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CALDERDALE LOCAL PLAN TRANSPORT EVIDENCE BASE

TECHNICAL NOTE 5: HIPPERHOLME SENSITIVITY TEST

CONFIDENTIAL

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WSP | PARSONS BRINCKERHOFF

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Calderdale Metropolitan Borough Council

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WSP | Parsons Brinckerhoff
Three White Rose Office Park
Millshaw Park Lane
Leeds
LS11 0DL

Tel: +44 (0) 113 395 6200
www.wsp-pb.com

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Checked by	Tom Randall			
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1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 WSP | Parsons Brinckerhoff have been commissioned by Calderdale Metropolitan Borough Council (CMBC) to prepare an evidence based structure to inform the decisions made for the Local Plan allocations of development sites around the authority boundary and potential mitigation schemes required

1.1.2 Previous to this report today there have been 4 reported stages:

- Technical Note 1: Future Network Baseline
- Technical Note 2: Implications of Settlement Growth
- Technical Note 3: Preferred Spatial Strategy
- Technical Note 4: Initial Assessment of Cumulative Impact

1.1.3 Technical Note 1 set out a 'snapshot' of future network operation prior to the application of growth to be allocated under the Local Plan but following realisation of committed developments, windfalls and planned major transport schemes.

1.1.4 Technical Note 2 looked at the relative macro-level implications likely to result from development in each settlement. The purpose of the note was to inform a preferred distribution of growth across settlements within Calderdale.

1.1.5 Following the submission of these documents to CMBC, alongside a range of other non-transport considerations, an initial decision was made on the likely distribution of development within Calderdale. Technical Note 3 shows the supporting transport evidence for this preferred development distribution.

1.1.6 Technical Note 4 details the stages 5a and 5b of the study. The initial stage 5a reports the initial traffic modelling exercise undertaken with the best known information at the time for the spatial allocation of sites across the district. Stage 5b was the penultimate modelling exercise with a more up to date allocations list and what would be assumed to be the final local plan iteration of sites.

1.2 THIS DOCUMENT

1.2.1 This technical note details stage 5c of the Local Plan study.

1.2.2 Stage 5c is a sensitivity test for ascertaining the impact of allowing housing growth within Hipperholme. It is intended to show the likely impacts of allowing the development of housing sites close to the already congested junction of the A644 and the A58 (Hipperholme Cross roads), located in the centre of Hipperholme. It also allows for reporting on the wider network impacts that are seen and any re-routing across the settlement area.

1.2.3 The run of the model with the sites included within the traffic demand can then be compared against an original model with these sites excluded.

2 METHODOLOGY

2.1 HIPPERHOLME SITES

2.1.1 For the Hipperholme test model the local plan preferred sites above 50 units in size have been modelled across the district with the addition of three residential sites in Hipperholme. A cap on overall housing growth equivalent to the local plan model run has been retained. This model run represents a marginally lower level of overall background growth within the Calderdale district (sites less than 50 units that have not been implicitly modelled).

2.1.2 The proposed allocation sites within Hipperholme that have been added are in Table 2.1 below

Table 2-1 Hipperholme potential sites

DEVELOPMENT	DWELLINGS
Crosslee PLC	50
Lightcliffe Works	70
Southedge Quarry	200
Total	**320**

2.1.3 The sites have used the same standard residential trip rate as outlined in Technical note 4, and the growth in housing for the district is capped at the same overall 17,651 dwellings. This has resulted in the modelled trips as shown in Table 2.2.

Table 2-2 Hipperholme potential sites, calculated hourly trips

DEVELOPMENT	AM (8-9) ARRIVALS	AM (8-9) DEPARTURES	IP (10-16) ARRIVALS	IP (10-16) DEPARTURES	PM (17-18) ARRIVALS	PM (17-18) DEPARTURES
Crosslee PLC	6	15	7	7	14	8
Lightcliffe Works	8	22	10	10	19	11
Southedge Quarry	23	62	29	28	55	31
Total	**37**	**99**	**46**	**45**	**88**	**50**

3 MODEL RESULTS

3.1.1 This section of the report gives details of the model outputs from the modelled sites within Hipperholme, and is solely based around the distribution of trips in Hipperholme and neighbouring Brighouse.

3.2 IMPACTS - DISTRIBUTION

3.2.1 The AM model shows that approximately a third of traffic heads north through Hipperholme cross roads, with an extra 25 vehicles (approximately +5%) using the northbound movement towards the cross roads from the development zones.

