Tunbridge Wells Local Plan – Strategic Transport Assessment Addendum

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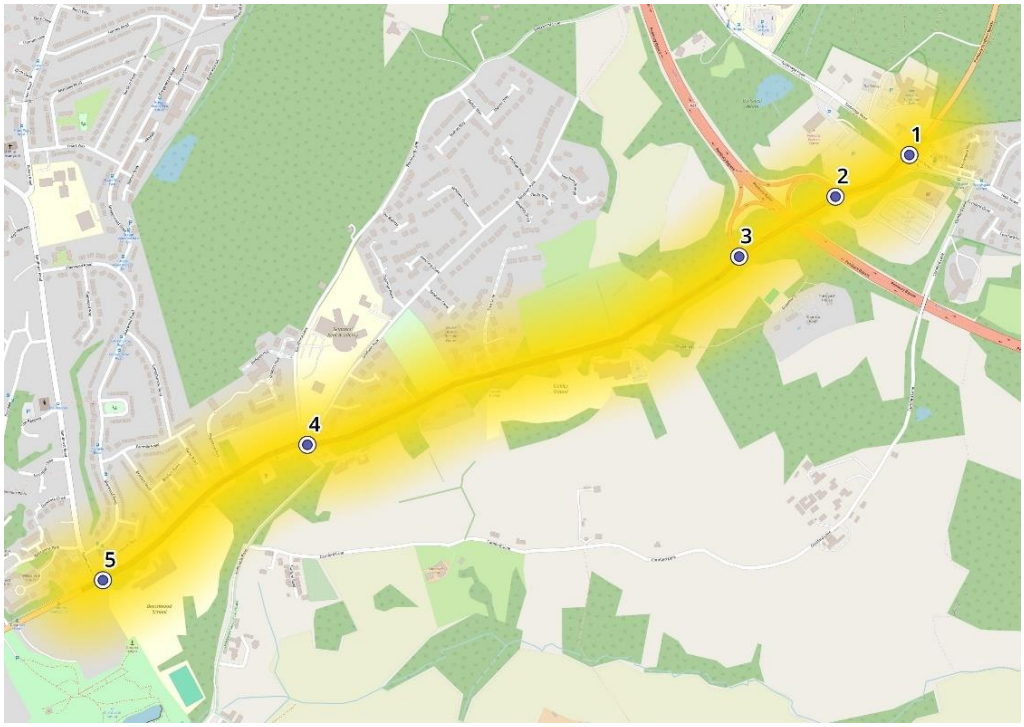
1. Introduction

Sweco has been commissioned by Tunbridge Wells Borough Council (TWBC) to undertake further traffic modelling for the TWBC Local Plan submission to assist in addressing Inspector's comments at the Examination in Public (EiP) for the TWBC Local Plan. The work undertaken is set out in the Tunbridge Wells Local Plan - Strategic Transport Assessment (STA)[1].

During the Local Plan modelling, improvements to the Pembury Road corridor (illustrated in Figure 1) were identified as a potential highway mitigation option. At the time, Stantec was looking at potential improvement options along the corridor however detailed proposals were not available.

Figure 1: Pembury Road Junctions



To reflect an emerging scheme along the corridor, strategic modelling using the Tunbridge Wells Traffic Model (TWTM) assumed an uplift in capacity of 10% at the five junctions illustrated in Figure 1. These assumptions were included within the Local Plan Highway Mitigation Option 2 (LPHM2) scenario. It was the intention to review these assumptions following the completion of the optioneering work undertaken by Stantec with a view to undertaking an updated model run once more detailed proposals were available.

[1] TWLP_123-Appendix-1-SWECO-Strategic-Transport-Assessment.pdf (tunbridgewells.gov.uk)

Stantec's study is now complete with the findings reported in A264 Pembury Road Corridor – Junction Capacity Assessment Technical Note. The study identified deliverable improvements at 4 of the 5 junctions on the corridor.

