

Surrey Heath Borough Council Local Plan

Strategic Highway Assessment Part 2: Results and Analysis

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Results and Analysis

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1 INTRODUCTION

1.1 Regulation 18 Appraisal

1.1.1 Surrey Heath Borough Council is in the process of developing their new Local Plan covering the period to 2032 which will plan for future growth to be accommodated within the borough over this period. Surrey County Council have been commissioned to assess the impact of the development options using the County's strategic transport model SINTRAM.

1.1.2 The overall aim is to help inform the decision making surrounding the suitability of potential development sites which have been identified, and to highlight junctions and sections of roads to focus mitigation solutions. This will aid the borough by providing the transport evidence base to inform the Regulation 18 consultation.

1.2 Organisation of this Report

1.2.1 The Strategic Highway Assessment (SHA) Report is split into two parts:

- Part 1 details the technical aspects of the modelling work undertaken, which include model development, validation and forecasting; and
- Part 2 provides the results and analysis of the forecasts, together with an overview of the key findings from the modelling.

1.2.2 Within this Part 2, Chapter 2 describes the results and analysis of this Strategic Highway Assessment (SHA). This includes a comparison of link flows and junction delay, as well as an evaluation of any cross boundary and motorway and trunk road impacts.

1.2.3 Chapter 3 provides an overview of any identified network hotspots.

1.2.4 Chapter 4 concludes by summarising the Strategic Highway Assessment (SHA) and highlighting the main points which have arisen.

1.2.5 NOTE: The figures and tables in this report are designed for viewing in print and at standard scales, but they have a resolution that enables them to be viewed on-screen with a reasonable level of zoom to facilitate reading and discerning details.

2 RESULTS AND ANALYSIS

2.1 Overview

2.1.1 The presented results represent modelled forecast traffic impacts on highways for the forecast year 2032 taken from the Local Model, for the two scenarios:

2.1.2 **Scenario 1: Do Minimum.** This scenario includes committed developments identified from the base year (since 2014) to the forecast year 2032, where committed developments comprise sites already built, or in the process of construction, or those that have planning permission.

2.1.3 The brief notes that whilst the study area is the extent of Surrey Heath Borough, the SHA must factor in growth in neighbouring authority areas, specifically the large committed and proposed development at Longcross in Runnymede. The full Longcross residential and commercial allocation has been included in Scenario 1 despite only being part committed. This is to enable the evaluation of this project to be focused on the impact of only Surrey Heath's Local Plan.

2.1.4 **Scenario 2: Local Plan Growth.** This scenario is a continuation of Scenario 1 plus the options for development as contained in the emerging Surrey Heath 2032 Local Plan.

2.1.5 Scenario 2 is compared with Scenario 1, to determine the highway impact of Surrey Heath's Local Plan.

2.1.6 Within both scenarios, natural demographic and employment changes, as determined by the Department for Transport's (DfT) National Trip End Model (NTEM) have been included. In line with the DfT's Transport Appraisal Guidance, adjustments have been made to the NTEM data to reflect the locality and composition of the committed and non-committed development sites which comprise both scenarios. In the case of Surrey Heath borough, however, the population totals of the Local Plan Scenario 2 do not exceed that forecasted by NTEM. For further information regarding this method, please see Section 4.5 of Part 1 of the Strategic Highway Assessment (SHA) Report.

2.2 Scenario Overview

2.2.1 The total vehicle distance is presented in Figure 2-1 for the AM peak hour and Figure 2-2 for the PM peak hour. Similarly total vehicle travel time is presented in Figure 2-3 and Figure 2-4, and link average speed in Figure 2-5 and Figure 2-6, for the AM and PM peak hours respectively.

2.2.2 Total vehicle distance and travel time is greater in the AM peak hour than the PM peak hour for both scenarios, and the link average speed is less in the AM than the PM peak hour. This shows that the AM peak hour is more congested, which is typical as peak commuting and education escort trips coincide.

2.2.3 As expected, the total vehicle distance and travel time is greater in Scenario 2 than in Scenario 1, and the link average speed is less in Scenario 2 than Scenario 1. This is a result of the addition of the draft Local Plan development in Scenario 2. However, the increases are not large, the total vehicle distance is just 0.5% greater in Scenario 2; the vehicle travel time is 1% greater in Scenario 2; and the average speed is only 0.4% less in Scenario 2.

Figure 2-1 AM Peak Hour Total Vehicle-Kilometres per Scenario for Surrey Heath Borough

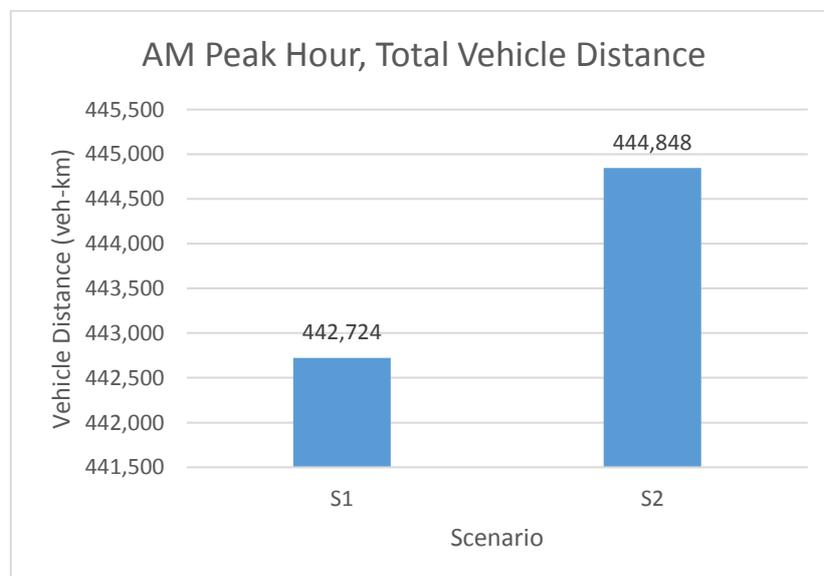


Figure 2-2 PM Peak Hour Total Vehicle-Kilometres per Scenario for Surrey Heath Borough

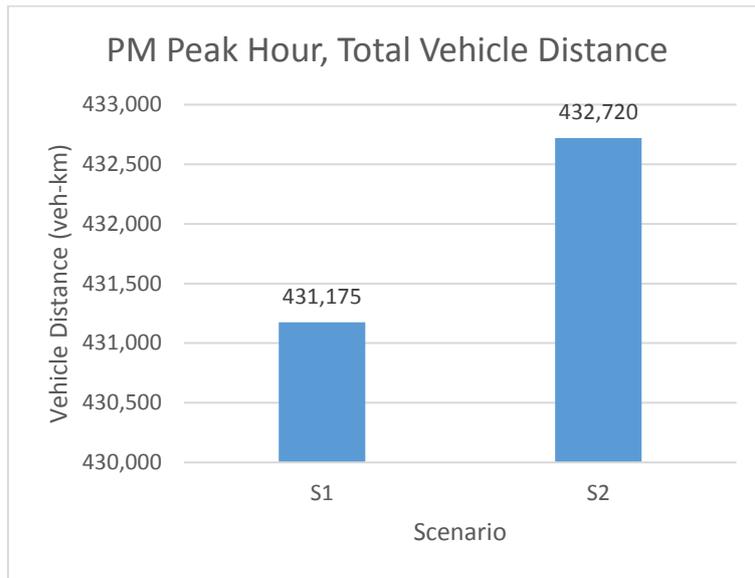


Figure 2-3 AM Peak Hour Total Vehicle-Hours per Scenario for Surrey Heath Borough

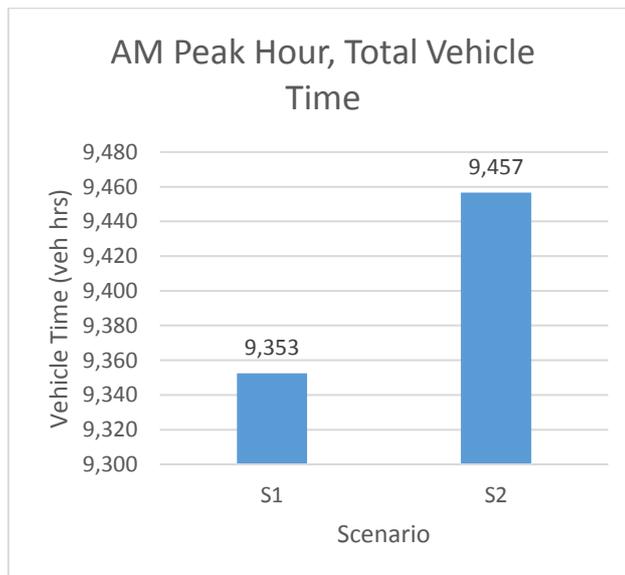


Figure 2-4 PM Peak Hour Total Vehicle-Hours per Scenario for Surrey Heath Borough

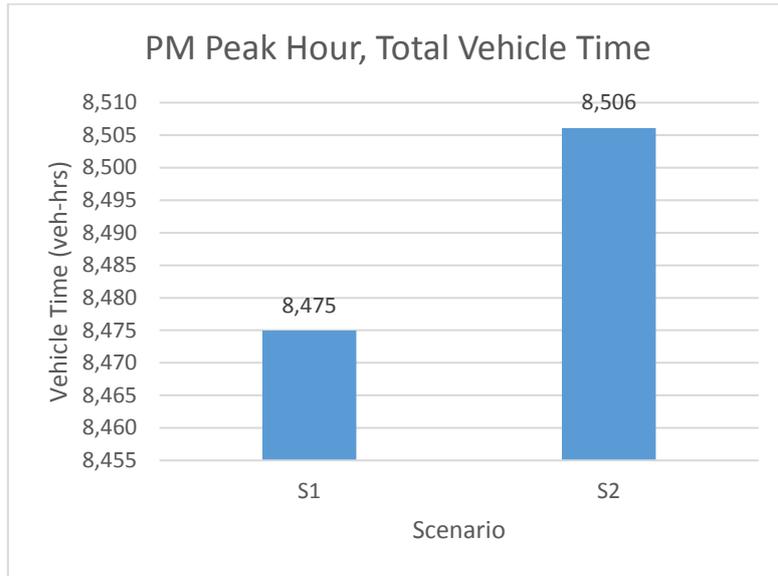


Figure 2-5 AM Peak Hour Link Average Speed for Surrey Heath Borough

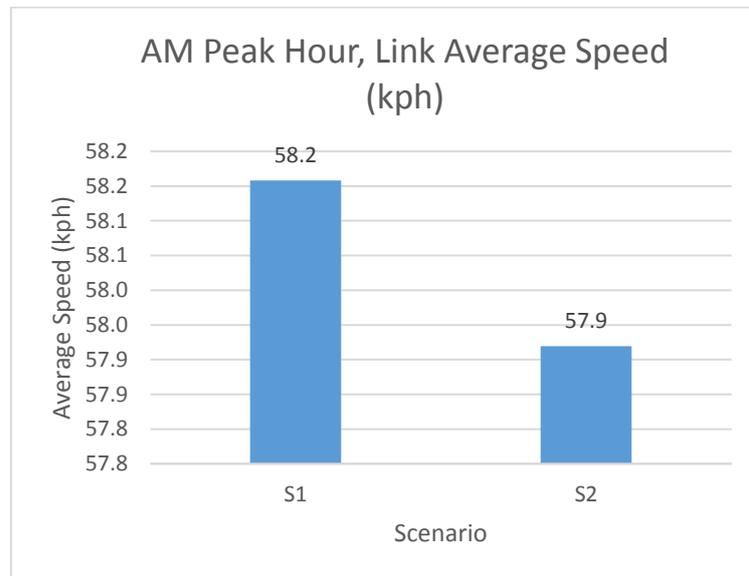
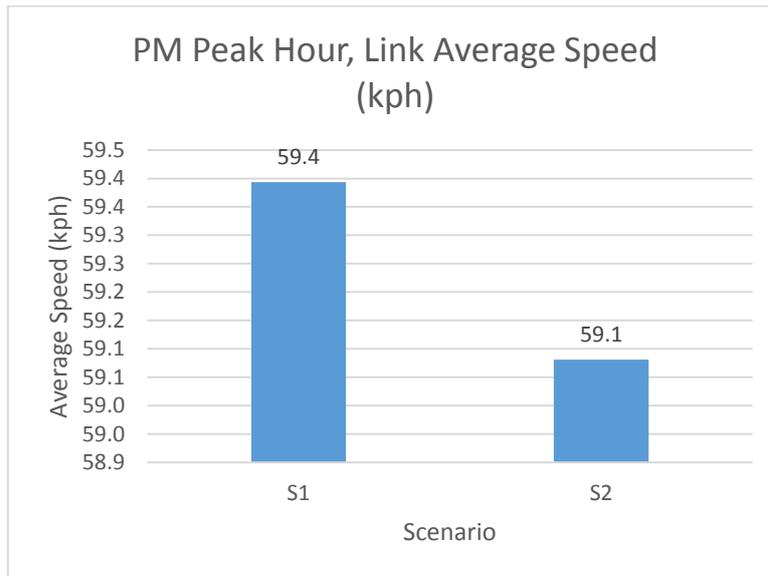


