary & Secondary Education	0
	Hotel & other accommodation	1,000
	Healthcare	3,491
	Leisure	3,819

**Figure 4-1 – 2036 Scenario 1 Baseline: Modelled Residential Growth for Fareham**


#### Land Use Assumptions outside Fareham Borough

- 4.10. This section outlines the land use impacts outside Fareham which may have an impact within the Borough such as population and employment. The SRTM inputs populate the Baseline scenario for all model areas except Fareham Borough, where the inputs have been revised as detailed in the above Table 4-5.
- 4.11. Three sites within Eastleigh borough were added to the baseline as they are now approved and are close to the boundary with Fareham; Land west of Woodhouse Lane, Hedge End (605 dwellings) and Land at Winchester Street, Botley (375 dwellings).



- 4.12. The LEIM module of the SRTM determines the level of overall development growth within the model in accordance with TEMPro (v7.2) employment and population trajectories for the sub-region. This is equivalent to allowing for background traffic growth within the modelling process.

## 2036 Scenario 2 Do Minimum

### Land Use Assumptions

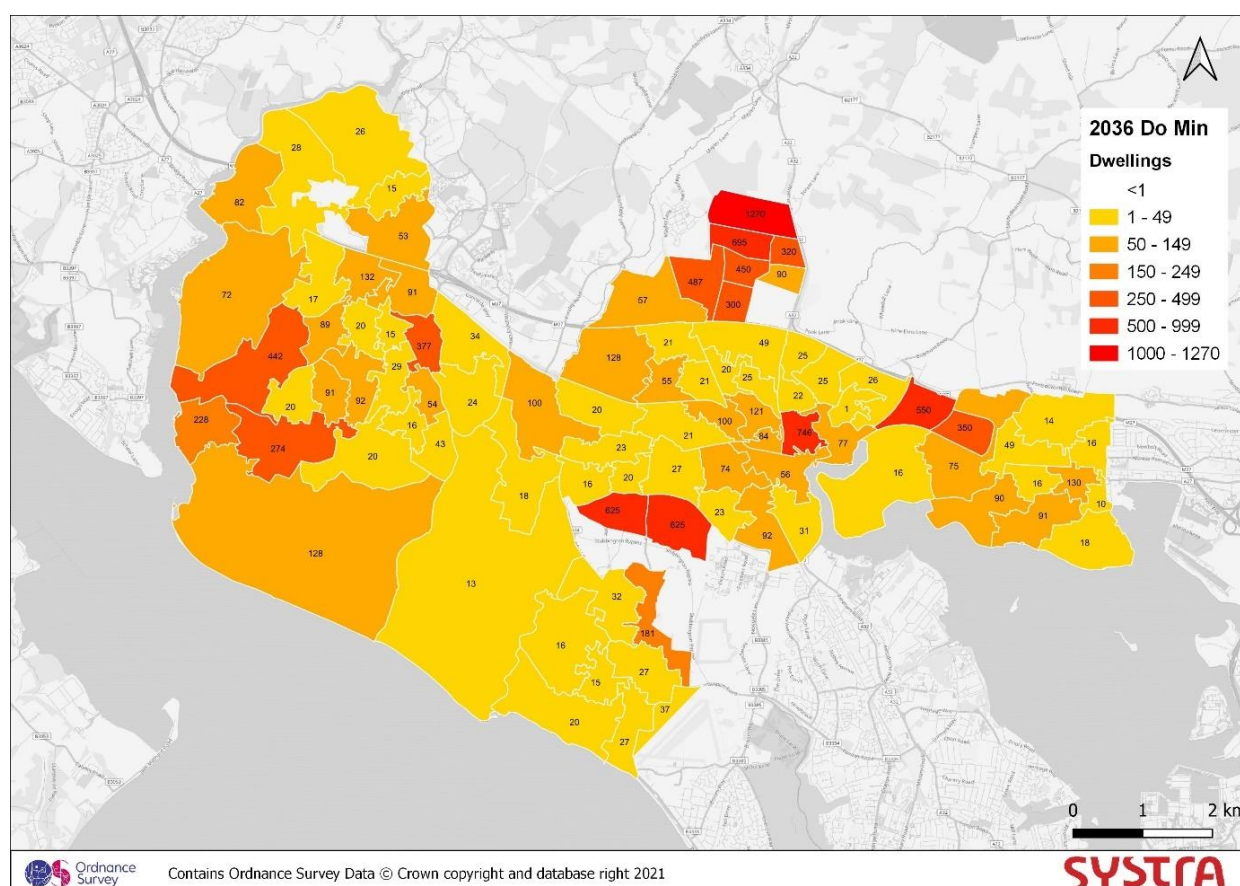
- 4.13. The Fareham Borough Local Plan development growth is included within the Do Minimum scenario as 'exogenous' development meaning that they will be built in their specified location, regardless of local conditions (such as changes in employment, population, income, other modes of transport). The Fareham Local Plan development totals for the Do Minimum scenario are shown in Table 4-6 which includes Baseline figures and summarised by model zone in Figure 4-2.
- 4.14. The SRTM modelling assesses the 'worst case scenario', so has assessed an upper limit of development which is above that set out in Table 4-6.

**Table 4-6 – Do Minimum: Fareham Land Use Assumptions 2019 - 2036**

	Land Use	TAA (new)
<b>Residential</b>	Dwellings	11,291
<b>Employment (m<sup>2</sup>)</b>	Retail	4,736
	Office	45,688
	Industrial	182,949
	Warehousing	27,370
	Primary and Secondary Education	4,800
	Hotel and other accommodation	1,000
	Healthcare	3,491
	Leisure	3,819

- 4.15. The allocations in the proposed scenario as seen in Table 4-6 are lower in quantum across residential, and higher in employment particularly industry and warehousing land uses. Overall, there is a decrease in the quantum of allocations in the revised scenario.
- 4.16. Some of this overall decrease reflects changes to the 'baseline' position, including changes to the number of permissions granted in the period between the TA and the TAA. Other zones have been revised following changes to proposed policy regarding both housing and employment.

**Figure 4-2 – 2036 Scenario 2 Do Minimum: Modelled Residential Growth for Fareham**



#### Non-Fareham Borough Land Use Assumptions

- 4.17. In the Do Minimum scenario, the land use outside of Fareham Borough is the same as in the Scenario 1 Baseline. By assessing the Local Plan in this way, there are no changes to the number of households, jobs, or population outside of Fareham. By ensuring land use inputs outside of Fareham are unchanged, the cumulative impacts of the Local Plan development can be isolated.

#### 2036 Scenario 3 Do Something

- 4.18. The Do Something scenario includes potential highway capacity infrastructure measures identified to help mitigate the transport impacts associated with the Fareham Local Plan. Details of these measures are included in Chapter 6.
- 4.19. In most cases, these mitigation measures are the worst-case mitigation options. The preferred approach to mitigation, which, in line with the emerging Hampshire Local Transport Plan 4, focuses on enabling active travel and public transport measures as a priority. These active travel measures were not modelled in the Do Something 2036 model as it is not always practical to realistically represent / model walking and cycling improvements on a site-by-site basis in a strategic model that does not include full representation of all walk links.

#### Land Use Assumptions

- 4.20. Land use assumptions between Scenario 2 Do Minimum and Scenario 3 Do Something are unchanged.



## Housing and Employment Sites

- 4.21. Modelling inputs for the TA (2020) and TAA were specified by FBC in November 2019.
- 4.22. Input data on completions, windfall sites and permissions across all model zones was included in a future Baseline model run to look at what would happen on the highway network if no sites were allocated. This Baseline also includes projected background growth in car use over the timeframe using TEMPro v7.2 growth projections provided by the Department for Transport.
- 4.23. Next, the allocations were included in a Do Minimum model run to look at the cumulative impacts of these sites compared with the Baseline situation. The role of the TA (2020) is to demonstrate that the impacts of the proposed allocations (and not the impacts of the Baseline) can be mitigated. Therefore, the resulting differences between the Baseline and Do Minimum model runs were reviewed, and mitigation measures developed.
- 4.24. These mitigation measures were tested through a final Do Something model run. As above, the TA (2020) concluded that the transport impacts of the proposed allocations were capable of mitigation at the strategic level.
- 4.25. Subsequently, there have been various changes to the growth scenario within the draft Local Plan due to changes in the proposed policies regarding both housing and employment, and changes to the number of completions, permissions and windfall sites since the original model runs. These changes are set out in the Revised Publication Plan Technical Transport Note which has been published in Fareham's Local Plan examination library. The net changes across all model zones are shown in the maps on the pages that follow.
- 4.26. Changes to the site allocations have been included in the model but are not assessed individually, the growth in the model is cumulative. The impacts of each individual site would be assessed through transport assessments related to the planning application for each site, as it comes forward.

## Net changes in the distribution of development

- 4.27. As well as the variations in quantum of development, the development strategy in the Revised Publication Local Plan includes changes to the distribution of completions, windfall, permissions (Baseline), and allocations (Do Minimum). The changes in the distribution of development within each of the model zones can be seen in Figure 4-3 to Figure 4-5 below. On the figures, the net increases show in shades of red and net decreases in shades of blue.

### Residential Development

- 4.28. Figure 4-3 shows that around half of zones have seen an increase in residential development, and around half have seen a decrease. The largest proposed increase at one zone is 538 dwellings, in the centre of Fareham town. The largest decrease is 675 dwellings, south of Fareham. Most of the allocations show very minimal changes in the number of dwellings. Almost all development north of the M27 motorway shows a decrease over the previous model runs.

### B1 Office

- 4.29. The changes in the distribution of office space (B1) developments can be seen in
- 4.30. Figure 4-4 below. This figure shows that most zones have seen an increase in development, and a small number have seen a decrease. The largest proposed increase at one zone is 13,600 sqm, in Whiteley. The largest decrease is 12,200 sqm in Segensworth. Most of the zones show relatively modest changes.

### B2 Industry and B8 Warehousing

- 4.31. The changes in the distribution of industry and warehousing space (B2 and B8) development can be seen in Figure 4-5 below. Overall, there is a 10% increase in proposed allocations, compared to the 2020 Draft Plan TA (2020). This figure shows that most zones have seen an increase in proposed development, and a small number have seen a decrease. The largest proposed increase is at Daedalus, where increases at two zones total 116,002 sqm. The largest decrease is in Funtley where two adjacent zones show a total decrease of 25,860 sqm, partly due to the phasing of the Welborne development going beyond the plan period. Counter to the office space developments, there is a decrease at Whiteley and an increase at Segensworth. Whilst this is essentially, a swap in land uses between these two areas, it should be noted that trips associated with office space would be expected

to be more intensive than those associated with warehousing and industrial uses. There might also be expected to be a shift in balance between car based and goods vehicles associated with this.

Figure 4-3 – Quantum Differences (TA (2020) vs TAA Inputs) Residential (dwellings) Land Use

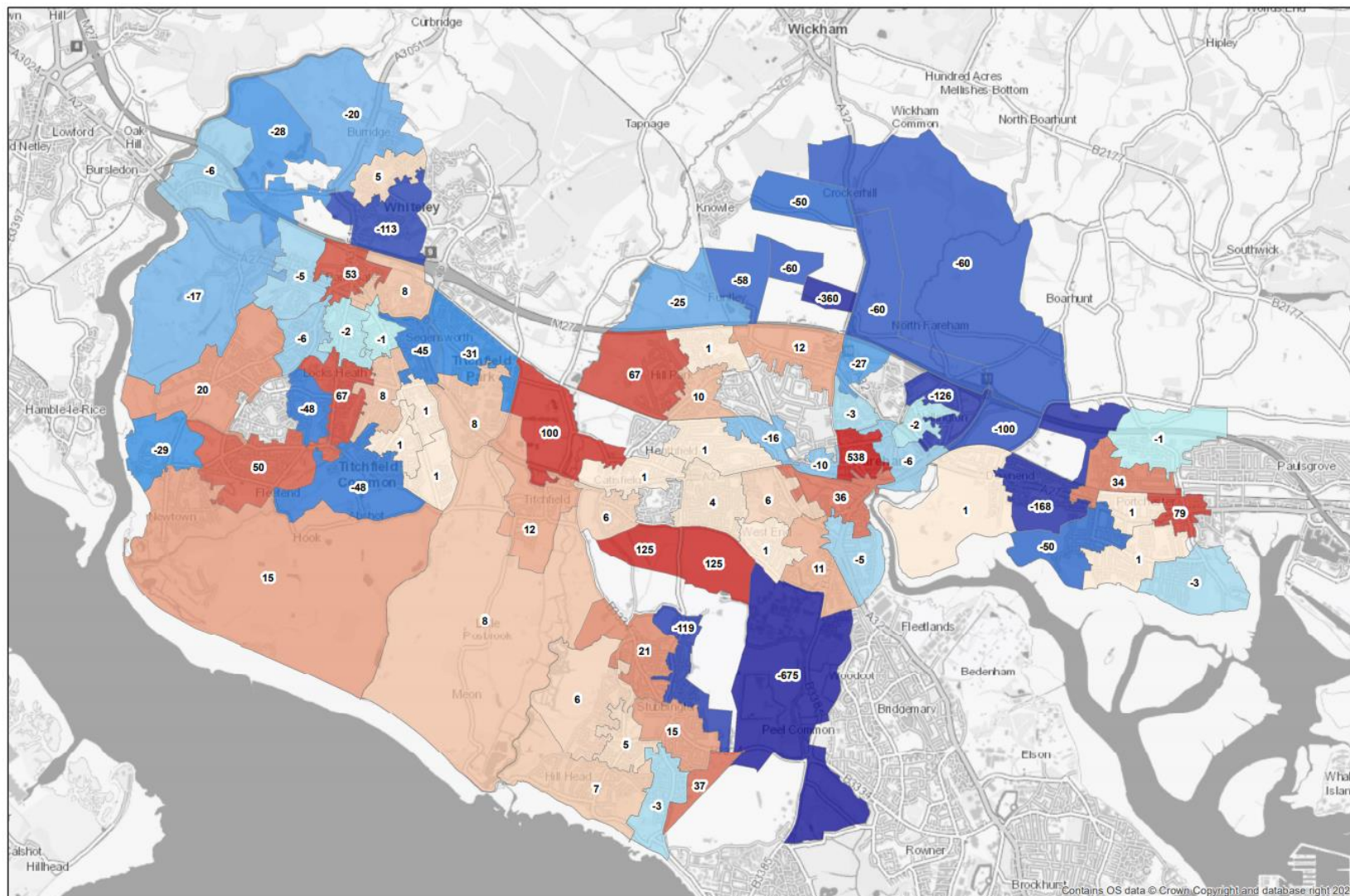




Figure 4-4 – Quantum Differences (TA (2020) vs TAA Inputs) B1 (sqm) Land Use

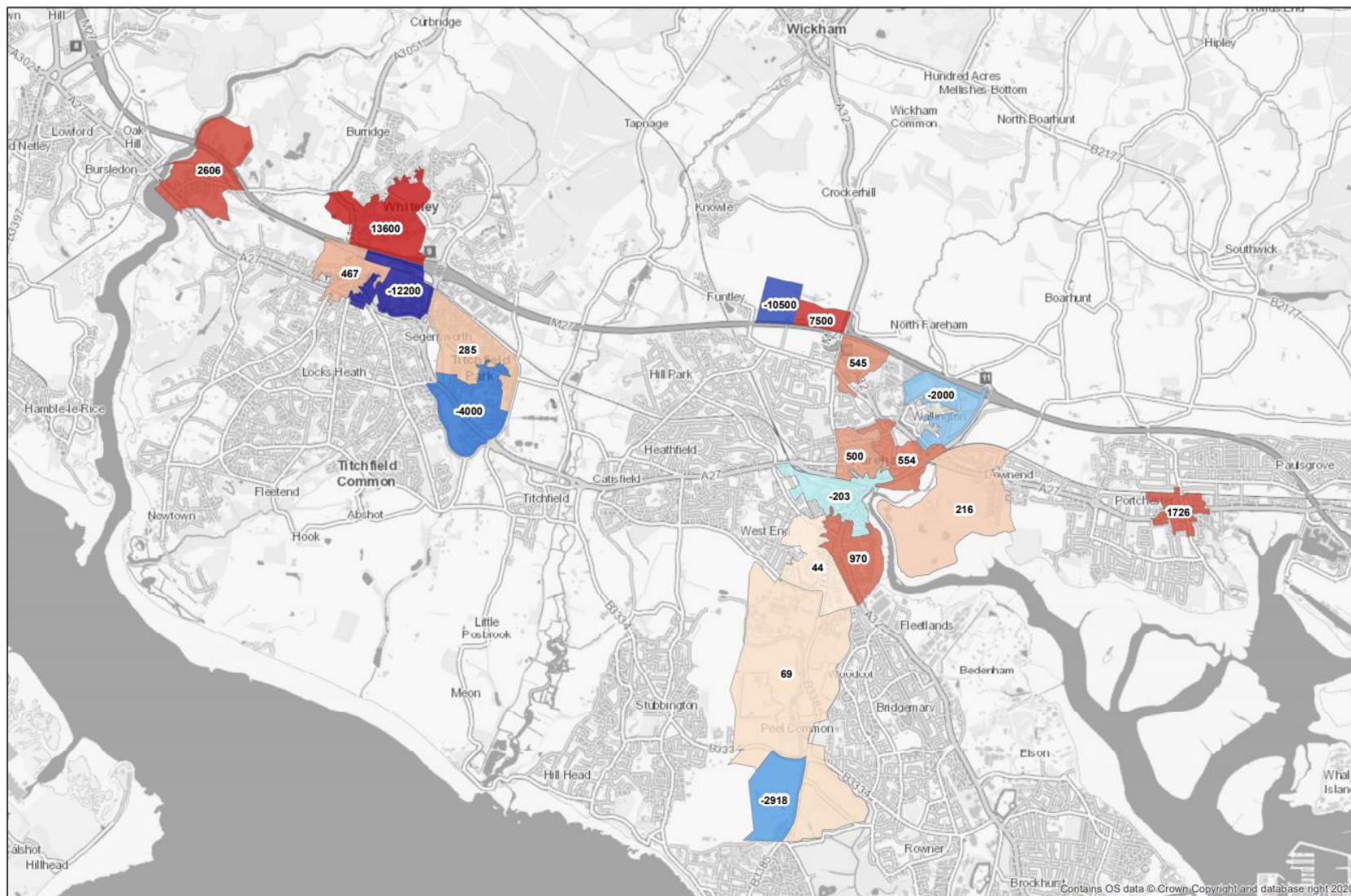
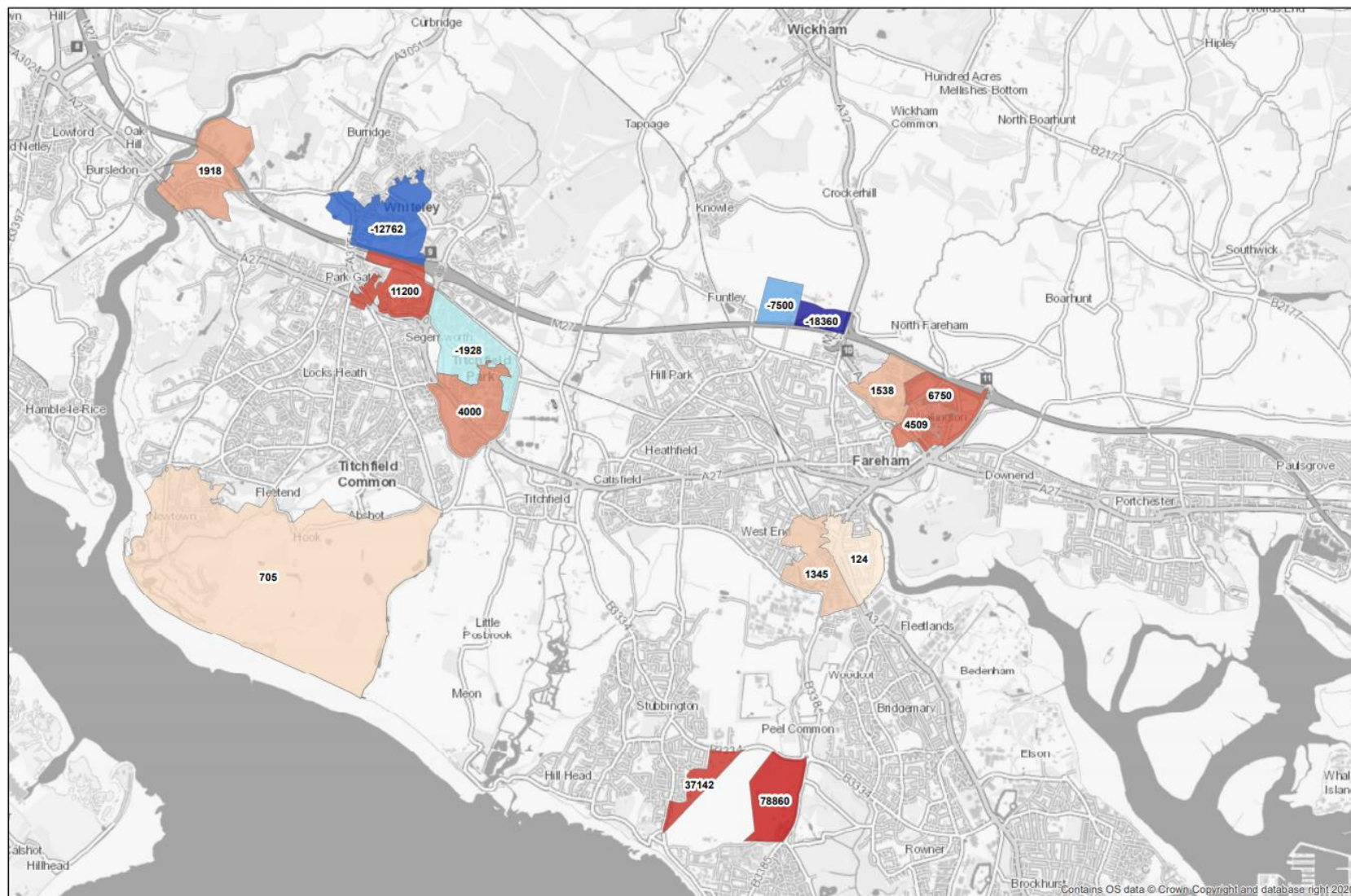


Figure 4-5 – Quantum Differences (TA (2020) vs TAA Inputs) B2 and B8 (sqm) Land Uses



## Summary

- 4.32. The overall quantum of proposed allocations is now lower than that tested through the 2020 Draft Plan (as described in the TA (2020)). It could, therefore, be said that the draft Local Plan represents a very robust assessment of the quantum of development on the highway network. However, the distribution of uses, and the changes in the baseline, mean that different localised impacts would be experienced.
- 4.33. Given that the quantum of allocated development proposed is now lower than previously tested, it is anticipated that the overall transport impacts of the proposed allocations are likely to be capable of mitigation. As described in Chapter 7, there are different mitigation requirements, particularly in localities where development has increased, and further work has been undertaken to assess this at a cumulative level. The Revised Publication Local Plan requires site specific transport assessments to be undertaken to enable individual site impacts to be identified.