The STA also identified other highway measures required to mitigate the impact of Local Plan traffic and the estimated year these will be needed. This analysis estimated the Colts Hill Bypass and Badsell Roundabout schemes will be needed in 2029. This was a high-level assessment which considered when Badsell Roundabout is forecast to become over capacity in both peaks due to a combination of Reference Case and Local Pan development. Following the publication of the STA, and further discussions between Sweco, Stantec and TWBC, further information was requested on when the impact of Local Plan traffic in isolation is expected to have a significant impact on the operation of Badsell Roundabout. Further analysis has therefore been undertaken to estimate the likely future year when the impact of Local Plan traffic at Badsell Roundabout will meet the 'hotspot' criteria.

This technical note details the results of the updated strategic model run of the LPHM2 scenario, incorporating the interventions presented in A264 Pembury Road Corridor – Junction Capacity Assessment Technical Note. The results presented in this note supersede those presented for the LPHM2 scenario in Section 5.11 of the STA. This note also presents the new analysis on the required delivery date of the Colts Hill Bypass and Badsell Roundabout schemes. It should be read in conjunction with the STA.

2. Model Scenario

The revised LPHM2 model includes the following interventions:

- Sustainable Transport Interventions (see Chapter 4 of STA)
- Colts Hill Bypass
- Badsell Roundabout Improvements
- Somerhill Roundabout Improvements
- Hop Farm Roundabout Improvements
- Pembury Road Capacity Improvements
    - A228 Pembury Road / Tonbridge Road (Woodgate Corner)
    - A228 Pembury Road A21 flyover South West Dumbbell
    - A264 Pembury Road / Hall's Hole Road
    - A264 Pembury Road / Sandhurst Road

No improvements at Kipping's Cross are included in this scenario.

3. Model Results

Traffic Flow Differences

The impact of the highway mitigation interventions on traffic flows is illustrated in the flow difference plots presented in Figure 2 (AM) and Figure 3 (PM). These compare the revised LPHM2 scenario with the Local Plan Modal Shift (LPMS) scenario.

Figure 2: Local Plan Highway Mitigation Option 2 – Local Plan Modal Shift Flow Difference AM