Figure 2-6 PM Peak Hour Average Speed for Surrey Heath Borough



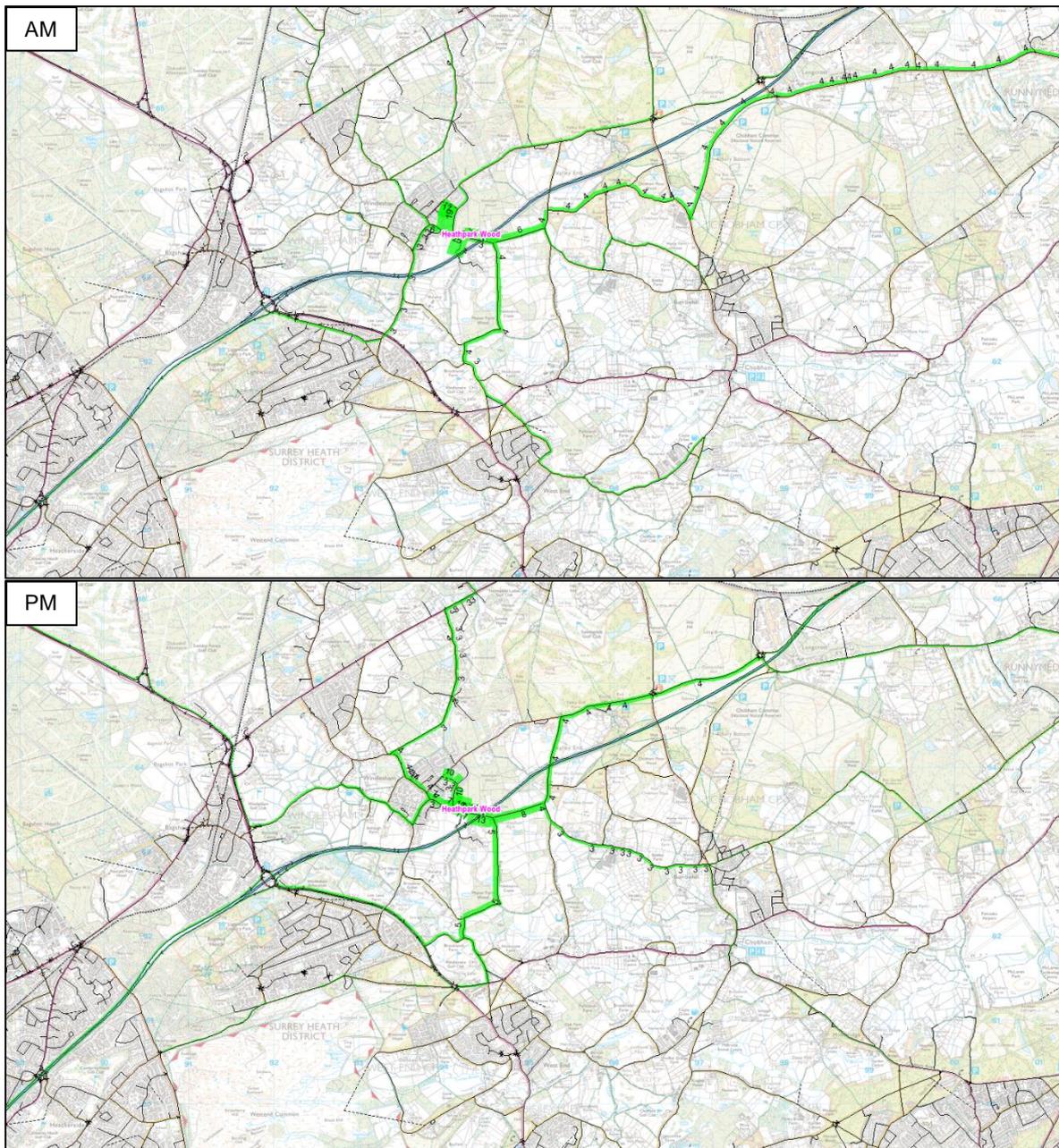
2.3 Select Link Plots

- 2.3.1 To help understand the highway impact of specific larger sites in the Local Plan, select link analysis has been undertaken to show the routing of vehicles accessing and egressing these development sites.
- 2.3.2 Figure 2-7 to Figure 2-11 present select link plots for larger Local Plan sites in the AM (0800-0900) and PM (1700-1800) peak hours. These show the routes taken by trips to and from each location.

2.3.3 Figure 2-7 presents the select link plots for the Heathpark Wood Site in Windlesham, a residential development of 140 dwellings. Few vehicle trips are generated by this site since it is relatively small in size. The majority of vehicles travel to and from nearby Windlesham in both time periods. In the both peak hours vehicles disperse either towards the M25 and Chertsey along the B386; south towards Woking; or towards the M3 eastbound at Junction 3. The impact of this additional traffic on the motorway network is discussed in Section 2.7. In the PM peak hour there are more vehicles coming from Ascot and Sunningdale to the north of the development.

2.3.4 Despite being small, increases on the B386 Chertsey Road and Staple Hill Road will impact the Thursely, Ash, Pirbright and Chobham Special Area of Conservation (SAC).

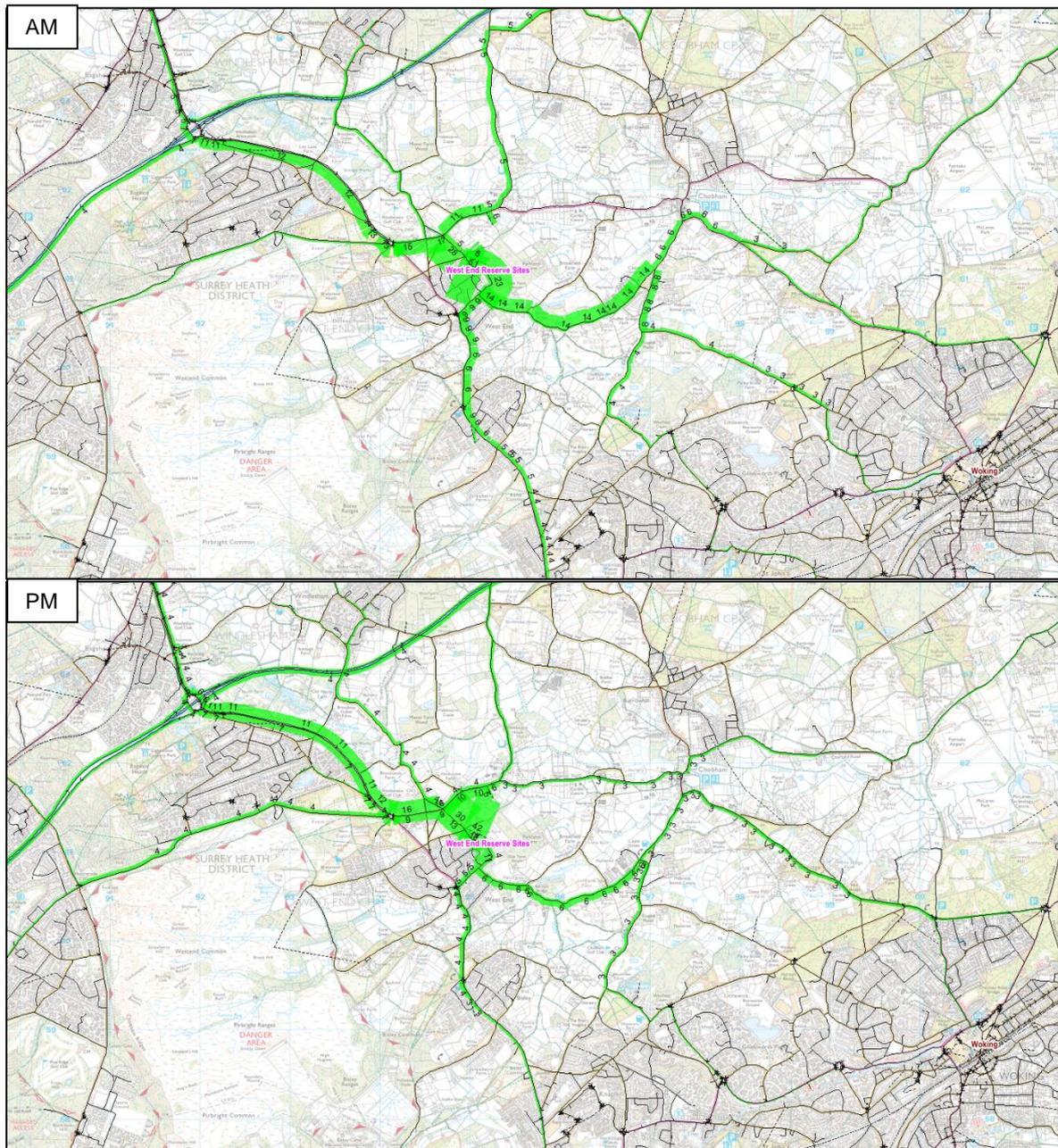
Figure 2-7 Select Link Plot for Heathpark Wood development in the AM (0800-0900) and PM (1700-1800) peak hour. The minimum label value has been set to 3 PCU.



2.3.5 Figure 2-8 presents the select link plots for the West End Reserve Sites, a residential development of 200 dwellings. Trips are fairly equally dispersed in each direction with a slightly larger proportion heading towards and away from the north along the A322 to the M3 junction 3. The impact of this additional traffic on the motorway network is discussed in Section 2.7.

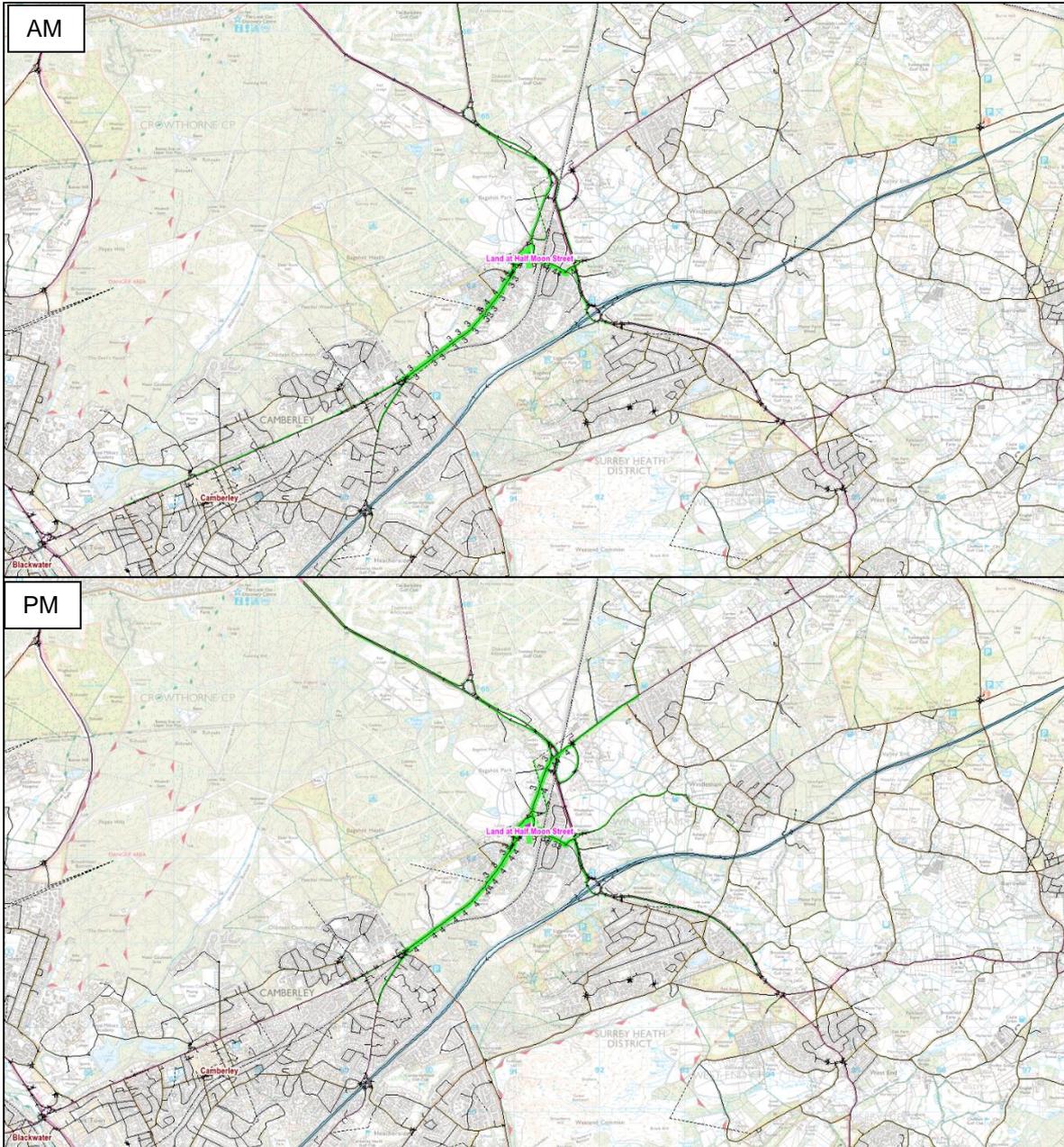
2.3.6 Despite being small, increases on the B311 Red Road will impact the Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC).

Figure 2-8 Select Link Plot for the West End Reserves Sites in the AM (0800-0900) and PM (1700-1800) peak hour. The minimum label value has been set to 3 PCU.



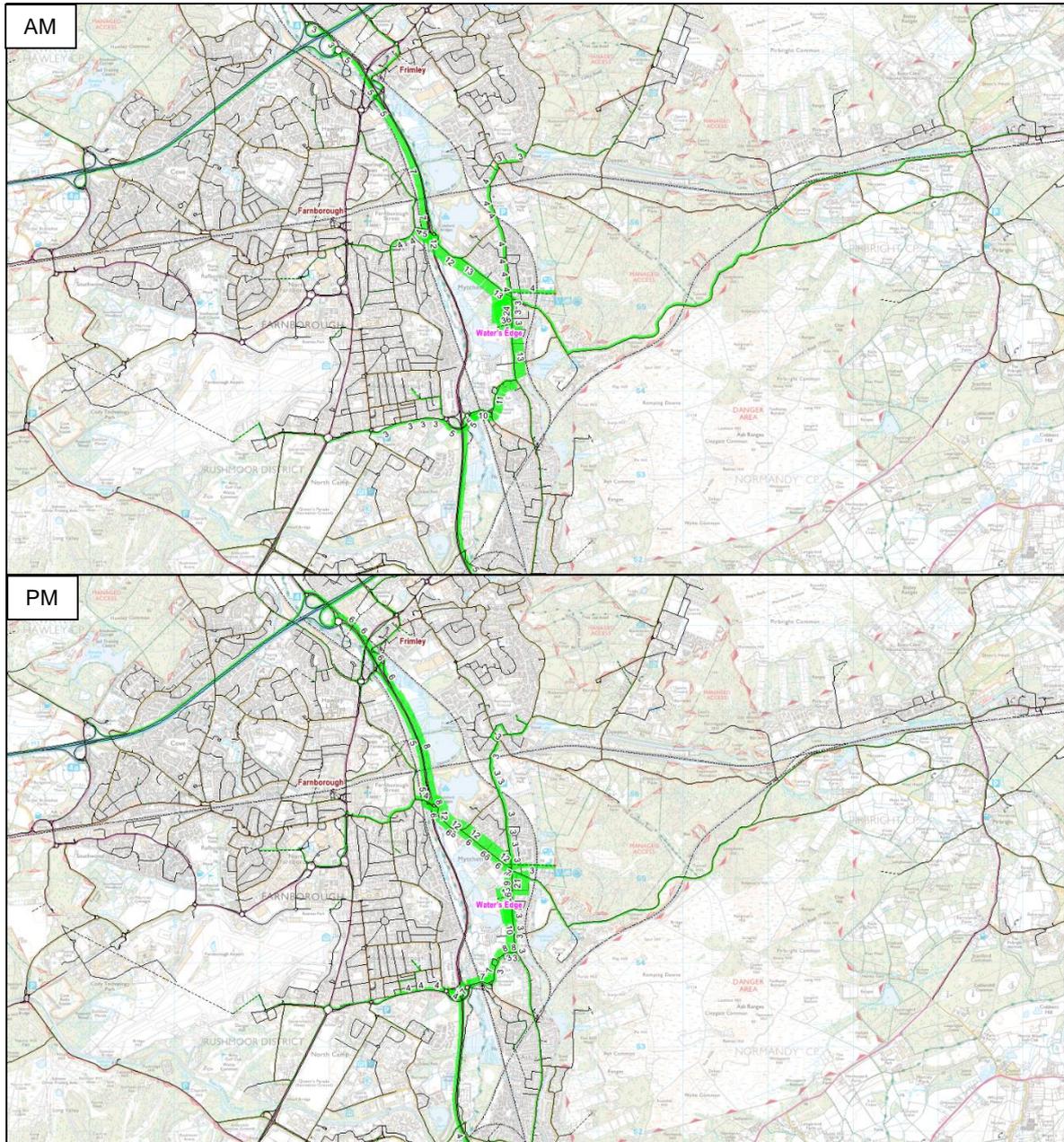
2.3.7 Figure 2-9 presents the select link plots for the Land at Half Moon Street in Bagshot, a development of 47 dwellings and small scale retail/office with approximately 58 employees. Few vehicle trips are generated by this site. Most use the A30 London Road, with some heading onto the A322 both northbound and southbound.

