

Swale Local Plan – Teynham/Lynsted Sensitivity Test Addendum

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 Date: 08/10/2021
 Document Reference: Swale Local Plan Teynham/Lynsted
 Sensitivity Test Addendum Report

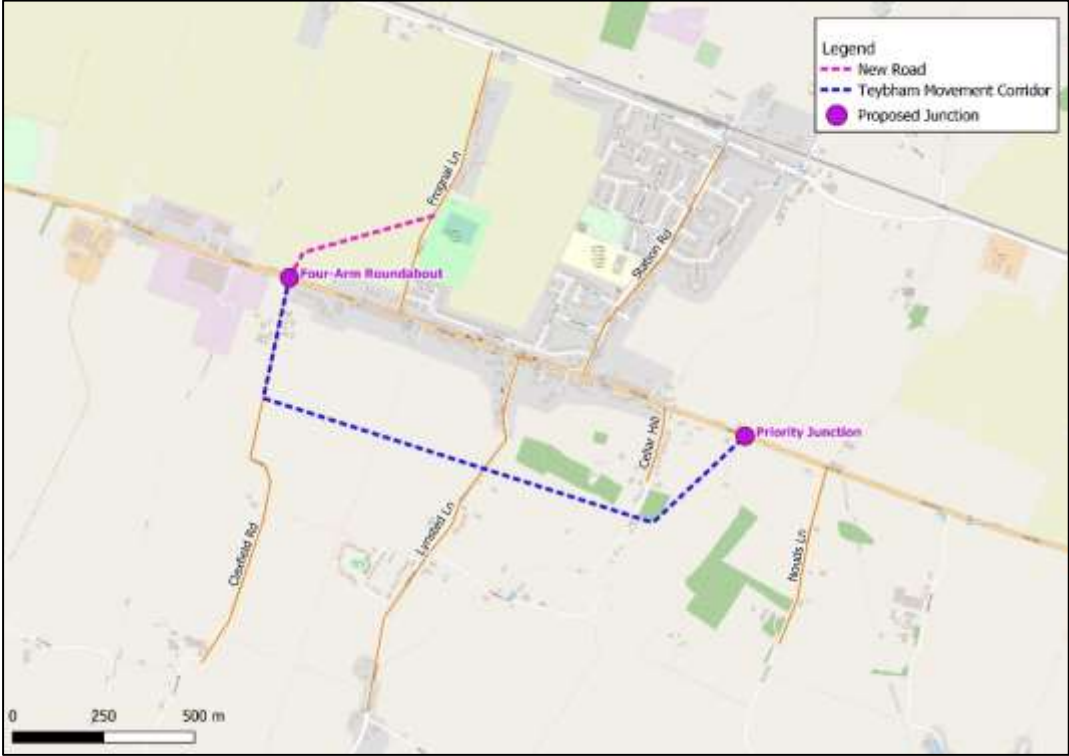
Rev.	Date	Reason for issue	Prepared		Reviewed		Approved	
1	08/10/2021	First issue	SB	08/10/2021	JZ	08/10/2021	FN	08/10/2021
2	29/10/2021	Second issue to address SBC comments	SB	26/10/2021	WW	29/10/2021	FN	29/10/2021
3	22/11/2021	Third issue to address SBC comments	SB	22/11/2021	WW	22/11/2021	WW	23/11/2021
4	9/12/2021	Fourth issue to address SBC comments	SB	09/12/2021	WW	10/12/2021	WW	10/12/2021
5	16/12/2021	Fifth issue to address SBC comments	SB	16/12/2021	FN	16/12/2021	FN	16/12/2021

Swale Local Plan – Teynham/Lynsted sensitivity test model outputs

1 Overview

- 1.1.1 This technical note is an addendum to a report produced for Swale Borough Council (SBC) entitled 'Local Plan Review – Highways Strategic Model – Regulation 19 Traffic Forecast Report (2021)'. SWECO was instructed by SBC to undertake a further sensitivity test to understand the traffic impact of a proposed link at Teynham/Lynsted known as Teynham/Lynsted Southern Link Route.
- 1.1.2 The A2 provides a vital road transport corridor between Chatham and Faversham, as well as a strategic link between the A229 and the A299, which offers an alternative travel route to the M2. It carries a significant amount of commuter and long-distance traffic and as such travellers currently experience high level of congestion and delays on this section of A2.
- 1.1.3 By 2027 and 2038 planning years, the number of dwellings in Teynham/Lynsted are expected to increase significantly as part of the Local Plan Review (LPR) allocations. These additional houses will generate extra travel demand which will worsen the existing congestion on the A2.
- 1.1.4 The proposed Teynham/Lynsted southern link route aims to remove a proportion of traffic from the A2 and ease the congestion and improve air quality along the London Road in central Teynham/Lynsted by providing a single carriageway in each direction, parallel to the existing A2 between Claxfield Road and west of Nouds Lane. A proposed draft scheme for modelling is shown in [Figure 1-1](#).
- 1.1.5 At the eastern end of the scheme there is a proposed T junction with priority assigned to Teynham/Lynsted southern link route. A new four-arm roundabout connecting Claxfield Road, A2 and Frogmal Lane is also proposed at the western end. Teynham/Lynsted southern link route has priority when joining Claxfield Road and crossing Lynsted Lane while Lynsted Lane will no longer have access to the A2.
- 1.1.6 The Teynham/Lynsted sensitivity test was undertaken for forecast year of 2038 only and the results were compared against the 2038 Do Something (DS) model as outlined in 'Local Plan Review – Highways Strategic Model – Regulation 19 Traffic Forecast Report (2021)'. The sensitivity test model was built upon the 2038 DS network with the inclusion of the proposed scheme while utilising the same 2038 DS demand.

