TECHNICAL NOTE

DATE:	06 August 2020	**CONFIDENTIALITY:**	Public
SUBJECT:	London Borough of Hounslow Local Plan Review - Technical Response to Surrey County Council		
PROJECT:	Local Plan Review (West of Borough)	**AUTHOR:**	Jo Riley
CHECKED:	Jon Cassell	**APPROVED:**	Nadia Lyubimova

INTRODUCTION

In response to the London Borough of Hounslow's Local Plan Review for the West of the Borough, Surrey County Council (SCC) have raised several queries about the impact of the planned development on its road network, and are specifically looking for:

- Further analysis of the performance of several key junctions, namely:
    - A308 / M3 Sunbury Cross roundabout
    - A308 / A30 Crooked Billet roundabout
    - A30 / B378 Bulldog junction
    - A30 Clockhouse roundabout
    - A316 Apex Corner
- Further analysis of the performance of key routes throughout the Stanwell, Ashford, Bedfont and Feltham areas, specifically:
    - A308
    - A244
    - B377
    - B378

As a reminder, the following scenarios were considered in the Highway Impact Assessment:

- **Scenario 1 (Do Minimum)** – An adjusted version of the existing LTS 7.1 Reference Case model, with:
    - Background growth in the West of Borough
    - Full growth in the East of Borough (includes the Great West Corridor)
    - Full growth outside the Borough
    - Any committed highway and public transport improvements
- **Scenario 2 (Low Growth)** – As Scenario 1, plus additional 'low' growth in the West of the Borough.
- **Scenario 3 (Low Growth with Mitigation)** – As Scenario 2, but with mitigation measures to mitigate 'low' growth in the West of the Borough.
- **Scenario 4 (High Growth with Mitigation)** – As Scenario 3, but with additional growth in the West of the Borough.

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To identify the areas where mitigation may be required, a comparison of junction Volume to Capacity (V/C) ratios between **Scenarios 2 and 1** was carried out and presented in the "Highway Impact Assessment" report, March 2019.

In addition to this, WSP produced a technical note[1] in December 2019, which detailed the impact of the development in the West of the Borough focussed on the Spelthorne area of Surrey, both in terms of V/C ratios and junction delays. SCC raised the point that the technical note reported the impacts at link level and did not focus on impacts at junction level. In SATURN the impacts exhibited on a link approach to a junction are a function of the impacts on that junction, i.e. the V/C and delay on a link approach to a junction will be reflective of the V/C and delay at that junction.

A range of mitigation measures have been included in **Scenarios 3 and 4** to understand whether the mitigation package is enough to offset the impacts of 'low' or 'high' growth in the West of the Borough. The Highway Impact Assessment report concluded that mitigation measures are likely to provide improved network conditions though will not bring traffic levels back to pre-development levels. The report has also acknowledged that the mitigation measures proposed and discussed are not exhaustive, and that other schemes could further help reduce the transport impact from the proposed 'low' or 'high' growth in the West of the Borough.

ASSESSMENT OF KEY JUNCTIONS

The following key junctions were highlighted by SCC for further analysis, the locations of which can be seen in the plot in Appendix A:

- A308 / M3 Sunbury Cross roundabout
- A308 / A30 Crooked Billet roundabout
- A30 / B378 Bulldog junction
- A30 Clockhouse roundabout
- A316 Apex Corner

Each junction will be assessed by investigating the V/C ratio difference on the link approaches to the junction, as well as the individual V/C ratios on the link approaches in different scenarios.

[1] "London Borough of Hounslow Local Plan Review for the West of the Borough: Surrey / Spelthorne Focus", 16 December 2019.

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Analysis of volume to capacity (V/C) ratio at a junction identifies how the junction is operating in each scenario. V/C ratio can be defined as follows:

- V/C of <80% indicates that a junction is operating within capacity and with spare capacity.
- V/C of 80%-89% means that a junction is still operating within, but is approaching capacity, with some queuing and delays.
- V/C of ≥90% indicates that a junction is operating above capacity, with substantial queues and delays.

The actual flow and delay on the link approaches will also be detailed where necessary to aid in the analysis.

A308 / M3 Sunbury Cross Roundabout

Although there were actual flow increases on several approaches to the Sunbury Cross roundabout in most scenario comparisons because of the growth introduced (please see the actual flow difference plots provided for completeness in Appendix C), the V/C ratio on link approaches to the junctions tells us whether each junction can accommodate the extra flow. The V/C ratio difference plots can be found in Appendix B, along with the V/C ratio plots for each scenario.

AM PEAK

In **Scenario 1** of the AM peak, the Vicarage Road approach is operating with a V/C ratio of 89% (approaching capacity). Meanwhile, the A308 Staines Road East approach exhibits a V/C ratio of 103% (over-capacity), as does the Green Street approach. The A308 Staines Road West approach arm shows a V/C ratio of 93% (over-capacity). All other approaches (the M3 exit slip road and the A316) are operating within capacity.