Figure 2-9 Select Link Plot for the Land at Half Moon Street development in the AM (0800-0900) and PM (1700-1800) peak hour. The minimum label value has been set to 3 PCU.



2.3.8 Figure 2-10 presents the select link plots for the Water's Edge development in Mytchett, a residential development of 150 dwellings. Vehicle trips head along either Coleford Bridge Road to access the A331 Blackwater Valley Route northbound, or along Mytchett Road to access the A331 Blackwater Valley Route southbound.

Figure 2-10 Select Link Plot for the Water's Edge development in the AM (0800-0900) and PM (1700-1800) peak hour. The minimum label value has been set to 3 PCU.



2.3.9 Figure 2-11 presents the select link plots for the London Road Block, Land East of Knoll Road, and Pembroke Broadway North development sites in Camberley. The London Road Block development has 350 proposed residential dwellings and some retail (approximately 375 employees); the Land East of Knoll Road site has 100 proposed dwellings; and Pembroke Broadway North site has 116 proposed dwellings and some retail (approximately 153 employees). Since these are all located in close proximity to each other they have been presented in the same select link plots. Unlike the developments in Figure 2-7 to Figure 2-10 they were not given their own zones to connect to the network because existing zones in the network

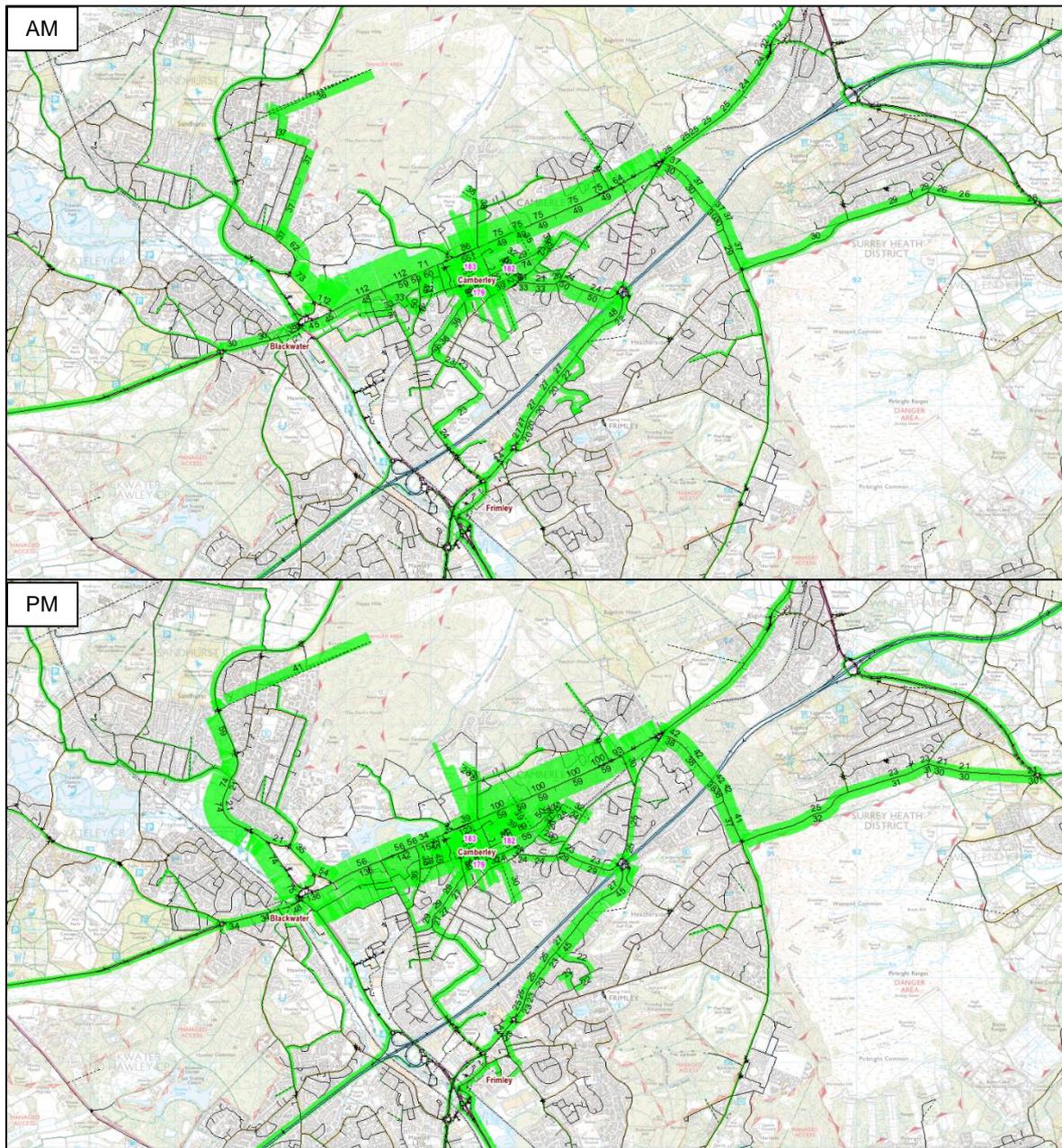
were already adequately located in central Camberley: Zone 183 contains London Road Block, Zone 182 contains Land East of Knoll Road, and Zone 179 Pembroke Broadway North. Hence, the trips shown to be entering/exiting these zones are not solely resulting from Scenario 2's Local Plan development.

2.3.10 Figure 2-11 shows that the trips to/from Zones 179, 182 and 183 disperse fairly evenly to/from Camberley and many stay in the vicinity of Camberley. Those that go beyond mainly use the A30 London Road, A325 Portsmouth Road, B3015 The Maultway and A321 Marshall Road.

2.3.11 Note that the A325 Portsmouth Road is where Frimley Park Hospital is located, any increased trips here could impact access to the Accident and Emergency unit.

2.3.12 Additionally, increases on the B311 Red Road and potentially the B3015 The Maultway will impact the Thursely, Ash, Pirbright and Chobham Special Area of Conservation (SAC).

Figure 2-11 Select link plots for the London Road Block (Zone 183), Land East of Knoll Road (Zone 182), and Pembroke Broadway North (Zone 179) development sites in Camberley in the AM (0800-0900) and PM (1700-1800) peak hour. Note that the scale differs from the other select link plots, as does the minimum label value which has been set to 20 PCU.



2.3.13 As afore mentioned, Figure 2-7, Figure 2-8 and Figure 2-11 present increases in vehicular trips on roads in the vicinity of the Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC). Such increases in trips will have implications of increased Nitrous Oxide deposits. Therefore, it is important to bear in mind the Wealden judgement associated with routing through areas of conservation.

2.4 Level of Service (LoS) Metric

2.4.1 The Level of Service (LoS) metric, which is an adaptation of the US Highway Capacity Manual LoS metric, is determined by the level of traffic flows relative to network link and junction capacities, expressed in terms of the ratio of flow to capacity (RFC). The interpretation of RFC values in terms of experienced levels of congestion is described in Table 2-1.

2.4.2 A level of service categorised as A represents the best operating conditions with an RFC value of less than 0.5. On the other hand, category D is the worst level of service with an RFC value greater than 1. An RFC value greater than 1 means that the stretch of road or turning movement has a higher level of traffic flow than its theoretical capacity, suggesting flow breakdown and extensive queues.

Table 2-1 Interpretation of Level of Service Categories

Category		Description	RFC
A	Free flow	Traffic flows at or above the posted speed limit and motorists have complete mobility between lanes. Motorists have a high level of physical and psychological comfort.	0 to 0.5
B	Stable flow	Ability to manoeuvre through lanes is noticeably restricted and lane changes require more driver awareness. Speeds slightly decrease as traffic volume slightly increase. Freedom to manoeuvre within the traffic stream is much more limited and driver comfort levels decrease. Roads remain safely below but efficiently close to capacity.	0.5 to 0.85
C	Unstable flow, operating at capacity	Flow becomes irregular and speed varies rapidly because there are virtually no usable gaps to manoeuvre in the traffic stream and speeds rarely reach the posted limit. Any disruption to traffic flow, such as merging ramp traffic or lane changes, will create a shock wave affecting traffic upstream. Drivers' level of comfort become poor.	0.85 to 1
D	Forced or breakdown of flow	Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity.	>1

2.4.1 The methodology for calculating the LoS has been applied to the analysis of both link flow and junction delay to aid the interpretation of the model results. The calculated LoS has been colour coded using the traffic light colours: green; amber; and red.

2.5 Link Analysis

2.5.1 Section 2.3 showed how the additional trips to/from large potential development sites in the Local Plan would disperse on the road network. In this section the actual impact this causes on the road links in the network has been examined.

2.5.2 Flow difference plots for the entire study area of Surrey Heath Borough have been presented for Scenario 2 in comparison to Scenario 1 for the weekday AM and PM peak hours in Figure 2-12 and Figure 2-13 respectively. Bandwidths coloured red show an increase in flow, whereas those coloured blue represent a decrease in flow, with their size being proportional to the increase or decrease. Note that labels are only shown for changes of greater than 100 PCU.

-
- 2.5.3 The blue bandwidths show a decrease in flow when comparing Scenarios 1 and 2. This can sometimes be due to residential development replacing commercial land uses which are considered to have more vehicle trips during the analysed time periods. Rerouting is also an effect of local congestion. Surrey Heath is mostly a rural area with few major roads apart from the M3, A331, A30 and A322. Hence, rerouting is very common especially in peak times where local residents' knowledge of smaller roads may often reduce journey times when avoiding the busier main roads.
- 2.5.4 Change in vehicle flow on the M3 has not been presented here. Further analysis of the traffic impact on the borough's motorway is contained in Section 2.7
- 2.5.5 Figure 2-12 shows the differences in traffic flows between Scenario 1 and Scenario 2 in the AM peak hour. Scenario 2 includes all development in Scenario 1 plus the Local Plan development. In the weekday AM peak period there are increases of more than 100 PCU on the:
- B386 School Road/Kennel Lane/Updown Hill/Chertsey Road, Windlesham
 - Church Road, Windlesham;
 - Westwood Road, Windlesham;
 - A319 Chertsey Road, Chobham;
 - Bedlam Bridge Road/Cott's Grove Road, West End;
 - Windlesham Road, West End;
 - A331 Blackwater Valley Route, Camberley;
 - A325 Frimley By-pass, Frimley; and
 - Mytchett Lake Road, Mytchett.
- 2.5.6 Figure 2-13 shows the difference in traffic flows between Scenario 1 and Scenario 2 in the PM peak hour, there are increases in flow of more than 100 PCU on the:
- B386 School Road/Kennel Lane/Chertsey Road, Windlesham;
 - Woodlands Lane, Windlesham;
 - Broadway Road and Hook Mill Lane Lightwater; and
 - A325 Frimley By-pass, Frimley.
- 2.5.7 As mentioned in Section 2.3, some increases on the B386 can be attributed to the Heathpark Wood development in Windlesham as shown in Figure 2-7. Likewise increases in flow on the A319 Chertsey Road, Chobham could be due to the West End Reserve sites in West End as shown in Figure 2-8. Additionally, the developments in Camberley are likely to be contributing to increases in flow on Broadway Road and Hook Mill Lane in Lightwater as shown in Figure 2-11.
- 2.5.8 An increase in flow on the A325 Frimley By-pass, Frimley of greater than 100 PCU in both the AM and PM peak hours is of concern since it is in the vicinity of Frimley Park Hospital which has a major Accident and Emergency department.
- 2.5.9 Figure 2-15, Figure 2-14, Figure 2-16 and Figure 2-17 show which links are reaching their theoretical capacities in the weekday AM and PM peak hours for Scenarios 1 and 2 respectively. Bandwidths are coloured as in Table 2-1: green for free flow and stable flow (LoS A and B); orange for unstable flow, operating at capacity (LoS C); and red for forced or breakdown of flow (LoS D).

Figure 2-15 Scenario 1 Level of Service (LoS) AM peak hour (0800-0900)