Figure 1-1 Location of Teynham/Lynsted southern link route. Note: location of junction and route shown purely for modelling purposes



2 Network Changes between the DS and Teynham/Lynsted Sensitivity Test

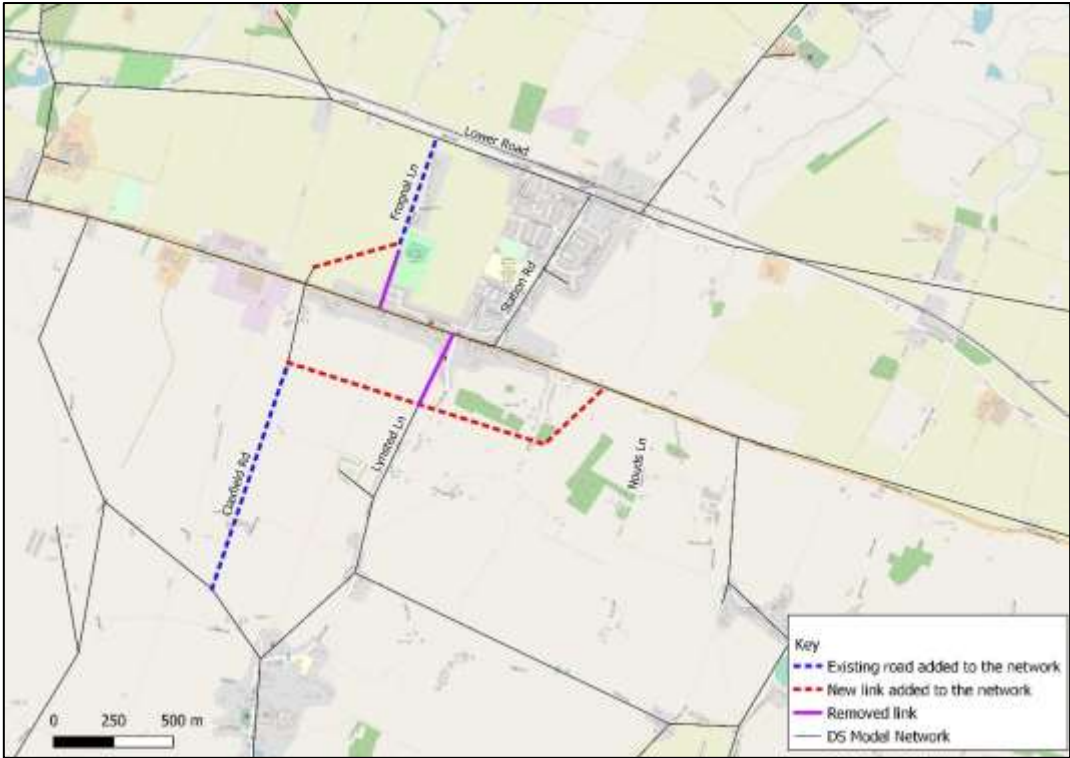
2.1.1 To assess the scheme based on the existing DS model, it was necessary to make a number of network changes and refinements. [Figure 2-1](#) shows the existing DS model network in the Teynham/Lynsted area. Any assumptions associated with the proposed scheme set out here are for the modelling purpose only. The proposed scheme with the related network changes is shown in [Figure 2-2](#), which consists of the followings:

- Update Claxfield Road by extending further south to join Wood Street
- North end of Frognal Lane joins Lower Road whereas south end connects to the new four-arm roundabout
- New priority T junction at eastern end joining A2, with priority assigned to Teynham/Lynsted southern link route
- Removal of the Lynsted Lane access to A2
- The Teynham/Lynsted southern link route has priority when joining Claxfield Road and crossing Lynsted Lane