## 5. Do Minimum Modelling Results

### Introduction

- 5.1. The SRTM has been used to model the proposed land allocations and identify key transport implications resulting from the scale and location of the allocations. Since the TA (2020), the SRTM model has been rerun with the new land use, highway, and public transport inputs.
- 5.2. This chapter summarises the highway outputs across the Fareham Borough for the 2036 Scenario 2 Do Minimum vs. 2036 Scenario 1 Baseline.
- 5.3. In the first instance, a comparison of the differences between the Baseline and Do Minimum scenarios was used to identify junctions and corridors within the Borough where future schemes may be required to mitigate the impact of the proposed Fareham Local Plan developments and thereby, enable its delivery.

### Assessment Methodology

- 5.4. The modelled area of the SRTM is divided into four regions (Core, Marginal, Buffer and External), which differ by zone aggregation and modelling detail. Fareham Borough is within the Core Fully Modelled Area (the most detailed region of the model).
- 5.5. Due to the size of the SRTM, only the key network statistics for Fareham Borough have been summarised below, including vehicle hours, vehicle kilometres, and average speed. The impact on the full core model study area is generally negligible as land use changes between the scenarios are focussed solely on Fareham Borough. As would be expected, the impact across the wider area is diluted; as vehicles move further away from their destination, their impact is spread over a larger area.
- 5.6. Highways impacts are measured in modelling in terms of Passenger Car Units or PCUs. A PCU is a measure of the effect that each type of vehicle has on highway capacity. For example, a car has a PCU value 1. A Heavy Commercial Vehicle has a PCU value of up to 2.4, as typically these vehicles have an impact on capacity equivalent to more than two cars.
- 5.7. The operational capacity on all links on the approaches to junctions within Fareham Borough, and in the immediate vicinity of Fareham Borough boundaries has been assessed to identify potential capacity hotspots as a result of proposed Local Plan allocations.
- 5.8. Capacity hotspots are identified by the RFC which is the ratio of traffic flow (or volume) to available capacity ( $V / C$ ) on each junction approach, presented as a percentage. A value of 85% is normally taken as the practical capacity value for design purposes. Junctions with a  $V / C$  of less than 85% on their approaches are said to be operating 'within capacity', with no or limited queues and delays. If the  $V / C$  is near or in excess of 85% then the junction is likely to be subject to intermittent queuing and delays and is said to be operating 'close to or at capacity'. A value greater than 100% means that the junction is 'over capacity' and significant queues and delays are likely to occur.
- 5.9. The change in RFC and delay between the scenarios has been calculated to identify locations where the forecast junction performance deterioration is most pronounced. The following criteria has been applied to identify junctions where operational performance worsens either significantly or severely (these criteria have been used on similar SRTM commissions in agreement with HCC and HE):
  - "significant" increase in RFC is where the RFC is greater than 85% and has increased by more than 5% on any approach arm; and
  - "severe" increase in RFC is where the RFC is greater than 95% and has increased by more than 10%, or where delay is greater than 120 seconds and has increased by more than 60 seconds per vehicle on any approach arm.

## 2036 Scenario 2 Do Minimum compared to 2036 Scenario 1 Baseline

### Highway Network Performance

- 5.10. This section outlines the performance of the highway network for the AM and PM peak periods for the 2036 Scenario 1 Baseline and 2036 Scenario 2 Do Minimum scenarios for Fareham and the Core Model Area focussing solely on the Revised Publication Local Plan. The forecast traffic growth within Fareham, arising from the introduction of the Local Plan growth, generates an increase in motor vehicle hours of 8.45% in the AM and 6.9% in the PM, in addition to that predicted to occur in the Baseline. Motor vehicle kilometres are forecast to increase by 2% in the AM and 2.5% in the PM peak. The greater percentage increase in vehicle hours compared to vehicle kilometres is indicative of a network under increasing pressure and higher delays. The average speed is forecast to decrease by 6% in the AM and 4% in the PM peak due to the additional traffic volumes and increased delay from congestion.

### Traffic Flow Difference

- 5.11. The model identifies the change in traffic flows in the AM and PM peak hours between the 2036 Scenario 2 Do Minimum and 2036 Scenario 1 Baseline scenarios in 2036 at an overall Borough level. When comparing the Do Minimum to the Baseline, there is a general increase in motor traffic within the Borough as would be expected with the inclusion of the Local Plan growth.
- 5.12. In addition to the new traffic directly associated with the Local Plan growth, the model outputs highlight any re-routing of traffic that may result from localised congestion or redistribution of existing trips.
- 5.13. Highways impacts are measured in modelling in terms of Passenger Car Units or PCUs. A PCU is a measure of the effect that each type of vehicle has on highway capacity. For example, a car has a PCU value of one. A Heavy Commercial Vehicle has a PCU value of up to 2.4, as typically these vehicles have an impact on capacity equivalent to more than two cars.
- 5.14. The greatest changes in actual flows are south of the Peel Common Roundabout in the 2036 Scenario 2 Do Minimum AM Peak, with increase in flows of up to 246 PCUs in the southbound circulatory arm. There has also been an increase of around 160 PCUs in the southbound direction of the Stubbington Bypass in the same period due to traffic going to the zone with the Daedalus Access. An increase of 148 PCUs is experienced in the eastbound approach to the Longfield Avenue / Bishopsfield Road.
- 5.15. Another location with a significant increase of around 115 PCUs in both directions in the AM Peak is Whiteley Lane, with the Whiteley Lane / Barnes Wallis Road roundabout being one of the severely impacted junctions in the 2036 Scenario 2 Do Minimum when compared with the 2036 Scenario 1 Baseline.

### AM peak

- 5.16. In the AM Peak, there has been a significant decrease of 284 PCUs in the Segensworth Road East, on the westbound approach to the Cartwright Drive / Segensworth Road East junction. An increase in flows is experienced along the Cartwright Drive suggesting that some traffic rerouted to this road. There has also been a decrease of 151 PCUs in the A27 Southampton Road near Segensworth Roundabout, likely due to the delays experienced on the westbound approach as will be discussed in the next section.
- 5.17. In the 2036 Scenario 2 Do Minimum PM Peak, the greatest changes in actual flows are along the B3385 Newgate Lane East most likely due to traffic leaving the zone with the Daedalus Access, with increase in flows of up to 150 PCUs. There has also been a significant increase in flows in the A27 Southampton Road with an increase of 220 PCUs in the southbound direction, near the severely impacted Segensworth Roundabout.

### PM peak

- 5.18. There has been a significant decrease of 131 PCUs in the northbound approach of the Segensworth Roundabout in the PM Peak. There has also been a decrease of 74 PCUs on the High Street southbound approach to the High Street / East Street junction near the Delme Roundabout, with a similar increase on Osborn Road also suggesting rerouting happened.



- 5.19. The Daedalus Access at the border of Fareham and Gosport, located on the B3385 Broom Way / Cherque Way also presents an increase in flows. There is an increase of 96 PCUs and 300 PCUs on the eastbound approach in the AM and PM Peak, respectively, compared to 2036 Scenario 1 Baseline. Similarly, there is an increase in the southbound approach of 246 PCUs and 74 PCUs in the AM and PM Peak, respectively. This is mainly due to the additional industrial land use of around 65,000sqm.
- 5.20. In the areas of Locks Heath, Stubbington and Portchester there are no major changes in flow differences between the two scenarios other than where traffic is joining the network from the new housing development sites (modelled as zone connectors rather than any new roads from the sites to the existing network). The magnitude of flow difference, beyond the zone connectors, is not more than +/-100 PCUs in either direction.

### Highway Delay

- 5.21. The forecast delay changes between the Scenario 2 Do Minimum and 2036 Scenario 1 Baseline scenarios predominantly correspond with those locations where flow changes are also most pronounced.

#### AM peak

- 5.22. The greatest increases in delays comparing the 2036 Scenario 2 Do Minimum with the 2036 Scenario 1 Baseline are situated on the Segensworth Roundabout in the AM Peak. The increase in delays on the westbound approach from Segensworth Road is 192 seconds per vehicle, whilst the southbound circulatory arm has an increase in delays of 216 seconds per vehicle.
- 5.23. Another significant increase of 97 seconds per vehicle is on the northbound approach to the Cartwright Drive / Segensworth Road East junction. Other significant increases in delays of around 60 seconds per vehicle are located around the Titchfield Gyratory, B3385 Newgate Lane / Longfield Avenue, and on the A3051 Botley Road / Rookery Avenue junctions.
- 5.24. Within the Fareham Borough the biggest forecast decrease in delay of 48 seconds per vehicle in the AM Peak is observed on Leafy Lane on the northbound approach to the Leafy Lane / Parkway junction near the M27 J9. There has also been a decrease of 34 seconds per vehicle on the northbound approach on the A27 Bridge Road / Hunts Pond Road / A3051 Botley Road junction, and a decrease of 18 seconds per vehicle in the eastbound approach to the A27 The Avenue / Catisfield Road junction.

#### PM peak

- 5.25. In the 2036 Scenario 2 Do Minimum compared with the 2036 Scenario 1 Baseline PM Peak, the greatest increase in delays happens in the northbound approach of the Warsash Road / Little Abshot Road mini roundabout. Another significant increase in delay of nearly 60 seconds per vehicle happens in the northbound approach of the A27 The Avenue / Redlands Lane junction. Significant increases in delays of around 45 seconds per vehicle also happen at the Barnes Wallis Road / Whiteley Lane north mini-roundabout and at the A3051 Botley Road / Yew Tree Drive roundabout.
- 5.26. There were no significant decreases in delays in the PM Peak. Decreases in delays are likely due to traffic rerouting in the highway network as there have been increases in actual flows on neighbouring routes.
- 5.27. In the areas of Locks Heath, Stubbington and Portchester there are no major changes in delay differences between the two scenarios, other than where discussed previously. The magnitude of delay difference is usually not more than +/-10 seconds in either direction.

### Capacity Hotspots

- 5.28. Capacity hotspots are identified by the ratio flow capacity (RFC) which is the ratio of traffic flow (or volume) to available capacity (V / C) on each junction approach, presented as a percentage. A value of 85% is normally taken as the practical capacity value for design purposes. Junctions with a V / C of less than 85% on their approaches are said to be operating 'within capacity', with no or limited queues and delays. If the V / C is near or in excess of 85%, then the junction is likely to be subject to intermittent queuing and delays and is said to be operating 'close to or at capacity'. A value greater than 100% means that the junction is 'over capacity' and significant queues and delays are likely to occur.

- 5.29. The change in RFC and delay between the scenarios has been calculated to identify locations where the forecast highway network performance deterioration is most pronounced in terms of junction performance. The following criteria has been applied to identify junctions where operational performance worsens either significantly or severely (these criteria have been used on similar SRTM commissions in agreement with the HA (HCC and National Highways)).
- 5.30. A total of 65 junctions within Fareham district are forecast to operate with an RFC greater than 80%. This is an increase of three junctions across the district in comparison to the 2036 Baseline.
- 5.31. Applying the criteria set out in Paragraph 5.9, of the 65 junctions 11 junctions meet the “significant” change criteria and eight junctions meet the “severe”<sup>1</sup> change criteria as seen in Figure 5-1.
- 5.32. For comparison, the TA (2020) showed a total of 17 junctions that met the “significant” change criteria and one junction meeting the “severe” change criteria. The changes in numbers and junctions reflect the difference in localised impacts described earlier in this report. Of the junctions forecast to experience significant delays, most are situated along the A27, part of which is a route to the SRN.

**Table 5-1 – Do Minimum impacted junctions**

ID	Junction	Significant Impact	Severe Impact
4	A32 Gosport Road / Newgate Lane	✓	
10	A32 / High Street / Wallington Way	✓	
15	Station Roundabout	✓	
18	A27 The Avenue / Redlands Lane / Gudge Heath Lane		✓
20	Longfield Avenue / Newgate Lane	✓	
24	B3334 Titchfield Road / Bridge Street		✓
28	Titchfield Gyratory	✓	
29	A27 The Avenue / Highlands Road	✓	
30	A27 Southampton Road / Mill Lane	✓	
31	Coach Hill / South Street / Bridge Street		✓
35	Segensworth Roundabout		✓
37	Barnes Wallis Road / Whiteley Lane / Cartwright Drive		✓
38	Segensworth Road East / Cartwright Drive		✓
39	Southampton Road / Telford Way Roundabout		✓
50	A27 Bridge Road / Coldeast Way	✓	
56	Sweethills Crescent / Yew Tree Drive	✓	
57	Bridge Road / Swanwick Lane	✓	
58	A27 Bridge Road / Barnes Lane		✓
65	Highlands Road / Fareham Park Road	✓	

<sup>1</sup> Please note this is not the same “severe” as mentioned in NPPF para 111.

**Figure 5-1 – 2036 Baseline vs. 2036 Do Minimum Impacted Junction Locations**



## Summary

- 5.33. The 2036 Scenario 2 Do Minimum builds off the 2036 Scenario 1 Baseline, by including the proposed full Fareham Local Plan growth for residential and employment development. Growth outside of the Borough is unchanged from the Baseline. An additional approximate 5,600 dwellings have been included within the 2036 Scenario 2 Do Minimum scenario over and above the Baseline.
- 5.34. The highway network tested within the 2036 Scenario 1 Baseline and 2036 Scenario 2 Do Minimum scenario remains consistent to assess the cumulative impact of the Local Plan allocations without any new mitigation.
- 5.35. Based on the SRTM modelling most of the links within the Borough are forecast to experience changes no greater than +/-100 PCUs in either direction. The exceptions to which being Peel Common roundabout, Stubbington Bypass, Longfield Avenue / Bishopsfield Road, and the Daedalus Access on the B3385 Broom Way / Cherque Way.
- 5.36. The list of 19 junctions forecast with either “significant” or “severe” impacts form the starting point for more detailed review and development of potential mitigation measures described in Chapter 6.

## 6. Mitigation and Infrastructure Measures

### Introduction

- 6.1. This section presents potential mitigation measures that may be required to address the identified significant impacts specifically resulting from the proposed Local Plan Growth i.e., the difference between the main Baseline (1) and Do Minimum (2) scenarios. It is important to note that modelling highway schemes represents the worst-case scenario, as the HA (HCC) preferred approach is reducing the need to travel at the outset and encouraging the uptake of active travel and the use of public transport through sustainable transport.
- 6.2. The traffic modelling has not accounted for any potential reduction in the number of vehicle trips forecast to be generated by site allocations resulting from the implementation of sustainable transport measures delivered through site specific travel plans. In addition, site specific Transport Assessments should aim to reduce reliance on trips made by private car and assess how their impacts could be mitigated e.g., through contributions to public transport measures such as SEHRT, and walking and cycling measures through Fareham's LCWIP and connections into their routes, as reflected in the Local Plan policies. The modelling is therefore considered to be very robust.
- 6.3. The SRTM has been used to test the cumulative impact of the Do Minimum scenario at a macro-level. From this high-level model, several junctions have been identified where the Do Minimum scenario would produce a significant (11 junctions) or severe (8 junctions) impact on capacity over the baseline situation.
- 6.4. Hampshire Services developed a set of criteria in agreement with the HA (HCC) and National Highways to determine the junctions which should be considered for mitigation. The criteria are based on traffic volume (as shown in Table 6-1 below), delay per vehicle, total queues and stacking room. Junction approaches with delays of 10 seconds or fewer per vehicle were not suggested for mitigation, unless flows were very high, or queues were blocking the preceding junction.

**Table 6-1 – Traffic flow criteria used to assess junctions for mitigation**

Flow through an arm (vehicles)		Level of flow
300	or under	Low
301	550	Medium
551	850	High
851	or over	Very High

- 6.5. Following more detailed assessment at each location, and application of thresholds, a reduced list of thirteen junctions has been investigated for mitigation. Table 6-2 provides some summary comments on the selection criteria for each junction. Of the nine remaining junctions identified in Table 6-2; five have a significant impact and four a severe impact with the Local Plan 2036 Do Minimum flows applied.