3.2.2 Traffic heading east on the A58 from the potential sites avoids using Hipperholme cross roads due to the modelled congestion and instead routes through the north of Brighouse and uses the A641. This is demonstrated by the plots below which show the traffic distribution from the model zone representing the potential sites (red circle). It should be noted that this zone also covers existing land uses.

Figure 3-1 - Distribution of traffic originating from Hipperholme sites zone - AM peak

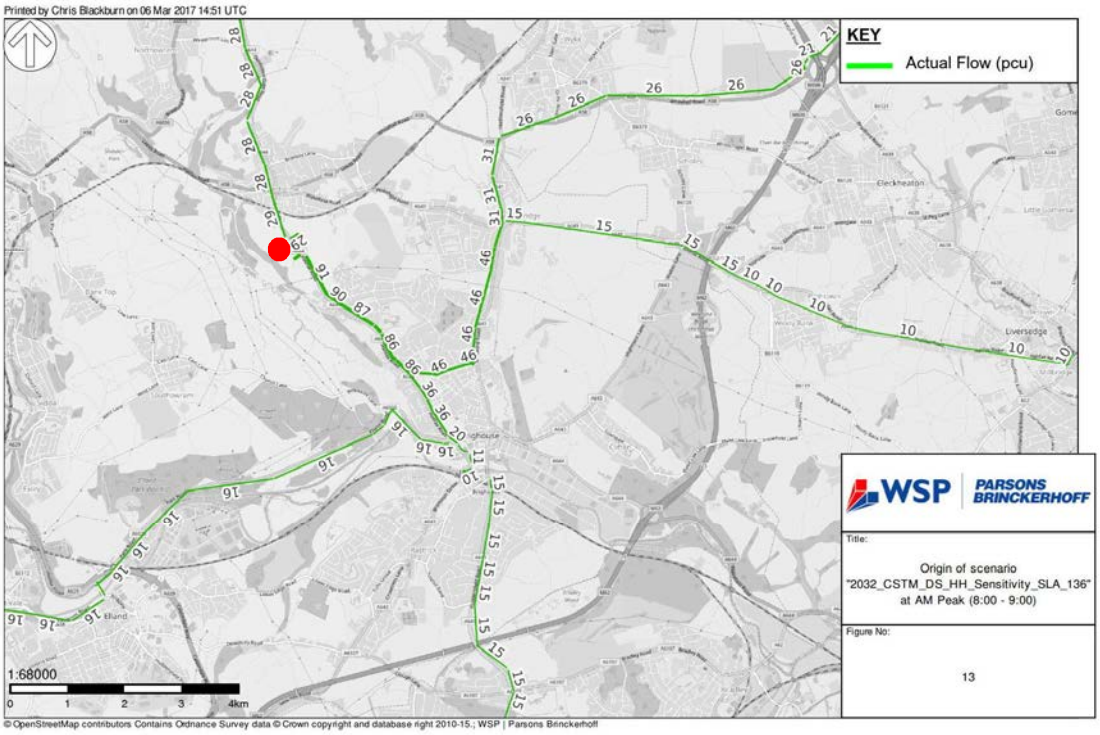
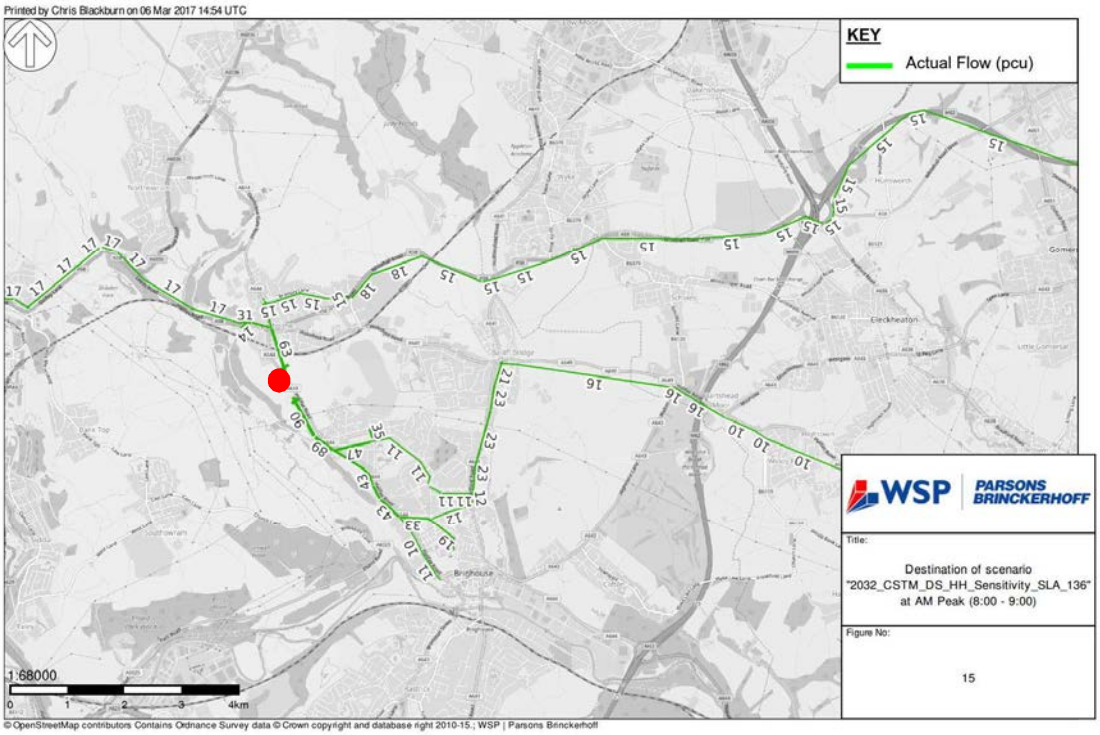