The introduction of low growth in **Scenario 2** of the AM peak results in a +5% increase in V/C ratio on the Vicarage Road approach to the roundabout, tipping the arm from operating in the band of approaching capacity to operating over-capacity (93%). The increase in V/C ratio on the Vicarage Road approach to the roundabout is accompanied by a +12 second increase in delay on the approach, increasing from 60 seconds in **Scenario 1** to 72 seconds in **Scenario 2**. Vicarage Road is not a strategic route, and so the large flows using the strategic routes and circulating the roundabout (~2600 PCU/hr) with a green time of 57 seconds will lead to delays and a large V/C ratio on the Vicarage Road approach (~500 PCU/hr), which has a green time of 19 seconds. All other approaches exhibit no increases in V/C ratio with the introduction of low growth.

In **Scenario 3**, mitigation is introduced to improve any impact of the low growth. In the AM peak of **Scenario 3**, the mitigation results in a reduction in V/C ratio on the Vicarage Road approach, meaning that the approach reduces to operating with a V/C ratio of 90%, a negligible difference from pre-growth levels. There are no changes in V/C ratio on all other approaches to the roundabout once mitigation is introduced (**Scenario 3** vs **Scenario 2**).

In the high growth with mitigation scenario (**Scenario 4**), no significant changes (>1%) in V/C ratio are seen on any of the link approaches to the roundabout in the AM peak (**Scenario 4** vs **Scenario 3**).

PM PEAK

In the PM peak of **Scenario 1**, the Vicarage Road approach exhibits a V/C ratio of 95% (over-capacity). Both the A308 Staines Road East and the A308 Staines Road West approaches show a V/C ratio of 100% (over-capacity). The Green Street approach has a V/C ratio of 102%. The remaining approaches (the M3 exit slip road and the A316) are operating within capacity.

When the low growth is introduced in **Scenario 2**, no significant V/C ratio changes are seen on the approaches to the roundabout. The Vicarage Road, M3 exit slip road and the A316 approaches all experience a +1% increase in V/C ratio, but this does not affect the band of capacity that the approaches are operating within.

The introduction of mitigation in **Scenario 3** of the PM peak has immaterial impact on the V/C ratios on the link approaches to the roundabout, when compared to **Scenario 2** – no changes greater than +1% were seen.

The same negligible impact is seen in **Scenario 4** when high growth and mitigation is applied.

CONCLUSION

It can therefore be concluded that the impact of the Local Plan growth on the M3 / A308 Sunbury Cross roundabout is negligible. The high V/C ratios seen on the approaches to the roundabout are not a result of the Local Plan growth since the affected approaches are already exhibiting capacity issues in **Scenario 1**. In the case where an increase of V/C ratio was seen with the introduction of low growth (Vicarage Road in the AM peak), this capacity has increased to the pre-growth levels once mitigation was applied in **Scenarios 3 and 4**.

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A30 / A308 Crooked Billet Roundabout

Although there were actual flow increases on several approaches to the roundabout in most scenario comparisons because of the growth introduced (please see the actual flow difference plots provided for completeness in Appendix C), the V/C ratio on approaches to the junction tells us whether the roundabout can accommodate the extra flow. The V/C ratio difference plots can be found in Appendix B, along with the V/C ratio plots for each scenario.

AM PEAK

In **Scenario 1** of the AM peak, the A308 Staines Bypass approach to the roundabout has a V/C ratio of 106% (over-capacity). All other approaches to the junction (A30 London Road, A308 London Road, A30 Staines Bypass, A3044 Stanwell Moor Road) are operating within capacity (V/C ratio <80%) in **Scenario 1**.

The introduction of the low growth in **Scenario 2** has no adverse impact on the V/C ratio on the approaches to the junction, with all approaches remaining at the same V/C ratio or less than that of **Scenario 1**.

Once mitigation is applied to the low growth (**Scenario 3**), any adverse effects on the V/C ratio on the approaches are immaterial (<1% increase from **Scenario 2**). In fact, several of the approaches indicate that the mitigation has improved the V/C ratio by up to -9% (seen on Stanwell Moor Road). The band of capacity of all approaches remains as it was in **Scenario 1**.

The same is true when high growth is introduced in **Scenario 4**; any changes in V/C ratio between **Scenarios 3 and 4** are immaterial (<1%).

PM PEAK

In the PM peak of **Scenario 1**, the A308 Staines Bypass approach to the roundabout exhibits a V/C ratio of 84% (approaching capacity). Also, the A30 Staines Bypass approach shows a V/C ratio of 83% (approaching capacity). Meanwhile, the A3044 Stanwell Moor Road approach has a V/C ratio of 101% (over-capacity). The remaining approaches to the junction (A30 London Road and A308 London Road) are operating within capacity (V/C ratio <80%) in **Scenario 1**.

Introducing the low growth in **Scenario 2** results in no significant impact on the V/C ratio of the approaches to the roundabout. The largest increase in V/C ratio is +2%, seen on the A30 Staines Bypass approach, and so the arm is still operating in the same band of capacity as in **Scenario 1**.