**Table 6-2 – Scenario 1 Do Minimum junctions with summary comments**
*SJ- Signalised Junction, PJ- Priority Junction, R-Roundabout, SR – Signalised Roundabout G- Gyratory*

Junction name	Approach arm	Type	Observations	Taken forward for mitigation
A32 Gosport Road / Newgate Lane	Redlands Lane and B3385 Newgate Lane	G	Increase in delay per vehicle under 5 seconds, very high flow but no queue length, so can be accommodated without blocking back. It's very unlikely that a solution could be found to address this congested location and if one could it would push congestion to the north.	No
A32 / High Street / Wallington Way	Wickham Road (south)	R	Increase in delay per vehicle below 10 seconds, flow high but queue length can be accommodated without blocking back.	No
Station Roundabout	West Street	R	Increase in delay per vehicle under 10 seconds, flow medium and queue length can be accommodated without blocking back.	No
A27 The Avenue / Redlands Lane / Gudge Heath Lane	A27 The Avenue (west)	SJ	Increase in delay per vehicle above 5 seconds, and very high flow suggests mitigation should be reviewed.	Yes
	Redlands Lane	SJ	Increase in delay per vehicle above 10 seconds, high flow and queue length can be accommodated without blocking back.	No
Longfield Avenue / Newgate Lane	B3385 Newgate Lane (north)	R	Increase in delay per vehicle under 5 seconds, very high flow but queue length can be accommodated without blocking back. Improvements have been delivered recently leaving little scope for further capacity improvements.	No
B3334 Titchfield Road / Bridge Street	Bridge Street	SJ	Increase in delay is over 10 seconds. However, HCC as HA (HCC) has a deliberate policy of constraining capacity at this junction to deter rat-running through Titchfield.	No
A27 Southampton Road / Titchfield Hill, Titchfield	Titchfield Hill	G	Increase in delay is over 10 seconds, suggest mitigation should be reviewed.	Yes
	A27 The Avenue	G	Although there is a very high flow, there is no queue and only a one second increase in delay.	No
A27 The Avenue / Highlands Road	Highlands Road	SJ	High flow and increase in delay over 10 seconds suggest mitigation should be reviewed.	Yes
A27 Southampton Road / Mill Lane, Titchfield	Mill Lane	SJ	Increase in delay per vehicle over 10 seconds suggests mitigation should be reviewed.	Yes
Coach Hill / South Street / Bridge Street	Bridge Street	P	Increase in delay per vehicle is over 10 seconds. HCC as HA (HCC) has a deliberate policy of constraining capacity at this junction to deter rat-running through Titchfield	No

Junction name	Approach arm	Type	Observations	Taken forward for mitigation
A27 Segensworth roundabout / Little Park Farm Road, Segensworth	Little Park Farm Road	SR	Increase in delay is over 10 seconds and queue length will block estate access, suggest mitigation should be reviewed.	Yes
	A27 Southampton Road (south)	SR	The Local Plan impact at this junction results in a 98% RFC on A27 Southampton Road (south) in the PM peak which meets the threshold for mitigation. However, there is no remaining capacity in this arm of the junction. It can also be seen that in the AM peak, the RFC at this junction arm is projected to be higher, at 100%, in the Baseline scenario. The PM impact of the Local Plan is no worse than this projected situation. This roundabout is considered by the HA (HCC) (HCC) to be on the route to the SRN, therefore the focus should be on highway capacity measures before public transport and active travel.	No
Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth	Cartwright Drive and Whiteley Way (north)	R	Increase in delay is over 10 seconds, suggest mitigation should be reviewed.	Yes
Southampton Road / Telford Way Roundabout	Southampton Road (west)	R	Increase in delay under 5 seconds and no blocking back suggests this roundabout is not considered for mitigation. This roundabout may also form part of the mitigation for Segensworth Roundabout and may need to be reconsidered if mitigation leads to knock on impacts.	No
A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate	A27 Bridge Road (east) and Ironbridge Crescent	SJ	High flow and increase in delay over 10 seconds suggest mitigation should be reviewed.	Yes
Sweethills Crescent / Yew Tree Drive	Yew Tree Drive (east)	P	Increase in delay is over 10 seconds, flow is medium and queue length can be accommodated without blocking back. Although this junction meets the thresholds for mitigation, it is not causing a capacity issue itself. The issue to resolve is caused by congestion at A3051 Botley Road / Yew Tree Drive, Whiteley – roundabout on the Yew Tree Drive arm, which is predicted to stack back to this junction.	No
Cartwright Drive / Segensworth Road East	Segensworth Road (east)	P	Increase in delay is over 10 seconds, suggest mitigation should be reviewed.	Yes
	Cartwright Drive (south)	P	You can't approach from Cartwright Drive (south) as no right turn signs. Suggest Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth junction upstream requires a review as it is the tail of traffic from that junction causing the issue here.	No



Junction name	Approach arm	Type	Observations	Taken forward for mitigation
Bridge Road / Swanwick Lane	Bridge Road (north)	SJ	The Local Plan impact at this junction results in a 94% RFC on Bridge Road (north) in the AM peak which meets the threshold for mitigation. However, there is no land available for increased capacity. Changes to signals are unable to mitigate in this location. It can also be seen that in the PM peak, the RFC at this junction arm is projected to be higher, at 98%, in the Baseline scenario. The AM impact of the Local Plan is no worse than this projected situation.	No
A27 Bridge Road / Barnes Lane	Barnes Lane	P	Increase in delay is over 10 seconds suggest mitigation should be reviewed. Discussed with HA (HCC) who recognise that there is no mitigation possible here due to lack of available land.	No
Highlands Road / Fareham Park Road	Fareham Park Road	P	Increase in delay per vehicle under 10 seconds, flow is medium and queue length can be accommodated without blocking back.	No

## Details of Potential Mitigation

- 6.6. The nine junctions which met the HCC criteria (Paragraph 6.4) have been assessed in greater detail with local junction modelling, as was also undertaken for the TA (2020). The findings from the local modelling have been used to determine the worst-case mitigation measures required at the junctions with the aim to produce nil detriment to the junction's capacity performance. The following section outlines in more detail the results of the modelling and the potential mitigation schemes, prior to their inclusion in the final Do Something SRTM model run. Further detail on the local junction modelling can also be found in the Hampshire Services Local Junction Modelling Report.
- 6.7. Most important to the success of the Local Plan is being able to demonstrate that at the nine junctions impacted by development traffic which have the potential to be mitigated, there are potential schemes / measures which can implemented.
- 6.8. It should be noted that these concept schemes are not intended to represent a preferred package of works or to advocate specific junction designs. The final design solutions would be developed as and when the individual proposals come forward to take account of any changes in traffic patterns and other infrastructure schemes coming forward in intervening years; and to ensure that inclusion of infrastructure for sustainable modes is considered first. These schemes address the impact of the Local Plan development only, as opposed to impacts resulting from background growth in traffic over the Local Plan period. In addition, the list of junctions that may require mitigation is not exhaustive and other junctions and links may also require improvements – it is expected that these would be considered through the planning application process for individual allocations.
- 6.9. The modelling is based on a worst-case scenario as it does not include sustainable transport measures which could reduce the vehicle impact. A reduction in vehicle trips should be considered prior to investment in junction improvements to alleviate forecast traffic congestion caused by the local plan growth. This could be achieved through maximising the accessibility of sites by sustainable transport modes (assessed through site-specific TAs); and implementation of robust, site-specific travel plans with sustainable transport targets. In addition, developer contributions will be collected towards BSIP and Fareham LCWIP measures as appropriate. These measures would bring about changes required to help support delivery of the Local Plan.
- 6.10. Discussions with the HA (HCC) were held, leading to a focus for public transport and active travel mitigation in all locations except on the routes to the SRN, where highway capacity improvements should be considered.

## Modelling Public Transport and Active Mode Schemes

- 6.11. The SRTM includes a proportion of trips by active modes and public transport trips and allows for a modal shift away from private car in line with current national policy.
- 6.12. Alterations to mode choice as a result of congestion have been accounted for in the SRTM by applying a reduction to the number of trips representing a 2% modal shift. This represents drivers changing from car / van travel to more sustainable active modes of transport.
- 6.13. Sustainable transport measures will form the main part of any mitigation required to provide additional mobility capacity within the system. Although the demand forecasts are unconstrained it is likely that in practice, other factors (new schemes outside the scope of the Local Plan mitigation) could affect the overall demand for and routing of travel on the network. It is recognised that providing additional highway capacity is only likely to provide a short-term benefit, that may be eroded as suppressed traffic demand is unlocked. Therefore, investment in providing alternatives is important.

## Public Transport

- 6.14. In relation to public transport, and focussing on bus, all standard weekday bus services are coded in the model and as such the full network representation of scheduled buses. The SRTM, therefore, directly models new routes / route adjustments, increase / decrease frequency of services or limited stop on routes, and improvements that can directly impact vehicle journey time such as bus lanes and traffic signal time adjustments to favour buses.



- 6.15. It is HCC policy to enable more public transport trips in line with the BSIP, and measures associated with bus improvements on the SEHRT network have been included in the modelling work, however other public transport schemes have not. More detail on what has been included in the modelling is contained in the Systra SRTM Modelling Report.

## Walking and Cycling

- 6.16. In recognition of the HA's (HCC) focus on enabling modal shift towards walking and cycling, measures from the Draft Fareham LCWIP has been considered<sup>2</sup>. The Fareham LCWIP's core walking zones, and primary and secondary cycle route measures will be prioritised by the HA (HCC) for future development and delivery. The supporting text of Local Plan Policy TIN1 states development applications (i.e., through site specific TAs) will be required to contribute to the delivery of the Fareham LCWIP to raise the profiles of cycling and walking as viable alternatives to driving to reduce the level of car usage in the Borough. It also states developments should be accessible, permeable, and integrated with existing networks. Fareham LCWIP routes have also been identified within site allocation policies to ensure measures are considered from the outset. The Fareham LCWIP is expected to be a live document that covers approximately a ten-year period. Therefore, updated, and future versions of the Fareham LCWIP should also be considered by developers.
- 6.17. For junctions away from Fareham LCWIP's core walking zones and proposed primary and secondary cycle routes, LTN1 / 20 compliant options have been proposed, were relevant, for future consideration in site-specific transport assessments, but it is acknowledged that these would not be the initial focus of the HA (HCC) in their own delivery programme.
- 6.18. The SRTM does not directly represent active mode schemes in the network, except in their impact to highway capacity (e.g., signal timings, or pedestrianisation road closures) for the modelled strategic network. Instead, the modelling process allows adjustments to the cost of active travel between zones and that influences mode choice based on active travel measures (e.g. cycle routes).
- 6.19. Modelling for any scheme assumes there is sufficient information / evidence on what is proposed to enable its accurate representation in the model. An alternative approach, that is regularly applied for development planning model applications for specific sites, is to represent mode share based on trips rates that have been agreed between the developer and highway authority as opposed to trying to account for specific active or public transport schemes.
- 6.20. Whilst designs based on these concepts could be tested in the SRTM, the SRTM does not support redistribution of traffic or mode shift specifically due to the attractiveness / improvements in site specific walking and cycling accessibility. Inclusion of these measures would therefore only serve to constrain highway capacity for motor vehicles and result in further negative impacts on the highway network without accounting for any mode shift towards walking and cycling that would occur. For this reason, walking and cycling measures are included in this TAA, but are not included in the SRTM Do Something model run.
- 6.21. As with public transport measures, it should be noted that new infrastructure for sustainable travel modes would not just serve the new allocations, but also the wider community, and have the potential to reduce the overall mode share by private car within the borough. The draft Fareham LCWIP contains more detail on this point.

## Highway capacity measures

- 6.22. Highway capacity measures can be successfully tested in the SRTM and were included in the SRTM for the 2036 Scenario 3 Do Something and the results outlined in Chapter 7 respectively.
- 6.23. Further details on the potential mitigation at each junction and local junction modelling are set out below and can be found in the Hampshire Services Local Junction Modelling Report.
- 6.24. The emerging LTP4 has a strong focus on reducing private car use, and as stated before these mitigation measures below should be considered only as a worst-case solution to the issues

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<sup>2</sup> Measures within the draft Fareham LCWIP were being reviewed and updated to meet Local Transport Note 1/20 at the time of writing. These updated measures were shared with Atkins ahead of the final publication and are therefore subject to change.

identified at each junction. Active travel and public transport measures should be prioritised and tested by developers through the planning application process.

- 6.25. For some junctions, there are no further options available to improve capacity for motor vehicle traffic within existing available land. These have been discussed with the HA (HCC) who have agreed to the methodology.
- 6.26. It should be noted that these concept schemes are not intended to represent a preferred package of works or to advocate specific junction designs. The final design solutions would be developed as and when the individual proposals come forward to take account of any changes in traffic patterns and other infrastructure schemes coming forward in intervening years; and to ensure that inclusion of infrastructure for sustainable modes is considered first.

## A27 The Avenue / Redlands Lane / Gudge Heath Lane, Fareham – signalised crossroads

- 6.27. This is a four-arm traffic signal junction located to the west of Fareham town centre. It is positioned around 400 metres to the east of the Bishopsfield Road junction. Traffic movements are controlled by signals. The main road is A27 The Avenue which runs west to east. To the north is Gudge Heath Lane which links through to a large residential catchment area. Redlands Lane forms the southern arm and sits on the Eclipse bus rapid transit route. A pedestrian controlled crossing is situated on the western arm across The Avenue.
- 6.28. The SRTM indicated that the Redlands Lane arm would be severely affected in capacity terms by the Local Plan traffic in 2036, changing from 83% ratio / flow capacity to 99%. In the AM it changed from 102% to 103%; the level of congestion would be worse than in the PM peak, but the impact of the Local Plan growth did not meet the agreed threshold.
- 6.29. This junction is not considered by the HA (HCC) to be on the route to the SRN, therefore active travel and public transport measures should be prioritised.

## Considerations for active travel

- 6.30. There is a reasonable level of crossing movements on the Gudge Heath Lane arm of the junction which is on main route between Fareham railway station / town centre and Fareham College to the west. No formal crossing facilities exist on this arm and users must cross during gaps in the traffic with the aid of a narrow central island.
- 6.31. The pedestrian demand across Redlands Lane is much lower. No formal crossing exists across this arm either except for dropped kerbs and a central island. The provision of push-button controlled crossings on the Gudge Heath Lane and Redlands Lane arms would be beneficial to pedestrians and cyclists. Either crossing would require an all red to traffic stage to be included which would push the junction performance even further over capacity, although this assumption is based on no significant modal shift to walking and cycling.
- 6.32. If the main road approaches to the junction are made LTN1 / 20 compliant then a new Cycle Optimised Protected Signals (CYCLOPS)<sup>3</sup> style junction could be considered, however, there are width constraints to connect the route into the side roads.

## Fareham LCWIP option

- 6.33. This junction is part of proposed primary route Route 270: River Hamble – Portchester in the draft Fareham LCWIP. It also connects to proposed secondary Route 275: Highlands Road – A27 The Avenue. It has suggested the following improvements at this junction:
- 6.34. **270.3.5 and 275.1.3** - A review of the A27 / Gudge Heath Lane / Redlands Lane signalised junction should be undertaken to explore improvements for cycle route continuity through the junction. Investigate the potential for providing a CYCLOPS style junction to improve north / south and east / west cycle route continuity and connectivity to Gudge Heath Lane and Redfields Lane.

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<sup>3</sup> A new Cycle Optimised Protected Signals (CYCLOPS) junction, fully segregates cyclists from general traffic. Cycles approach the junction from the 'arms', converging onto a cycle track which completely encircles the junction, allowing cycles to make a right turn while being protected from traffic, and to complete the manoeuvre in one movement (dependent on signal timings).

## Considerations for public transport

- 6.35. The HA (HCC) has specifically identified that this junction should prioritise bus movements in future. The option to optimise the signal timings in the SRTM Scenario 3 would not materially affect bus priority.

### BSIP measure

- 6.36. The BSIP Appendix 1 sets out the full list of potential bus infrastructure options currently under consideration by HCC. One of these measures is to extend the existing Eclipse BRT busway from Redlands Lane to Fareham Rail station via this junction.

## Highway capacity improvements

- 6.37. Previous work at this junction has maximised the available capacity within the highway boundary constraints. The traffic signals already operate under MOVA (Microprocessor Optimised Vehicle Actuation) which works to continuously optimise the signal timings to maximise their efficiency. There are no further capacity enhancements that are feasible.
- 6.38. The junction modelling concludes that no solution could be implemented which could accommodate the 2036 Do Minimum traffic flows within capacity at this junction. However, the results achieved through the modelling work could achieve an improvement over the Baseline situation in the AM peak and improve, albeit marginally, on the PM impact on Redlands Lane.
- 6.39. It is also important to test the SRTM results in local junction modelling software as they are more sensitive for individual junctions. MOVA is not within the SRTM, or localised modelling as it's a system that self-optimises on site, so instead optimised signal timings are tested in local modelling, and the results fed back into the SRTM. It is therefore recommended that the optimised signal timings used in the local model are tested in the Do Something SRTM model run.

## A27 Southampton Road / Mill Lane, Titchfield – signalised T junction

- 6.40. This is a three-arm traffic signal junction which is located on the A27 Southampton Road north of Titchfield. The main road is the A27 Southampton Road which is a two-lane dual carriageway which runs broadly east to west. Mill Lane is a single carriageway which joins from the north and links through to Funtley and Wickham further to the north. Traffic from Mill Lane can only turn left on to the A27. All arms have a 40mph speed limit. There is a pedestrian-controlled crossing on the west side of the junction across Southampton Road. The signals operate under MOVA control which allows a high degree of responsiveness to changes in traffic flows.
- 6.41. The SRTM indicated that Mill Lane would be significantly affected by the Do Minimum Local Plan traffic.
- 6.42. This junction is considered by the HA (HCC) to be on the route to the SRN, therefore highway capacity measures, as well as active travel have been considered.

## Considerations for active travel

- 6.43. A pedestrian controlled crossing already exists across the west arm of the A27 at this junction. Future consideration could be given to providing a similar controlled crossing (upgraded to a toucan, to support cycling) on the Mill Lane arm. This would introduce an additional stage to the operation of the signals which would affect capacity. Given that the existing junction only has a small level of spare capacity in the 2036 PM peak, the inclusion of the extra lane on Mill Lane (Option 2) may be necessary to mitigate a controlled crossing on that arm.

### Fareham LCWIP option

- 6.44. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP. It has suggested the following improvements near this roundabout:
- 6.45. **270.2.7** - There is currently a shared facility running along the northern side of the A27 Southampton Road between the St Margarets roundabout and Titchfield gyratory which is not compliant. There is scope to explore widening the existing facility to provide a fully segregated two-way cycle track on this side.

- 6.46. **270.2.8** - A review of the Titchfield gyratory should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction.

## Considerations for public transport

### BSIP measure

- 6.47. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

## Highway capacity improvements

- 6.48. The junction modelling tested two options:
- Option 1 – Optimised signal timings; and
  - Option 2 – Mill Lane widened to a two-lane approach.
- 6.49. The junction modelling concludes optimising the signal timings at the existing junction layout would be sufficient to accommodate the 2036 Do Minimum traffic flows and for the junction to operate within capacity. The Do Minimum flows would provide 2.2% spare capacity in the 2036 PM. No changes to either the operation of the signals or the junction layout would be necessary based on these flows. However, should traffic flows increase further under future runs of the SRTM the option exists to implement Option 2. This has the potential to accommodate around 10% extra traffic flow compared to the 2036 Do Minimum PM peak but could detract from the walking and cycling environment. It is recommended that the existing signal junction layout and operation is retained.

## A27 The Avenue / Highlands Road, Fareham – signalised T junction

- 6.50. This is a three-arm traffic signal junction which is located on the A27 The Avenue on the west side of Fareham. The main road is the A27 The Avenue which is a two-lane dual carriageway that runs east to west. Highlands Road is a single carriageway which joins from the north. The A27 arms have a localised speed limit of 30mph on the direct approaches which sits inside a 40mph speed limit along the corridor. The speed limit on Highlands Road is 30mph. There is a pedestrian-controlled crossing on the west side of the junction across The Avenue. The signals operate under MOVA control which allows a high degree of responsive to changes in traffic flows.
- 6.51. The SRTM traffic data excluded any flows between the A27 east and Highlands Road. Therefore, current traffic flow data was obtained from the traffic signals for this movement and factored to 2036 using a TEMPro growth rate<sup>4</sup>.
- 6.52. The SRTM indicates that the Local Plan traffic would have a significant impact on the capacity of the Highlands Road arm.
- 6.53. This junction is not considered by the HA (HCC) to be on the route to the SRN, therefore active travel and public transport measures should be prioritised.

## Considerations for active travel

- 6.54. At present, Highlands Road traffic volumes and speeds are not appropriate for mixed use traffic and would therefore not be suitable for all users. The following two paragraphs relate to the local junction modelling only; i.e., retention of the existing layout.
- 6.55. A pedestrian controlled crossing is already located on the A27 west arm of this junction. It is a staggered arrangement given the total overall crossing distance (25 metres). Consideration could be given to providing a separate straight across phase for cyclists on this arm. This would require all traffic movements to be stopped and so would have an impact on the junction capacity.
- 6.56. An uncontrolled pedestrian crossing exists across the Highlands Road arm. An upgrade to a pedestrian / cyclist-controlled crossing could be considered on this arm. With a dedicated left turn

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<sup>4</sup> TEMPRO growth rates used for the missing right turn flows 1.0984 AM and 1.08763 PM - grown from observed flows to 2036

lane on the A27 west arm the use of a 'hold the left' signal arrangement could be considered. It would allow the Highlands Road crossing to appear for long periods during the dominant A27 traffic stage while the left turn traffic is held at red. However, this would require some localised carriageway widening on the A27 west arm to accommodate an island to provide the necessary signals to provide a safe arrangement.

#### Fareham LCWIP option

- 6.57. The junction is the connector point of two proposed routes in the draft Fareham LCWIP: primary Route 270: River Hamble – Portchester and secondary Route 272: Fareham Shopping Centre – Catisfield. It has suggested the following improvements at this junction:
- 6.58. **270.2.10** - A review of the A27 / Highlands Road signalised junction should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction. Investigate the potential for providing a Cyclops style junction to improve east / west cycle route continuity and connectivity to Highlands Road.

### Considerations for public transport

#### BSIP measure

- 6.59. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

#### Highway capacity improvements

- 6.60. The junction modelling tested one option:
- Option 1 – Optimised signal timings
- 6.61. The junction modelling concludes that optimising the signal timings at the existing junction layout would be sufficient to accommodate the 2036 Do Minimum traffic flows and for the junction to operate within capacity. It is recommended that the existing signal junction layout and operation is retained.