Figure 2-1 Existing Do Something (DS) Model Network in Teynham/Lynsted Area



Figure 2-2 Teynham Sensitivity Test Model Network



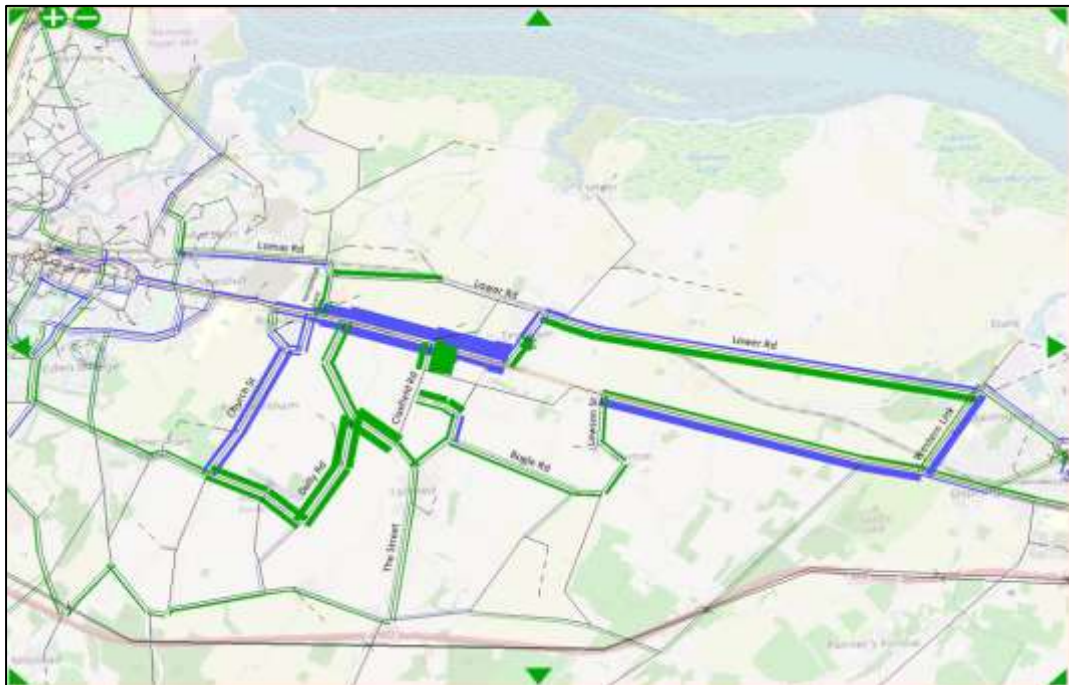
3 Results of Teynham/Lynsted Sensitivity Test

3.1 Flow difference

Figure 3-1 to

- 3.1.1 Figure 3-3 show the comparisons of the total actual flow in the vicinity of the scheme area between 2038 DS and the sensitivity test across all three time periods, with green bars showing increase in modelled flows and blue bars showing the opposite. Due to limitations of the modelling software, only links existing in both models can display the difference. Therefore, no colour bar is shown on Teynham/Lynsted southern link route and the associated new links.
- 3.1.2 Overall, the model indicates that when the scheme is in place, the majority of traffic travelling between the northern part of Sittingbourne and Faversham will be shifted from A2 to Teynham/Lynsted southern link route. In addition, as Teynham/Lynsted southern link route has the priority over A2 at the eastern end of the scheme, this results in considerable delay for the remaining traffic on A2 (about 3 minutes in the AM and PM peak and 1 minute in the inter peak), which causes some of that traffic to reroute to Lower Road in order to avoid the excessive delay.
- 3.1.3 For those travelling between southern part of Sittingbourne and Faversham, the majority of traffic will travel via Upper Rodmersham Road and Dully Road to access Teynham/Lynsted southern link route before joining the A2, instead of via Church Street.
- 3.1.4 This change of travel pattern was observed across all three time periods, although the change of pattern in inter peak is smaller when comparing against the AM and PM peaks.

Figure 3-1 Flow Difference between DS and Sensitivity Test – AM peak



3.1.5 Figure 3-4 to Figure 3-6 show the total flows (in PCUs¹) by directions on key roads within Teynham/Lynsted across all three time periods in both 2038 DS scenario and Teynham/Lynsted sensitivity test. To measure traffic congestion on roads, a metric of traffic volume over their associated capacity, the so-called V/C ratio, is normally used. A figure of V/C ratio greater than 80% on a road section indicates the travel congestion is close to its capacity. Under such a condition, traffic queues are likely formed, and journey time will also increase. The V/C ratios in the Teynham area for the 2038 DS scenario are shown in Figure 3-7 to Figure 3-9.

3.1.6 A review of the model flow and V/C ratio outputs has the following findings:

- With the Teynham new link road, It is found the through traffic on A2 starts to use the road, with V/C ratios less than 50% for all time periods which indicate it copes with the diverted traffic well.
- Traffic is redistributed to some adjacent rural roads following the road network changes. In particular, due to the delays at the priority junction of A2/Teynham new link road, a proportion of traffic reroutes to the Lower Road, but the V/C ratios are below 40% which will not cause major traffic issues.
- It is found that V/C ratio for the Northbound traffic on the Claxfield Road is more than 80% in the AM and PM peak. This shows that the new Teynham/Lynsted southern new link road will attract local traffic from the Green Lane, as well as these from Doddington through Lynsted following the network changes.