The mitigation for the low growth is applied in **Scenario 3**. The largest increase in V/C ratio between **Scenarios 2 and 3** is +4% seen on both the A308 Staines Bypass approach and the A30 London Road approach. The A30 London Road approach remains operating within capacity (V/C ratio of 68%) in **Scenario 3** despite the increase in V/C ratio. Similarly, the A308 Staines Bypass approach remains in the

same band of capacity as in **Scenarios 1 and 2** (approaching capacity), despite the increase in V/C ratio. All other approaches see no change or a decrease in V/C ratio in **Scenario 3**.

When the high growth is introduced in **Scenario 4**, the largest V/C ratio increase between **Scenarios 3 and 4** of +4% was again seen on the A30 London Road approach. The approach is still operating within capacity however, with a V/C ratio of 72%. Increases in V/C ratio are also seen on the A30 Staines Bypass approach and the A308 Staines Bypass approach of +3% and +1% respectively, but neither result in the approach changing capacity bands and becoming over-capacity. All remaining approaches see either no change or a reduction in V/C ratio with the introduction of high growth with mitigation.

CONCLUSION

It can be concluded that the impact of the Local Plan growth on the A30 / A308 Crooked Billet roundabout is negligible. The high V/C ratios seen on some approaches are exhibited in all scenarios (including **Scenario 1**), and so are not a result of the Local Plan growth. Any increases in V/C ratio that are a result of introducing the growth do not result in the approach operating in a higher band of capacity than that seen in **Scenario 1**.

It is suggested that signalising the A308 Staines Bypass approach may be beneficial in improving the high V/C ratios seen, particularly in the AM peak. In addition, optimisation of the signal timings at the junction could help to improve the high V/C ratios seen on the already signalised arms, such as the A3044 Stanwell Moor Road and the A30 Staines Bypass.

A30 / B378 Bulldog Junction

There were actual flow increases on several approaches to the A30 / B378 junction in most scenario comparisons because of the growth introduced (please see the actual flow difference plots provided for completeness in Appendix C). The V/C ratio on the approaches to the junction tells us whether the junction can accommodate the extra flow. The V/C ratio difference plots can be found in Appendix B, along with the V/C ratio plots for each scenario.

AM PEAK

In the AM peak of **Scenario 1**, the B378 Town Lane approach to the junction is operating with a V/C ratio of 85% (approaching capacity). The B378 Stanwell Road approach exhibits a V/C ratio of 97% (over-capacity). The A30 London Road eastbound and westbound approaches are both operating within capacity in **Scenario 1**, with V/C ratios of 71% and 73% respectively.

The introduction of low growth in **Scenario 2** results in the V/C ratio on the A30 London Road eastbound approach and the B378 Stanwell Road approach increasing by +1%. A +2% increase in V/C ratio is seen on the A30 London Road westbound approach (the arm is still operating within capacity). The B378 Town Lane approach sees the largest increase in V/C ratio of +3%, but the arm remains operating in the same band of capacity as **Scenario 1**.

With the application of mitigation in **Scenario 3**, the V/C ratio improves by a maximum of -5% between **Scenarios 2 and 3** on the B378 Town Lane approach, the B378 Stanwell Road approach, and the A30 London Road eastbound approach. However, on the A30 London Road westbound approach, the V/C ratio increases by +5%. The approach remains operating within capacity, with a V/C ratio of 79%.

In **Scenario 4**, the high growth is introduced, resulting in increases in V/C ratio on all approaches between **Scenarios 3 and 4**. The A30 London Road eastbound approach and the B378 Stanwell Road approach see V/C ratio increases of +2% and +3% respectively. These increases do not result in the capacity band of the approaches changing (A30 eastbound remains within capacity and the B378 Stanwell Road remains over-capacity). However, a +5% increase in the V/C ratio is seen on the A30 London Road westbound approach which results in the arm going from operating within capacity (79% in **Scenario 3**) to approaching capacity (84% in **Scenario 4**). In addition, the B378 Town Lane approach exhibits a +13% increase in V/C ratio, which takes the approach from approaching capacity (86% in **Scenario 3**), to over-capacity (99% in **Scenario 4**).

PM PEAK

In the PM peak of **Scenario 1**, the B378 Town Lane approach to the junction is operating with a V/C ratio of 96% (over-capacity). The A30 London Road westbound approach exhibits a V/C ratio of 80% (approaching capacity). The B378 Stanwell Road and the A30 London Road westbound approaches are both operating within capacity in **Scenario 1**, with V/C ratios of 48% and 73% respectively.

When the low growth is applied in **Scenario 2**, any increases in V/C ratio seen are immaterial (no increases greater than +1%). A -1% decrease in V/C ratio is seen on the A30 London Road westbound approach, resulting the arm reducing to operating within capacity (79%).