### A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate- signalised crossroads

- 6.62. This is a four-arm junction which is controlled by traffic signals. It is located on the A27 Bridge Road in Park Gate. The main road, A27 Bridge Road, runs west to east and carries the highest flows. To the south is Coldeast Way which is a cul-de-sac serving a residential area and medical facilities. On the north side is Ironbridge Crescent which serves a residential area.
- 6.63. The SRTM highlighted that the Local Plan traffic Do Minimum would have a significant impact on congestion on the A27 Bridge Road (west) arm. The traffic modelling undertaken in this study indicates the opposite to the SRTM model with the capacity impacts occurring on A27 Bridge Road (east arm) and Ironbridge Crescent. The options focus on mitigating the impact on these approaches.
- 6.64. This junction is not considered by the HA (HCC) to be on the route to the SRN, therefore active travel and public transport measures should be prioritised.

### Considerations for active travel

- 6.65. Regarding the layout considered for the SRTM Do Something model run; Option 2 (see below) replaces the existing uncontrolled pedestrian crossings, including centre refuges, with on-demand controlled crossings on the A27 east and Ironbridge Crescent arms. While there are no changes to the layouts on the remaining arms there is potential to also upgrade these facilities to on-demand crossings. This would have little impact on the junction performance or capacity compared with Option 1 (see below) as all traffic movements would be stopped regardless of which arm was demanded by pedestrians.



### Fareham LCWIP option

- 6.66. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP. It has suggested the following improvements at this junction:
- 6.67. **270.1.7** - A review of the A27 Bridge Road / Ironbridge Crescent / Coldeast Way junction should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction.

## Considerations for public transport

### BSIP measure

- 6.68. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

## Highway capacity improvements

- 6.69. The junction modelling tested two options:
- Option 1 – Optimised signal timings; and
  - Option 2 – A27 westbound right turn lane and Ironbridge Crescent widening.
- 6.70. The modelling results conclude that only Option 2 provides a solution that could handle the 2036 Do Minimum traffic flows. The provision of on-demand pedestrian crossings at the junction may be necessary to mitigate the removal of refuges on the A27 east and Ironbridge Crescent arms. The inclusion of these facilities could have a marked effect on capacity in the 2036 Do Minimum PM peak. Previous knowledge of the junction would suggest that in the PM peak pedestrian activity across the A27 is low. It is considered that the modelling results towards the appearance of the pedestrian stage every second or third cycle would be more realistic. With the third cycle and Option 2 junction, the junction would operate just within capacity. Data and further assessment may be required for verification on pedestrian demand levels.
- 6.71. A further consideration would be to omit the on-demand pedestrian crossings from Option 2. Although not modelled, the results for such an arrangement would improve the junction capacity further ensuring that it could accommodate the 2036 Do Minimum traffic flows. However, this would reduce pedestrian amenity.
- 6.72. It is recommended that Option 2 should be tested in the Do Something run. It is recommended that further assessment on the future pedestrian activity levels is undertaken to confirm the impact on the junction performance

## A27 Southampton Road / Titchfield Hill, Titchfield – partially signalised gyratory

- 6.73. This is a gyratory system which sits on the A27 Southampton Road at Titchfield. The junction is currently undergoing significant changes to its layout as part of the Stubbington bypass scheme. The link between A27 west and B3334 Titchfield Road is being re-routed directly through the centre of the gyratory. This will be a two-lane link which will be signal controlled together with the B3334 Titchfield Road entry. The B3334 Titchfield Road arm is being widened to two lanes in both directions. The existing eastern end of the gyratory will be removed. The layout of the Titchfield Hill arm is a two-lane entry which has individual lanes for left turning and ahead traffic. The western side of the gyratory is a wide single lane give way which joins the A27 eastbound. These arms will remain unchanged by the Stubbington bypass scheme. Changes associated with the Stubbington Bypass are already included in the SRTM model runs to date.
- 6.74. The SRTM indicates that the Titchfield Hill arm would be significantly over capacity with the Local Plan traffic.
- 6.75. The gyratory has been modelled using Linsig3 software. The traffic signals at the A27 / B3334 node have been modelled based on the proposed junction layout under construction for Stubbington bypass. The signal timings have been optimised to find the most appropriate timings for the 2036 Do Minimum traffic flows.

- 6.76. This junction is considered by the HA (HCC) to be on the route to the SRN, therefore highway capacity options as well as active travel measures have been considered.

### Considerations for active travel

- 6.77. There is currently no cycle infrastructure at the junction. The Stubbington Bypass scheme will provide a shared use path on the east side of the B3334 leading to the junction and a link to Titchfield Hill. To the west of the Mill Lane junction there is a shared use path along the north side of the A27.
- 6.78. Consideration could be given to linking the proposed shared use path on the east of the B3334 with the proposed Fareham LCWIP primary route, with appropriate links and toucan crossings on the desire lines.
- 6.79. It is anticipated that a segregated east / west cycle facility would be provided on the north side of the A27, which would bypass the junction.

### Fareham LCWIP option

- 6.80. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP. It has suggested the following improvements at this junction:
- 6.81. **270.2.8** - A review of the Titchfield gyratory should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction.

### Considerations for public transport

#### BSIP measure

- 6.82. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

### Highway capacity improvements

- 6.83. The junction modelling tested two options:
- Option 1 – Optimised signal timings which is based on the scheme currently being constructed under the Stubbington bypass scheme; and
  - Option 2 – two-lane give way entries.
- 6.84. The current scheme under construction (Option 1) would not be able to accommodate the 2036 Do Minimum traffic flows without resulting in the Titchfield Hill and western gyratory arms being over capacity. Option 2 resolves these capacity issues and would be able to accommodate the 2036 Do Minimum traffic. It is recommended that Option 2 is tested in the Do Something run.

### Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth roundabout

- 6.85. This is a four-arm roundabout located to the east of Segensworth. The western arm is Barnes Wallis Road which links through to the industrial area of Segensworth. Cartwright Drive, to the east, is a local distributor road which connects through to the main road network of the A27 to the south. Whiteley Lane north provides a link to the large residential area of Whiteley to the north and is one of a limited number of accesses serving that area from the south of the M27. On the southern arm Whiteley Way connects through to a mix of residential / office / industrial land use including the Office for National Statistics.
- 6.86. All approaches are single lanes with limited localised lane flaring at the roundabout entries. Whiteley Lane north does have a short, flared lane. Cartwright Drive also has a short-flared lane at the roundabout entry and includes a central hatched area on its approach. There are footways on the Barnes Wallis Road, Whiteley Lane (south) and Whiteley Lane (north) but none on Cartwright Drive. The pedestrian facilities at the roundabout include dropped kerbs and use of the splitter islands on the Barnes Wallis Road and Whiteley Lane (south) arms.

- 6.87. The speed limit at the roundabout itself is 40mph. Shortly beyond the roundabout 30mph speed limits apply on the Barnes Wallis Road and Whiteley Lane (south) arms. Whiteley Lane to the north has a derestricted speed limit just beyond the roundabout.
- 6.88. The SRTM indicated that both Cartwright Drive and Whiteley Lane north were over capacity. The SRTM highlights that the Whiteley Lane (north) lane meets the threshold for mitigation. Cartwright Drive does not meet the threshold, but as will be seen in the analysis of 'Cartwright Drive / Segensworth Road East' T junction, capacity issues on Cartwright Drive are predicted to cause stacking back through to Segensworth Road East.
- 6.89. This roundabout is not considered by the HA (HCC) to be on the route to the SRN, therefore active travel and public transport measures should be prioritised.

### Considerations for active travel

- 6.90. To improve conditions for on-road cycling the existing normal roundabout could be reconfigured to make a compact roundabout or parallel crossings.

### Fareham LCWIP option

- 6.91. This junction is part of proposed secondary Route 271: Bridgemary – Lower Swanwick in the draft Fareham LCWIP. It has suggested the following improvements at this roundabout:
- 6.92. **271.3.1** - A review of the Cartwright Drive / Barnes Wallis Way / Whiteley Way roundabout should be undertaken to make improvements for pedestrians and cycle route connectivity and continuity through the junction. If the roads leading to the junction are made LTN1 / 20 compliant then the roundabout could be reconfigured to provide a Dutch style roundabout. Alternatively, parallel crossings on Barnes Wallis Road and Whiteley Lane with links to connect the route could also be considered.

### Considerations for public transport

#### BSIP measure

- 6.93. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

### Highway capacity improvements

- 6.94. The junction modelling tested two options:
- Do-Nothing option; and
  - Option 1 – Increase flared lane lengths on Cartwright Drive and Whiteley Way north arms.
- 6.95. The results indicate that the localised widening (Option 1) on the Whiteley Lane north and Cartwright Drive arms would address the capacity issues identified in the SRTM. The roundabout would operate well within capacity in the 2036 Do Minimum AM peak. However, in the 2036 Do Minimum PM peak the Barnes Wallis Road arm would be considerably over capacity (1.04 RFC). However, this is not materially any different to the 2036 Baseline PM position from the SRTM where the figure is 1.05 for that arm. It is recommended that Option 1 should be tested in the Do Something run.
- 6.96. If needed in the future, further options could be investigated to mitigate the level of congestion predicted on the Barnes Wallis Road arm in the 2036 PM peak. The first, following the approach to the wider TA (2020), would be to reduce the number of motor vehicles trips associated with the Segensworth employment sites. The draft Fareham LCWIP has demonstrated that there are high number of short car trips made to these sites and therefore a high potential to shift to active modes, with the right supportive infrastructure in place. Failing that, potential highway capacity measures could investigate widening both the Barnes Wallis Road approach and the Cartwright Drive exit to two lanes. More significant mitigation measures may require the conversion of the roundabout to a signalised cross-roads junction.



## Cartwright Drive / Segensworth Road East - T junction, Segensworth

- 6.97. This is a three-arm priority T junction which is located to the east of Segensworth. The main road is Cartwright Drive which runs north to south. Segensworth Road (also known as Segensworth Road East) is the side arm which links through to Mill Lane in the east. The right turn movement from Cartwright Drive south into Segensworth Road East is prohibited. The junction is located on the fringes of a large industrial area and provides a link through to large residential areas at Titchfield Common and Whiteley. There is a 40mph speed limit on all arms of the junction.
- 6.98. The SRTM highlighted that the Local Plan traffic Do Minimum would have a severe impact on congestion on Segensworth Road East.
- 6.99. This junction is not considered by the HA (HCC) to be on the route to the SRN, therefore active travel and public transport measures should be prioritised.

### Considerations for active travel

- 6.100. Currently there is no cycle infrastructure north or east of the junction and these roads are not currently appropriate for mixed use traffic and therefore not be suitable for all users.
- 6.101. To the west, it is unclear if cycling is permitted on the path connecting Cartwright Drive and Whiteley Lane. There is a prohibition of driving, but no shared use path signs. The link connects through to the mixed use area of Segensworth. In the future this link could be upgraded to an improved walking and cycling route.
- 6.102. Under Option 6 the opportunity would exist to consider a cycle phase / stage within the junction layout and operation of the signals. This would allow cyclists from the west to enter and cross the junction under signal control to travel east along Segensworth Road East. In the opposite direction cyclists from Segensworth Road East (either on-road or on a new provision, depending on the development of the Fareham LCWIP) could cross directly to the walking and cycling link to continue their onward westbound journey. A CYCLOPS junction could also be considered. These arrangements would need to be modelled and layouts developed.

### Fareham LCWIP option

- 6.103. This junction is intended to connect the proposed secondary Route 271: Bridgemary – Lower Swanwick and Route 344 Segensworth – Titchfield Haven in the draft Fareham LCWIP. It has suggested the following improvements at this junction:
- 6.104. **271.2.6** - A review of the Segensworth Road East / Cartwright Drive priority junction should be undertaken to make improvements for pedestrians and cycle route connectivity and continuity through the junction. The junction could be reconfigured to provide a fully signalised Cyclops style junction or a standalone toucan crossing with suitable links could be provided on Cartwright Drive to the south of the junction.

### Considerations for public transport

#### BSIP measure

- 6.105. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

### Highway capacity improvements

- 6.106. The junction modelling tested six options:
- Do-Nothing option;
  - Option 1 – Increase flared lane lengths on Cartwright Drive and Whiteley Way north arms;
  - Option 2 – Cartwright Drive southbound and Segensworth Road widened to two lanes – priority T junction;
  - Option 3 – Signalised junction based on existing junction layout with Segensworth Road widened to two lanes;

- Option 4 – Signalised junction with Segensworth Road widened to two lanes;
- Option 5 – Signalised junction with Cartwright Drive southbound and Segensworth Road East widened to two lanes; and
- Option 6 – Signalised junction with Cartwright Drive southbound and Segensworth Road East widened to two lanes including left turn signal.

6.107. It is concluded that the existing priority junction cannot accommodate the 2036 Do Minimum traffic flows even with changes to the layout. The introduction of signal control is required to enhance capacity on Segensworth Road. Even under signalisation the junction layout would need improving to provide two lanes on Segensworth Road and Cartwright Drive southbound. The signal staging would need to be maximised with the inclusion of a left turn filter signal on Cartwright Drive southbound to arrive at a solution which would operate within capacity to accommodate the 2036 Do Minimum traffic flows. It is recommended that Option 6 is progressed at this location in the SRTM Do Something run.

## A27 Segensworth roundabout / Little Park Farm Road, Segensworth – signalised roundabout

- 6.108. Known as Segensworth roundabout this junction forms a major intersection in the Fareham highway network. It is a seven arm partially signalised roundabout which connects several major routes. Four of the seven arms are signal-controlled, and these include the M27 Junction 9 link road to the north and the A27 Southampton Road arms which go west towards Park Gate and south towards Fareham. Segensworth Road is the other signalised arm which is one way approach towards the roundabout and feeds in traffic from the Segensworth industrial area. All these arms have multiple lanes ranging from two to four lane entries on to the roundabout. The signals operate under Split Cycle Offset Optimisation Technique (SCOOT) control. Barnes Wallis Road, in the northeast corner, is a one-way road leading away from the roundabout. The remaining two arms are uncontrolled and considered to be more minor in nature. The southwest arm is Southampton Road which predominantly serves several retail premises. The final arm on the northwest corner of the roundabout is Little Park Farm Road. This is a single lane approach which flares out to two lanes at the roundabout entry. It serves the large industrial area of Segensworth West. The circulatory sections of the roundabout are mostly four lanes.
- 6.109. The roundabout sits in a 50mph speed limit although 30mph speed limits apply to Little Park Farm Road, Barnes Wallis Road, Segensworth Road and Southampton Road shortly beyond the exits.
- 6.110. This roundabout is considered by the HA (HCC) to be on the route to the SRN, therefore highway capacity options as well as active travel measures have been considered.

## Considerations for active travel

### Fareham LCWIP option

- 6.111. No measures are proposed in the draft Fareham LCWIP here as routes to the north, south, east, and west of this junction are proposed instead.

## Considerations for public transport

### BSIP measure

- 6.112. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

## Highway capacity improvements

- 6.113. The junction modelling tested four options:
- Option 1 – Optimised signal timings;
  - Option 2 – Little Park Farm Road signalised;

- Option 3 – Little Park Farm Road entry closed; traffic diverted via Telford Way on to A27 Southampton Road (west) arm; and
- Option 4 – Little Park Farm Road entry closed; A27 Southampton Road (west) arm widened to three lanes.

- 6.114. The results indicate that closing the entry at Little Park Farm Road and the addition of a third lane on the A27 Southampton Road (west) arm (Option 4) would enable that approach to operate within capacity in both 2036 Do Minimum peaks.
- 6.115. It is recommended that Option 4 is progressed at this location in the SRTM Do Something run. Although some of the arms are still over capacity, it offers a significant improvement over the other options. This option also reduces the PM impact on the A27 Southampton Road (south) arm compared to the Do Minimum output, which did trigger the agreed threshold, however, it does result in a higher impact in the AM peak.

## Sweethills Crescent / Yew Tree Drive

- 6.116. Although this junction meets the agreed threshold, it is not causing a capacity issue itself. The issue to resolve is caused by congestion at 'A3051 Botley Road / Yew Tree Drive, Whiteley – roundabout', on the Yew Tree Drive arm, which is predicted to stack back to this junction.

## A3051 Botley Road / Yew Tree Drive, Whiteley roundabout

- 6.117. This is a four-arm roundabout that is located to the west of Whiteley. The main road, A3051 Botley Road, runs broadly north to south and links Park Gate to Botley. Yew Tree Drive is the side arm which joins from the east. It serves Whiteley and provides a main route into this large area of mixed residential and commercial use. The fourth arm serves a single residential property on the west side and for modelling purposes has been excluded due to the negligible demand on this arm.
- 6.118. Each arm is a single lane approach with negligible amount of flaring at the give way lines. All arms are situated within a 30mph speed limit. There is an uncontrolled pedestrian crossing on the Yew Tree Drive arm only which utilises the wide splitter island.
- 6.119. The SRTM highlighted that the Local Plan Do Minimum traffic would have a significant impact on congestion on Yew Tree Drive, leading to stacking back through the 'Sweethills Crescent / Yew Tree Drive' junction. The report focuses on mitigating the impact on the Local Plan traffic on this approach.

## Considerations for active travel

- 6.120. At the 'Sweethills Crescent / Yew Tree Drive' junction, upgrading the existing uncontrolled crossings to parallel crossings would provide a benefit for cyclists and pedestrians.

## Fareham LCWIP option

- 6.121. Yew Tree Drive and Botley Road are part of secondary Route 342: Swanwick – Fleet End Road of the draft Fareham LCWIP. It has suggested the following improvements at this roundabout:
- 6.122. **342.1.4** - A review of the A3051 Botley Road / Yew Tree Drive roundabout should be undertaken to make improvements for pedestrians and cycle route connectivity and continuity through the junction. If the approaches to the junction are made LTN1 / 20 compliant then the junction could be reconfigured to provide a fully signalised Cyclops junction or standard signalised junction with sparrow type crossings. Alternatively, a parallel crossing across the Yew Tree Drive arm could be considered.

## Considerations for public transport

### BSIP measure

- 6.123. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus, future planning applications should review the BSIP and other relevant documents as they develop.

## Highway capacity improvements

- 6.124. The junction modelling tested two options:
- Do-Nothing option; and
  - Option 1 - Yew Tree Drive widened into the southern verge area to formally provide two lanes for a distance of 20 metres back from the give way line. The nearside lane would be used by traffic turning left to travel south along Botley Road and the offside lane by those turning right to travel northwards.
- 6.125. The modelling results confirmed that the additional flared lane on Yew Tree Drive would accommodate the 2036 Do Minimum traffic levels in both the AM and PM peaks. Therefore, it is recommended that Option 1 is progressed at this location in the SRTM Do Something run.