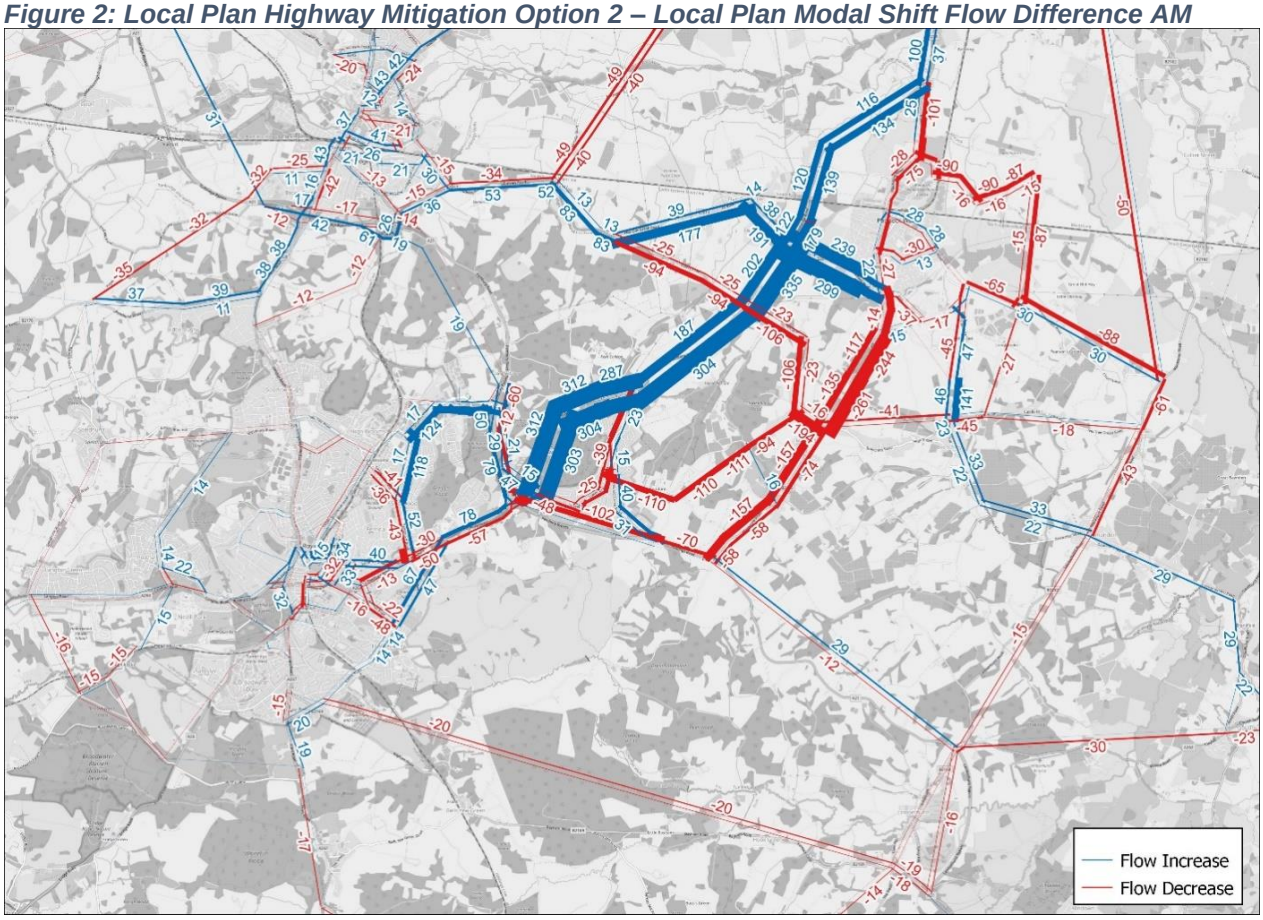