¹ PCUs stands for Passenger Car Unit, which is to assess highway capacity by converting different vehicle types into standard car unit according to the space they take up. A car has a value of 1; smaller vehicles, e.g. motorcycle, will have lower values, and larger vehicles such as heavy good vehicles will have higher values greater than 2.

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Figure 3-4 Flows on key roads in Teynham/Lynsted area – AM peak

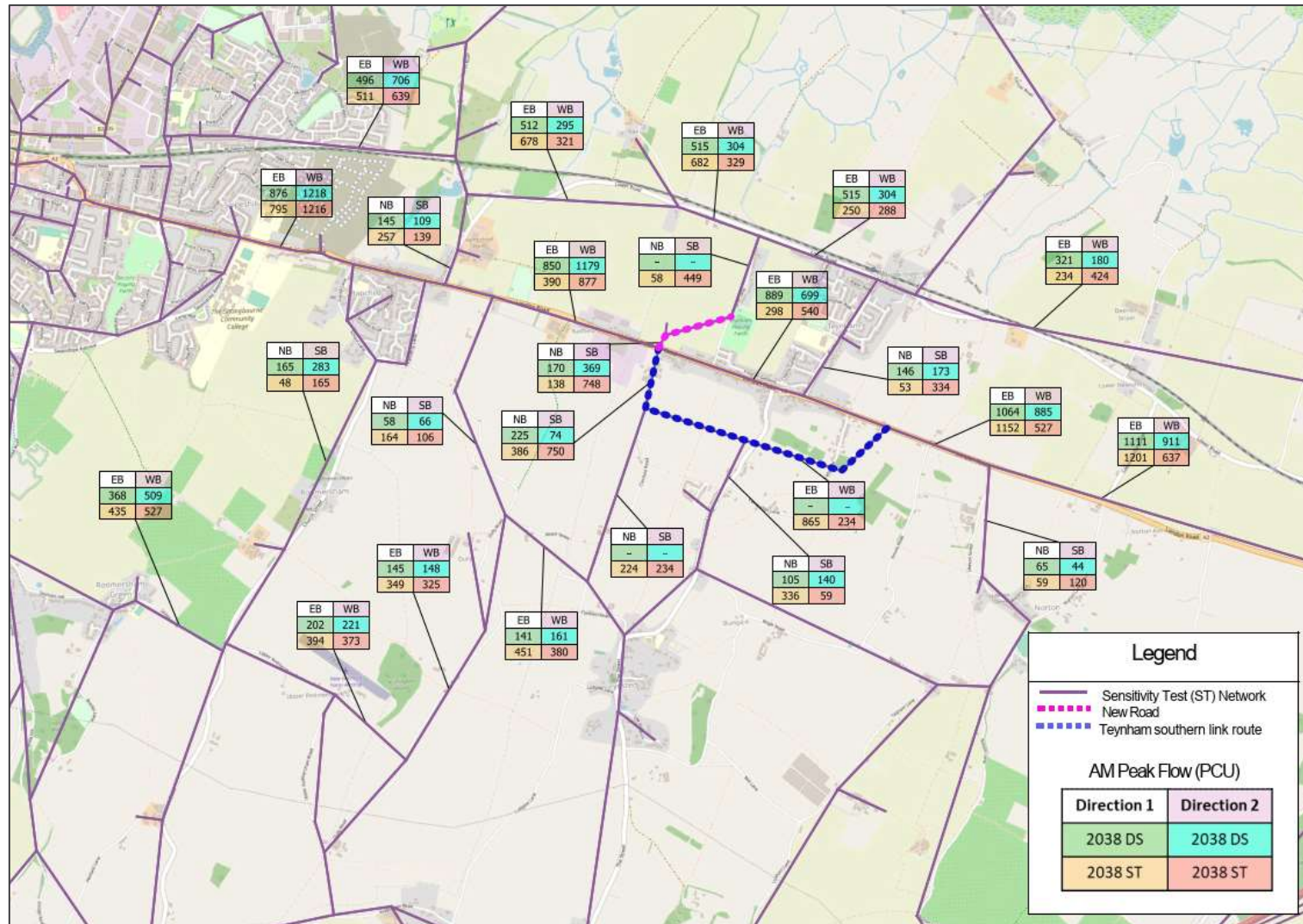


Figure 3-5 Flows on key roads in Teynham/Lynsted area – Inter peak

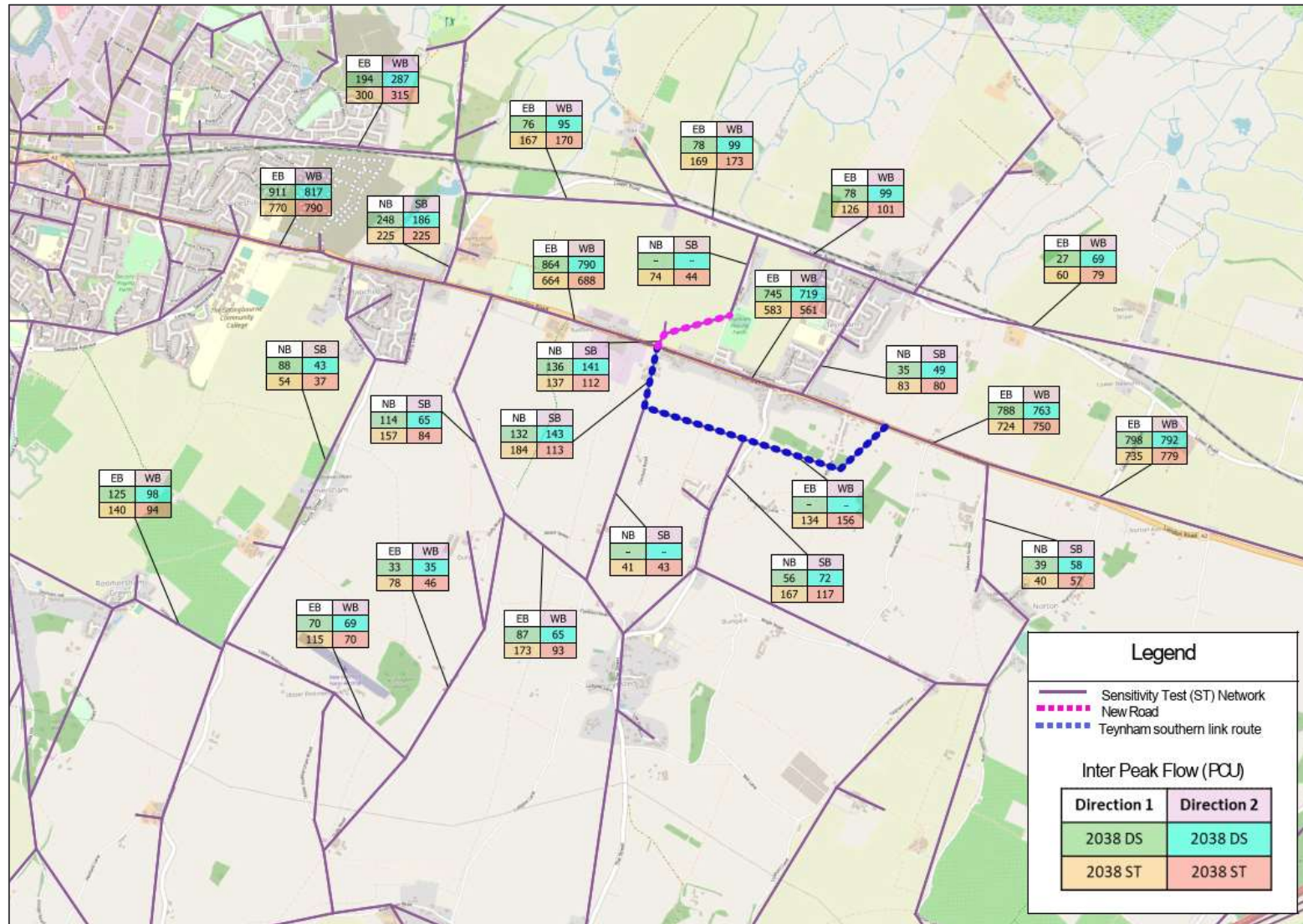


Figure 3-6 Flows on key roads in Teynham/Lynsted area – PM peak