Introducing the mitigation in **Scenario 3** results in decreases in V/C ratio or a small change (1% or less) between **Scenarios 2 and 3** on the B378 northbound and southbound approaches, as well as the A30 London Road eastbound approach. However, there is +10% increase in V/C ratio seen on the A30 London Road westbound approach. This results in the arm operating with a V/C ratio of 89% (approaching capacity) in **Scenario 3**.

The high growth in **Scenario 4** results in immaterial or no change in V/C ratio on the B378 northbound and southbound approaches when compared to **Scenario 3**. An increase in V/C ratio of +4% is seen on the A30 London Road eastbound approach, but the approach is still operating within capacity in **Scenario 4**

(79%). Finally, an increase of +3% occurs on the A30 London Road westbound approach, resulting in the approach changing to operating over-capacity in **Scenario 4** (92%).

CONCLUSION

The impact of the development at Heathrow Gateway and Bedfont Lakes, particularly in **Scenario 4**, results in increases in traffic flow of around 200 PCU/hr on the A30 approaches to the junction, leading to increases in V/C ratio on these approaches in the growth scenarios in both peaks.

The increased flow on the A30 combined with trip generation from the Tesco and Ashford hospital nearby exacerbate V/C increases at the B378 Town Lane approach. This approach is adversely affected by the growth introduced in the Local Plan when combined with the already present trip generation from the Tesco and Ashford Hospital in the AM peak. However, in the PM peak, the mitigation introduced is enough to take the capacity back to below pre-development levels.

It is suggested that the V/C ratios seen on the approaches to this junction could be improved by optimisation of the signal timings.

A30 Clockhouse Roundabout

There were actual flow increases on several approaches to the Clockhouse roundabout in most scenario comparisons because of the growth introduced (please see the actual flow difference plots provided for completeness in Appendix C). The V/C ratio on link approaches to the junctions tells us whether each junction can accommodate the extra flow. The V/C ratio difference plots can be found in Appendix B, along with the V/C ratio plots for each scenario.

AM PEAK

In the AM peak of **Scenario 1**, the A315 Staines Road approach to the roundabout is operating with a V/C ratio of 91% (over-capacity). Similarly, the B3003 Clockhouse Lane approach has a V/C ratio of 104% (over-capacity). The A30 Staines Road approach is approaching capacity with a V/C ratio of 89%. Both the A30 Great South-West Road approach and the Bedfont Road approach are operating within capacity, with V/C ratios of 69% and 78% respectively.

With the introduction of low growth in **Scenario 2**, changes in V/C ratio of 1% or less are seen on the A30 Great South-West Road, A30 Staines Road and B3003 Clockhouse Lane approaches. However, on both the Bedfont Road approach and the A315 Staines Road approach, an increase in V/C ratio of +5% is seen. This results in the Bedfont Road approach now operating with a V/C ratio of 83% (approaching capacity), but the A315 Staines Road approach remains in the same band of capacity (over-capacity).

The introduction of the mitigation in **Scenario 3** (including a major highway improvement scheme at the Clockhouse Roundabout) has a positive impact on the approaches to the roundabout, with no increases in V/C ratio seen between **Scenarios 2 and 3**. The A30 Staines Road approach, and the Bedfont Road approach are now operating within capacity in **Scenario 3** as a result of the mitigation. The V/C ratio of all remaining approaches returns to below the pre-development level (i.e. less than **Scenario 1**).

The same is seen in **Scenario 4** with the introduction of the high growth. Though there is an increase in V/C ratio of +8% on the A315 Staines Road approach between **Scenarios 3 and 4**, it is still operating at a lower V/C ratio than in **Scenario 1** (90%). Bedfont Road sees an increase in V/C ratio of +2% between **Scenarios 3 and 4**, but it remains in the same capacity band (approaching capacity). All remaining approaches see a decrease in V/C ratio between **Scenarios 3 and 4**, remaining operating at a lower V/C ratio than in **Scenario 1**.

PM PEAK

In the PM peak of **Scenario 1**, the A315 Staines Road approach to the roundabout is operating with a V/C ratio of 94% (over-capacity). Similarly, the B3003 Clockhouse Lane approach has a V/C ratio of 93% (over-capacity). The A30 Great South-West Road approach is also operating over-capacity with a V/C ratio of 101%. The Bedfont Road approach is operating over-capacity with a V/C ratio of 90%. The A30 Staines Road approach is operating within capacity, with a V/C ratio of 77%.

When the low growth is introduced in **Scenario 2**, the B3003 Clockhouse Lane and the A30 Staines Road approaches see negligible changes in V/C ratio (1% or less). The Bedfont Road approach and the A315 Staines Road approach exhibit increases in V/C ratio of +2%, neither of which alter the band of capacity that the approach is operating in. The same is true of the +3% increase in V/C ratio shown on the A30 Great South-West Road – the V/C increases to 105%, remaining over-capacity.

The introduction of mitigation in **Scenario 3** has a positive effect on all approaches. Large decreases in V/C ratio between **Scenarios 2 and 3** of up to -24% are seen, reducing to below pre-development levels on most approaches.