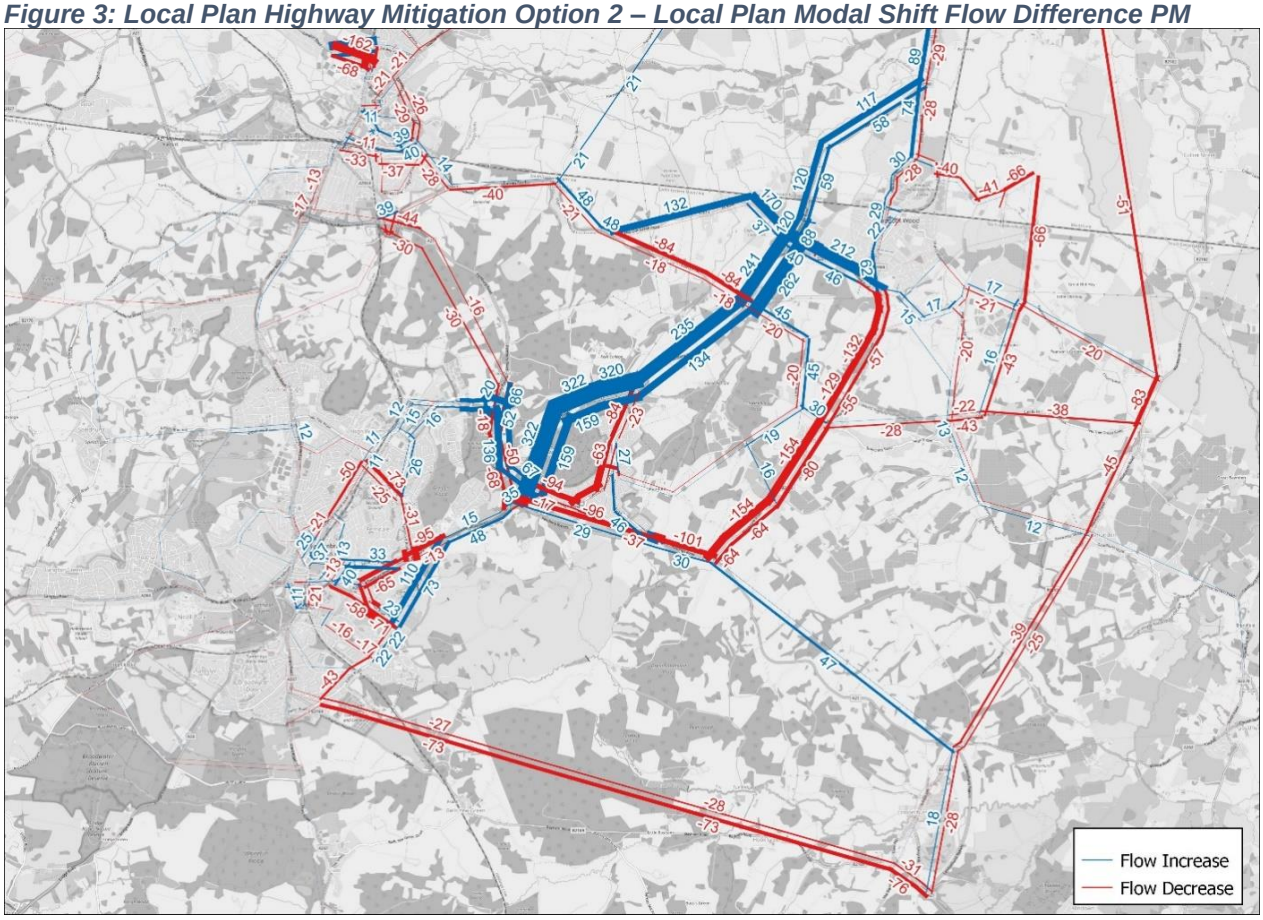