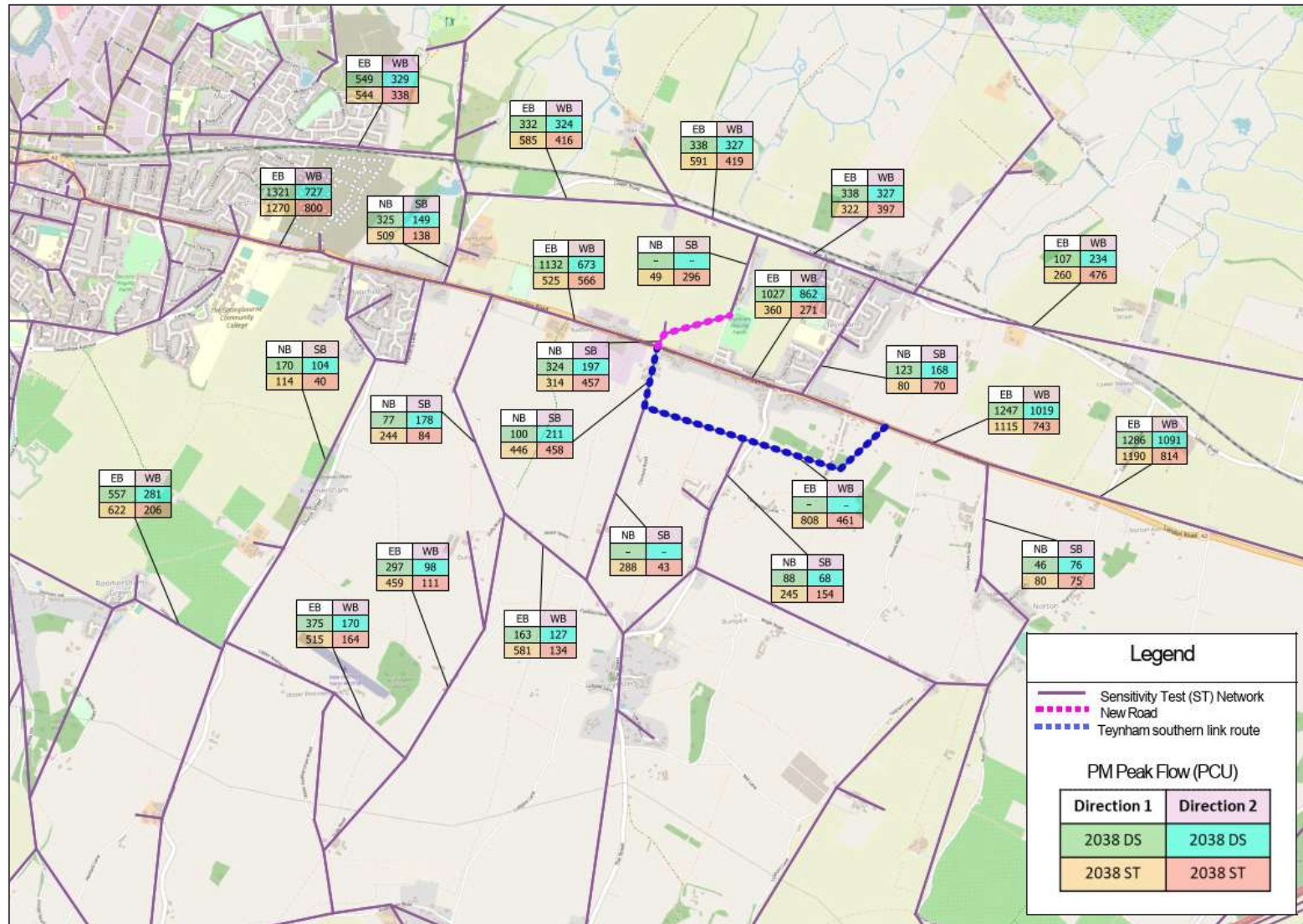


Figure 3-7 V/C ratios (%) on key roads in Teynham/Lynsted area – AM peak

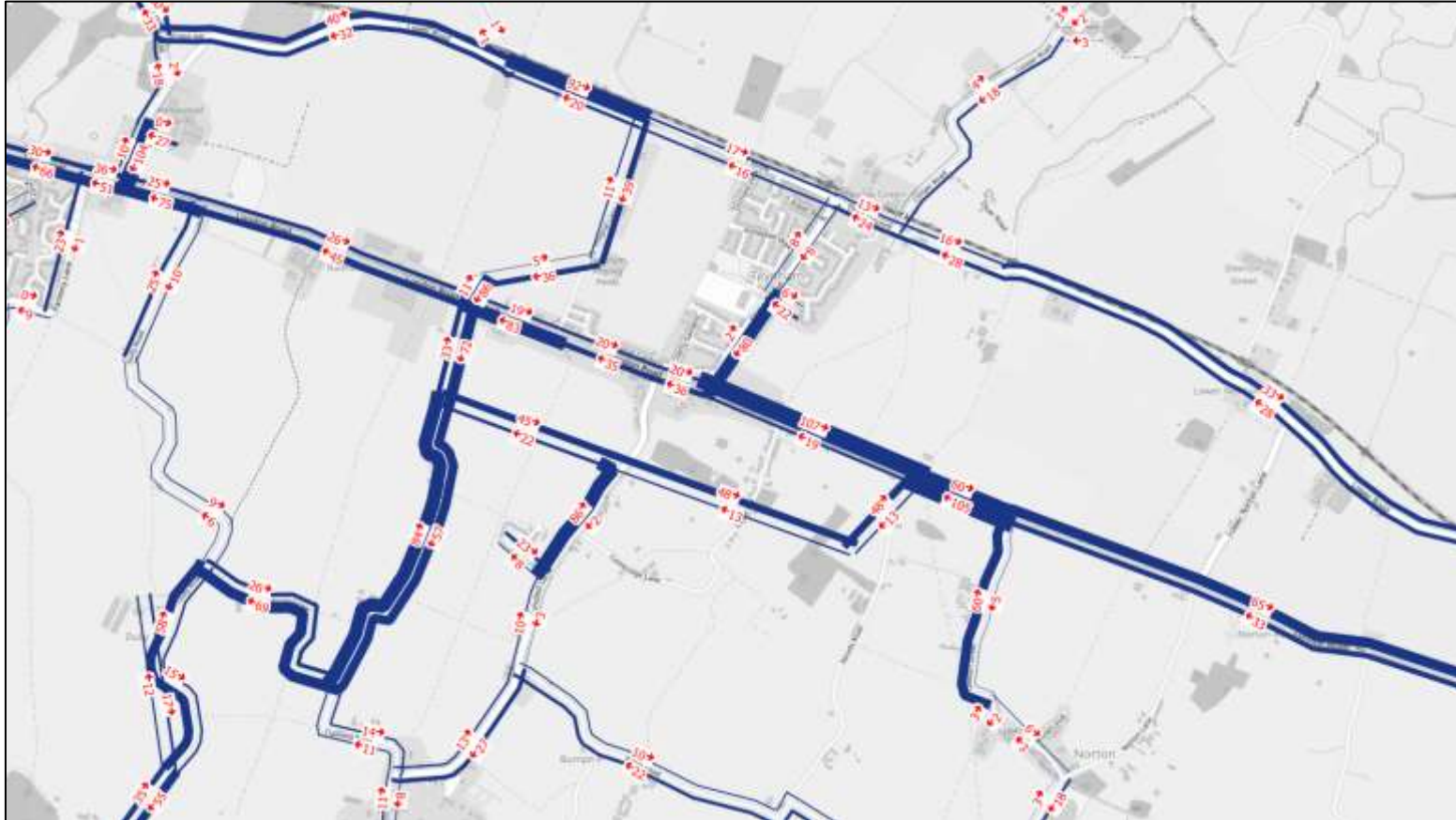
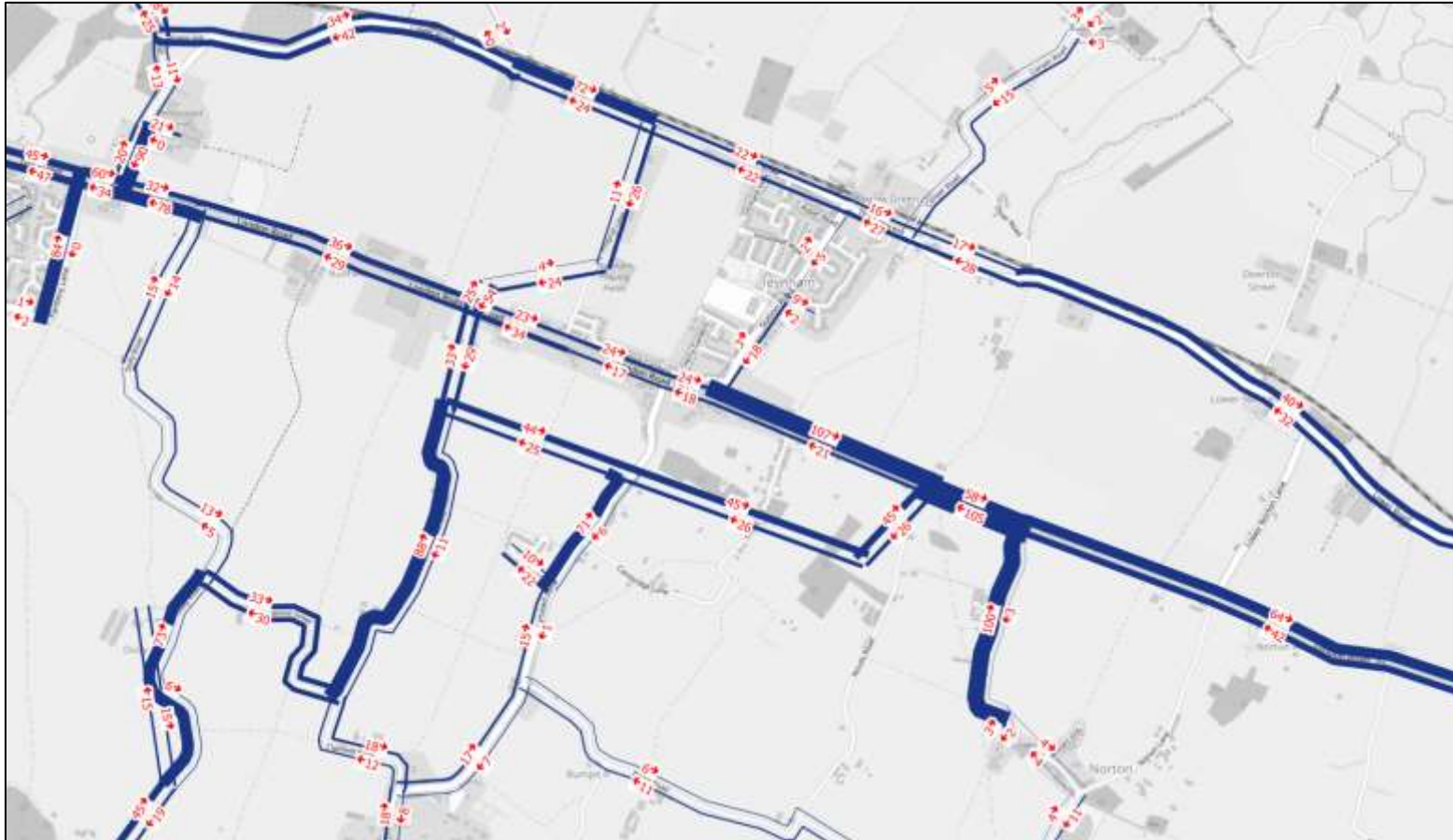