A similar result is seen in **Scenario 4** with the introduction of high growth. Though increases in V/C ratio are seen on most approaches when compared to **Scenario 3**, the V/C ratios on all approaches except Bedfont Road (which is operating at 96% capacity) are still below pre-development levels.

CONCLUSION

The impact of the Local Plan growth and mitigation on the Clockhouse roundabout is deemed positive overall. A major highway improvement scheme at the Clockhouse Roundabout, including the construction of a short tunnel on the A30 has been tested. Though some increases in V/C ratio were seen in **Scenario 2**

with the introduction of low growth, this was mostly improved with the application of mitigation in **Scenarios 3 and 4**, and often resulted in the approaches operating at an improved capacity to that of **Scenario 1**.

A316 Apex Corner

There were actual flow increases on several approaches to the Apex Corner roundabout in most scenario comparisons because of the growth introduced (please see the actual flow difference plots provided for completeness in Appendix C). The V/C ratio on link approaches to the junctions tells us whether each junction can accommodate the extra flow. The V/C ratio difference plots can be found in Appendix B, along with the V/C ratio plots for each scenario.

AM PEAK

In the AM peak of **Scenario 1**, the A316 Country Way approach, the A316 Great Chertsey Road approach, the A312 Hampton Road West approach, and the A305 Twickenham Road approach are all operating over-capacity, with V/C ratios of 105%, 103%, 108% and 117% respectively. Conversely, the A312 Hampton Road East approach is operating within capacity, with a V/C ratio of 77%.

The introduction of the low growth in **Scenario 2** has a small impact on all approaches with a maximum increase in V/C ratio of +1% seen on the A316 Country Way and A312 Hampton Road West approaches. The remaining approaches see no change in V/C ratio.

With the introduction of mitigation in **Scenario 3**, reductions or no changes in V/C ratio are seen on all approaches (maximum reduction of -1%) when compared to **Scenario 2**.

The introduction of high growth in **Scenario 4** has immaterial effect on V/C, with negligible decreases or no changes in V/C ratio seen when compared with **Scenario 3**.

PM PEAK

In the PM peak of **Scenario 1**, the A316 Country Way approach, the A316 Great Chertsey Road approach, the A312 Hampton Road West approach, and the A305 Twickenham Road approach are all operating over-capacity, with V/C ratios of 103%, 101%, 108% and 101% respectively. Meanwhile, the A312 Hampton Road East approach is operating with a V/C ratio of 82% (approaching capacity).

The introduction of the low growth in **Scenario 2** has little effect on all approaches with a maximum increase in V/C ratio of +1% seen on the A312 Hampton Road West approach. The remaining approaches see no change in V/C ratio.

With the introduction of mitigation in **Scenario 3**, reductions or no changes in V/C ratio are seen on all approaches (maximum reduction of -2%) when compared to **Scenario 2**.

The introduction of high growth in **Scenario 4** has small changes in V/C ratio seen (maximum increase of +2% on A312 Hampton Road West) when compared with **Scenario 3**.

CONCLUSION

It can be concluded that the impact of the Local Plan growth on the A316 Apex Corner junction is small, with very little effect being seen in either peak in any scenario comparison. The high V/C ratios seen on the approaches to the roundabout are not a result of the Local Plan growth since the affected approaches are already exhibiting capacity issues in **Scenario 1**. It is suggested that signalising this junction may be beneficial to improve capacity.

Other Notable V/C Ratio Increases

SCENARIO 2 VS SCENARIO 1

AM PEAK

- There are no notable V/C ratio increases on strategic junctions in the AM peak of **Scenario 2** vs **Scenario 1** that have not already been discussed.

PM PEAK

- V/C ratio increase of +11% on the **M4 Junction 4** westbound entrance slip road, increasing from 81% (approaching capacity) in **Scenario 1**, to 92% (over-capacity) in **Scenario 2**. There is an increase of +217 PCU/hr joining the M4 here, due to the proximity of the junction to the Heathrow Gateway development, which results in the increased V/C ratio. The V/C ratio at this junction is largest in **Scenario 2**. In the scenarios with mitigation (3 and 4), the V/C ratio reduces to the band of 'approaching capacity' as in **Scenario 1**, and so this junction is not impacted significantly by the growth introduced once mitigation is applied.
- V/C ratio increase of +11% on **A315 Staines Road** eastbound approach to junction with Green Lane, increasing the V/C ratio from 73% in **Scenario 1**, to 84% in **Scenario 2**. The V/C ratio of the straight-ahead movement on the A315 increases from 89% (approaching capacity) to 94% (over-capacity). An increase in actual flow due to the proximity of the junction to both the Heathrow Gateway and Bedfont Lakes developments of +44 PCU/hr is seen on this movement, tipping the straight-ahead movement from approaching to over-capacity. Although the increase in V/C ratio

may seem significant, the mitigation introduced sees an improvement in V/C, reducing to operating within capacity again, and so the impact of the Local Plan growth is not deemed to be material.