Figure 3: Local Plan Highway Mitigation Option 2 – Local Plan Modal Shift Flow Difference PM



The above demonstrates a notable increase in traffic on the A228 corridor. This can be attributed to the Badsell Roundabout improvement, Colts Hill bypass and Pembury Road junction interventions. The combination of these interventions leads to a greater increase in traffic along this corridor in comparison to the Local Plan Highway Mitigation Option 1 (LPHM1) scenario which does not include the Pembury Road junction improvements. There are corresponding decreases on the alternative routes via Kipping's Cross and Pembury.

Hotspots

The identification of hotspots for the revised LPHM2 scenario follows the same methodology as the LP Core and LPMS scenarios, as discussed in Section 3.3 of the STA. The analysis has identified the following high-level summary:

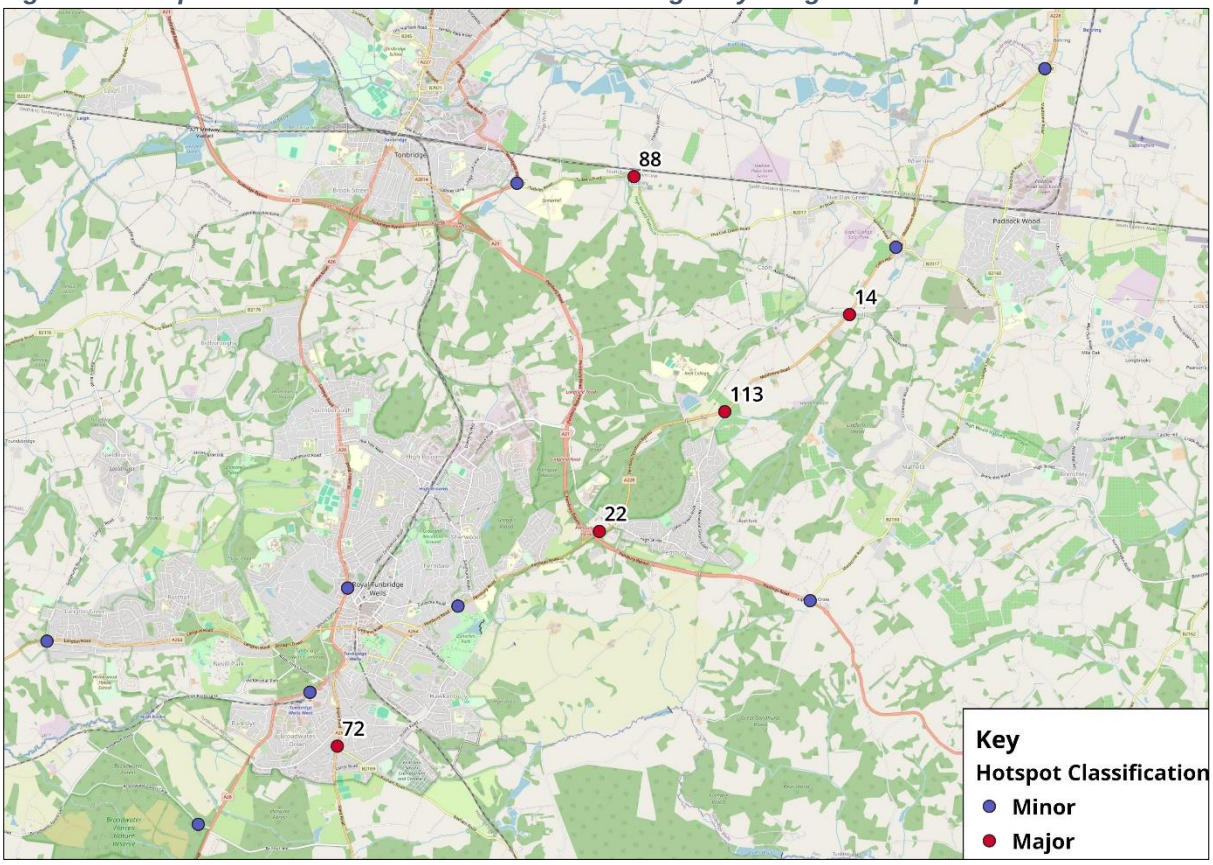
- 9 'minor' hotspot junctions – this is the same number as in the LPMS scenario. It should be noted that 4 of these junctions were classed as 'major' hotspots in the LPMS scenario.
- 5 'major' hotspot junctions - a reduction from 8 in the LPMS scenario. These include 3 that remain from the LPMS scenario and 2 additional locations.

The 'major' hotspots are summarised in Table 1 and illustrated in Figure 4.

Table 1: Major Hotspot Summary – Local Plan Highway Mitigation Option 2 Scenario

ID	Junction name	Location
14	A228 / Alders Road / Crittenden Road	Paddock Wood
22	A228 Pembury Road A21 flyover North East Dumbbell	Pembury
72	A267 / B2169 Birling Road	Royal Tunbridge Wells
88	B2017 / Hartlake Road	Tudeley
113	A228 / Maidstone Road	Pembury

Figure 4: Hotspot Junction Locations – Local Plan Highway Mitigation Option 2 Scenario



A total of 5 junctions that fall out of the 'major' hotspot list from the LPMS scenario, 3 are as a direct result of the highway mitigation measures included in the model as follows:

- Junction 8: Somerhill Roundabout
- Junction 12: Hop Farm Roundabout
- Junction 13: Badsell Roundabout

The remaining 2 junctions falling out of the 'major' hotspot list are resultant of the combined effect of the Colts Hill Bypass, Badsell Roundabout, and Pembury Road corridor improvements which divert traffic away from B2160 Maidstone Road:

- Junction 35: Kipping's Cross Roundabout
- Junction 107: Matfield Crossroads

Of the outstanding 5 'major' hotspots the following 3 junctions have not been considered for detailed highway interventions for the reasons set out in Section 4.3.2 of the STA:

- Junction 14: A228 / Alders Road / Crittenden Road
- Junction 72: A267 / B2169 Birling Road
- Junction 88: B2017 / Hartlake Road