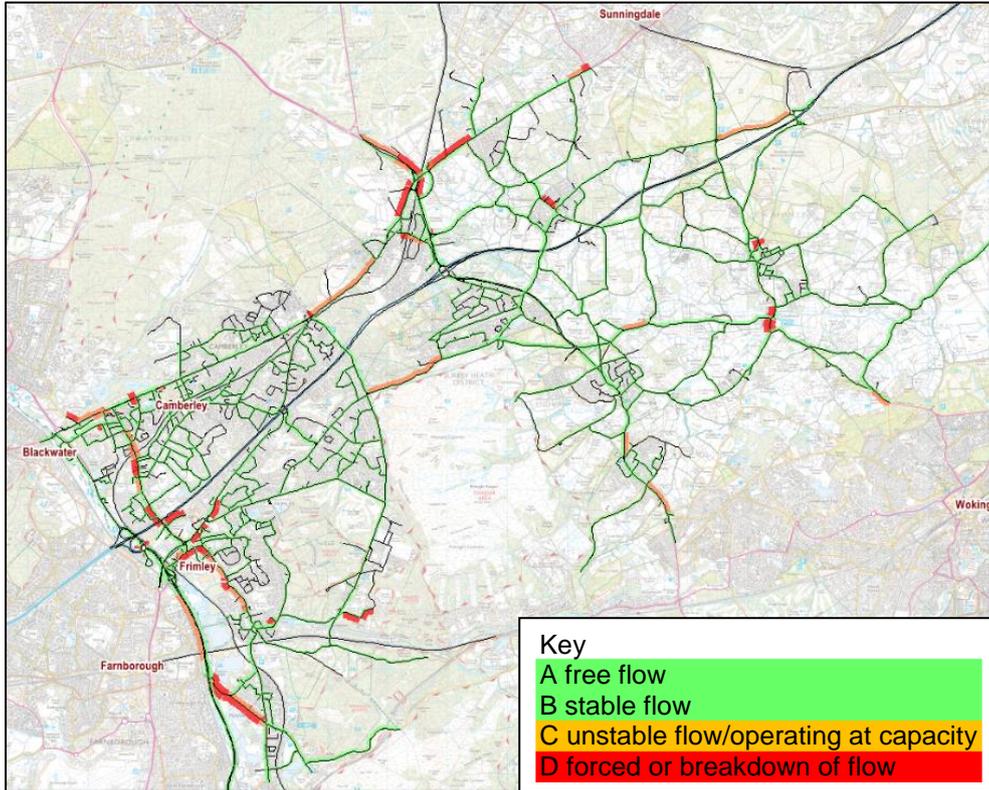
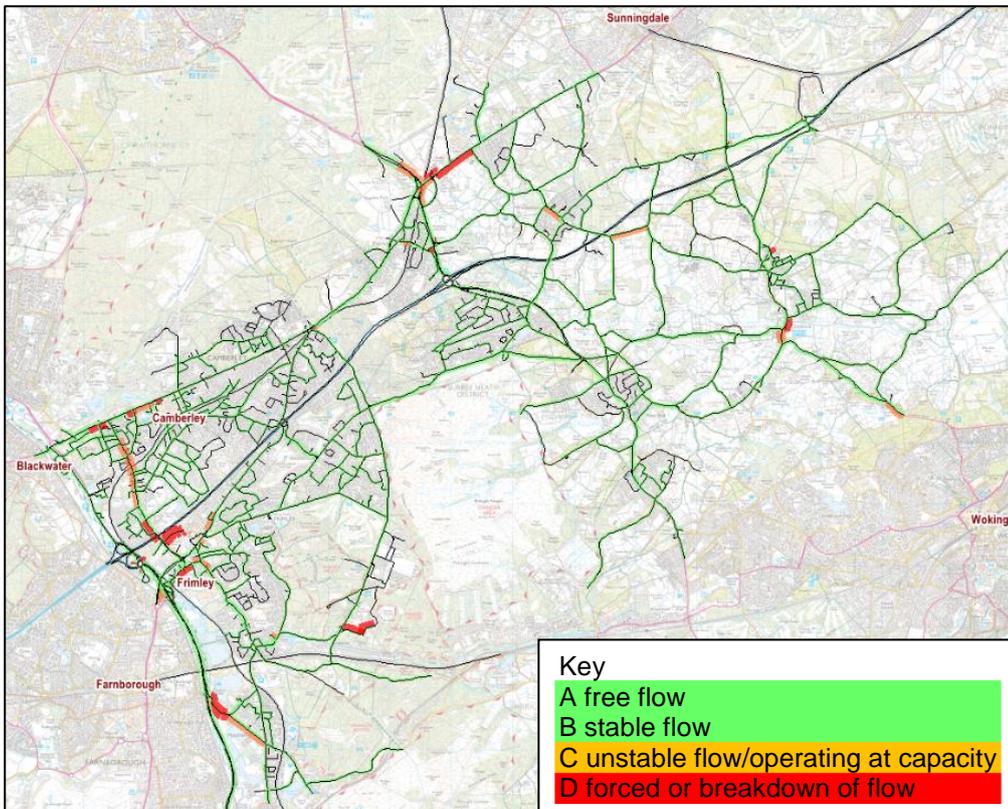


Figure 2-14 Scenario 1 Level of Service (LoS) PM peak hour (1700-1800)



2.5.10 Figure 2-15 and Figure 2-14 present the Level of Service (LoS) for Scenario 1 during the weekday AM (0800-0900) and PM (1700-1800) peak hours. Scenario 1 is the Do Minimum scenario, it includes committed developments identified from the base year (since 2014) to the forecast year 2032, where committed developments comprise sites already built, are in the process of construction, or have planning permission. The Scenario 1 developments are also included within Scenario 2 which is why Scenario 2 is compared back to Scenario 1. In this Do Minimum Scenario 1, unstable flow (LoS of C) or forced or breakdown of flow (LoS of D) is found at the following locations:

- A30 London Road, Windlesham (LoS D);
- A30 London Road, Bagshot (LoS C & D);
- A322 Bracknell Road, Bagshot (LoS D);
- High Street and Guildford Road, Bagshot (LoS C & D);
- Updown Hill, Windlesham (LoS D);
- B386 Chertsey Road, Chobham (LoS C);
- High Street, Chobham (LoS D);
- A3046 Station Road, Chobham (LoS D);
- A319 Bagshot Road, West End (LoS C);
- A322 Guildford Road, Bisley (LoS C);
- B311 Red Road, Lightwater (LoS C);
- A30 London Road, Camberley (LoS C & D);
- B3411 Frimley Road, Camberley (LoS C);
- B3411 Frimley Green Road, Frimley (LoS C & D);
- A325 Portsmouth Road/Frimley By-pass, Frimley (LoS C & D);
- Coleford Road/Bridge Road, Mytchett (LoS C & D); and
- Brunswick Road Deepcut (LoS D).

Figure 2-16 Scenario 2 Level of Service (LoS) AM peak hour (0800-0900)

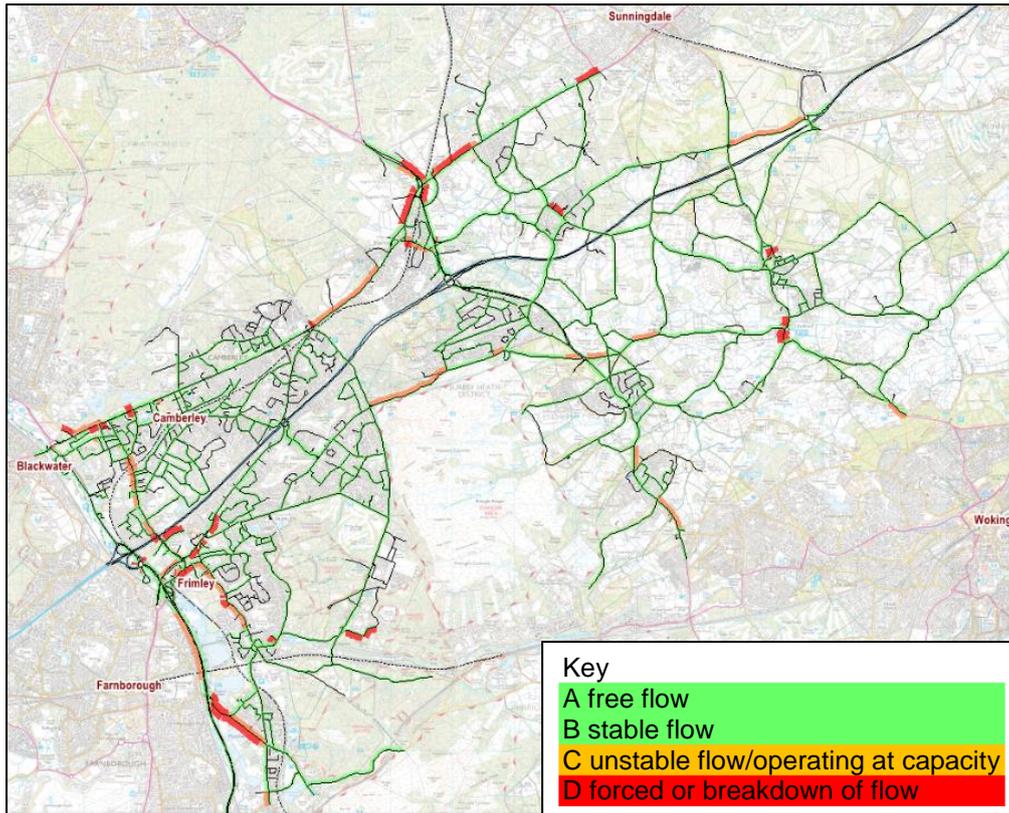
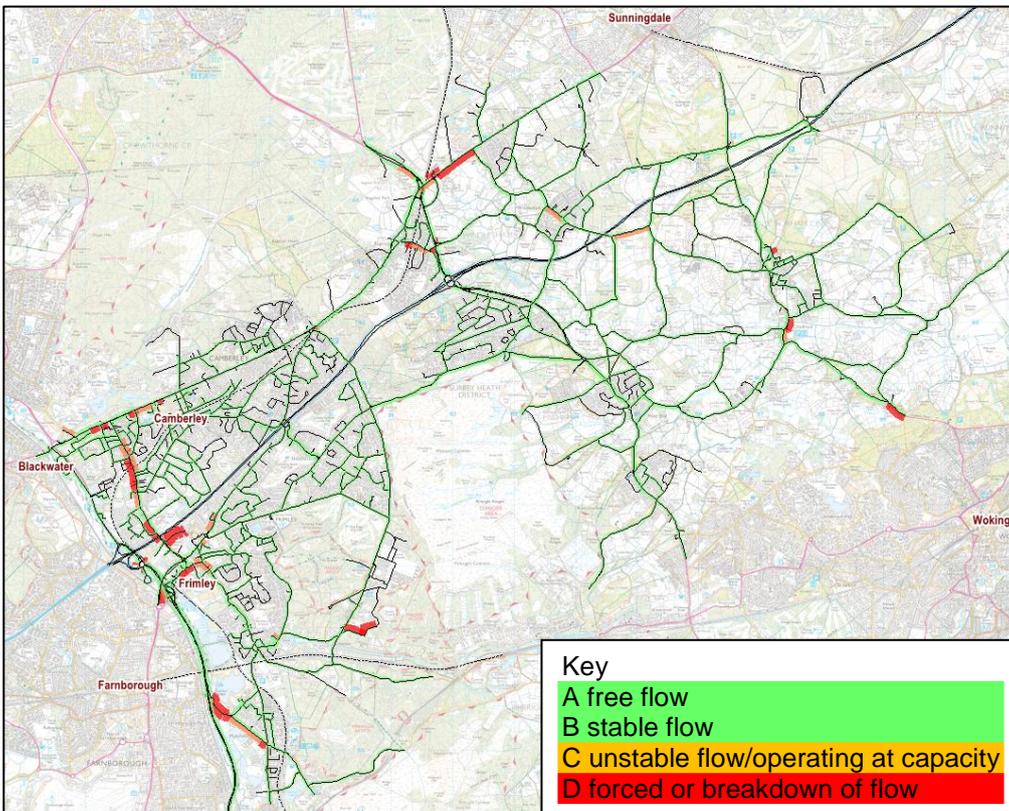


Figure 2-17 Scenario 2 Level of Service (LoS) PM peak hour (1700-1800)



2.5.11 Figure 2-16 and Figure 2-17 show the Level of Service for Scenario 2. Scenario 2 includes all development in Scenario 1 plus the Local Plan development during the weekday AM (0800-0900) and PM (1700-1800) peak hours. In comparison to Scenario 1 LoS, Scenario 2 LoS, deteriorates from green for free flow and stable flow (LoS A and B) to orange for unstable flow (LoS C) or forced or breakdown of flow (LoS of D) at the following locations:

- B311 Red Road, West End and Lightwater (LoS C);
- A319 Bagshot Road, West End (LoS C);
- B3411 Mytchett Road, Mytchett (LoS C);
- A30 London Road, Windlesham (LoS D);
- A30 London Road, Camberley (LoS D); and
- B3411 Frimley Green Road, Frimley (LoS D).

2.5.12 By looking at Section 2.3, certain development sites can be associated with these deteriorations in LoS. The decline on the B311 Red Road can be linked to the West End Reserve Sites and London Road Block/Land East of Knoll Road/Pembroke Broadway North developments in Camberley. The deterioration on the A319 Bagshot Road can be attributed to the West End Reserve sites. The decrease in LoS on the B3411 Mytchett Road can be related to the Water's Edge development in Mytchett. The decline on the A30 London Road at Camberley and on the B3411 Frimley Green Road can be linked to London Road Block/Land East of Knoll Road/Pembroke Broadway North developments in Camberley.

2.6 Junction Analysis

2.6.1 The Level of Service at junctions is determined by the level of traffic flows relative to network link and junction capacities, expressed in terms of the ratio of flow to capacity (RFC) as described in Section 2.4. Junctions are coloured as in Table 2-1 Interpretation of Level of Service Categories: green for free flow and stable flow (LoS A and B); orange for unstable flow, operating at capacity (LoS C); and red for forced or breakdown of flow (LoS D). Junctions shown as maroon are those with the worst performance, a LoS of D and RFC values greater than 3.0.

2.6.2 Figures are presented for both the AM and PM peak hours for each scenario.

2.6.3 Figure 2-18 and Figure 2-19 show a comparison of the operation of junctions in Surrey Heath in Scenario 1 and Scenario 2 for the AM and PM peak hours respectively. Scenario 1 is the Do Minimum scenario which presents a future in which there is only the currently committed development in the borough of Surrey Heath, but accounts for full development in the rest of the Great Britain to 2032. Scenario 2 includes all development in Scenario 1 plus the Local Plan development

2.6.4 Considering Scenario 1, whilst the majority of junctions are shown as having available capacity and are therefore green, major routes including the A30, A322, A325, A331, A3046, B383, B386 and B3411 are under pressure with multiple junctions having RFCs in excess of 1.0 (shown as red), due to the volume of flow on these main roads. A number of junctions are shown in maroon, indicating that they will struggle to accommodate the additional traffic in this scenario, without the addition of the Local Plan development. These are the worst performing junctions where there are likely to be large delays and extensive queuing and include the following:

- A30 approach to j/w A325 and B3015, Camberley (signals);
- A30 j/w Bridge Road, Bagshot (signals);
- A30 j/w Laundry Lane, Camberley (signals);

-
- A30 London Road j/w A322 Bracknell Road northbound on slip (give way);
 - A30 London Road j/w B3020 Sunninghill Road, Windlesham (signals);
 - A30 London Road j/w Ceasars Camp Road, Camberley (signals);
 - A30 London Road j/w Frimley Road, Camberley (signals);
 - A30 London Road j/w Knoll Road and Kings Ride, Camberley (signals);
 - A30 London Road j/w Lower Charles Street, Camberley (signals);
 - A30 London Road j/w Park Street, Camberley (signals);
 - A30 London Road j/w Waterers Way/Waitrose, Bagshot (signals);
 - A30 London Road j/w Yaverland Drive, Bagshot (signals);
 - A322 Bagshot Road j/w Limecroft Road, Bisley (signals);
 - A322 Guildford Road j/w Brentmoor Road and Streets Heath, West End (signals);
 - A322 j/w New Road, Bagshot (signals);
 - A322 j/w Queens Road, Bisley (signals);
 - A322 northbound approach to M3 Junction 3 (signals);
 - A322 southbound approach to M3 Junction 3 (give way);
 - A325 approach to j/w A30 and B3015, Camberley (signals);
 - A331 j/w Admiralty Way, Camberley (signals);
 - A331 j/w Sainsburys, Camberley (signals);
 - A331 j/w Stanhope Road (signals);
 - A331 northbound approach to M3 Junction 4 (signals);
 - A331 northbound approach to M3 Junction 4 northbound on/offslip (roundabout);
 - A331 southbound approach to M3 J4 southbound on/offslip (signals);
 - B3015 The Maultway approach to junction with A325 Portsmouth Road and A30 London Road, Camberley (signals);
 - B3411 Frimley Road j/w Crabtree Road, Frimley (signals);
 - B3411 Frimley Green Road northbound approach to Balmoral Drive roundabout;
 - B3411 Frimley Road j/w Albany Park (give way);
 - B3411 Frimley Road j/w Gilbert Road, Frimley (give way);
 - B3411 Frimley Road j/w James Road, Frimley (signals);
 - B3411 Frimley Road j/w Lyon Way, Frimley (signals);
 - Frimley Business Park approach to M3 Junction 4 roundabout;
 - M3 Junction 3 eastbound offslip (signals);
 - M3 Junction 3 westbound offslip (signals); and
 - M3 Junction 4 westbound offslip (signals).