SCENARIO 3 VS SCENARIO 2

AM PEAK

- There are no notable V/C ratio increases on strategic junctions in the AM peak of **Scenario 3** vs **Scenario 2** that have not already been discussed.

PM PEAK

- V/C ratio increase of +34% on **A30 Great South-West Road** south-westbound approach to Dick Turpin Way, resulting in an increase in V/C ratio to 67% (within capacity) in **Scenario 2**, to 101% (over-capacity) in **Scenario 3**. There is blocking back at the next junction on the A30 with Faggs Road, causing delays of more than 100 seconds at the junction with Dick Turpin Way. The same is seen in **Scenario 4** with the same V/C ratio of 101%. Although this is a significant increase in V/C ratio and delay, it is suggested that these could be improved with signal optimisation at this junction as well as the A30 / Faggs Road junction.
- V/C ratio increase of +17% on **A315 Staines Road westbound** approach to the junction with Green Lane, with the V/C ratio increasing from 66% (within capacity) in **Scenario 2**, to 83% (approaching capacity) in **Scenario 3**. The right turning movement from the A315 to Green Lane sees a V/C ratio greater than 100% in both scenarios. This combined with the increase in flow seen in the area due to the growth introduced, results in an increase in V/C at the approach. This impact is due to the low growth in the Local Plan but is not considered severe.
- V/C ratio increase of +13% on the **A30** approach to merge with the A308 The Glanty, near Egham. The V/C ratio at this junction increases from 84% (approaching capacity) in **Scenario 2**, to 98% (over-capacity) in **Scenario 3**. The next junction on the A308 (Egham Bypass / Windsor Road roundabout) blocks back, resulting in a delay increase of +20 secs at the A30 approach, and an increased V/C. The V/C ratio at the Egham Bypass / Windsor Road roundabout is >100% in all scenarios and does not change by more than 1% between scenarios. It is suggested that the performance of the Egham Bypass / Windsor Road roundabout could be improved with signalisation at this junction.

SCENARIO 4 VS SCENARIO 3

AM PEAK

- There are no notable V/C ratio increases on strategic junctions in the AM peak of **Scenario 4** vs **Scenario 3** that have not already been discussed.

PM PEAK

- V/C ratio increase of +12% on the **Stanwell Road** westbound approach to the junction with the A30 Great South-West Road, resulting in an increase of V/C ratio from 75% (within capacity) in **Scenario 3**, to 87% (approaching capacity) in **Scenario 4**. Large increases in traffic in the growth scenarios due to developments such as Heathrow Gateway results in delays on this non-strategic approach, due to the volume of traffic using the junction at Heathrow airport.

ASSESSMENT OF KEY ROUTES

The following key routes were highlighted by SCC for further analysis:

- A308
- A244
- B377
- B378

The location of the routes assessed can be seen in the plot in Appendix A.

A308

The key junctions (highlighted by SCC) along the A308 route are the Crooked Billet roundabout and the Sunbury Cross roundabout, the analysis of which can be found in the 'Assessment of Key Junctions' section.

There are no junctions on the A308 route that are significantly adversely affected by the growth introduced in the Local Plan, evidenced by the fact that any junctions experiencing capacity issues, are also experiencing these issues in **Scenario 1**. The junctions on the route will see an increase in flow throughput that is a result of the background growth in the area, and this is translated into small delays and V/C ratio increases on the route, but no significant increases from what is seen in **Scenario 1**. The actual flow difference plots between each scenario are provided in Appendix C for completeness.

For the information of SCC, the following strategic junctions (not already mentioned) on the A308 route are exhibiting signs of capacity issues (V/C ratio >80%) on one or more approaches across all scenarios in the AM and / or PM peak. These capacity issues are not as a result of the Local Plan growth, as the junctions are experiencing capacity issues in all scenarios:

- A308 London Road / A308 South Street / Mustard Mill Road junction
- A308 / B377 Fordbridge Roundabout
- A308 Kingston Road / A308 Staines Road West / B378 School Road / Ashford Road junction
- A308 Staines Road West / A244 Cadbury Road / A244 Windmill Road junction

A244

There are no key junctions (highlighted by SCC) along the A244 route.

There are no junctions on the A244 route that are significantly adversely affected by the growth introduced in the Local Plan, shown by the fact that any junctions that are operating close to or over-capacity, are also operating similarly in **Scenario 1**. The junctions on the route will see an increase in flow throughput that is a result of the background growth in the area, and this could be translated into small delays and V/C ratio increases along the route, but no significant increases from what is seen in **Scenario 1**.