## Summary

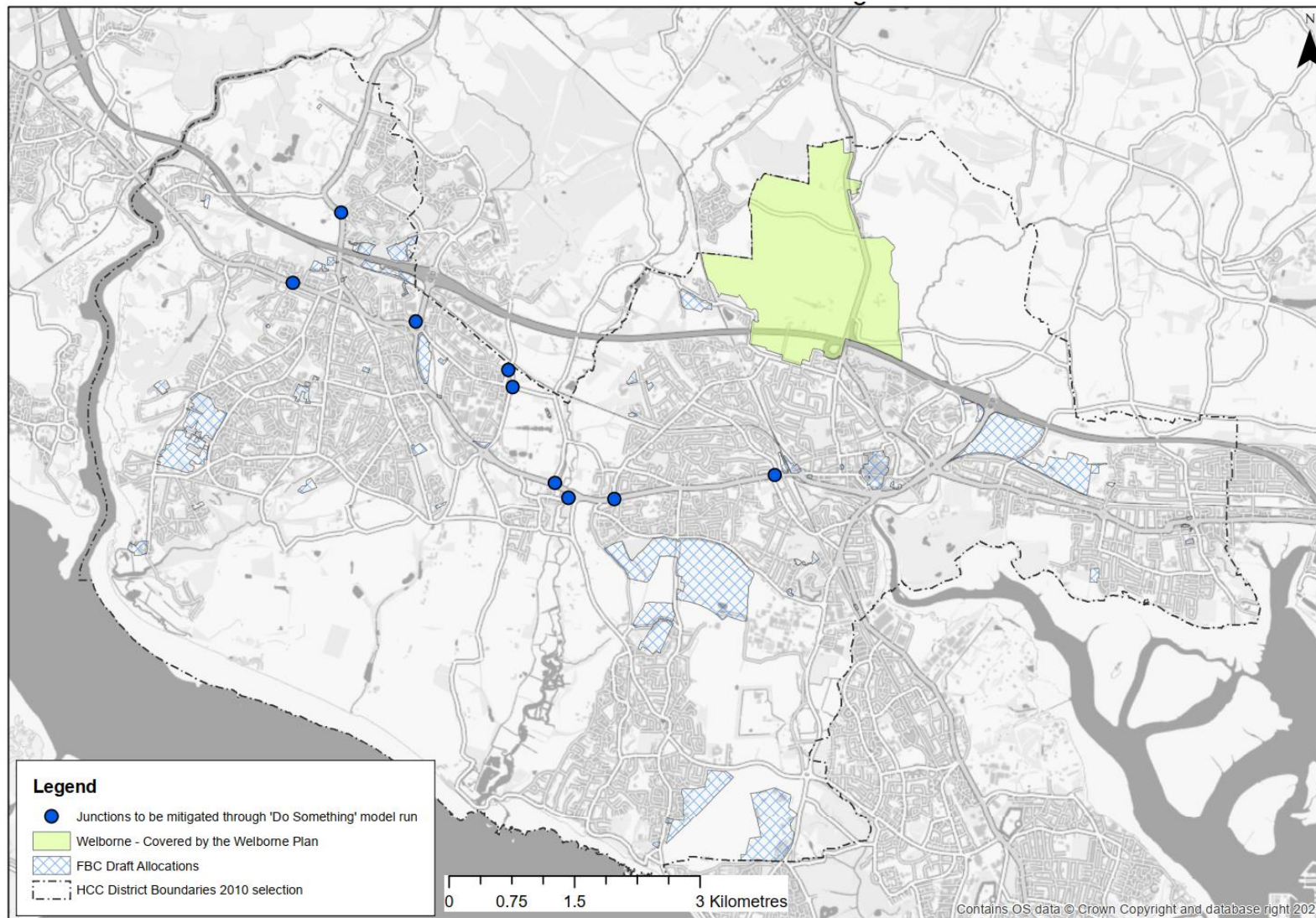
- 6.126. Several junctions have been identified as being potentially significantly or severely impacted by the traffic forecast to be generated by the Fareham Local Plan. The junctions where mitigation is achievable and most warranted have been assessed further and their effectiveness evaluated using local junction modelling software. The potential highway mitigation measures are summarised in Table 6-3 and shown in Figure 6-1.
- 6.127. It should be noted that none of the mitigation measures have been subject to a Road Safety Audit at this stage. Following standard processes, the physical mitigation measures should have a stage 1 Road Safety Audit completed before progressing to any further stage of design. As above, the mitigation presented in this report is to demonstrate that the level of development proposed is capable of mitigation – it is not intended to present a preferred package of works or to advocate specific junction designs. As above, active travel and public transport measures should be pursued in accordance with the Plan TIN2 Policy, with highway capacity measures only considered as a last resort except for junctions on the route to the SRN. For junctions which sit on routes to the strategic road network, capacity should be considered alongside active travel and public transport measures.

**Table 6-3 – Proposed Highways Mitigation Measures**

	Junction	Mitigation measure
18	A27 The Avenue / Redlands Lane / Gudge Heath Lane	Option 1 – optimised signal timings
30	A27 Southampton Road / Mill Lane, Titchfield	Option 1 – optimised signal timings; retain existing signal junction layout and operation
29	A27 The Avenue / Highlands Road	Option 1 – optimised signal timings; retain existing signal junction layout and operation
50	A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate	Option 2 with expectation that pedestrian phase called every third cycle
28	A27 Southampton Road / Titchfield Hill, Titchfield	Option 2 – two-lane give way entries
37	Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth	Option 1 - Increase flared lane lengths on Cartwright Drive and Whiteley Way north arms
38	Cartwright Drive / Segensworth Road East	Option 6 - Signalised junction with Cartwright Drive southbound and Segensworth Road East widened to two lanes including left turn signal
35	A27 Segensworth roundabout / Little Park Farm Road, Segensworth	Option 4 - Little Park Farm Road entry closed; A27 Southampton Road (west) arm widened to three lanes
56	A3051 Botley Road / Yew Tree Drive, Whiteley	Option 1 - Yew Tree Drive widened



**Figure 6-1 – Site allocations and junction mitigation measures**



## 7. Do Something Modelling Results

### 2036 Scenario 3 Do Something vs 2036 Scenario 2 Do Minimum

- 7.1. The above mitigation measures have been included in the SRTM to provide the 2036 Scenario 3 Do Something with full details of the modelling and residual impacts of the mitigation measures presented in the next section and Systra SRTM Modelling Report. As agreed with the HA (HCC), other than on routes to the SRN, these mitigation measures are presented as worst-case options; active travel and public transport solutions should be sought first.
- 7.2. The nature of the SRTM means that where additional capacity is introduced on a modelled network that is operating under unconstrained demand, re-routing of traffic occurs and released capacity often attracts traffic demand from other routes. This can reduce the mitigation scheme benefits in terms of junction performance. The observed forecast traffic flow increases at the locations where mitigation measures have been implemented to alleviate capacity issues are due to this phenomenon. This can also result in congestion points elsewhere on the network that are not forecast in earlier 2036 Scenario 2 Do Minimum. This re-assignment of traffic is representative of actual changes in driver behaviour when deciding to avoid a congested route and whilst several factors other than driver delay can affect route choice, traffic re-assignment within the network is an expected knock-on effect of the model.
- 7.3. Details of knock-on effects resulting from the potential mitigation measures elsewhere on the network are explored later in this section.

### Highway Network

- 7.4. The Highway network for the Do Something scenario includes changes at nine junctions within Fareham Borough to mitigate against the impacts of the Fareham Local Plan.
- A27 The Avenue / Redlands Lane / Gudge Heath Lane - A27 The Avenue (west);
  - A27 Southampton Road / Titchfield Hill, Titchfield - Titchfield Hill;
  - A27 The Avenue / Highlands Road - Highlands Road;
  - A27 Southampton Road / Mill Lane, Titchfield - A27 Southampton Road / Mill Lane, Titchfield;
  - A27 Segensworth roundabout / Little Park Farm Road, Segensworth - Little Park Farm Road;
  - Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth - Cartwright Drive and Whiteley Way (north);
  - Cartwright Drive / Segensworth Road East - Segensworth Road;
  - A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate - A27 Bridge Road (east) and Ironbridge Crescent; and
  - A3051 Botley Road / Yew Tree Drive, Whiteley - Yew Tree Drive.
- 7.5. It should be noted that where mitigation measures increase capacity, and potentially attract further traffic, the expected reduction in delay from the mitigation may be dampened or absorbed entirely by the impact of the increased traffic volume. In addition, the provision of traffic signals will inherently produce an element of delay due to the red signal periods and for certain traffic movements this may be greater than the scenario without the signals particularly in time periods where capacity or congestion issues are not present / forecast.

### Highway Network Performance

- 7.6. The section outlines the performance of the highway network for the AM and PM periods for 2036 Scenario 1 Baseline, 2036 Scenario 2 Do Minimum and 2036 Scenario 3 Do Something.
- 7.7. Even when focussing at a Borough level, the coverage is very broad with only nine mitigated sites and in terms of comparison between the 2036 Scenario 2 Do Minimum and 2036 Scenario 3 Do Something values, the difference is small. The outputs reported in the sections below focus more specifically on the locations where mitigation has been included and provide a better comparison between these scenarios.

- 7.8. In terms of network performance statistics, the mitigation included in Scenario 3 Do Something has had a greater impact in the AM peak. The number of vehicle hours within Fareham has reduced by nearly 2% in the AM peak when comparing DS with DM scenarios, but is largely unchanged in the PM peak. By contrast, the number of vehicle kms has increased by almost 1% and 0.5% in the AM and PM peak, respectively. The average speed has also increased by around 2.5% in the AM peak, and remained virtually unchanged in the PM peak. An increase in vehicle kms alongside an increase in average speed and a decrease in vehicle hours shows that, overall, the network is performing better than in the Do Minimum scenario.
- 7.9. A general increase in vehicle kilometres, reduction in vehicle hours, and increase in vehicle speed is consistent with the inclusion of mitigation as bottleneck and delay issues are addressed. This relatively small impact of the mitigation is a result of a congested network, particularly on the A27, and is to be expected. Hence the focus of the HA is on active travel and public transport measures as a priority.

## Traffic Flow Difference

- 7.10. This section identifies the change in traffic flow in the AM and PM peak hours between the 2036 Scenario 3 Do Something and 2036 Scenario 2 Do Minimum, at an overall borough level. The sections that follow focus on the nine locations where mitigation is proposed, plus any other notable flow and delay changes.

### Junction 18 - A27 The Avenue / Redlands Lane / Gudge Heath Lane

- 7.11. This is a four-arm traffic signal junction located to the west of Fareham town centre, with the A27 The Avenue being the main road running west-east. As part of the Local Junction Modelling Report 2021, it was recommended that the signal timings were optimised at this junction using Linsig3 software. These new signal timings were tested in the Scenario 3 Do Something 2036 run.
- 7.12. Comparing Scenario 3 Do Something 2036 against the Scenario 2 Do Minimum 2036 run, there were generally minor reductions in traffic flows on all arms in both peaks, except Gudge Heath Lane which experienced an increase of 110 PCUs in the AM peak. The greatest reduction in traffic flows was of 74 PCUs at the A27 The Avenue (west) approach arm.
- 7.13. There were delay decreases of up to 15 seconds in the AM peak on Redlands Lane, and there was an increase of 11 seconds in the PM peak. Despite being a relatively minor delay increase in the PM peak, this has now triggered the 'severely' impacted under the delay criterion when comparing Scenario 3 Do Something 2036 against Scenario 1 Baseline 2036.
- 7.14. Even though there was a traffic flow increase in the AM peak, both time periods now experience less delay on the Gudge Heath Lane approach, with reductions of 82 seconds in the AM peak and 17 seconds in the PM peak.
- 7.15. This suggests that the signal timings might be unbalanced towards Gudge Heath Lane, and the junction signal timings might benefit from re-optimisation using Linsig3 software using the new traffic flows.

### Junction 28 - A27 Southampton Road / Titchfield Hill, Titchfield

- 7.16. The junction is currently undergoing significant changes to its layout as part of the Stubbington Bypass scheme. The link between A27 west and B3334 Titchfield Road is being re-routed directly through the centre of the gyratory. This will be a two-lane link which will be signal controlled together with the B3334 Titchfield Road entry. The B3334 Titchfield Road arm is being widened to two lanes in both directions. The existing eastern end of the gyratory will be removed. The layout of the Titchfield Hill arm is a two-lane entry which has individual lanes for left turning and ahead traffic. The western side of the gyratory is a wide single lane give way which joins the A27 eastbound. These arms will remain unchanged by the Stubbington bypass scheme.
- 7.17. The Fareham Local Plan Local Junction Modelling Report 2021 recommended that "Option 2 – two-lane give way entries" was tested in the SRTM Scenario 3 Do Something run. The main changes to the gyratory in Option 2 when comparing with the scheme currently under construction are the lane designations on Titchfield Hill entry arm, and the creation of two lanes downstream on the gyratory (west side of gyratory). The report also suggests that with these



measures, the gyratory would operate just within capacity using the Scenario 2 Do Minimum 2036 flows, for both AM and PM peaks.

- 7.18. Whilst it was expected that this junction would operate within capacity using the Do Minimum flows, it is also expected that the mitigation measures would generate rerouting across the highway network due to some routes becoming more attractive than others. This is the case with Titchfield Gyratory, where the increase in capacity and signal timing optimisation have led to an increase of up to 144 PCUs in the AM peak on the B334 Titchfield Road approach arm, and 90 PCUs in the PM peak on the Titchfield Hill approach.
- 7.19. Concerning delay differences between Scenario 3 Do Something and Scenario 2 Do Minimum, there has been a delay reduction across all arms in the AM peak except the A27 The Avenue approach arm with a delay increase of 11 seconds. Similar delay reductions were experienced in the PM peak, except the B334 Titchfield Road arm which had a delay increase of 36 seconds. The maximum delay reduction was of 91 seconds and 27 seconds in the Titchfield Hill arm in the AM and PM peak, respectively.

### Junction 29 - A27 The Avenue / Highlands Road

- 7.20. The Fareham Local Plan Local Junction Modelling Report 2021 recommended that the existing signal stage configuration remained, but with green times optimised to the traffic flows generated by the Scenario 2 Do Minimum 2036.
- 7.21. As a result of the mitigation measures proposed in the Scenario 3 Do Something 2036, the actual flows reduced by around 30 PCUs in both Highlands Road and A27 The Avenue (west) and increased by 75 PCUs in the A27 The Avenue (east) for the AM peak. There were minor increases in delay up to 12 seconds in all arms in the same time period.
- 7.22. Comparatively, in the PM peak, there were an additional 62 and 9 PCUs on the A27 The Avenue (east) and A27 The Avenue (west), respectively. On the other hand, there was a decrease of 90 PCUs on Highlands Road. Delays have also increased in this junction by 26 seconds in the Highlands Road approach.

### Junction 30 - A27 Southampton Road / Mill Lane, Titchfield

- 7.23. The proposed scheme at Junction 30 was to optimise the signal timings using the same junction layout and signal staging operation. From the local junction modelling this was expected to provide about 2.2% spare capacity in the Scenario 2 Do Minimum 2036. However, due to flow reassignment as a result of optimised signal timings there have been large flow increases at this junction in the Scenario 3 Do Something 2036 run. There are now an additional of 506 PCUs using the A27 Southampton Road (east), and 106 PCUs using Mill Lane in the AM peak. Despite these increases, the delay difference is small, with less than 15 seconds difference in all arms in the same time period.
- 7.24. For the PM peak, there are now an additional 170 PCUs and 102 PCUs on A27 Southampton Road (east) and Mill Lane approach arms, respectively. The delay increases are less than 30 seconds. Traffic flows on the A27 Southampton Road (west) have decreased by 95 PCUs.
- 7.25. The increase in traffic flows in the AM and PM peaks may not be attributed to one isolated factor. For the AM peak, it can be inferred that rerouting has happened due to traffic flow decreases on adjacent routes such as Catisfield Road (westbound) and Titchfield Hill (westbound). Also, based on Select Link Analysis of both Do Minimum and Do Something model runs, the maximum increase of traffic flows in the WB direction may be attributed to A27 The Avenue (east) and B3334 Titchfield Road. For the PM peak, Select Link Analysis shows that the increase in traffic on the A27 Southampton Road (east) is due to more traffic coming from Highlands Road and A27 The Avenue (east). There has been a similar decrease in River Lane and Fontley Road, suggesting that westbound traffic was rerouted from there to the A27.

### Junction 35 - A27 Segensworth roundabout / Little Park Farm Road, Segensworth

- 7.26. The proposed scheme at Segensworth Roundabout was Option 4 of the Fareham Local Plan Local Junction Modelling Report 2021. This included the closure of the Little Park Farm Road entry arm, and the A27 Southampton Road (west) arm widened to three lanes. The existing signal

timings were also optimised to consider these highway network changes. Despite these mitigation measures, it was still expected that three arms, namely M27 link road, A27 Southampton Rd (south), and Circulatory (west), would be at or over capacity with the Scenario 2 Do Minimum 2036 flows in the Local Modelling Report.

- 7.27. In line with the local junction modelling report, Scenario 3 Do Something 2036 shows that the traffic flows using Little Park Farm Road in Scenario 2 Do Minimum 2036 have been rerouted to the A27 Southampton Road (west) via Telford Way for both time periods. There has been an increase of over 500 PCUs and 350 PCUs on the A27 Southampton Road (west) arm, for AM and PM peak, respectively.
- 7.28. In the Scenario 2 Do Minimum 2036 scenario, both Little Park Farm Rd and Segensworth Rd arms were flagged in the AM peak as severe due to the delay criterion. In the Scenario 3 Do Something 2036 run, there were no arms flagged as significantly or severely impacted under the delay criterion, when compared with the Scenario 1 Baseline 2036.
- 7.29. Delay has decreased significantly across all arms of the roundabout except the west circulatory movement, with reductions of around 200 seconds in the AM peak. No significant changes in delay have happened in the PM peak. However, in both time periods, congestion has built up on Telford Way, with delay increases of around 500 seconds. It is suggested that the A27 Southampton Rd /Telford Way junction is mitigated separately, to reduce the impacts from the Little Park Farm Rd entry arm close.

### Junction 37 - Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth

- 7.30. Increased flared lane lengths on Cartwright Drive and Whiteley Way north arms were the main recommendations for Junction 37 as part of the Local Junction Modelling Report 2021. Despite these measures, the same report estimated that the Barnes Wallis Road arm would still be over capacity in the PM peak, using the Scenario 2 Do Minimum 2036 flows.
- 7.31. There was an increase of nearly 500 PCUs on the Cartwright Drive arm in the Scenario 3 Do Something 2036 compared to the Scenario 2 Do Minimum 2036 flows, for the AM peak. This is mainly due to traffic rerouting from the A27 Southampton Road in the northbound direction, to Cartwright Drive, at the St Margarets Roundabout. On the other hand, there was a decrease of around 70 PCUs on Whiteley Lane arm, in the same time period. There were no significant changes on the other arms in the AM peak.
- 7.32. In the PM peak, there was an increase of almost 700 PCUs in the Whiteley Lane (north) arm. A few select link analyses around the area show that most of the traffic is coming from a loading zone near Solent Village, and part of this traffic is coming from the M27 which is being routed through Parkway South Roundabout. These results suggest that this route has become more attractive to some trips in comparison with the route via Segensworth Roundabout. On the other hand, there were traffic flows decreases of 100 PCUs and 50 PCUs, in Cartwright Drive and Barnes Wallis Road, respectively.
- 7.33. Despite the traffic flow increases in certain arms, there were reductions in delays across all arms in the AM and PM peaks, especially in the Cartwright Drive arm, which experienced a reduction of over 120 seconds in the AM peak, and in the Whiteley Lane arm, with a reduction of around 320 seconds in the PM peak.

### Junction 38 - Cartwright Drive / Segensworth Road East

- 7.34. The proposed scheme at Junction 38 includes transforming this three-arm priority T junction into a signalised junction with Cartwright Drive southbound and Segensworth Road East widened to two lanes including a left-turn signal. The Fareham Local Plan Local Junction Modelling Report 2021 estimates that this junction would operate with spare capacity using the Scenario 2 Do Minimum 2036 flows.
- 7.35. As a result of these mitigation measures, there were very high traffic flow increases, especially on the Cartwright Drive (south) in the AM peak, which now has nearly 400 extra PCUs in the Scenario 3 Do Something 2036 compared to Scenario 2 Do Minimum 2036. There was also an increase of almost 40 PCUs in the Cartwright Drive (north) arm, and around 70 PCUs in the Segensworth Road East. Despite these flow increases, there were no significant increases in



delays, with the maximum change being at Cartwright Drive (south) which now experiences almost 40 seconds of additional delay.

- 7.36. For the PM peak, there was an increase of 250 PCUs on Cartwright Drive (north) and a decrease of nearly 300 PCUs in the Segensworth Road East. Despite the decrease of flows on Segensworth Road East, there was delay increase of around 40 seconds. This suggests that the signal timings might be unbalanced with the Scenario 3 Do Something 2036 flows and could benefit from being re-optimised.
- 7.37. These traffic flow changes are in line with nearby Junction 37, and it suggests that extra capacity was unlocked in this route which is now more attractive than other adjacent routes.

### Junction 50 - A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate

- 7.38. The Fareham Local Plan Local Junction Modelling Report 2021 recommends Option 2 for Junction 50, which replaces the existing uncontrolled pedestrian crossings, including central refuges, with on-demand controlled crossings on the A27 east and Ironbridge Crescent arms. In this option, there is a westbound right-turn lane on the A27 arm, and the widening of the Ironbridge Crescent. It is considered in the Local Junction modelling report that the on-demand pedestrian signals would be called every other third cycle, and with the other measures, the junction would operate just within capacity.
- 7.39. In the Scenario 3 Do Something 2036, there was a decrease of around 60 PCUs on the A27 Bridge Road (west) in the AM peak, and an increase of 26 PCUs on the same arm in the PM peak. There was also a decrease of nearly 40 PCUs in the A27 Bridge Road (east) in the PM peak.
- 7.40. Despite the flow increase in some arms, there were no significant changes in delay, with all of them being less than 20 seconds in all time periods.