Figure 2-18 Junction Level of Service AM Peak Hour 0800 – 0900

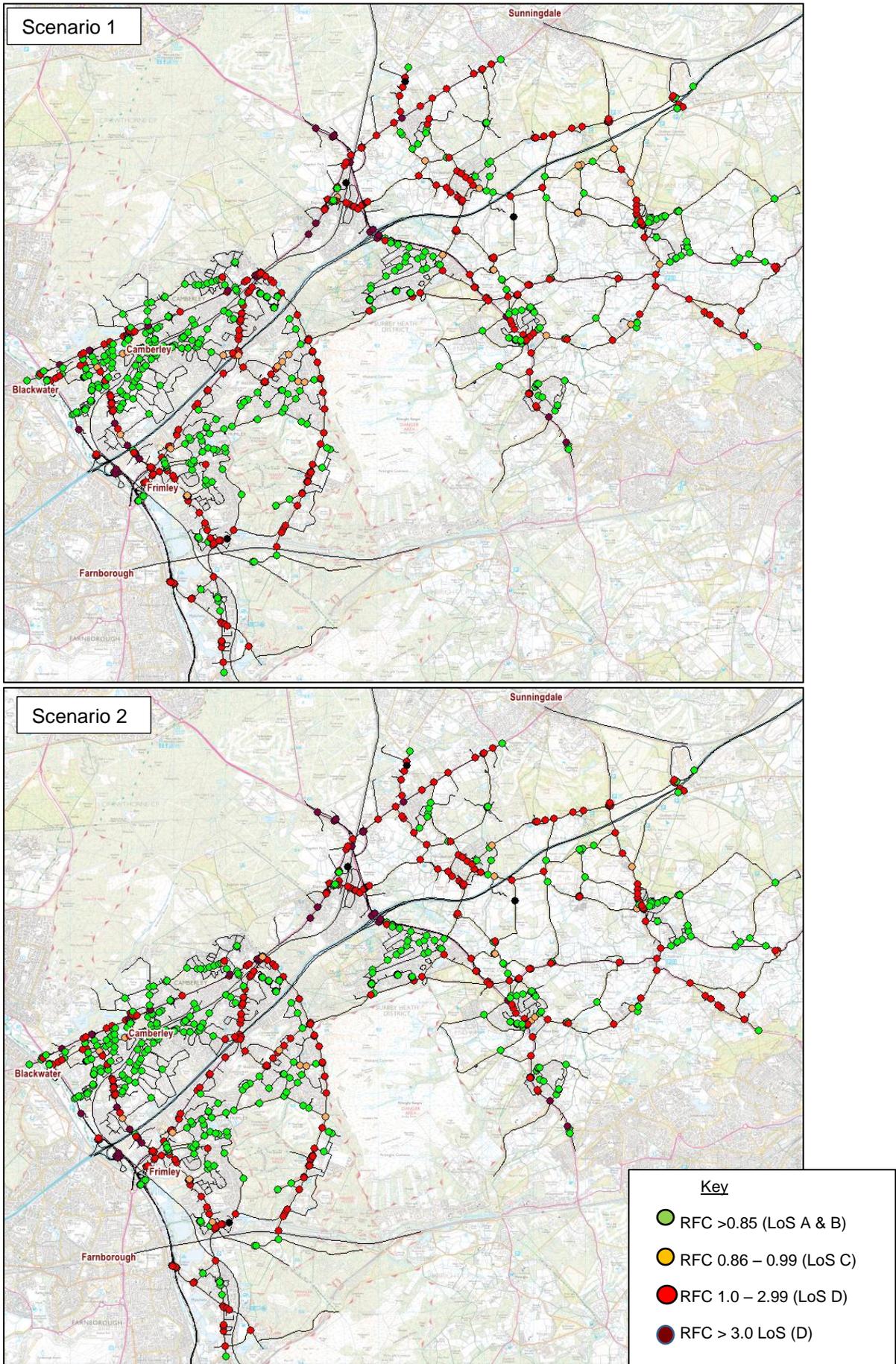
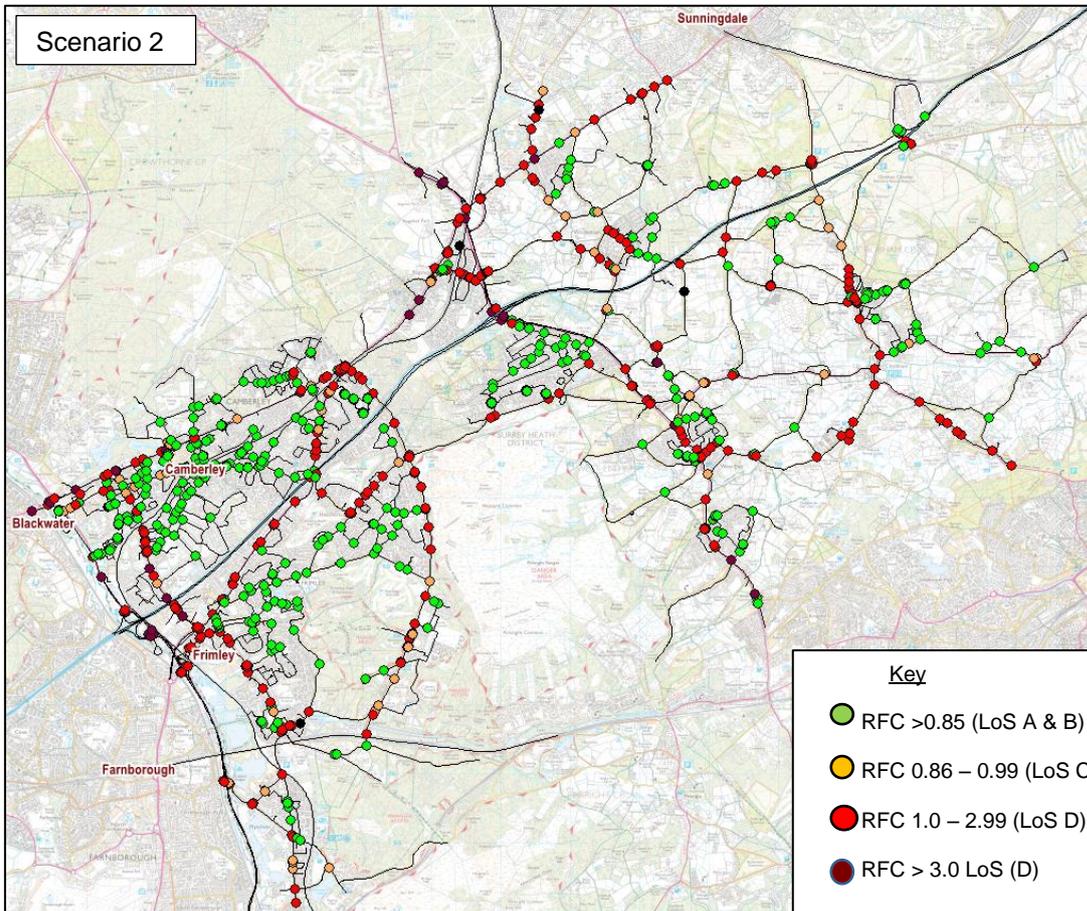
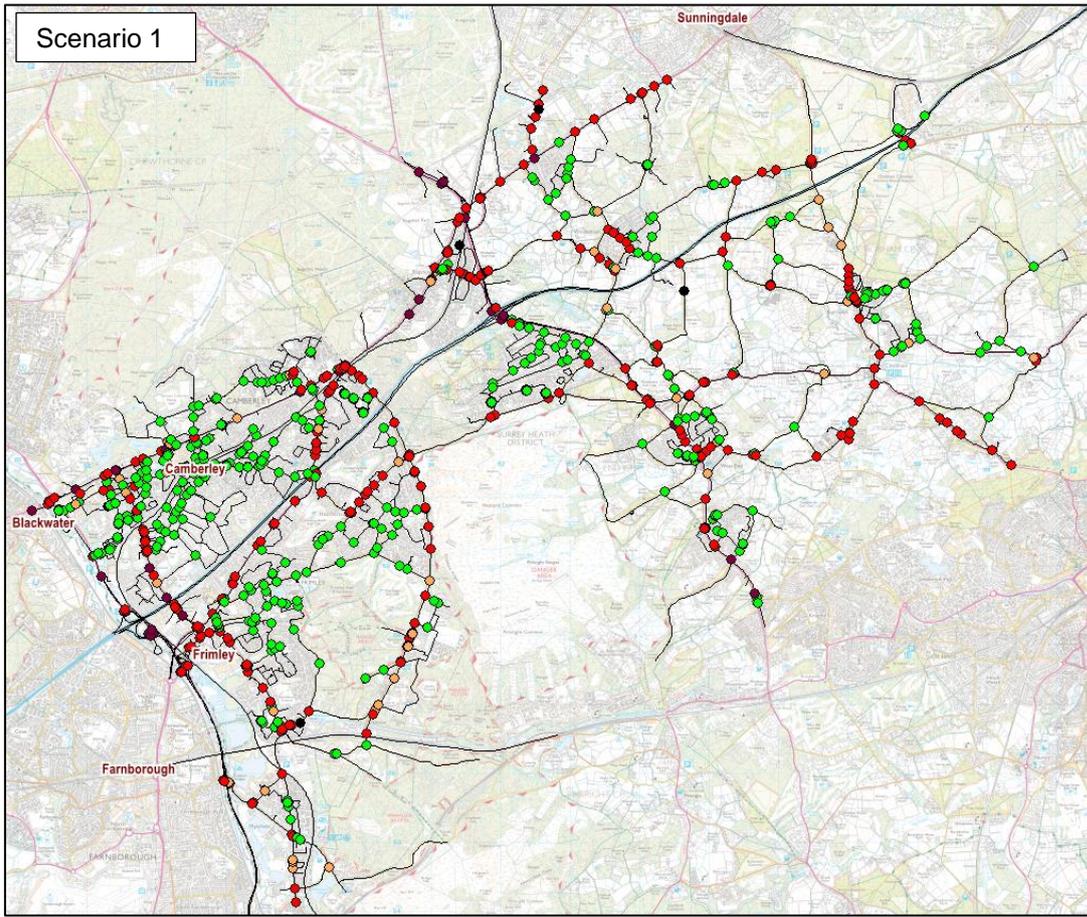


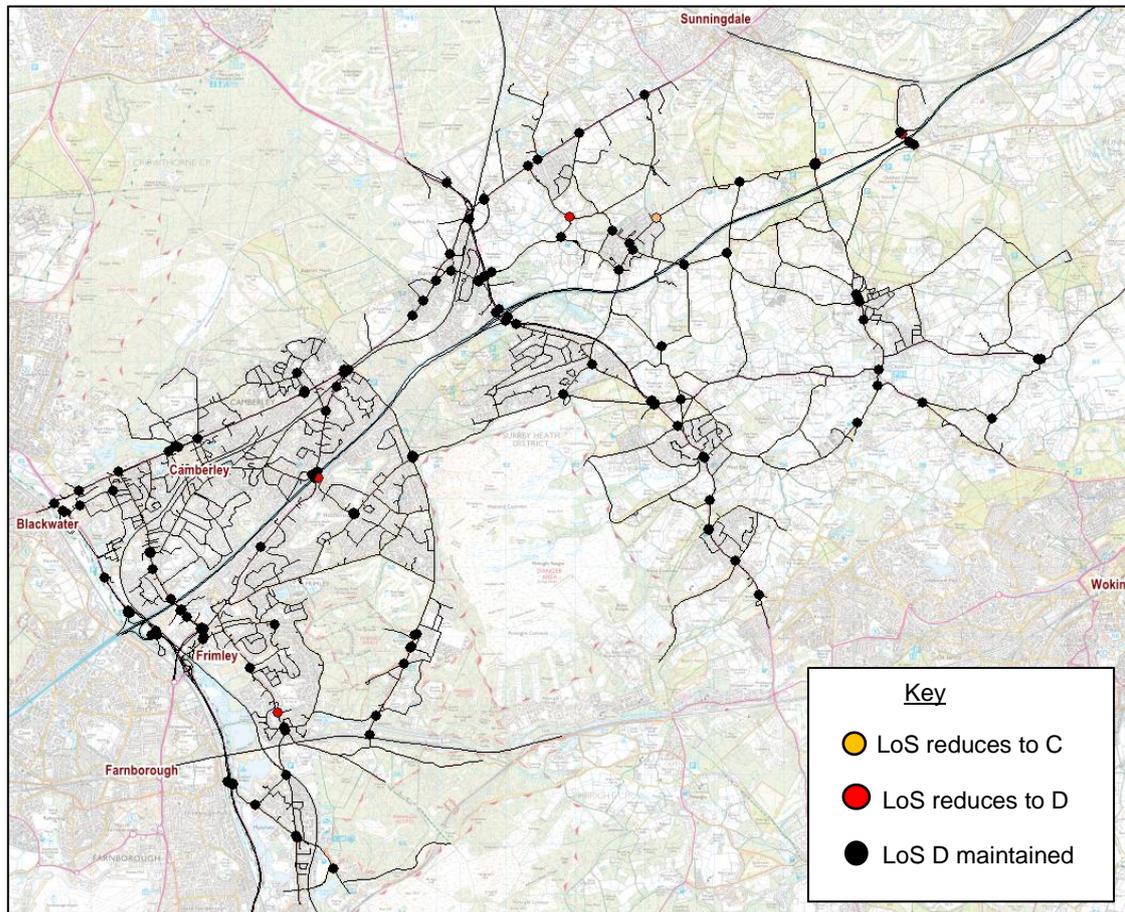
Figure 2-19 Junction Level of Service PM Peak Hour 1700 – 1800



2.6.5 Scenario 2 shows the effect of the addition of Local Plan development. As in Scenario 1, the largest delays are focussed on main routes with a general worsening of junction performance.

2.6.6 Figure 2-20 and Figure 2-21 show junctions where the level of service has deteriorated to C or D as a result of this additional traffic in Scenario 2, or where the LoS is maintained at D in both scenarios. Only those junctions where average delay per vehicle is in excess of 15 seconds are shown.