For the information of SCC, the following strategic junctions (not already mentioned) on the A244 route are exhibiting signs of capacity issues (V/C ratio >80%) on one or more approaches across all scenarios in the AM and / or PM peak. These capacity issues are not as a result of the Local Plan growth, as the junctions are experiencing capacity issues in all scenarios:

- A244 Gaston Bridge Road / A244 Walton Bridge Road / B375 Russell Road / Fordbridge Road (Marshall's roundabout)
- A244 Gaston Bridge Road / B376 Green Lane roundabout
- A244 Ashford Road / A244 Chertsey Road / B377 Ashford Road / Chertsey Road junction
- A244 Ashford Road / A244 High Street / Sunbury Road / St. Dunstans Road junction
- A244 High Street / Browells Lane / Highfield Road junction
- A244 Hounslow Road / Hanworth Road junction
- A244 Hounslow Road / New Road junction
- A244 Hounslow Road / A312 Harlington Road East / A312 Harlington Road West junction
- A244 Hounslow Road / A315 Staines Road junction

B377

There are no key junctions (highlighted by SCC) along the B377 route.

No junctions on the B377 route are significantly adversely affected by the growth introduced in the Local Plan, evidenced by the fact that any junctions experiencing capacity issues, are also experiencing these issues in **Scenario 1**. The junctions on the route will therefore see an increase in flow throughput that is a result of the background growth in the area, and this could be translated into small delays and V/C ratio increases on the route, but no significant increases from what is seen in **Scenario 1**.

For the information of SCC, the following strategic junctions (not already mentioned) on the B377 route are exhibiting signs of capacity issues (V/C ratio >80%) on one or more approaches across all scenarios in the AM and / or PM peak. These capacity issues are not as a result of the Local Plan growth, as the junctions are experiencing capacity issues in all scenarios:

- B377 Ashford Road / B377 Kingston Road / Kingston Road roundabout
- B377 Fordbridge Road / B378 Church Road junction
- B377 Feltham Road / B378 Convent Road / B3003 Clockhouse Lane roundabout

B378

There is one key junction (highlighted by SCC) on the B378 route, namely the A30 / B378 junction, the analysis of which can be found in the ‘Assessment of Key Junctions’ section.

There are no junctions on the B378 route that are significantly adversely affected by the growth introduced in the Local Plan, evidenced by the fact that any junctions experiencing capacity issues, are also experiencing these issues in **Scenario 1**. The junctions on the route will therefore see an increase in flow throughput that is a result of the background growth in the area, and this could be translated into small delays and V/C ratio increases on the routes, but no significant increases from what is seen in **Scenario 1**.

For the information of SCC, the following strategic junctions (not already mentioned) on the B378 route are exhibiting signs of capacity issues (V/C ratio >80%) on one or more approaches across all scenarios in the AM and / or PM peak. These capacity issues are not as a result of the Local Plan growth, as the junctions are experiencing capacity issues in all scenarios:

- B378 Park Road / A3044 Stanwell Moor Road junction
- B378 Park Road / B378 Town Lane / High Street roundabout

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CHECKED:	Jon Cassell	**APPROVED:**	Nadia Lyubimova

CONCLUSION

This technical note has given further detail and analysis in response to the points raised by SCC with regards to the impacts of the London Borough of Hounslow's Local Plan on the areas of Stanwell, Bedfont, Feltham and Ashford. Specific attention was given to several key junctions and routes identified by SCC.

Although the growth introduced in **Scenarios 2, 3 and 4** is shown to have an impact on the network, particularly with regards to the V/C ratio of key junctions in the area, it is more often than not, not considered a significant impact, since the V/C ratio remains in the same band of capacity when the growth is introduced. The impact of the high growth in particular is most noticeable at the junctions in the vicinity of the Bedfont Lakes and Heathrow Gateway developments.

The key junctions mentioned by SCC are all exhibiting V/C ratios representative of a junction that is approaching capacity or over-capacity. It must be noted however, that several of the junctions in the assessed area (including the key junctions) are already operating close to or over-capacity in **Scenario 1**, the Do Minimum scenario.

The Highway Impact Assessment report (March 2019) demonstrated that the mitigation measures in **Scenarios 3 and 4** are likely to provide improved network conditions, though the mitigation package will not bring traffic levels back to pre-development levels. The list of mitigation measures tested in **Scenarios 3 and 4** is not exhaustive and other mitigation could help further reduce the transport impact from the proposed growth.