### Junction 56 - A3051 Botley Road / Yew Tree Drive, Whiteley

- 7.41. It was proposed in the Fareham Local Plan Local Junction Modelling Report 2021 that Option 1 should be tested in the Scenario 3 Do Something 2036 run. This option includes widening the Yew Tree Drive arm to improve its capacity, with a provision of two lanes for around 20 metres back from the give way line. The nearside lane would be used by traffic turning left to travel south along Botley Road and the offside lane by those turning right to travel northwards.
- 7.42. There were increases in traffic flows in all arms in both time periods in Scenario 3 Do Something 2036 when compared to Scenario 2 Do Minimum 2036, with the most significant increases being around 50 PCUs in both the Yew Tree Drive (west) and Yew Tree Drive (east) arms in the AM peak, and 150 PCUs and 250 PCUs in the Yew Tree Drive (west) and Yew Tree Drive (east) arms in the PM peak, respectively.
- 7.43. Despite the flow increases in all arms, there were no delay changes in the AM peak, and there were delay reductions of up to 60 seconds in the PM peak, on the Yew Tree Drive (east) arm.

### Capacity Hotspots

- 7.44. This section outlines junctions with an RFC greater than 85% in the 2036 Scenario 3 Do Something. Junctions with an RFC greater than 85% are operating close to, or at capacity.
- 7.45. Applying the criteria set out in Paragraph 5.9, there is a total of nine junctions that meet the “significant” change criteria and 14 junctions meeting the “severe” change criteria when compared against the Baseline. This represents a decrease of two “significant” locations compared to the Do Minimum, and an increase in six “severe” locations. The junctions are listed in **Table 7-1**. There are nine junctions not previously identified as having “significant” or “severe” impacts in the Do Minimum and these are highlighted in **Table 7-1**.
- 7.46. New junctions triggering one of the “significant” or “severe” criteria are not entirely unexpected due to the mitigation measures incorporated potentially releasing bottlenecks that then impact downstream locations or changing the assignment of vehicles through the network. Essentially due to the congested network, the congestion is being moved around the network rather than

being materially reduced by the mitigation. Hence the HA focus is on active travel and public transport measures as a priority.

- 7.47. The sections below summarise the performance of the mitigated junctions in the Do Something model run and highlight the nine additional junctions with impact classified as “significant” or “severe”.

### Junction 18 - A27 The Avenue / Redlands Lane / Gudge Heath Lane

- 7.48. In the Fareham Local Plan Local Junction Modelling 2021 report, it was concluded that the new set of signal timings in the Scenario 3 Do Something 2036 were expected to improve the capacity at this junction when compared to the Scenario 1 Baseline 2036. However, only marginal benefits were expected in the PM peak. Comparing this with the Scenario 3 Do Something 2036 run, it is noted that both junction and strategic modelling are consistent. Junction 18 is not flagged in the AM peak, but it is still flagged as severely impacted in the PM peak on Redlands Lane approach arm.

### Junction 28 - A27 Southampton Road / Titchfield Hill, Titchfield

- 7.49. The A27 The Avenue was flagged in the Scenario 2 Do Minimum 2036 vs Scenario 1 Baseline 2036 as significantly impacted by the Local Plan flows, and it is now flagged as severely impacted with the Scenario 3 Do Something 2036 changes. This is likely due to the increase in traffic flows on this arm.
- 7.50. It is also noted that Titchfield Hill approach arm, which was flagged as significantly impacted in the PM peak by the Local Plan flows in the Scenario 2 Do Minimum 2036 versus Scenario 1 Baseline 2036, is now operating within capacity in the Scenario 3 Do Something 2036. However, the B334 Titchfield Road approach is now flagged as severely impacted in the PM peak under the RFC increase criterion. This is likely due to changes in traffic signal timings, which have reduced the green timing percentage of the cycle time available for the northbound movement from B334 Titchfield Road.

### Junction 29 - A27 The Avenue / Highlands Road

- 7.51. This junction was flagged in the Scenario 2 Do Minimum 2036 scenario because it met the RFC criterion on the Highlands Road arm in the AM peak. There were no changes to the Scenario 3 Do Something 2036, with this arm still being flagged as significantly impacted against the Baseline flows.
- 7.52. The same arm, Highlands Road, is also now significantly impacted in the PM peak. This is likely due to changes in traffic signal timings, which have reduced the green timing percentage of the cycle time available for the southbound movement from Highland Road.
- 7.53. It is suggested that re-optimisation of signal timings at this junction is performed using the Scenario 3 Do Something 2036 flows.

### Junction 30 - A27 Southampton Road / Mill Lane, Titchfield

- 7.54. This junction has all its arms flagging as either significantly or severely impacted in the AM peak, in Scenario 3 Do Something 2036 vs Scenario 1 Baseline 2036. It also has the A27 Southampton Rd (west) flagging as significantly impacted in the PM peak. This junction performs now worse than in the Scenario 2 Do Minimum 2036, however, there is significantly more traffic using this junction in the Scenario 3 Do Something 2036, which has likely caused the issue.
- 7.55. Also, it is noted that the A27 Southampton Rd (west) arm, has had a decrease in flows in the AM peak but was flagged as severely impacted. This is likely due to changes in traffic signal timings and signal timings configuration, which have reduced the green timing percentage of the cycle time available for the eastbound movement from A27 Southampton Rd (west) and increased the time in between this stage being called.
- 7.56. It is suggested that re-optimisation of signal timings at this junction is performed using the Scenario 3 Do Something 2036 flows.

### Junction 35 - A27 Segensworth roundabout / Little Park Farm Road, Segensworth

- 7.57. This junction had one arm flagging as significantly impacted under the RFC criterion in the AM peak, and two arms flagging as significantly impacted in the PM peak, in the Scenario 2 Do Minimum 2036 versus Scenario 1 Baseline 2036 flows. In the Scenario 3 Do Something 2036, all arms are now operating within capacity.
- 7.58. However, the adjacent junction Southampton Road /Telford Way is now over capacity due to the rerouting of traffic via Telford Way, with the closure of Little Park Farm Rd entry arm.

### Junction 37 - Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth

- 7.59. As a result of the mitigation measures at Junction 37, the previously flagged Whiteley Lane (north) arm as severely impacted in the Scenario 2 Do Minimum 2036, is now flagged as significantly impacted in the Scenario 3 Do Something 2036, in the AM peak. There was a minor reduction in traffic flows on this arm, and with the increased capacity due to the increased flared lane lengths, have led to a reduction in the RFC.
- 7.60. It is noted that despite the great increase in traffic flows on Cartwright Drive in the AM Peak, and on Whiteley Lane (north) in the PM peak, the significant or severe criteria were not triggered on those arms.

### Junction 38 - Cartwright Drive / Segensworth Road East

- 7.61. The Segensworth Road East arm was previously flagged as severely impacted in this junction due to the RFC criterion, as part of the Scenario 2 Do Minimum 2036 versus Scenario 1 Baseline 2036 analysis. In the Scenario 3 Do Something 2036, this arm is no longer flagged despite the increase in traffic flows, showing that the increase in capacity in this arm has solved the issue.
- 7.62. However, in the AM peak, the Cartwright Drive (south) arm was previously flagged as significantly impacted in the Scenario 2 Do Minimum 2036 and is now flagged as severely impacted in the Scenario 3 Do Something 2036. This is likely due to the large increase in traffic flows in this arm as described in the previous sections.

### Junction 50 - A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate

- 7.63. The proposed scheme at Junction 50 has increased capacity on the A27 Bridge Road (west) arm which was previously flagged as significantly impacted in the PM peak of the Scenario 2 Do Minimum 2036 and is no longer flagged in the Scenario 3 Do Something 2036. There was an increase of around 30 PCUs on this arm.

### Junction 56 - A3051 Botley Road / Yew Tree Drive, Whiteley

- 7.64. The proposed scheme at Junction 56 has increased capacity on Yew Tree Drive (east) arm which was previously flagged as significantly impacted in the PM peak of the Scenario 2 Do Minimum 2036 and is no longer flagged in the Scenario 3 Do Something 2036, despite the significant increase of over 260 PCUs on this arm.

### Additional junctions flagged as “significant” or “severe”

- 7.65. Table 7-1 has the complete list of junctions flagged as “significant” or “severe” in the Scenario 3 Do Something 2036 when compared with Scenario 1 Baseline 2036. The junctions highlighted in blue are those additional ones which were not previously flagged in the Scenario 2 Do Minimum 2036.

**Table 7-1 – 2036 Do Something vs 2036 Baseline Impacted Junction List**

Junction arm	Junction Approach	Significantly Impacted	Severely Impacted	Junctions not impacted in the Do Minimum scenario
10	A32 /High Street /Wallington Way	Y		
15	Station Roundabout	Y		
18	A27 The Avenue /Redlands Lane /Gudge Heath Lane		Y	
20	Longfield Avenue /Newgate Lane	Y		
24	B3334 Titchfield Road /Bridge Street		Y	
28	Titchfield Gyratory		Y	
29	A27 The Avenue /Highlands Road	Y		
30	A27 Southampton Road /Mill Lane		Y	
32	St Margarets Roundabout		Y	Y
37	Barnes Wallis Road /Whiteley Lane /Cartwright Drive	Y		
38	Segensworth Road East /Cartwright Drive		Y	
39	Southampton Road /Telford Way Roundabout		Y	
41	Botley Road /A27 /Hunts Pond Road /Southampton Road		Y	Y
46	Peters Road /Lockwood Roundabout	Y		Y
49	Lockwood Road /Brook Lane Roundabout	Y		Y
51	A27 Bridge Road /Station Road /Brook Lane Roundabout		Y	Y
54	Botley Road /Yew Tree Drive		Y	Y
55	Sweethills Crescent /Yew Tree Drive Roundabout		Y	Y
57	Bridge Road /Swanwick Lane	Y		
58	A27 Bridge Road /Barnes Lane		Y	
65	Highlands Road /Fareham Park Road	Y		
67	Segensworth Road East /Fontley Road /Mill Lane		Y	Y
68	A27 The Avenue /Ranvilles Lane		Y	Y

## Summary

7.66. The nine junctions listed below were those where mitigation has been proposed and the preliminary designs have been incorporated into the SRTM:

- A27 The Avenue / Redlands Lane /Gudge Heath Lane;
- A27 Southampton Road /Titchfield Hill, Titchfield;
- A27 The Avenue /Highlands Road;
- A27 Southampton Road /Mill Lane, Titchfield;

- A27 Segensworth roundabout /Little Park Farm Road, Segensworth;
  - Cartwright Drive /Whiteley Lane /Barnes Wallis Road, Segensworth;
  - Cartwright Drive /Segensworth Road East;
  - A27 Bridge Road /Coldeast Way /Ironbridge Crescent, Park Gate;
  - A3051 Botley Road /Yew Tree Drive, Whiteley.
- 7.67. A total of 62 junctions in Fareham Borough are forecast to operate with an RFC greater than 80% in the Do Something. This is a decrease of three junctions from the Scenario 2 Do Minimum and the same number as the number forecast to meet this threshold in Scenario 1 Baseline i.e., before any Local Plan growth is considered. It is noted that although the number of junctions is similar, the list of junctions is different between each scenario.
- 7.68. It is forecast that nine junctions will experience “significant” impacts and 14 junctions with “severe” impacts in comparison to Scenario 1 Baseline as seen in Table 7-1. This represents a two junction decrease of significant and six junctions increase of severe impacted junctions compared to the Do Minimum. However, four out of the nine junctions with mitigation proposed are now forecast below the significant or severe criteria. They are:
- Segensworth Roundabout;
  - Barnes Wallis Road /Whiteley Lane /Cartwright Drive;
  - A27 Bridge Road /Coldeast Way; and
  - Sweethills Crescent /Yew Tree Drive.
- 7.69. There are three junctions which are forecast to have the same significant or severe criteria:
- A27 The Avenue /Redlands Lane /Gudge Heath Lane;
  - A27 The Avenue /Highlands Road; and
  - Segensworth Road East /Cartwright Drive.
- 7.70. There are only two junctions out of the mitigated junctions which are now forecast to fit within the severe criteria, and the main reasons are rerouting and higher traffic flows in these areas in both AM and PM peaks as a result of the increased capacity added through the Do Something mitigation package. They are:
- Titchfield Gyratory; and
  - A27 Southampton Road /Mill Lane.



## 8. Knock on Impacts

### Introduction

- 8.1. The Scenario 3 Do Something run showed the mitigation measures made small improvements on the Do Minimum. In terms of network performance statistics, the mitigation included in the Do Something has had a greater impact in the AM peak. The number of vehicle hours within Fareham has reduced by nearly 2% in the AM peak when comparing Do Something with Do Minimum scenarios but is largely unchanged in the PM peak. By contrast, the number of vehicles kilometres has increased by almost 1% and 0.5% in the AM and PM peak, respectively. The average speed has also increased by around 2.5% in the AM peak and remained virtually unchanged in the PM peak. An increase in vehicle kms alongside an increase in average speed and a decrease in vehicle hours shows that, overall, the network is performing better than in the Do Minimum scenario.
- 8.2. A general increase in vehicle kilometres, reduction in vehicle hours, and increase in vehicle speed is consistent with the inclusion of mitigation, as congestion and delay issues are addressed. The overall impact is small due to the congested network, therefore active travel and public transport measures should be the focus.

### Impacts

- 8.3. The improvements made in the mitigation package have resulted in some rerouting now that the modelling shows those junctions would be more attractive / less congested. There are nine junctions not previously identified as having “significant” or “severe” impacts in the Do Minimum. New junctions triggering one of the criteria are not unexpected due to the incorporated mitigation measures potentially releasing bottlenecks that then impact downstream locations or cause changes to the assignment of vehicles through the network. It is also noted that all but the Longfield Avenue / Newgate Lane junction were already at or over capacity in the Scenario 2 Do Minimum 2036, and as such, any minor changes in traffic flows are likely to result in large increases in delay and RFC. The 23 junctions identified as experiencing significant or severe impacts from the Do Something runs have been reviewed to determine if any additional mitigation is necessary.
- 8.4. The HCC criteria contained in Paragraph 6.4 was applied to the 23 junctions to determine the junctions which should be considered for mitigation. The criteria are based on traffic volume, delay per vehicle, total queues and stacking room. Junction approaches with delays of 10 seconds or fewer per vehicle were not suggested for mitigation, unless flows were very high, or queues were blocking the preceding junction. This reduced the number of junctions requiring mitigation down from 23 to 13.
- 8.5. Discussions to share these results with the HA (HCC) were held, leading to a focus for active travel and public transport mitigation in all locations except on the routes to the SRN as seen in Figure 8-1.
- 8.6. For the nine junctions identified as not on routes to the Strategic Road Network as seen in Figure 8-2, measures to support access by local bus (such as bus priority and bus infrastructure), active travel (such as pedestrian and cycle schemes) and place-making (such as 20-minute neighbourhoods) will be considered. The BSIP and Fareham LCWIP (an updated version of which will be published in summer 2022) contain details of proposed measures. These eight junctions are listed below:
  - A27 The Avenue / Redlands Lane / Gudge Heath Lane
  - A27 The Avenue / Highlands Road
  - Segensworth Road East / Cartwright Drive
  - Botley Road / A27 / Hunts Pond Road / Southampton Road
  - A27 Bridge Road / Station Road / Brook Lane roundabout
  - Sweethills Crescent / Yew Tree Drive roundabout
  - A27 Bridge Road / Barnes Lane
  - Segensworth Road East / Fontley Road / Mill Lane

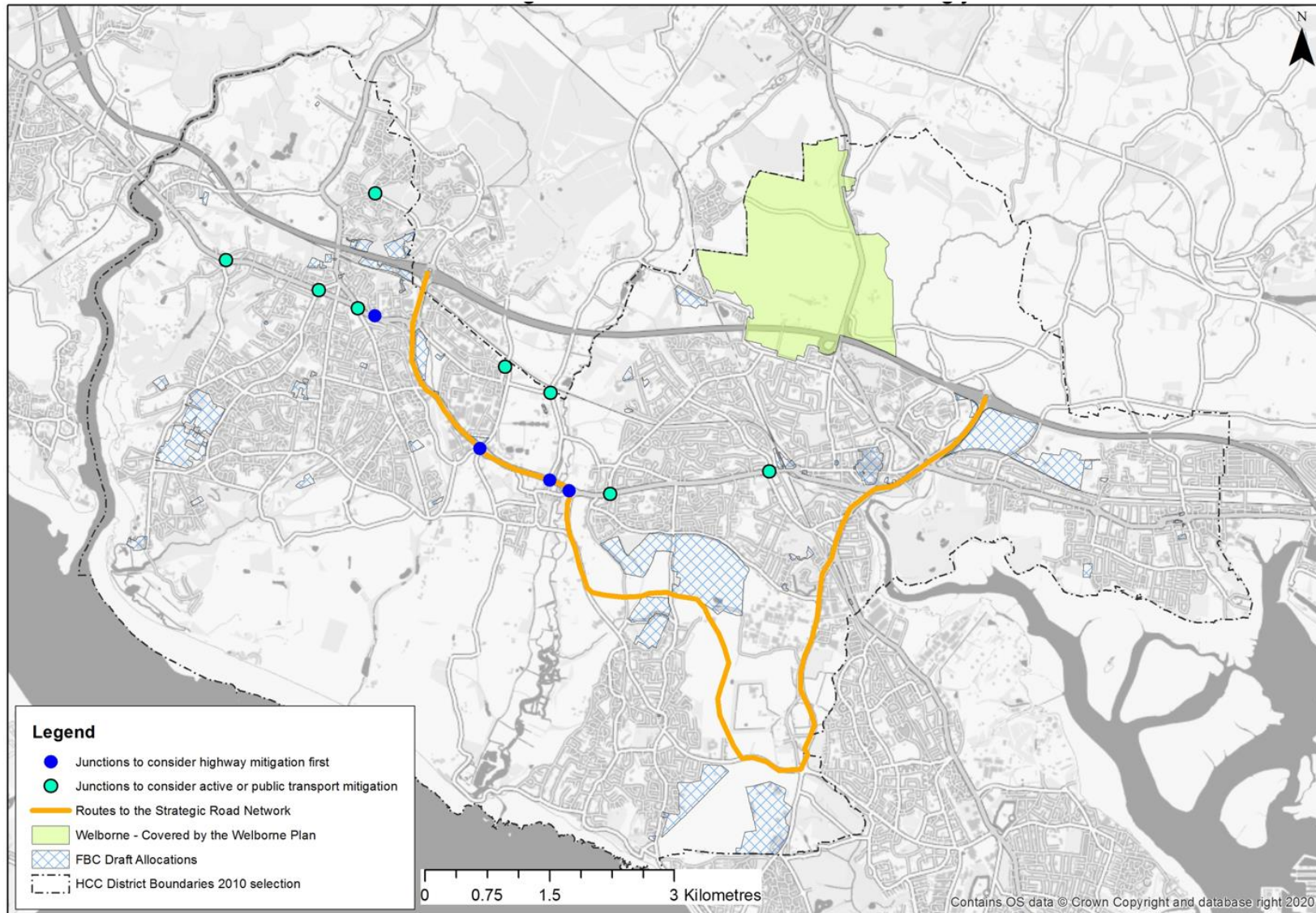
8.7. At the three junctions on the route to the SRN, plus one where the impact is obviously impacted by the Do Something mitigation (Telford Way because of proposals to close Little Park Farm Road entry), given the likely longer distance trips being made, highway capacity should be explored further, alongside other measures. The four junctions are listed below and outlined in Table 8-1:

- A27 Southampton Road / Titchfield Hill, Titchfield – partially signalised gyratory;
- A27 Southampton Road / Mill Lane, Titchfield – signalised T junction;
- Southampton Road / A27 Telford Road roundabout; and
- Southampton Road A27 / St Margarets Lane roundabout.