The remaining 'hotspot' junctions are additional to those presented in the LPMS scenario:

- Junction 13: A228 / Maidstone Road – this junction is located on the Pembury Road corridor to the north of the junctions where capacity has been added in the LPHM2 scenario and to the south of Colts Hill Bypass and Badsell Roundabout. The general increase in traffic on this corridor due to these capacity improvements has caused this junction to also become over capacity. This junction is also identified as a

'hotspot' in the LPHM1 scenario. It is recommended that this junction is either considered as part of the A228 Pembury Road corridor study or taken account of in the Monitor and Manage plan with a view to investigating mitigation measures as part of relevant planning applications.

- Junction 22: A228 Pembury Road A21 flyover North East Dumbbell – it is notable that this junction was considered within Stantec's Pembury Road Corridor study. The study concluded no improvements are required as the detailed junction modelling indicated the junction is expected to perform within capacity even with the increased demand on Pembury Road. Further investigation into the strategic modelling results shows that the hotspot criteria are met in the PM peak when the Volume over Capacity (V/C) on the Pembury Road northbound approach increases from 86% in the Reference Case (RC) to 97% in the LPHM2 scenario. Whilst the Local Plan is expected to have an impact at this location, the junction is still forecast to operate within its ultimate capacity in the strategic modelling. The purpose of the strategic modelling is to identify potential hotspot locations which require further detailed investigation. Given the detailed junction modelling indicates the junction would be within capacity, and the proposed wider capacity increases along the Pembury Road corridor demonstrated by both the strategic and junction modelling, no further mitigation has been considered at this location.

4. Badsell Roundabout / Colts Hill Bypass Delivery Date

The analysis presented in the STA estimated the Colts Hill Bypass and Badsell Roundabout schemes will be needed in 2029. This was a high-level assessment which considered when Badsell Roundabout is forecast to become over capacity in both peaks due to a combination of Reference Case and Local Pan development. The analysis was based on the capacity at Badsell Roundabout as this is the main capacity constraint within the area and the two schemes are intrinsically linked.

Following the publication of the STA, and further discussions between Sweco, Stantec and TWBC, further information was requested on when the impact of Local Plan traffic in isolation is expected to have a significant impact on the operation of Badsell Roundabout. Further analysis has therefore been undertaken to estimate the likely future year when the impact of Local Plan traffic at Badsell Roundabout will meet the 'hotspot' criteria described in Section 3 of this report.

The analysis is based on Volume over Capacity (V/C) statistics by year derived using the following methodology:

- V/C results for 2018 Base Case and 2030 and 2038 forecast years are taken directly from relevant models.
- V/C results for remaining years calculated using interpolation based on total future residential development build out rates.
- Analysis compares the Reference Case (RC) and Local Plan Modal Shift (LPMS) scenarios. The hotspot criteria are met when the increase in V/C on any approach is forecast to be greater than 5% in the LPMS scenario compared to the RC.

The analysis is presented in Table 2 and Table 3 for the AM and PM peak hours respectively. This shows the hot spot criteria are met in 2031 in the AM and 2032 in the PM.