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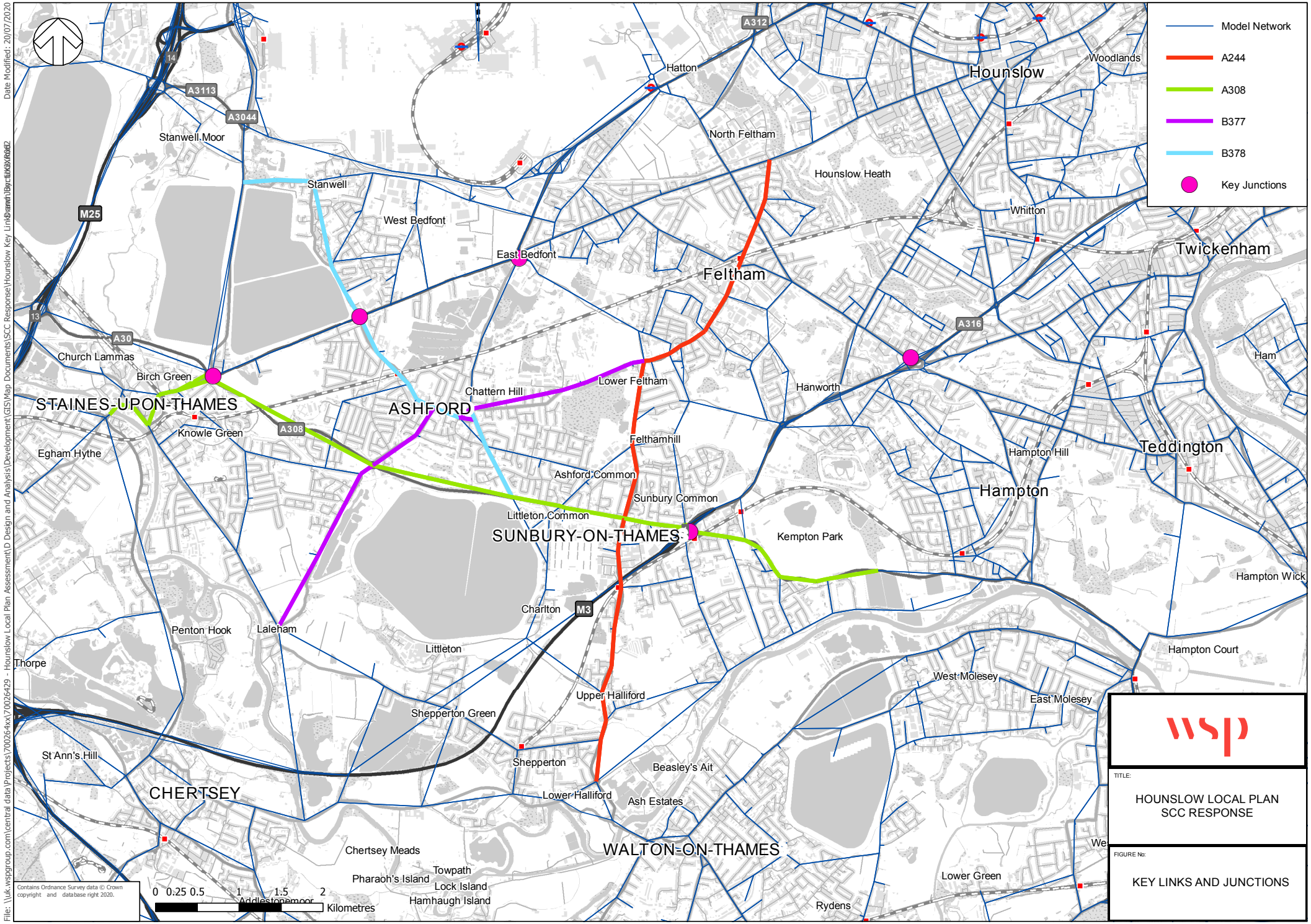
APPENDIX A

Key Links and Junctions identified by Surrey County Council


Model Network
A244
A308
B377
B378
Key Junctions
Hounslow
Woodlands
Hatton
North Feltham
Hounslow Heath
Whitton
Twickenham
Feltham
East Bedfont
West Bedfont
Stanwell
Stanwell Moor
A3113
A3044
A312
M25
A30
A316
Church Lammas
Birch Green
STAINES-UPON-THAMES
Knowle Green
Egham Hythe
A308
ASHFORD
Chattern Hill
Lower Feltham
Hanworth
Ham
Felthamhill
Hampton Hill
Teddington
Ashford Common
Sunbury Common
Hampton
Littleton Common
SUNBURY-ON-THAMES
Kempton Park
Hampton Wick
Charlton
M3
Penton Hook
Laleham
Littleton
Thorpe
Hampton Court
West Molesey
East Molesey
Upper Halliford
Shepperton Green
St Ann's Hill
Shepperton
Beasley's Ait
CHERTSEY
Lower Halliford
Ash Estates
Chertsey Meads
WALTON-ON-THAMES
Towpath
Pharaoh's Island
Lock Island
Hamhaugh Island
Lower Green
Rydens
0 0.25 0.5 1 1.5 2
Kilometres
Contains Ordnance Survey data © Crown copyright and database right 2020.
wsp
TITLE:
HOUNSLOW LOCAL PLAN
SCC RESPONSE
FIGURE No:
KEY LINKS AND JUNCTIONS
Date Modified: 20/07/2020
File: \\uk.wspgroup.com\central data\Projects\70026429xx\70026429 - Hounslow Local Plan Assessment\D Design and Analysis\Development\GIS\Map Documents\SCC Response\Hounslow Key Links and Junctions.mxd

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APPENDIX B

V/C Ratio Difference and V/C Ratio plots

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APPENDIX C

Actual Flow Difference plots