**Table 8-1 – Do Something junction summary and impacts**

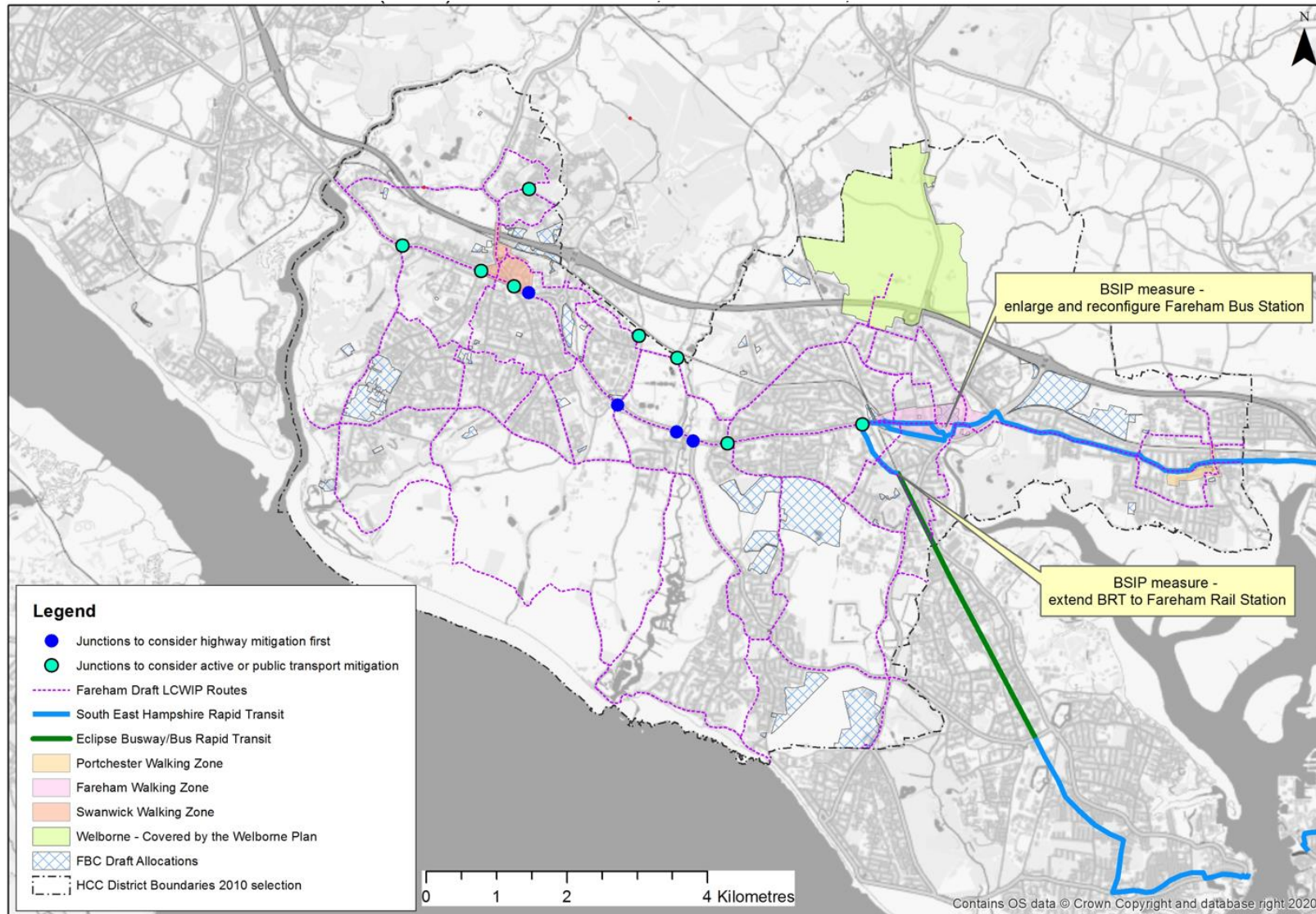
Junction	Junction arm	Do Something summary
Titchfield Gyratory	A27 The Avenue	AM - Increase in delay per vehicle over 10 seconds, flow very high, and queue length can be accommodated without blocking back. RFC increase from BL 88 to 101.
	B334 Titchfield Road	AM - Increase in delay per vehicle over 10 seconds, flow very high, and queue length can be accommodated without blocking back.  PM- Increase in delay per vehicle over 10 seconds, flow very high, and queue length can be accommodated without blocking back.
A27 Southampton Road / Mill Lane	A27 Southampton Rd (east)	AM - Reduction in delay per vehicle compared with BL, flow very high, and queue length can be accommodated without blocking back. RFC increase from BL 50 to 90.
	Mill Lane	AM - Increase in delay per vehicle over 10 seconds (at 13), flow still medium on this arm, and queue length can be accommodated without blocking back. RFC increase from BL 72 to 95.  PM - Increase in delay per vehicle over 10 seconds, flow medium, and queue would block first keep clear.
	A27 Southampton Rd (west)	AM - Increase in delay per vehicle over 10 seconds (at 15), flow very high, and queue length can be accommodated without blocking back. RFC increase from BL 72 to 95.  PM - Increase in delay per vehicle over 10 seconds, flow very high, and queue length can be accommodated without blocking back.
Southampton Road /Telford Roundabout	Southampton Road (west)	AM - Increase in delay per vehicle over 10 seconds, flow high, and queue length can just be accommodated without blocking back existing traffic.
	Telford Way	AM - Increase in delay per vehicle over 10 seconds, flow low, and queue length can be accommodated without blocking back. RFC greatly increased from BL 39 to 126  PM - Increase in delay per vehicle over 10 seconds, flow low, and queue length cannot be accommodated without blocking back.
St Margarets Roundabout	St Margarets Lane	AM - Increase in delay per vehicle at 33 seconds, flow low, and queue length can be accommodated without blocking back.

**Figure 8-1 – Routes to the Strategic Road Network and Do Something Junctions**





**Figure 8-2 – FBC LP TA (2020) - Site Allocations, Fareham LCWIP Routes, BSIP, SEHRT and Junctions**



## Further mitigation considerations

- 8.8. As stated before, these mitigation measures are worse-case and the HA's (HCC) preferred approach to mitigation of highway impacts, is to focus on active and sustainable modes of travel and reducing the need to travel by motor vehicle, unless the junction is on the route to the SRN.
- 8.9. Fareham LCWIP is due to be adopted in the summer 2022 and has been updated to reflect the Government's latest cycle infrastructure design guidance: LTN1 / 20. The recommended measures in the network could impact on traffic flows through these junctions, but this has not been modelled as the information was not available for this Local Plan TA (2020) and TAA.
- 8.10. For junctions on the route to the SRN, and where HCC has existing models, the Do Something flows have been tested in more sensitive local models to review the results and test signal optimisation. The measures below could be considered through future planning applications for sites that impact on these junctions, but at this stage, no further changes to design have been modelled.

## A27 Southampton Road / Titchfield Hill, Titchfield – partially signalised gyratory

- 8.11. The Do Something mitigation package suggested Option 2 as the recommended option as it would operate within capacity. The updated 2036 Do Something flows have only been tested on Option 2.
- 8.12. Option 2 provided capacity mitigation measures on Titchfield Hill and the western gyratory. Titchfield Hill is currently a two-lane entry with the nearside lane designated for left turning vehicles only; the offside lane is designated for those joining the gyratory to travel east. This arrangement results in an unbalanced of assignment of the flows across the two lanes. Option 2 re-designates the nearside lane so that it can also be used by those joining the gyratory to travel east as well as those turning left. In Option 2 the western section of the gyratory has been designed as a two-lane section which continues to give way to the A27 eastbound. Effectively this increases the number of lanes available for the main traffic movement from Titchfield Hill from one to two lanes. A diagram for Option 2 is shown in Appendix diagram 8 of the Systra SRTM Modelling Report.
- 8.13. Option 2 has been modelled based on the updated 2036 Do Something traffic flows and the results are below in Table 8-2.

**Table 8-2 – Junction 28 Option 2**

Option 2	2036 Do Something AM		2036 Do Something PM	
	DoS	MMQ	DoS	MMQ
A27 southbound	39.7%	8	62.4%	10
A27 westbound	<b>96.4%</b>	<b>33</b>	89.7%	17
B3334 Titchfield Road	<b>97.8%</b>	<b>35</b>	84.8%	12
Titchfield Hill	86.1%	9	81.1%	8
Western gyratory	53.4%	4	<b>93.0%</b>	<b>12</b>
Cycle time	120 secs		74 secs	
Practical reserve capacity	<b>-8.6%</b>		<b>-3.4%</b>	

DoS – Degree of saturation (%) where this is 90% or greater the lane is at or over capacity (highlighted in bold red)

MMQ – Mean maximum queue length in vehicles

- 8.14. With Option 2, the results show a large improvement on the original Do Minimum results tested in LinSig as part of investigations for the Do Something mitigation package (the practical reserve capacity in the AM moves from -54.9% to -8.6% in the AM, and -74.4% to -3.4% in the PM). Due to the type of model used, direct comparison cannot be drawn between these results and the outputs of the SRTM, however, it is acknowledged that the junction does not operate within capacity with Option 2.



- 8.15. In the 2036 AM peak both the A27 westbound and B3334 Titchfield Road arms would both exceed 90% Degree of Saturation. While the remaining arms would operate within capacity the overall impact on the gyratory would result in it operating at 8.6% over capacity.

#### Further mitigation measures:

- 8.16. When attempting to address the capacity deficit in the 2036 AM peak there is limited scope within the highway network for capacity improvements on the B3334 Titchfield Road arm of the gyratory. In the model, all traffic from this arm is headed to the A27 west. Due to the physical restriction on the A27 River Meon bridge (immediately to the west of the gyratory) it would not be feasible to introduce an additional lane in either direction in this area. In turn this precludes providing a third lane on B3334 Titchfield Road approach to the gyratory due to the requirement for road users to merge back into two lanes shortly beyond the signals. Road user's reluctance at using a short-flared lane would negate these measures and not provide the necessary additional capacity.
- 8.17. On the A27 westbound arm in the 2036 AM peak around 11% of traffic turns left to the B3334 Titchfield Road. Additional capacity could be provided by extending the length of the existing left turn lane on the A27 westbound approach to the signals. This could be tested with further modelling.
- 8.18. In the 2036 PM peak the western circulatory give way is the only arm which would be over capacity. Under Option 2 this section would be increased to provide two lanes at the give way. The provision of a third lane would not be feasible due to the A27 eastbound exit only being two lanes.
- 8.19. This would lead to signalisation of the western circulatory needing to be investigated to address the capacity issue. It should be noted that due to the very high conflicting traffic flow on the A27 eastbound (2480 vehicles in the 2036 PM peak) signalisation is very likely to have a significant detrimental impact on the capacity of this approach. To address this problem, it is likely that the A27 eastbound would need to be widened from two lanes to three lanes on the approach to this arm of the gyratory. With the physical restriction on the A27 at the River Meon bridge the length of this flared lane would be limited to around 50 metres. This would affect the capacity that an additional lane could achieve.

#### Fareham LCWIP measure

- 8.20. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP.
- 8.21. There is currently a shared facility running along the northern side of the A27 Southampton Road between the St Margarets roundabout and Titchfield gyratory which is not compliant. There is scope to explore widening the existing facility to provide a fully segregated two-way cycle track on this side.
- 8.22. A review of the Titchfield gyratory should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction.
- 8.23. There are no existing cycle facilities along this section of the A27 between the Titchfield gyratory and the A27 / Peak Lane junction. There appears to be scope to provide a two-way segregated cycle track along the southern side.

#### BSIP measure

- 8.24. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus. Future planning applications should review the BSIP and other relevant documents as they develop.

### A27 Southampton Road / Mill Lane, Titchfield – signalised T junction

#### Option 1 – Optimised signal timings

- 8.25. The existing traffic signal junction has been modelled using Linsig3 software. The junction has been modelled based on the current staging arrangement and junction layout. The layout is shown in the Appendix diagram 2 of the Systra SRTM Modelling Report.
- 8.26. The updated 2036 Do Something AM, and PM peak flows have been tested. The signal timings have been optimised to achieve the best performance. The results for these flows are summarised below Table 8-3.

**Table 8-3 – Junction 30 Option 1**

Option 1	2036 DM AM peak		2036 DM PM peak	
	DoS	MMQ	DoS	MMQ
A27 Southampton Road eastbound left and ahead	89.2%	17	<b>90.2%</b>	<b>35</b>
A27 Southampton Road eastbound ahead	89.1%	17	<b>90.1%</b>	<b>34</b>
Mill Lane	86.8%	11	<b>92.2%</b>	<b>20</b>
A27 Southampton Road westbound ahead	86.9%	19	69.0%	12
A27 Southampton Road westbound ahead and right	88.3%	18	60.7%	5
Cycle time	64 secs		120 secs	
Practical reserve capacity (%)	0.9%		<b>-2.4%</b>	

*DoS – Degree of saturation (%) where this is 90% or greater the lane is at or over capacity (highlighted in bold red)*

*MMQ – Mean maximum queue length in vehicles*

8.27. For the 2036 AM peak Do Something flows to be accommodated based on the recommended Option 1, the cycle time would need to be increased from an average 59 seconds to 64 seconds. This is a minor change and with the signals operating under MOVA control the cycle time is dynamic and would automatically adjust to accommodate the traffic demand. The cycle time could be increased further to provide additional spare capacity if required.

8.28. In the 2036 PM peak Do Something flows both the A27 eastbound and Mill Lane arms would be over capacity. The cycle time has been modelled at its upper limit (120 seconds). It is concluded that Option 1 could not accommodate the 2036 PM peak Do Something traffic flows.

#### Option 2 – Mill Lane widened to a two-lane approach

8.29. This option was investigated as part of the Do Something mitigation to enhance the junction capacity. Although it was not required when the original traffic flows were modelled, it is now revisited to address the capacity issue identified in the 2036 Do Something PM peak model.

8.30. This option has included an additional flared lane on the Mill Lane approach to the signal junction. The flared lane would extend around 35 metres back from the stop line. The layout is shown in the Appendix diagram 3 of the of the Systra SRTM Modelling Report.

8.31. The results for the widening on Mill Lane have been modelled for the 2036 peaks using the updated Local Plan (Do Something) flows. For direct comparison purposes the cycle times have been kept the same as those used for Option 1. The staging is also the same as the Option 1. The signal timings have been optimised to achieve the best set of results. These are summarised below in Table 8-4.

**Table 8-4 – Junction 30 Option 2**

Option 2	2036 Do Minimum AM peak		2036 Do Minimum PM peak	
	DoS	MMQ	DoS	MMQ
A27 Southampton Road eastbound left and ahead	69.1%	11	83.1%	29
A27 Southampton Road eastbound ahead	69.0%	11	83.1%	29
Mill Lane	79.9%	6	81.7%	11
A27 Southampton Road westbound ahead	86.9%	19	75.6%	16
A27 Southampton Road westbound ahead and right	88.3%	18	62.5%	6
Cycle time	64 secs		120 secs	
Practical reserve capacity (%)	1.9%		8.2%	

*RFC – Ratio of Flow to Capacity where a value of 0.85 or greater (highlighted in red) indicates the arm is over capacity*

*Queue – the maximum queue in vehicles predicted in the peak hour*

- 8.32. In the 2036 AM Do Something peak the junction would operate with a small amount of spare capacity (1.9%) based on the same 64 second cycle time as used for Option 1. It offers a marginal improvement over Option 1 in this peak period.
- 8.33. More importantly applying the 2036 Do Something PM peak to Option 2 results in a healthy level of spare capacity (8.2%). This demonstrates that Option 2 would need to be implemented to accommodate the 2036 Do Something PM peak traffic flows.
- 8.34. Should a highway capacity measure be required in the future, it is recommended that Option 2 would be required to accommodate the 2036 Do Something traffic flows.

#### Fareham LCWIP measure

- 8.35. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP.
- 8.36. There is currently a shared facility running along the northern side of the A27 Southampton Road between the St Margarets roundabout and Titchfield gyratory which is not compliant. There is scope to explore widening the existing facility to provide a fully segregated two-way cycle track on this side.
- 8.37. A review of the Titchfield gyratory should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction.

#### BSIP measure

- 8.38. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus. Future planning applications should review the BSIP and other relevant documents as they develop.

### Southampton Road / A27 Telford Road roundabout

- 8.39. As a result of the mitigation measures proposed in the Scenario 3 Do Something 2036, the actual flows increase by 366 PCUs on Telford Way, and 150 PCUs on Southampton Road (west) for the AM peak. There were increases in delay of up to 508 seconds on Telford Way and 83 seconds on Southampton Road (west) in the same time period. Also, in the AM peak, there were increases in queue length of approximately 70 PCUs on Telford Way and 36 PCUs on Southampton Road (west).
- 8.40. Comparatively, in the PM peak, there were additional flows of 411 PCUS on Telford Way and 111 on Southampton Road (east). There was also an increase in delay of 485 seconds and an increase in queue length of approximately 70 PCUs on Telford Way.
- 8.41. There are no existing models for this junction, so these proposals have not been tested in modelling software. Therefore, further discussions should be held with the HA (HCC) before designs are undertaken through future planning applications.

#### Geometric option

- 8.42. By removing the existing verge strip along the edge of the northbound carriageway from the exit off the roundabout to the junction with Badgers Copse, the carriageway kerb could be located along the edge of the existing footway. The existing splitter island and carriageway centre line could be re-positioned approximately 3.5m off the new kerb line allowing sufficient width southbound for two 3.7m wide lanes. On the southbound approach to the roundabout the verge strip would be reduced up to Give Way line to provide sufficient carriageway width to accommodate the two lanes. This would provide a two-lane section from the Give Way line to the splitter island approximately 75m long. The removal of the southbound verge strip would require the re-positioning of two lamp columns, although there is no evidence of any other services within this verge area.

#### Signalised option

- 8.43. An outline concept for a signalised three arm junction is described below.
- 8.44. The A27 eastbound approach would be widened to two lanes which would continue through to the existing two-lane dual carriageway beyond. Widening into the northern verge may not be feasible due to the presence of mature trees along this side. Alternatively, the A27 would need realigning to the south into the grassed verge area which runs along the southern side.
- 8.45. It is likely that the A27 westbound would need to be a two-lane approach to the signal junction to accommodate the dominant ahead movement. An additional lane would be needed for the right turn

traffic movement into Telford Way. With the removal of the roundabout island and deflection for A27 eastbound traffic it may be feasible to provide the additional right turn lane within the highway boundary.

- 8.46. Under a signal arrangement it is anticipated that Telford Way would be widened to a two-lane approach. The nearside lane for the left turn movement headed to the A27 east and the offside lane for the right turn movement to headed to the A27 west. If dictated by capacity, it would appear feasible to widen the Telford Way approach further to provide two left turn lanes alongside a single right turn lane.
- 8.47. No junction layout or traffic modelling has been produced at this stage to verify the above outline option.

#### Fareham LCWIP option

- 8.48. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP.
- 8.49. There is currently a short section of shared facility on the northern side of the A27 Southampton Road and an existing shared facility on the southern side between the Botley Road and Telford Way roundabouts. There is scope to explore widening the existing facilities to provide fully segregated cycle tracks on both sides.
- 8.50. A review of the A27 Bridge Road / Telford Way roundabout should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction. Investigate the potential for providing a Dutch style roundabout to improve east / west continuity and connectivity to Telford Way.
- 8.51. There is currently a shared facility running along the southern side of the A27 Southampton Road between the Telford Way roundabout and the Southampton Road service road which is not compliant. There is scope to explore widening the existing facility to provide a fully segregated two-way cycle track on this side continuing it as far as the Halfords access where the pavement width is constrained.

#### BSIP measure

- 8.52. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus. Future planning applications should review the BSIP and other relevant documents as they develop.

#### Southampton Road A27 / St Margarets Lane roundabout

- 8.53. As a result of the mitigation measures proposed in the Scenario 3 Do Something 2036, the actual flows in the AM peak increase by 525 PCUs on A27 Southampton Road (southeast) but decrease by 141 PCUs on Cartwright Drive and 57 PCUs on St Margarets Lane. There were increases in delay of up to 67 seconds on Warsash Road and 33 seconds on St Margarets Lane in the same time period. Also, in the AM peak, the queue length on Warsash Lane increased by 17 PCUs.
- 8.54. Comparatively, in the PM peak, there was an additional flow of 242 PCUs on A27 Southampton Road (southeast) and 20 PCUs on Cartwright Drive. There was also an increase in delay of 54 seconds and a minor increase in queue of nine PCUs on Cartwright Drive.
- 8.55. There are no existing models for this junction, so these proposals have not been tested in modelling software. Therefore, further discussions should be held with the HA (HCC) before designs are undertaken through future planning applications.
- 8.56. The signalisation of the A27 St Margarets Lane roundabout was completed in 2016. During the design process local stakeholders including the local County Councillor and the Titchfield Village Trust were consulted on the proposals. Both parties expressed strong concern that the scheme should not lead to an increase in traffic levels using St Margarets Lane. The concerns were that St Margarets Lane is narrow further to the south and was considered unsuitable for higher traffic flows. Also, traffic would use St Margarets Lane to rat run through Titchfield village centre to avoid the congestion around the A27 Titchfield Gyratory.
- 8.57. Within the scheme the treatment of St Margarets Lane was kept to an absolute minimum. While one of the aims of the scheme was improve traffic capacity, no capacity enhancements were implemented for St Margarets Lane. The entry remained as a give way with a single unflared lane on to the roundabout.

8.58. In context of this position a proposed increase in capacity on the St Margarets Lane approach to the roundabout should be treated with caution. While it may be feasible to widen this entry to the roundabout from a single lane to two lanes this would be contrary to the historical view which discouraged increased traffic flows along St Margarets Lane.