Table 2: Badsell Roundabout Modelled V/C Results - AM

Time	Scenario	Approach	Year															
			2018	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
AM	Reference Case	A228 Maidstone Road (N)	99	104	104	105	105	106	106	106	107	107	108	109	109	110	110	111
		B2017 Badsell Road (E)	78	95	98	100	101	103	104	105	106	106	106	107	107	107	107	108
		A228 Maidstone Road (S)	77	88	90	91	92	93	94	95	95	95	95	94	94	94	94	94
		B2017 Badsell Road (NW)	43	53	55	56	57	58	59	60	60	61	62	63	64	64	65	66
	Local Plan Modal Shift	A228 Maidstone Road (N)	99	105	106	107	108	109	110	111	111	112	112	113	113	113	113	113
		B2017 Badsell Road (E)	78	94	97	100	102	105	107	110	111	113	114	115	116	116	116	116
		A228 Maidstone Road (S)	77	87	89	91	92	94	96	97	98	99	100	101	101	101	101	102
		B2017 Badsell Road (NW)	43	55	57	58	60	62	64	66	67	68	69	70	71	71	71	71
	% Difference	A228 Maidstone Road (N)	0%	1%	2%	2%	2%	3%	3%	4%	4%	4%	4%	4%	3%	3%	2%	2%
		B2017 Badsell Road (E)	0%	-1%	-1%	-1%	0%	1%	3%	4%	**5%**	7%	8%	8%	8%	8%	8%	8%
		A228 Maidstone Road (S)	0%	-1%	-1%	-1%	0%	1%	2%	3%	4%	5%	6%	7%	7%	7%	7%	8%
		B2017 Badsell Road (NW)	0%	3%	3%	4%	5%	6%	8%	11%	11%	12%	12%	12%	10%	10%	8%	7%

Table 3: Badsell Roundabout Modelled V/C Results - PM

ID	Scenario	Approach	Year															
			2018	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
PM	Reference Case	A228 Maidstone Road (N)	62	75	78	80	81	82	83	84	85	86	87	89	90	91	92	94
		B2017 Badsell Road (E)	45	57	60	61	62	64	64	65	66	66	66	67	67	67	68	68
		A228 Maidstone Road (S)	89	95	97	97	98	99	99	99	99	100	100	100	100	100	100	100
		B2017 Badsell Road (NW)	74	91	94	96	97	99	100	101	101	101	101	101	102	102	102	102
	Local Plan Modal Shift	A228 Maidstone Road (N)	62	76	79	81	83	85	87	90	92	95	98	100	100	101	101	101
		B2017 Badsell Road (E)	45	59	61	63	65	68	70	72	75	78	81	83	84	84	84	85
		A228 Maidstone Road (S)	89	95	96	97	98	99	100	101	102	103	103	104	104	104	104	104
		B2017 Badsell Road (NW)	74	89	92	94	96	99	101	103	105	107	108	109	110	110	110	110
	% Difference	A228 Maidstone Road (N)	0%	1%	1%	1%	3%	4%	5%	7%	8%	11%	12%	13%	12%	11%	10%	8%
		B2017 Badsell Road (E)	0%	2%	2%	3%	5%	6%	8%	11%	14%	19%	22%	25%	25%	25%	25%	25%
		A228 Maidstone Road (S)	0%	0%	0%	0%	0%	1%	1%	2%	3%	3%	4%	4%	4%	5%	5%	5%
		B2017 Badsell Road (NW)	0%	-2%	-2%	-2%	-1%	0%	1%	2%	4%	**5%**	7%	8%	8%	8%	8%	8%

5. Summary

This report is an addendum to, and should be read in conjunction with, the Tunbridge Wells Local Plan - Strategic Transport Assessment (STA)[2]. It presents the results of an update to the Local Plan Highway Mitigation Option 2 (LPHM2) scenario based on more detailed feasibility design and junction modelling work undertaken by Stantec on the Pembury Road corridor. In addition, further detailed analysis has been undertaken on the required delivery date of the Colts Hill Bypass and Badsell Roundabout schemes.

The updated LPHM2 scenario results presented in this report are broadly similar to those presented in the STA. Whilst one additional hotspot location was identified within the strategic modelling, the A228 Pembury Road A21 flyover North East Dumbbell (junction 22), the more detailed junction modelling forecasts that this junction would operate within capacity. The conclusions of this scenario are therefore in line with those presented in the STA.

A detailed analysis of the model results show that the hotspot criteria are expected to be met at Badsell Roundabout in 2031 due to the addition of Local Plan traffic. It is therefore considered that the Colts Hill Bypass and Badsell Roundabout scheme would be required by 2031 to mitigate the impact of Local Plan development.

[2] TWLP_123-Appendix-1-SWECO-Strategic-Transport-Assessment.pdf (tunbridgewells.gov.uk)