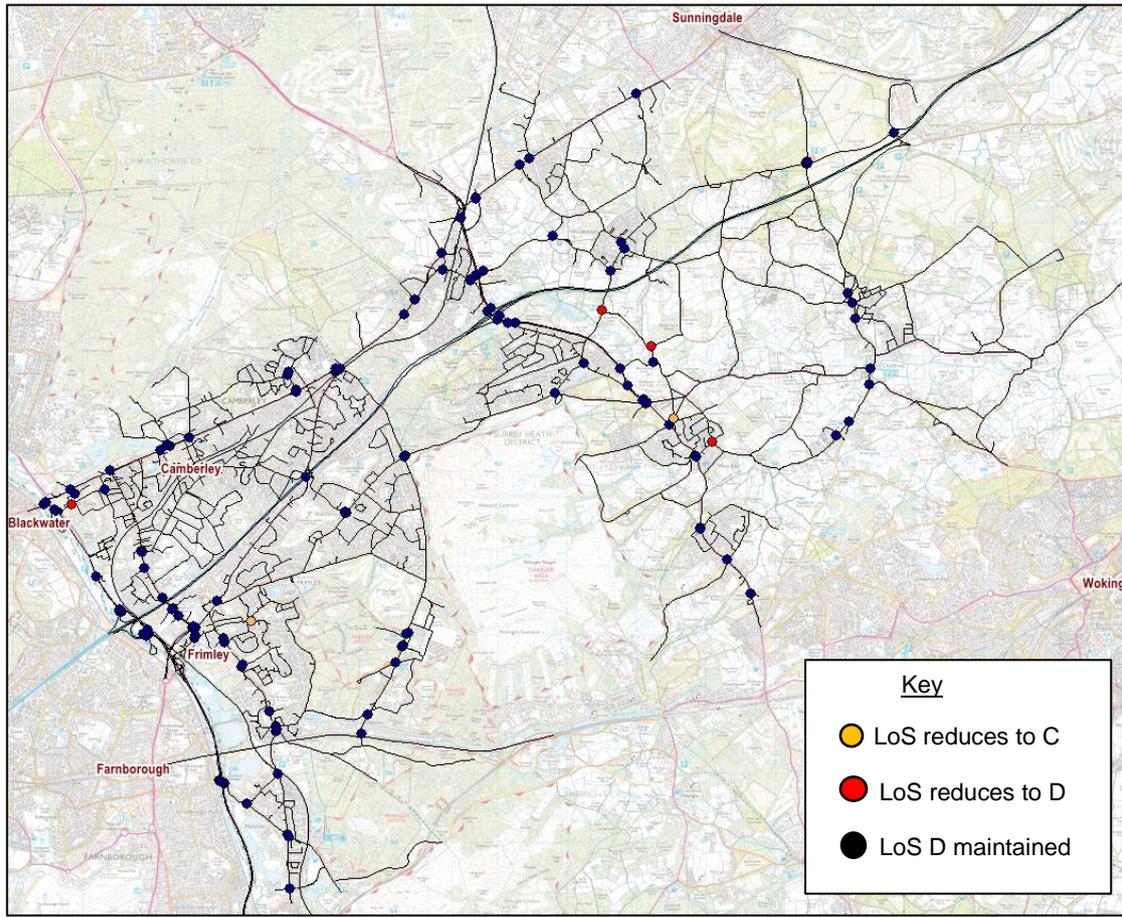
Figure 2-20 Scenario 1 to Scenario 2 LOS change AM Peak Hour 0800 – 0900



2.6.7 Figure 2-20 shows those junctions which have experienced a worsening of performance leading to a change in their level of service category during the AM peak. These include the following (Scenario 1 LoS shown first in brackets followed by Scenario 2 LoS). Note only those junctions where average delay is in excess of 15 seconds per vehicle are shown:

- B386 Chertsey Road j/w Heathpark Drive, Windlesham (B, C);
- Prior Road approach to roundabout junction with Portsmouth Road, Frimley (C, D);
- B3411 Frimley Green Road southbound approach to roundabout junction with Beresford Close, Frimley Green (C, D);
- Longcross Road approach to roundabout junction with B386 Chertsey Road and Chobham Lane, Longcross (C, D); and
- B386 School Road j/w Church Road, Windlesham (C, D).

Figure 2-21 Scenario 1 to Scenario 2 LOS change PM peak hour 1700 - 1800



2.6.8 Figure 2-21 shows those junctions which have experienced a worsening of performance leading to a change in their level of service category during the PM peak. These include the following (Scenario 1 LoS shown first in brackets followed by Scenario 2 LoS). Note only those junctions where average delay is in excess of 15 seconds per vehicle are shown:

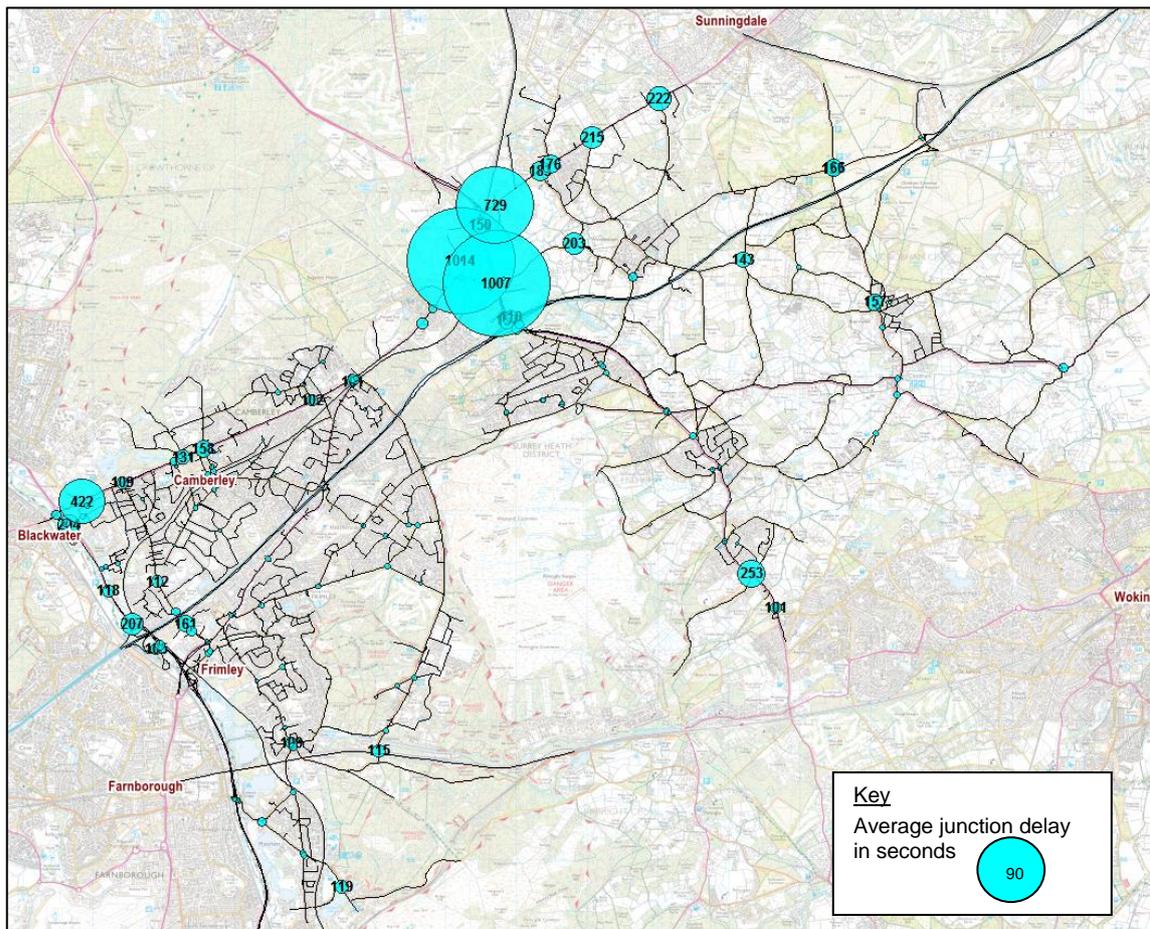
- Field Lane j/w Alphington Avenue, Frimley (B, C);
- Windlesham Road j/w Church Road, West End (B, C);
- Stanhope Road j/w Tuscam Way, York Town (C, D);
- Broadway Road j/w Hook Mill Lane, Lightwater (C, D);
- Hook Mill Lane j/w Burnt Pollard Lane and Rye Grove, West End (B, D); and
- Fellow Green j/w Beldam Bridge Road, West End (C, D).

2.6.9 Some of the junctions can be attributed to certain larger developments in the Local Plan as seen in Section 2.3. It is indicated that Heathpark Wood development in Windlesham would contribute to the deterioration at B386 Chertsey Road j/w Heathpark Drive, Windlesham; B386 School Road j/w Church Road, Windlesham; and Broadway Road j/w Hook Mill Lane, Lightwater. The London Road Block/Land East of Knoll Road/Pembroke Broadway North developments in Camberley have been shown to impact Prior Road approach to roundabout junction with Portsmouth Road, Frimley; and Stanhope Road j/w Tuscam Way, York Town. The West End Reserve sites in West End have been shown to cause decline at Windlesham Road j/w Church Road, West End; Broadway Road j/w Hook Mill Lane, Lightwater; Hook Mill Lane j/w Burnt Pollard Lane and Rye Grove, West End; and Fellow Green j/w Beldam Bridge Road, West End.

2.6.10 Figure 2-22 and Figure 2-23 show average junction delay per vehicle in the AM and PM peak hours respectively during Scenario 2. During the AM peak, the five largest delays are shown at the following junctions, listed below in a descending order of magnitude:

- A30 London Road j/w Bridge Road, Bagshot;
- A322 j/w New Road, Bagshot;
- Grove End Approach to roundabout junction with A30 London Road, Bagshot;
- A30 j/w Laundry Lane, Camberley; and
- A322 j/w Queens Road, Bisley.

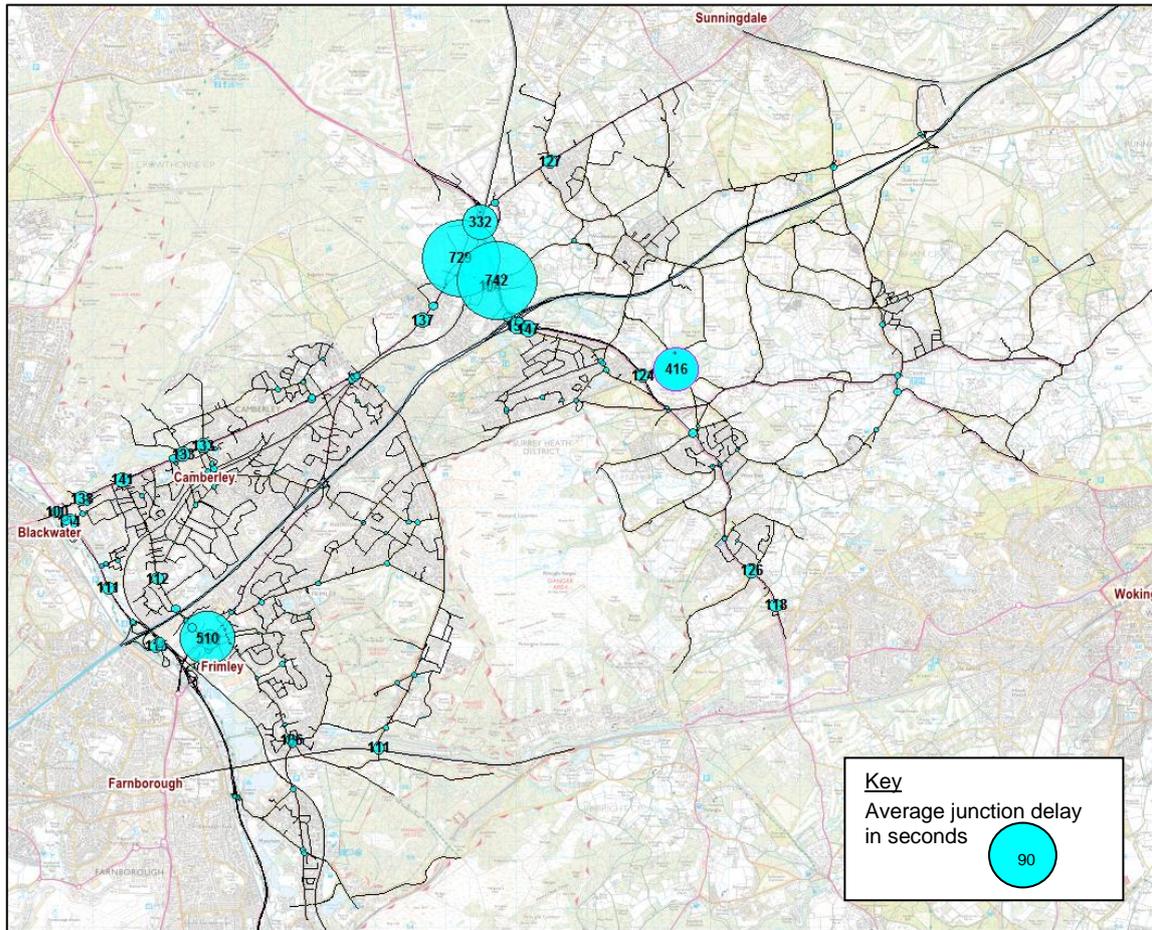
Figure 2-22 Scenario 2 AM Peak Hour Delay 0800 - 0900



2.6.11 During the PM peak hour, as shown in Figure 2-23, the five largest delays are shown at the following junctions, listed below in a descending order of magnitude:

- A322 j/w New Road, Bagshot;
- A30 London Road j/w Bridge Road, Bagshot;
- B3411 Frimley Road southbound approach to roundabout junction with A325 Farnborough road, Frimley;
- Blackstroud Lane East j/w Burnt Pollard lane, West End; and
- A30 London Road j/w A322 Bracknell Road northbound on slip.

Figure 2-23 Scenario 2 PM Peak Hour Delay 1700 - 1800



- 2.6.12 Taking into account all the junction analysis undertaken, many of the junctions experiencing an increase in delay are already shown to be operating over capacity (RFCs greater than 1) in Scenario 1 without the additional development proposed in the Local Plan. In these locations, existing congestion would be exacerbated resulting in a reduction in driver comfort levels and increased stress as a result of further deterioration of traffic conditions.
- 2.6.13 Junctions which are impacted in Scenario 2 are not necessarily those in the immediate vicinity of the larger sites. The combination of the Local Plan sites together with committed development means that for any junction which is close to capacity a small amount of additional traffic may tip the balance resulting in a deterioration in performance. This additional traffic may be related to development or be comprised of existing traffic rerouting as a result of traffic generated by development.

2.7 The Motorway Network

- 2.7.1 Surrey Heath Borough contains sections of the M3 which is the responsibility of Highways England.
- 2.7.2 Table 2-2 presents the traffic flow along the Highways England network contained within or at the edge of the Borough for the weekday AM and PM peak hours.
- 2.7.3 During the AM peak hour, the maximum increase in flow on the existing HE network between Scenario 1 (Do-Minimum, committed development) and Scenario 2 (Scenario 1 plus Local Plan development) is an increase of 137 PCU on the M3 Westbound Junction 3 on-slip. With reference to Section 2.3, this increase is partly attributed to the Heathpark Wood site in Windlesham (Figure 2-7) and the West End Reserve Sites (Figure 2-8).
- 2.7.4 During the PM peak hour, the largest increase in flow applies to an increase of 127 PCU on the M3 Eastbound between Junction 3 and 2. With reference to Section 2.3, this increase is partly attributed to the West End Reserve Sites (Figure 2-8) and London Road Block/Land East of Knoll Road/Pembroke Broadway North developments in Camberley (Figure 2-11).
- 2.7.5 Note that, as shown in the junction analysis in Section 2.6 (Figure 2-18 and Figure 2-19 in particular), the junctions which connect the A322 and the A331 to the M3 at Junction 3 and Junction 4 respectively, already have a high LoS of D in Scenario 1 and this is unchanged in Scenario 2.