8.59. Should a scheme be progressed, there is sufficient verge width within the highway boundary on both carriageways of St Margarets Lane to provide an additional northbound lane on the approach to the roundabout. The southbound verge could be reduced from the existing pedestrian crossing drop kerb to approximately 70m from the splitter island. A similar length on the northbound verge could be removed while still allowing sufficient width to accommodate the existing footway. The northbound bell mouth would require widening by 3m at the Give Way line to provide sufficient width to accommodate the additional lane. This would provide a two-lane section approximately 65m long northbound. This would require the re-location of two lamp columns and road signs, but there is no evidence of existing services within the proposed widening area.

#### Fareham LCWIP option

8.60. This junction is part of proposed primary Route 270: River Hamble – Portchester in the draft Fareham LCWIP.

8.61. A review of the St Margarets roundabout should be undertaken to explore improvements for pedestrians and cycle route continuity through the junction. Investigate the potential for providing a CYCLOPS style junction to improve east / west cycle route continuity and connectivity to Cartwright Drive, St Margarets Lane, and Warsash Road.

8.62. There is currently a shared facility running along the northern side of the A27 Southampton Road between the St Margarets roundabout and Titchfield gyratory which is not compliant. There is scope to explore widening the existing facility to provide a fully segregated two-way cycle track on this side.

#### BSIP measure

8.63. General measures including bus stop infrastructure and routes to bus stops as proposed in the BSIP should be considered here to support more trips by bus. Future planning applications should review the BSIP and other relevant documents as they develop.



## 9. Summary and Conclusions

- 9.1. This Strategic Transport Assessment Addendum has been prepared to identify and describe the transport related impacts due to the proposed Fareham Local Plan. It also considers the potential interventions that may be required to address any identified significant adverse transport related impacts specifically resulting from the Local Plan growth.
- 9.2. An update to the national, sub-regional and local policy context contained within the TA (2020) relevant to this study has been provided. Broadly these are all aimed at facilitating sustainable development to support population and economic growth, nationally, regionally, and locally within Fareham, with an emphasis on supporting travel by public transport, walking, and cycling to lessen road traffic growth and its associated negative impacts on residents.
- 9.3. Fareham Borough is well connected in transport terms, with connections to the National Strategic Road Network and routes of both regional and sub-regional importance. It is served by three rail stations and has a comprehensive bus network, with services connecting all the key settlements. The Borough also has a network of existing cycling routes, although it is recognised that these do not meet the latest design guidance. There are also footways alongside most roads in the Borough.
- 9.4. Key transport related issues currently experienced in the Borough include peak period traffic congestion on several key routes due to high levels of car use and dependency; collisions at specific locations; some lack of connectivity, especially by public transport and for people walking and cycling; areas of poor air quality due to high traffic volumes; and funding constraints to address these issues.
- 9.5. The proposed growth locations in the Local Plan to accommodate forecast population and economic growth, took a wide range of factors into consideration, including transport and access implications. Most of the Local Plan growth is located either within or on the edge of existing conurbations, providing good opportunities for trips to be made by modes of transport other than the private car. Consequently, the proposed growth in the Local Plan is generally in sustainable locations in terms of transport and access.
- 9.6. A sub-regional traffic model has been used to assess the current operation of the road network and the traffic impact due to forecast population and economic growth up to 2036, both with and without the Local Plan growth. It should be noted that the forecast trip generation for the Local Plan growth is based on typical trip rates and does not, therefore, take account of any reduction in traffic generation that may be achieved through the delivery of sustainable measures; such as travel plans, walking and cycling infrastructure outlined in the Fareham LCWIP, and bus rapid transit, aimed at reducing single occupancy car trips by promoting journeys by public transport, walking, and cycling. In addition, the trip generation does not account for any changes resulting from the Covid pandemic, as there is still considerable uncertainty over what long-term impacts the pandemic will have on people's travel behaviours and patterns.
- 9.7. The traffic modelling has identified that traffic congestion is forecast to increase across the road network, both with and without the Local Plan growth. Demand at several key junctions is forecast to exceed available capacity which will result in significant addition delays during peak periods.
- 9.8. Consequently, minimising the number of motor vehicle trips generated by the Local Plan growth through a combination of maximising the accessibility of sites by modes of transport other than the private car and the implementation of robust, site specific travel plans, that have ambitious targets for maximising trips by alternative sustainable modes of travel, should be considered prior to investment in junction improvements to alleviate forecast incremental traffic congestion caused by the Local Plan growth. New development should consider alternative mitigation options which follow a sequential approach to assess their impact on the local road network. They should consider the role they can play in reducing car use and transport emissions starting with measures to avoid the need to travel, actively promote sustainable travel measures, public transport and finally, where the above measures cannot avert the need, implement localised junction improvements to include increased highway capacity for motor vehicles.

- 9.9. In recognition of the Highway Authority's (HCC's) focus on enabling modal shift towards walking and cycling, and public transport, measures from the draft Fareham LCWIP and the Bus Service Improvement Plan have been considered as part of the proposed package of mitigation options. Site-specific transport assessments should consider the Fareham LCWIP and HCC's BSIP as the starting point to demonstrate how connections can be made to existing and new walking and cycling links and public transport schemes (such as SEHRT). LCWIPs are expected to be live documents that cover approximately ten-year periods. Therefore, updated, and future versions of the LCWIP should also be considered by developers.
- 9.10. By comparing the 2036 Baseline to the 2036 Do Minimum scenarios, the potential traffic impact of the Fareham Local Plan has been established. It is forecast that 19 will either experience "significant" or "severe" impact.
- 9.11. An in-depth analysis of each of these junctions was undertaken examining delay per vehicle, queue lengths, level of traffic flow and overall capacity which revealed that mitigation measures at the following nine junctions was required:
- A27 The Avenue / Redlands Lane / Gudge Heath Lane;
  - A27 Southampton Road / Titchfield Hill, Titchfield;
  - A27 The Avenue / Highlands Road;
  - A27 Southampton Road / Mill Lane, Titchfield;
  - A27 Segensworth roundabout / Little Park Farm Road, Segensworth;
  - Cartwright Drive / Whiteley Lane / Barnes Wallis Road, Segensworth;
  - Cartwright Drive / Segensworth Road East;
  - A27 Bridge Road / Coldeast Way / Ironbridge Crescent, Park Gate; and
  - A3051 Botley Road / Yew Tree Drive, Whiteley.
- 9.12. Concept schemes to mitigate the traffic impact of Local Plan growth at these nine junctions have been prepared and evaluated for their effectiveness.
- 9.13. The 2036 Do Something scenario was built off Scenario 2 Do Minimum, by including the proposed mitigation measures for the nine junctions to the highway network. As agreed with the HA (HCC), these mitigation measures are presented as worst-case options where active travel and public transport solutions should be sought first.
- 9.14. The Do Something modelling identified a total of nine junctions that met the "significant" change criteria (Paragraph 5.9) and 14 junctions meeting the "severe" change criteria when compared against the Baseline. New junctions triggering one of the "significant" or "severe" criteria are not entirely unexpected due to the mitigation measures incorporated potentially releasing bottlenecks that then impact downstream locations or change the assignment of vehicles through the network.
- 9.15. Applying the HCC criteria (Paragraph 6.4), the above 23 junctions were reduced to 13 junctions which were identified as requiring mitigation. Discussions with the HA (HCC) outlined their preferred approach to be a focus for public transport and active travel mitigation in all locations except on the routes to the SRN, plus one junction where the impact in the DS is clearly the result of the DS mitigation measure at Segensworth Roundabout.
- 9.16. For the nine junctions identified as not on routes to the Strategic Road Network, measures to support access by local bus, active travel and place-making will be considered. These measures are currently within HCC's BSIP and the updated Fareham LCWIP, which will be published this summer. These eight junctions are listed below:
- A27 The Avenue / Redlands Lane / Gudge Heath Lane;
  - A27 The Avenue / Highlands Road;
  - Segensworth Road East / Cartwright Drive;
  - Botley Road / A27 / Hunts Pond Road / Southampton Road;
  - A27 Bridge Road / Station Road / Brook Lane roundabout;

- Sweethills Crescent / Yew Tree Drive roundabout;
  - A27 Bridge Road / Barnes Lane; and
  - Segensworth Road East / Fontley Road / Mill Lane.
- 9.17. At the three junctions on the route to the SRN, plus one where the impact is obviously impacted by the Do Something mitigation (Telford Way because of proposals to close Little Park Farm Road entry), given the likely longer distance trips being made, highway capacity should be explored further, alongside other measures. The four junctions are listed below:
- A27 Southampton Road / Titchfield Hill, Titchfield – partially signalised gyratory;
  - A27 Southampton Road / Mill Lane, Titchfield – signalised T junction;
  - Southampton Road / A27 Telford Road roundabout; and
  - Southampton Road A27 / St Margarets Lane roundabout.
- 9.18. Where HCC has had existing models, the Do Something flows have been tested in more sensitive local junction models to review the results and test signal optimisation. This has been undertaken on two of the four junctions. Further mitigation measures have been identified for all four junctions and could be considered through future planning applications for sites that impact on these junctions, but at this stage, no further design / model work has been undertaken to test these properly.
- 9.19. Additionally, the highway network might benefit from re-optimisation of signal timings using local junction modelling software in those mitigated junctions and on the newly impacted junctions due to the updated traffic flows on the highway network.
- 9.20. The SRTM modelling is on a strategic scale, and it is therefore logical to assume that site-specific transport assessments submitted with planning applications may identify additional requirements particularly regarding the junction modelling when looking in more detail. These should be based on the forecast traffic impacts taking into consideration any reduction in vehicle trip generation predicted to be achieved by the implementation of site-specific travel plans.
- 9.21. It is expected that funding for the identified mitigation schemes will be secured through developer contributions (s106). It will be a requirement of the Local Plan to seek developer contributions towards LCWIP, BSIP and other mitigation measures identified in the TA (2020) and TAA.
- 9.22. The comparison has also indicated that the Local Plan growth could increase traffic demand in current collision areas. The standard process to review and address any such impacts would be through future site-specific transport assessments through the planning process. In the case of sites with resolution to grant, this process will already have been undertaken.
- 9.23. The methodology, criteria and outputs of model runs contained within this TAA have been shared with both the HA (HCC) and National Highways throughout the development of the TA (2020). Feedback has been sought and additional sensitivity tests carried out to address the concerns of both authorities. To reflect the engagement carried out to date, Statements of Common Ground have been positively prepared in collaboration between both FBC and HCC, and FBC and NH. Reflecting the Duty to Cooperate, FBC will continue to engage with both authorities following their response to this document, and the associated transport evidence base.
- 9.24. In conclusion, based on the work of this Transport Assessment Addendum, it is considered that the quantum and distribution of the development proposed in the Fareham Local Plan, and the resulting transport impacts, are capable of mitigation at the strategic level through a balance of active and public transport measures, and in limited circumstances, highway capacity enhancements, and that the plan is therefore deliverable and sound from a transport perspective.

# Appendices



# Appendix A: SRTM Committed Schemes included in Baseline scenarios

District	Scheme	2026	2031	2036	2041
Eastleigh	Botley Road / Burnetts Lane	✓	✓	✓	✓
Eastleigh	Allington Lane / B3037 Fair Oak Road	✓	✓	✓	✓
Eastleigh	A335 Leigh Road / Passfield Avenue	✓	✓	✓	✓
Eastleigh	Sundays Hill Bypass	✓	✓	✓	✓
Eastleigh	St John's Link Road	✓	✓	✓	✓
Eastleigh	Chestnut Avenue / Stoneham Lane Roundabout	✓	✓	✓	✓
Eastleigh	Chestnut Avenue / Passfield Avenue	✓	✓	✓	✓
Eastleigh	Burnetts Lane / B3037 Fair Oak Road / Sandy Lane	✓	✓	✓	✓
Eastleigh	Botley Bypass	✓	✓	✓	✓
Eastleigh	North Stoneham Park Development Access	✓	✓	✓	✓
Eastleigh	B3037 Mortimers Lane / B3354 Winchester Road Junction	✓	✓	✓	✓
Eastleigh	B3037 Eastleigh Road / B3354 Botley Road Stubbington Way Junction	✓	✓	✓	✓
Eastleigh	Botley Green development access	✓	✓	✓	✓
Eastleigh	Botley Gardens development access	✓	✓	✓	✓
Eastleigh	Maypole Roundabout Hedge End	✓	✓	✓	✓
Eastleigh	M27 Junction 7 Improvements	✓	✓	✓	✓
Eastleigh	Winchester Road / Eastleigh Road / Stubbington Way junction, Fair Oak	✓	✓	✓	✓
Fareham	St Margarets Roundabout	✓	✓	✓	✓
Fareham	Peel Common Roundabout	✓	✓	✓	✓
Fareham	Gudge Heath Lane	✓	✓	✓	✓
Fareham	A27 Southampton Road, Fareham	✓	✓	✓	✓
Fareham	Newgate Lane South, Fareham	✓	✓	✓	✓
Fareham	Station Roundabout (Avenue approach)	✓	✓	✓	✓
Fareham	Stubbington Bypass	✓	✓	✓	✓
Fareham	Peel Common Roundabout	✓	✓	✓	✓
Fareham	A27 Downend Road, Portchester	✓	✓	✓	✓
Fareham	M27 Junction 10		✓	✓	✓



District	Scheme	2026	2031	2036	2041
Fareham	Welborne Development		✓	✓	✓
Fareham, Gosport	Stubbington Bypass mitigation measures	✓	✓	✓	✓
Fareham, Winchester	M27 Junction 9 and Parkway South Roundabout	✓	✓	✓	✓
Gosport	Privett Road / Bury Road junction	✓	✓	✓	✓
Gosport	Rowner Road / Carisbrooke Road junction	✓	✓	✓	✓
North Whiteley	Whiteley Way Extension and speed limits	✓	✓	✓	✓
Havant	Hulbert Road / Purbrook Way Junction (Dunsbury Hill)	✓	✓	✓	✓
Havant	Dunsbury Hill Farm Business Park	✓	✓	✓	✓
Havant	A3(M) Junction 3	✓	✓	✓	✓
Havant	Purbrook Way / College Road	✓	✓	✓	✓
Havant	Interbridges	✓	✓	✓	✓
Havant	Purbrook Way / Stakes Hill Road	✓	✓	✓	✓
Havant	Purbrook Way f. Stakes Hill Road to College Road	✓	✓	✓	✓
Havant	Hulbert Road / Frenstaple Road / Tempest Avenue	✓	✓	✓	✓
Havant	Harts Farm Way / Southmoor Lane	✓	✓	✓	✓
Havant	Bancroft Way New Road	✓	✓	✓	✓
Havant	Ladybridge Roundabout	✓	✓	✓	✓
Havant	A259 Havant Road east of A27 Warblington Junction	✓	✓	✓	✓
Havant	A27 / A259 Warblington Junction	✓	✓	✓	✓
Havant	Eagle Avenue Wecock Farm mini roundabout	✓	✓	✓	✓
Havant	Barton's Road / Horndean Road junction	✓	✓	✓	✓
Havant	Barton's Road right turn	✓	✓	✓	✓
Havant	Hambleton Road / Aston Road junction, Waterlooville	✓	✓	✓	✓
Havant	Park Road South / Solent Road junction	✓	✓	✓	✓
Havant	Park Road South / Elm Road / Parkway junction	✓	✓	✓	✓
Havant Portsmouth	/ Hayling Island ferry service	✓	✓	✓	✓
Isle of Wight	Mill Street, Newport	✓	✓	✓	✓
Isle of Wight	St Georges Way, Newport	✓	✓	✓	✓
Isle of Wight	Forest Road / Parkhurst Road, Newport	✓	✓	✓	✓

District	Scheme	2026	2031	2036	2041
Isle of Wight	Coppins Bridge – St Georges Approach	✓	✓	✓	✓
Isle of Wight	Pennyfeathers development network changes		✓	✓	✓
Portsmouth	Portsmouth Transforming Cities Fund schemes	✓	✓	✓	✓
Portsmouth	Havant Road / Eastern Road	✓	✓	✓	✓
Portsmouth	The Hard, Queen Street / Wickham Street / Clock Street	✓	✓	✓	✓
Portsmouth	Fratton Way	✓	✓	✓	✓
Portsmouth	Isambard Brunel Road	✓	✓	✓	✓
Portsmouth	Anglesea Road / Park Road	✓	✓	✓	✓
Portsmouth	A27 Southampton Road Compass Road Paulsgrove	✓	✓	✓	✓
Portsmouth	A27 Southampton Road Port Way	✓	✓	✓	✓
Portsmouth	Aldi Store Access / Southampton Road / Paulsgrove	✓	✓	✓	✓
Portsmouth	Anglesea Road, Queens Street, Alfred Road, Bishop Crispian Way	✓	✓	✓	✓
Portsmouth	Eastney Road, Bransbury Road, Devonshire Avenue	✓	✓	✓	✓
Portsmouth	Fratton Park / Lake Road	✓	✓	✓	✓
Portsmouth	Goldsmith Avenue / Milton Road / Eastney Road	✓	✓	✓	✓
Portsmouth	Goldsmith Avenue Priory Crescent Winter Road	✓	✓	✓	✓
Portsmouth	Kingston Road Kingston Crescent -North End	✓	✓	✓	✓
Portsmouth	M275 / A3 / A27, Marriott Junction	✓	✓	✓	✓
Portsmouth	Market Way / Alfred Road / Unicorn Road	✓	✓	✓	✓
Portsmouth	Mile End Road Trafalgar Link Road	✓	✓	✓	✓
Portsmouth	Milton Road / Velder Avenue	✓	✓	✓	✓
Portsmouth	Milton Road / Priory Crescent	✓	✓	✓	✓
Portsmouth	Fratton Road / Arundel Street junction	✓	✓	✓	✓
Portsmouth	Copnor Road / Norway Road junction	✓	✓	✓	✓
Portsmouth	London Road / Southwick Hill Road junction	✓	✓	✓	✓
Portsmouth	Copnor Road / Burrfields Road / Stubbington Avenue junction	✓	✓	✓	✓
Portsmouth	Fratton Road / Lake Road / St Marys Road junction	✓	✓	✓	✓
Portsmouth	Eastern Road / Havant Road / Farlington Avenue junction	✓	✓	✓	✓

District	Scheme	2026	2031	2036	2041
Southampton	Southampton Transforming Cities Fund schemes	✓	✓	✓	✓
Southampton	Commercial Road / Morris Road / Wyndham Place	✓	✓	✓	✓
Southampton	M271 Redbridge Roundabout	✓	✓	✓	✓
Southampton	A33 West Approach / Redbridge Road / Millbrook Road West	✓	✓	✓	✓
Southampton	Woolston- Victoria Road / Woodley Road	✓	✓	✓	✓
Southampton	A3024 Improvements	✓	✓	✓	✓
Southampton	M27 Junction 8	✓	✓	✓	✓
Southampton	Windhover Roundabout	✓	✓	✓	✓
Southampton	Swaythling A335 Junctions scheme	✓	✓	✓	✓
Southampton	Woolston Itchen Riverside development	✓	✓	✓	✓
Southampton	Wide Lane	✓	✓	✓	✓
Southampton	Inner Avenue Southbound	✓	✓	✓	✓
Southampton	A33 Millbrook Roundabout	✓	✓	✓	✓
Southampton	A33 Millbrook Road West / Regents Park	✓	✓	✓	✓
Southampton	A3057 Shirley High Street / Park Street	✓	✓	✓	✓
Southampton	Brownhill Way / Frogmore Lane	✓	✓	✓	✓
Southampton	Third Avenue	✓	✓	✓	✓
Southampton	Northern Rad / Union Street / Princes Street	✓	✓	✓	✓
Southampton	Saltmarsh Lane / Central Bridge / Albert Road North / Itchen Bridge	✓	✓	✓	✓
Southampton	A33 West Quay Road Corridor	✓	✓	✓	✓
Test Valley	M27 Junction 3	✓	✓	✓	✓
Test Valley	M271 Junction 1 / Brownhill Way	✓	✓	✓	✓
Test Valley	Abbotswood network changes	✓	✓	✓	✓
Test Valley	Winchester Road / Braishfield Road Junction	✓	✓	✓	✓
Test Valley	Ringwood Road / Calmore Road junction	✓	✓	✓	✓
New Forest	Rollestone crossroads, Blackfield	✓	✓	✓	✓
Various	Smart Motorways M27	✓	✓	✓	✓
Various	Smart Motorways M3	✓	✓	✓	✓

**Atkins Limited**

4th floor, Tower 3, Royal Pavilion  
Wellesley Road  
Aldershot  
Hampshire  
GU11 1PZ