Figure 3-8 V/C ratios(%) on key roads in Teynham/Lynsted area – Inter peak



Figure 3-9 V/C ratios(%) on key roads in Teynham/Lynsted area – PM peak



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3.2 Select Link Analysis

A select link analysis was carried out on Lower Road in eastbound direction during AM and PM periods as shown in Figure 3-10 and

3.2.1 Figure 3-11 respectively. As it can be seen from these figures, the majority of eastbound traffic heading towards A2 would use the associated Frogmal Lane access and Teynham/Lynsted southern link route when the scheme is in place.

Figure 3-10 Select Link Analysis on Lower Road Eastbound - AM peak



Figure 3-11 Select Link Analysis on Lower Road Eastbound - PM peak



3.2.2 A similar routing pattern is also seen for the eastbound traffic on Green Lane with most of the traffic heading towards A2 using Teynham/Lynsted southern link route as illustrated in Figure 3-12 and Figure 3-13.

Figure 3-12 Select Link Analysis on Green Lane Eastbound - AM peak

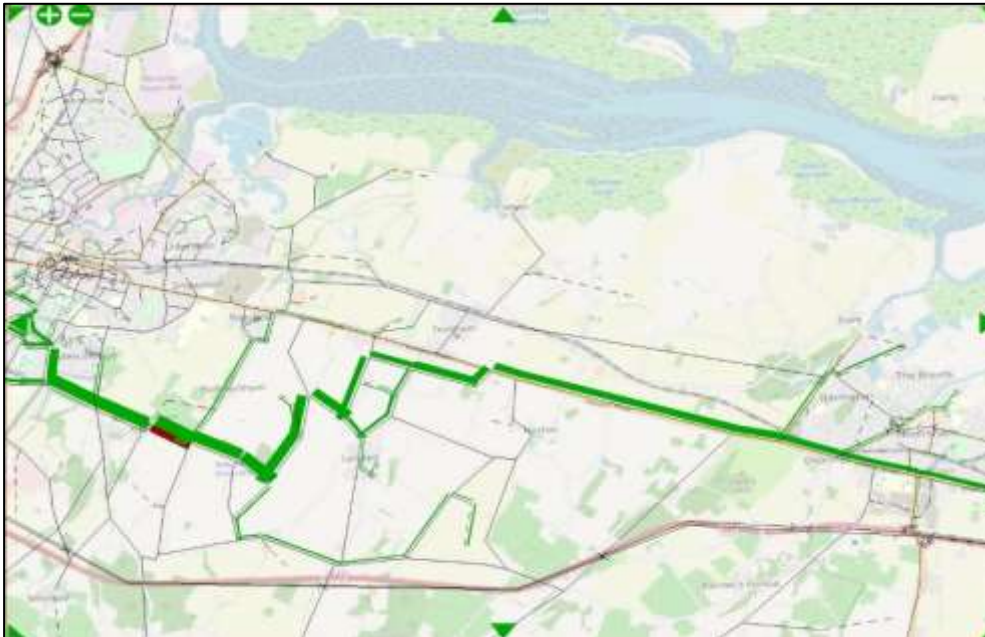


Figure 3-13 Select Link Analysis on Green Lane Eastbound - PM peak



4 Summary

4.1.1 The modelling results in this technical note can be summarised as follows:

- The proposed scheme will attract traffic travelling between Sittingbourne and Faversham, and therefore decreases traffic on A2 between Dully Road and the eastern end of the scheme.
- Select link analysis shows that at the eastern end of the scheme due to the priority given to Teynham/Lynsted southern link route over the A2, excessive delays are expected to occur on both sides of the A2. This causes westbound traffic towards Sittingbourne to reroute from A2 to Lower Road.
- For those travelling between southern part of Sittingbourne and Faversham, the majority of traffic will travel via Upper Rodmersham Road and Dully Road to access Teynham/Lynsted southern link route before joining the A2, instead of via Church Street.
- This change of travel pattern was observed across all three time periods, although the change of pattern in inter peak is smaller when comparing against the AM and PM peaks.

4.1.2 It is recommended that further mitigation measurements need to be proposed at the eastern end of the scheme (the proposed priority junction) in order to reduce the predicted excessive delay on the A2. This could include measures such as junction widening to increase the approaching lane capacity on A2 Eastbound arm, or dedicated right turn allocation for A2 from Eastbound to A2 Westbound etc. The examination of potential mitigation measures, however, is beyond the scope of the project.