Table 2-2 Traffic flow summary for the Motorway Network within Surrey Heath for the weekday AM (0800-0900) and PM (1700-1800) peak hours.

Link ID	Road	AM peak hour (0800-0900)		PM peak hour (1700-1800)	
		S1	S2	S1	S2
Vehicles (PCU)					
M3 Eastbound					
2568_1	M3 J4 off-slip	1688	1495	1490	1498
2569_2	M3 J4 on-slip	2142	2074	2050	2073
16_1	M3 J4 - 3	7222	7072	6253	6273
4113_1	M3 J3 off-slip	1518	1492	772	757
401912_2	M3 J3 on-slip	1724	1754	1629	1722
329303_1	M3 J3 - 2	7428	7334	7111	7238
M3 Westbound					
782_2	M3 J4 on-slip	1070	1168	1569	1563
333361_2	M3 J4 off-slip	2037	2062	2397	2344
333459_2	M3 J3 - 4	6464	6536	7429	7441
1508_2	M3 J3 on-slip	758	853	1470	1420
4116_2	M3 J3 off-slip	1241	1378	1944	1865
329296_2	M3 J2 - 3	6946	7061	7903	7887
Absolute difference compared to Scenario 1 (PCU)					
M3 Eastbound					
2568_1	M3 J4 off-slip	-	-192	-	9
2569_2	M3 J4 on-slip	-	-68	-	23
16_1	M3 J4 - 3	-	-150	-	20
4113_1	M3 J3 off-slip	-	-26	-	-15
401912_2	M3 J3 on-slip	-	30	-	93
329303_1	M3 J3 - 2	-	-94	-	127
M3 Westbound					
2568_1	M3 J4 off-slip	-	99	-	-6
2569_2	M3 J4 on-slip	-	25	-	-53
16_1	M3 J4 - 3	-	72	-	12
4113_1	M3 J3 off-slip	-	94	-	-50
401912_2	M3 J3 on-slip	-	137	-	-78
329303_1	M3 J3 - 2	-	115	-	-16
Percentage change compared with Scenario 1					
M3 Eastbound					
2568_1	M3 J4 off-slip	-	-11%	-	1%
2569_2	M3 J4 on-slip	-	-3%	-	1%
16_1	M3 J4 - 3	-	-2%	-	0%
4113_1	M3 J3 off-slip	-	-2%	-	-2%
401912_2	M3 J3 on-slip	-	2%	-	6%
329303_1	M3 J3 - 2	-	-1%	-	2%
M3 Westbound					
2568_1	M3 J4 off-slip	-	9%	-	0%
2569_2	M3 J4 on-slip	-	1%	-	-2%
16_1	M3 J4 - 3	-	1%	-	0%
4113_1	M3 J3 off-slip	-	12%	-	-3%
401912_2	M3 J3 on-slip	-	11%	-	-4%
329303_1	M3 J3 - 2	-	2%	-	0%

2.7.7 The delay at motorway merges has been calculated in the model using the formula specified in WebTAG¹. The result of which is added to the calculated link generalised cost used in assignment².

2.7.8 Table 2-3 presents the calculated additional merge delay for all on-slips on the M3 for the weekday AM and PM peak hours.

Table 2-3 Calculated Additional Motorway Merge Delay (seconds per vehicle) for the Weekday AM Peak Hour (0800 – 0900) and PM Peak Hour (1700-1800)

Merge	AM		PM	
	S1	S2	S1	S2
<i>Additional Delay (s/veh)</i>				
M3 J4 EB on-slip	104	62	61	98
M3 J3 EB on-slip	40	31	27	38
M3 J3 WB on-slip	11	40	40	13
<i>Absolute Difference Compared with Scenario 1 (s/veh)</i>				
M3 J4 EB on-slip	-	-43	-	37
M3 J3 EB on-slip	-	-10	-	11
M3 J3 WB on-slip	-	29	-	-26
<i>Ratio to Flow Capacity</i>				
M3 J4 EB on-slip	1.21	1.02	1.02	1.18
M3 J3 EB on-slip	0.93	0.88	0.87	0.92
M3 J3 WB on-slip	0.8	0.92	0.92	0.81

2.7.9 In Scenario 1, additional merge delay is worse in the AM going eastbound, while the westbound on-slip has worse merge delay in the PM. This reflects the tidal nature of the M3 with increased flow heading towards the M25 and London in the AM and vice versa in the PM.

2.7.10 In Scenario 2, with the addition of the Local Plan, the eastbound additional merge delay is worse in the PM and the westbound is worse in the AM.

2.7.11 The greatest increases in additional merge delay occur on the M3 Eastbound Junction 4 on-slip in both scenarios during both time periods. This is also the only merge junction with an RFC over the capacity indicator of 1. When a junction becomes over capacity there is the potential of affecting safety by exacerbating existing queuing. Increases on the M3 Eastbound Junction 4 on-slip are not necessarily due to development as shown in Section 2.3. The area around Junction 4 of the M3 is congested so it will be sensitive to any change. Increases on the M3 Eastbound Junction 4 on-slip are likely to be resulting from displacement caused by such congestion, leading to rerouting.

2.7.12 Whilst the rest of the merge junctions' RFCs are below 1, they are still approaching or above the theoretical capacity pressure of 0.85. This could potentially create or exacerbate queuing as mentioned above and in turn affect safety as well.

2.8 Cross Boundary Impacts

2.8.1 Traffic flows on A principal and B roads which cross into neighbouring authorities have been analysed and compared. Table 2-4 and Table 2-5 present the flows entering and exiting the borough respectively for the weekday AM peak hour and

¹ WebTAG unit M3.1 (DfT, 2014) *Highway Assignment Modelling*: Appendix D.9 Merge Modelling on High Speed Roads

² More detail regarding this method is provided in *TN5: SINTRAM Model Technical Report*

PM peak hour. The roads have been listed in a clockwise direction, starting with Runnymede.

2.8.2 In Table 2-4, in the AM peak hour (0800-0900), the roads entering Surrey Heath with the highest increase in flow are the A319 Chobham Road, A321 Marshall Road and A30 London Road, these all have increases of more than 100 PCUs in the peak hour with percentage increases of 31%, 17% and 13% respectively. The percentage increase on the A319 Chobham Road is very large. However, the A320 corridor which feeds the A319 is a known problem and there is currently a corridor study being undertaken. Nevertheless, the Level of Service (LoS) does not deteriorate despite the increase in flow indicating that the A319 is able to cope with this.

2.8.3 The only road in the AM peak hour with a decrease in LoS is the B3411 Mytchett Road coming from Guildford Borough into Surrey Heath. The increase of 72 PCU (7%) causes a decline in LoS from B (stable flow) to C (unstable flow, operating at capacity).

2.8.4 In the PM peak hour, the largest increase in PCU from a neighbouring authority is on the B386 Longcross Road from Runnymede with 33 PCU (4%) increase, while the largest percentage increase is on the B3012 Guildford Road from Guildford Borough of 11% (24 PCU). Similarly to the AM, the PM peak hour also only has one road from a neighbouring authority which has a deterioration in LoS. This is the A3046 Station Road from Woking Borough. The increase of 19 PCU (1%) causes a decline in LoS from C (unstable flow, operating at capacity) to D (forced or breakdown of flow).

Table 2-4 Traffic flow summary for A principal and B roads which enter Surrey Heath from neighbouring authorities for the weekday AM (0800-0900) and PM (1700-1800) peak hours

Link ID	Road	Boundary with...	AM peak hour (0800-0900)		PM peak hour (1700-1800)	
			S1	S2	S1	S2
Vehicles ENTERING Surrey Heath (PCU)						
34815_2	B386 Longcross Road	Runnymede	442	497	827	860
120602_2	A319 Chobham Road	Runnymede	354	464	711	666
8955_1	A3046 Station Road	Woking	1338	1265	1349	1368
3505_2	A322 Guildford Road	Woking	268	252	280	272
326159_2	B3012 Guildford Road	Guildford	113	105	219	243
17316_1	B3411 Mytchett Road	Guildford	1006	1078	558	588
325679_1	A331 Blackwater Valley Route	Rushmoor	2221	2171	2042	1992
333313_1	A325 Frimley By-pass	Rushmoor	1066	1120	803	817
2578_1	A30 London Road	Hart	982	1105	735	743
6707_2	A321 Marshall Road	Bracknell Forest	614	720	324	349
1511_1	A322 Bracknell Road	Bracknell Forest	3505	3444	2986	2836
10184_2	B3020 Sunninghill Road	Bracknell Forest	584	652	718	623
10190_1	A30 London Road	Windsor and Maidenhead	694	776	704	670
25_1	B383 Chobham Road	Windsor and Maidenhead	873	846	642	600
Absolute difference compared to Scenario 1						
34815_2	B386 Longcross Road	Runnymede	-	56	-	33
120602_2	A319 Chobham Road	Runnymede	-	110	-	-45
8955_1	A3046 Station Road	Woking	-	-72	-	19
3505_2	A322 Guildford Road	Woking	-	-16	-	-8
326159_2	B3012 Guildford Road	Guildford	-	-8	-	24
17316_1	B3411 Mytchett Road	Guildford	-	72	-	30
325679_1	A331 Blackwater Valley Route	Rushmoor	-	-50	-	-50
333313_1	A325 Frimley By-pass	Rushmoor	-	54	-	13

Link ID	Road	Boundary with...	AM peak hour (0800-0900)		PM peak hour (17000-1800)	
			S1	S2	S1	S2
2578_1	A30 London Road	Hart	-	123	-	8
6707_2	A321 Marshall Road	Bracknell Forest	-	106	-	26
1511_1	A322 Bracknell Road	Bracknell Forest	-	-61	-	-150
10184_2	B3020 Sunninghill Road	Bracknell Forest	-	68	-	-95
10190_1	A30 London Road	Windsor and Maidenhead	-	82	-	-34
25_1	B383 Chobham Road	Windsor and Maidenhead	-	-27	-	-42
Percentage change compared with Scenario 1						
34815_2	B386 Longcross Road	Runnymede	-	13%	-	4%
120602_2	A319 Chobham Road	Runnymede	-	31%	-	-6%
8955_1	A3046 Station Road	Woking	-	-5%	-	1%
3505_2	A322 Guildford Road	Woking	-	-6%	-	-3%
326159_2	B3012 Guildford Road	Guildford	-	-7%	-	11%
17316_1	B3411 Mytchett Road	Guildford	-	7%	-	5%
325679_1	A331 Blackwater Valley Route	Rushmoor	-	-2%	-	-2%
333313_1	A325 Frimley By-pass	Rushmoor	-	5%	-	2%
2578_1	A30 London Road	Hart	-	13%	-	1%
6707_2	A321 Marshall Road	Bracknell Forest	-	17%	-	8%
1511_1	A322 Bracknell Road	Bracknell Forest	-	-2%	-	-5%
10184_2	B3020 Sunninghill Road	Bracknell Forest	-	12%	-	-13%
10190_1	A30 London Road	Windsor and Maidenhead	-	12%	-	-5%
25_1	B383 Chobham Road	Windsor and Maidenhead	-	-3%	-	-7%

2.8.1 In Table 2-5, the largest increase in vehicles and percentage increase exiting Surrey Heath is 194 PCU (31%) on the A321 Marshall Road into Bracknell Forest. Whilst this increase is large, the LoS remains at A (free flow) indicating that the additional traffic can be accommodated without a deterioration in performance. In the AM peak hour none of the roads exiting Surrey Heath have a deterioration in LoS.

2.8.2 In the PM peak hour (1800-1900), the largest increase in PCU is on the A321 Marshall Road into Bracknell Forest with 39 PCU (3%). The largest percentage increase is 14% (30 PCU) on the A322 Guildford Road into Woking Borough. Again, neither of these increases create a deterioration of LoS. However, the A325 Frimley By-Pass into Rushmoor has an increase of 17 PCU (1%) which creates a decline in LoS from C (unstable flow, operating at capacity) to D (forced or breakdown of flow).

Table 2-5 Traffic flow summary for A principal and B roads which exit Surrey Heath from neighbouring authorities for the weekday AM (0800-0900) and PM (1700-1800) peak hours.

Link ID	Road	Boundary with...	AM peak hour (0800-0900)		PM peak hour (1700-1800)	
			S1	S2	S1	S2
Vehicles EXITING Surrey Heath (PCU)						
34815_2	B386 Longcross Road	Runnymede	945	1003	434	396
120602_2	A319 Chobham Road	Runnymede	894	890	522	488
8955_1	A3046 Station Road	Woking	1049	1051	969	930
3505_2	A322 Guildford Road	Woking	272	291	212	241
326159_2	B3012 Guildford Road	Guildford	352	340	130	132
17316_1	B3411 Mytchett Road	Guildford	840	889	1000	1020
325679_1	A331 Blackwater Valley Route	Rushmoor	2252	2205	2482	2442
333313_1	A325 Frimley By-pass	Rushmoor	1150	1147	1595	1612
2578_1	A30 London Road	Hart	670	676	968	991
6707_2	A321 Marshall Road	Bracknell Forest	622	816	1246	1285
1511_1	A322 Bracknell Road	Bracknell Forest	2947	3007	3012	2923
10184_2	B3020 Sunninghill Road	Bracknell Forest	786	635	265	241
10190_1	A30 London Road	Windsor and Maidenhead	1318	1379	826	785
25_1	B383 Chobham Road	Windsor and Maidenhead	899	864	696	573
Absolute difference compared to Scenario 1						
34815_2	B386 Longcross Road	Runnymede	-	58	-	-38
120602_2	A319 Chobham Road	Runnymede	-	-4	-	-34
8955_1	A3046 Station Road	Woking	-	2	-	-39
3505_2	A322 Guildford Road	Woking	-	19	-	30
326159_2	B3012 Guildford Road	Guildford	-	-12	-	1
17316_1	B3411 Mytchett Road	Guildford	-	49	-	20
325679_1	A331 Blackwater Valley Route	Rushmoor	-	-46	-	-40
333313_1	A325 Frimley By-pass	Rushmoor	-	-3	-	17
2578_1	A30 London Road	Hart	-	7	-	23
6707_2	A321 Marshall Road	Bracknell Forest	-	194	-	39
1511_1	A322 Bracknell Road	Bracknell Forest	-	59	-	-89
10184_2	B3020 Sunninghill Road	Bracknell Forest	-	-151	-	-24
10190_1	A30 London Road	Windsor and Maidenhead	-	61	-	-41
25_1	B383 Chobham Road	Windsor and Maidenhead	-	-35	-	-123
Percentage change compared with Scenario 1						
34815_2	B386 Longcross Road	Runnymede	-	6%	-	-9%
120602_2	A319 Chobham Road	Runnymede	-	0%	-	-7%
8955_1	A3046 Station Road	Woking	-	0%	-	-4%
3505_2	A322 Guildford Road	Woking	-	7%	-	14%
326159_2	B3012 Guildford Road	Guildford	-	-3%	-	1%
17316_1	B3411 Mytchett Road	Guildford	-	6%	-	2%
325679_1	A331 Blackwater Valley Route	Rushmoor	-	-2%	-	-2%
333313_1	A325 Frimley By-pass	Rushmoor	-	0%	-	1%
2578_1	A30 London Road	Hart	-	1%	-	2%
6707_2	A321 Marshall Road	Bracknell Forest	-	31%	-	3%
1511_1	A322 Bracknell Road	Bracknell Forest	-	2%	-	-3%
10184_2	B3020 Sunninghill Road	Bracknell Forest	-	6%	-	-9%
10190_1	A30 London Road	Windsor and Maidenhead	-	0%	-	-5%
25_1	B383 Chobham Road	Windsor and Maidenhead	-	0%	-	-18%

2.9 Network Hotspots and Mitigation

- 2.9.1 To summarise the traffic impacts identified in this study, Table 2-1 lists the junctions and sections of road which experience a poor Level of Service (D), termed ‘hotspots’. The hotspots are shown geographically in Figure 2-24, and refer to potential problems arising from the implementation of the Local Plan.
- 2.9.2 Hotspots are areas of stress where drivers are subject to considerable delay and are likely to require mitigation to facilitate any development in the local area. This could be ‘hard’ or ‘soft’ measures, or most likely a combination of both. Hard engineering measures could involve increasing the number of lanes of the carriageway or introducing a cycle lane, for example, whilst soft measures could be the implementation of a travel plan to encourage travel by sustainable modes.
- 2.9.3 The hotspots provide a preparatory list of where potential mitigation should be focused, to inform the borough’s Infrastructure Delivery Plan (IDP). With Surrey Heath Borough having adopted Community Infrastructure Levy (CIL) in December 2014, this list of hotspots could also inform a subsequent review of the Borough’s adopted CIL, in accordance with the new requirements for the Local Plan.
- 2.9.4 NOTE: in accordance with the National Planning Policy Framework all individual developments that generate significant amounts of movement should be supported by a specific Transport Statement or Transport Assessment. These are submitted as part of the planning application process.

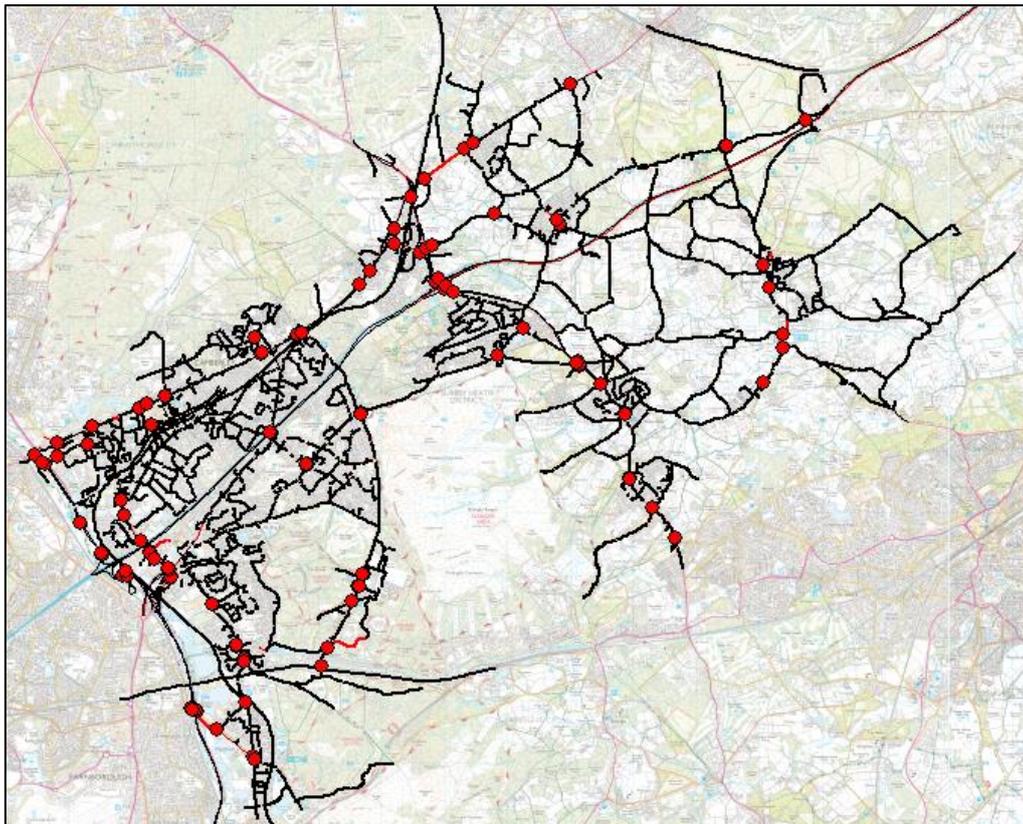
Table 2-6 Network Hotspots

Area	Location
LINKS	
Windlesham	A30 London Road*
	Updown Hill
Bagshot	A30 London Road
	A322 Bracknell Road
	High Street and Guildford Road
Chobham	High Street
	A3046 Station Road
Camberley	A30 London Road*
Frimley	B3411 Frimley Green Road*
	A325 Portsmouth Road/Frimley By-pass
Mytchett	Coleford Road/Bridge Road
Deepcut	Brunswick Road
JUNCTIONS	
Windlesham	A30 London Road j/w B3020 Sunninghill Road
	B386 School Road j/w Church Road*
Bagshot	A30 j/w Bridge Road
	A30 London Road j/w A322 Bracknell Road northbound on slip
	A30 London Road j/w Waterers Way/Waitrose
	A30 London Road j/w Yaverland Drive
	A322 j/w New Road
Camberley	A30 approach to j/w A325 and B3015
	A30 j/w Laundry Lane
	A30 London Road j/w Ceasars Camp Road
	A30 London Road j/w Knoll Road and Kings Ride
	A30 London Road j/w Lower Charles Street
	A30 London Road j/w Park Street
	A325 approach to j/w A30 and B3015
	A331 j/w Admiralty Way
	A331 j/w Sainsburys
	A331 j/w Stanhope Road
	A331 northbound approach to M3 Junction 4
	A331 northbound approach to M3 Junction 4 northbound
	A331 southbound approach to M3 J4 southbound on/offslip

Area	Location
	B3015 The Maultway approach to junction with A325 Portsmouth Road and A30 London Road
	Frimley Business Park approach to M3 Junction 4 roundabout
	M3 Junction 4 westbound offslip
	Stanhope Road j/w Tuscam Way*
Frimley	B3411 Frimley Road j/w Crabtree Road
	B3411 Frimley Green Road northbound approach to Balmoral Drive roundabout
	B3411 Frimley Road j/w Albany Park
	B3411 Frimley Road j/w Gilbert Road
	B3411 Frimley Road j/w James Road
	B3411 Frimley Road j/w Lyon Way
	A325 Frimley By-Pass/Portsmouth Road j/w B3411 Frimley Road and Frimley High Street
	Prior Road approach to roundabout junction with Portsmouth Road*
	B3411 Frimley Green Road southbound approach to roundabout junction with Beresford Close*
Bisley	A322 Bagshot Road j/w Limecroft Road
	A322 j/w Queens Road
West End	A322 Guildford Road j/w Brentmoor Road and Streets Heath
	Hook Mill Lane j/w Burnt Pollard Lane and Rye Grove*
	Fellow Green j/w Beldam Bridge Road*
Lightwater	A322 northbound approach to M3 Junction 3
	A322 southbound approach to M3 Junction 3
	M3 Junction 3 eastbound offslip
	M3 Junction 3 westbound offslip
	Broadway Road j/w Hook Mill Lane*
Longcross	Longcross Road approach to roundabout junction with B386 Chertsey Road and Chobham Lane*

*These junctions and links show a decline in Scenario 2.

Figure 2-24 Network Hotspots for both the AM (0800-0900) and PM (1700-1800) peak hours.



2.9.5 The main roads which serve Surrey Heath in an east-west movement are the A30, M3 and B311/A319, yet they are bunched in the northern half of the borough. The Thames Basin Heaths Special Protection Area, dominates the central section of the Borough. Therefore, the only roads which connect the east of the borough to the west are the A30, M3 and B311. Hence, it would be expected that these would be affected by further development as shown in the Link Analysis Section 2.5,

Junction Analysis Section 2.6 and Motorway Network Section 2.7. Those links and junctions particularly affected are presented in Figure 2-1.

- 2.9.6 Meanwhile, the main roads which serve the north-south movement are the A331, B3411, B3015, A322 and B383. These are more concentrated in the west where the Borough is more built up. Hence, the south-east of the borough is susceptible to rerouting due to less route choice on main roads as seen in the Link Analysis Section 2.5.
- 2.9.7 As drawn upon in the *Surrey Heath Existing Transport Trends & Constraints Report (May 2017)*, due to poor existing public transport provision in the east of the borough it is highly recommended that any development plans for this part of the borough, such as Heathpark Wood and West End Reserve Sites, include a sustainable transport development plan as part of their proposals.
- 2.9.8 Furthermore, of notable concern are the hotspots in the vicinity of Frimley Park Hospital, which contains a major accident and emergency department for the area. As shown in Section 2.6, Figure 2-18 and Figure 2-19, many of the junctions along the B3411 Frimley Road and A325 Portsmouth Road have a high LoS in Scenario 1. Whilst in Section 2.5, Figure 2-15 and Figure 2-14 show that links on the A325 Frimley By-pass and A325 Portsmouth Road have a high LoS in in Scenario 1.
- 2.9.9 Whilst the LoSs do not deteriorate with the addition of the Local Plan in Scenario 2; it is still an issue that growth to 2032 has put pressure on the network here, since it has the potential to effect emergency vehicular access to the accident and emergency department.

3 OVERVIEW OF FINDINGS

- 3.1.1 The potential highway impacts of Surrey Heath Borough's draft Regulation 18 Local Plan have been assessed for the forecast year 2032 using a combination of Surrey County Council's strategic transport model, SINTRAM, and a local model ('Surrey Heath SHAR') derived from it.
- 3.1.2 Two model scenarios have been created:
- a) Scenario 1 is the Do Minimum scenario which presents a future where there is only the currently committed development in Surrey Heath Borough.
 - b) As a continuation of Scenario 1, Scenario 2 represents the options for development as contained in the emerging Surrey Heath Local Plan.
- 3.1.3 The potential highway impacts of the draft Regulation 18 Local Plan have therefore been identified by comparing Scenario 1 Do Minimum with Scenarios 2.
- 3.1.4 NOTE: in accordance with the National Planning Policy Framework all individual developments that generate significant amounts of movement should be supported by a specific Transport Statement or Transport Assessment. These are formed as part of planning application process.
- 3.1.5 Sections 2.5 and 2.6 highlight links and junctions within the Borough which have been forecasted to be under stress, where drivers will be subject to considerable delay. It should be noted that many of these locations already experience congestion issues which are exacerbated by the additional trips arising from the Local Plan developments. These locations are likely to require mitigation to reduce the impact of any development in the local area, and which provide a preparatory list to inform the Borough's Infrastructure Delivery Plan (IDP). With Surrey Heath Borough having

adopted Community Infrastructure Levy (CIL) in December 2014, this list could also inform a subsequent review of the Borough's adopted CIL, in accordance with the new requirements for the Local Plan.

3.2 Key Points

3.2.1 The primary impacts of the Surrey Heath Borough's draft Regulation 18 Local Plan on the highway network can be summarised as follows:

- 1) The overall network differences between Scenarios 1 and 2 are very small. The total vehicle distance is just 0.5% greater in Scenario 2; the vehicle travel time is 1% greater in Scenario 2; and the average speed is only 0.4% less in Scenario 2.
- 2) As would be expected, the worst increases in link flows and junction delay, arising from the Local Plan, are found on routes which surround the proposed new development sites.
- 3) Taking into account all the junction analysis undertaken, many of the junctions experiencing an increase in delay are already shown to be operating over capacity (RFCs greater than 1) in Scenario 1 without the additional development proposed in the Local Plan. In these locations, existing congestion would be exacerbated resulting in a reduction in driver comfort levels and increased stress as a result of further deterioration of traffic conditions.
- 4) Of notable concern is the impact in the vicinity of Frimley Park Hospital. Increases in delay in the area could compromise emergency vehicle access to and from the Hospital.
- 5) The main roads which serve Surrey Heath in an east-west movement are the A30, M3 and B311/A319, yet they are bunched in the northern half of the borough. The Thames Basin Heaths Special Protection Area, dominates the central section of the Borough. Therefore, the only roads which connect the east of the borough to the west are the A30, M3 and B311. Hence, it would be expected that these would be affected by further development as shown in the Link Analysis Section 2.5, Junction Analysis Section 2.6 and Motorway Network Section 2.7. Those links and junctions particularly affected are presented in Figure 2-1.
- 6) Meanwhile, the main roads which serve the north-south movement are the A331, B3411, B3015, A322 and B383. These are more concentrated in the west where the Borough is more built up. Hence, the south-east of the borough is susceptible to rerouting due to less route choice on main roads as seen in the Link Analysis Section 2.5.
- 7) As mentioned in Section 2.3, there are some increases in vehicular trips on the B386 Chertsey Road, B311 Red Road and B3015 The Maultway caused by Local Plan development. These roads are in the vicinity of the Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC). Such increases in trips will have implications of increased Nitrous Oxide deposits. Therefore, it is important to bear in mind the Wealden judgement associated with routing through areas of conservation.

3.2.2 As drawn upon in the *Surrey Heath Existing Transport Trends & Constraints Report (May 2017)*, due to poor existing public transport provision in the east of the borough it is highly recommended that any development plans for this part of the borough, such as Heathpark Wood and West End Reserve Sites, include a sustainable transport development plan as part of their proposals.

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- 3.2.3 Moreover, the analysis in this report shows that the impacts of the Local Plan in Scenario 2 are not considered severe. Therefore, providing suitable mitigation can be identified, particularly in key locations along the A30, A322 and B3411 corridors, highway impacts should not be the determining factor when reviewing the Local Plan. A holistic approach is recommended, taking into account broader accessibility issues together with other environmental, social and economic factors.
- 3.2.4 While the impact of the Local Plan in Scenario 2 may not be severe, Scenario 1 network performance will be relatively poor with many junctions on the main routes operating above capacity. Any development will exacerbate this and shows the importance of planning the spatial strategy and development to receive the lowest level of vehicular trips.