Figure 3-2 - Distribution of traffic destined for Hipperholme sites zone - AM peak



3.2.3 Figure 3-2 shows rat-running, from the A58 east, along Bramley Lane for traffic destined for the zone in the AM peak, indicative of the severe congestion at the cross roads.

Figure 3-3 - Distribution of traffic originating from Hipperholme sites zone - PM peak

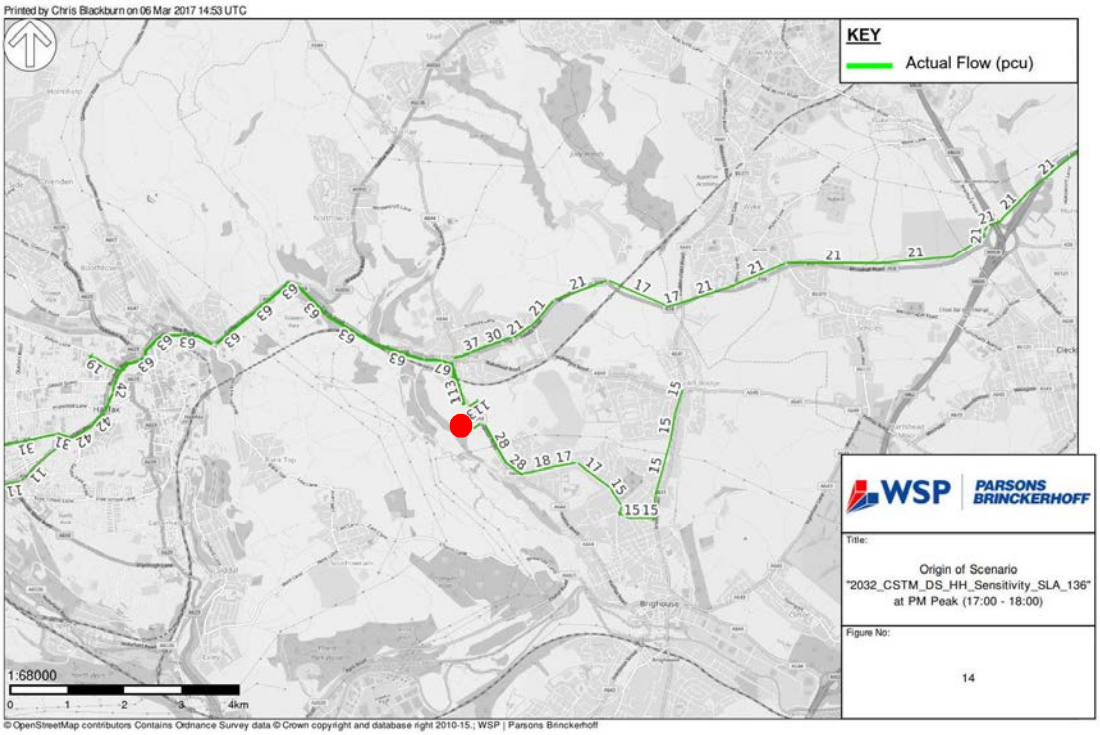
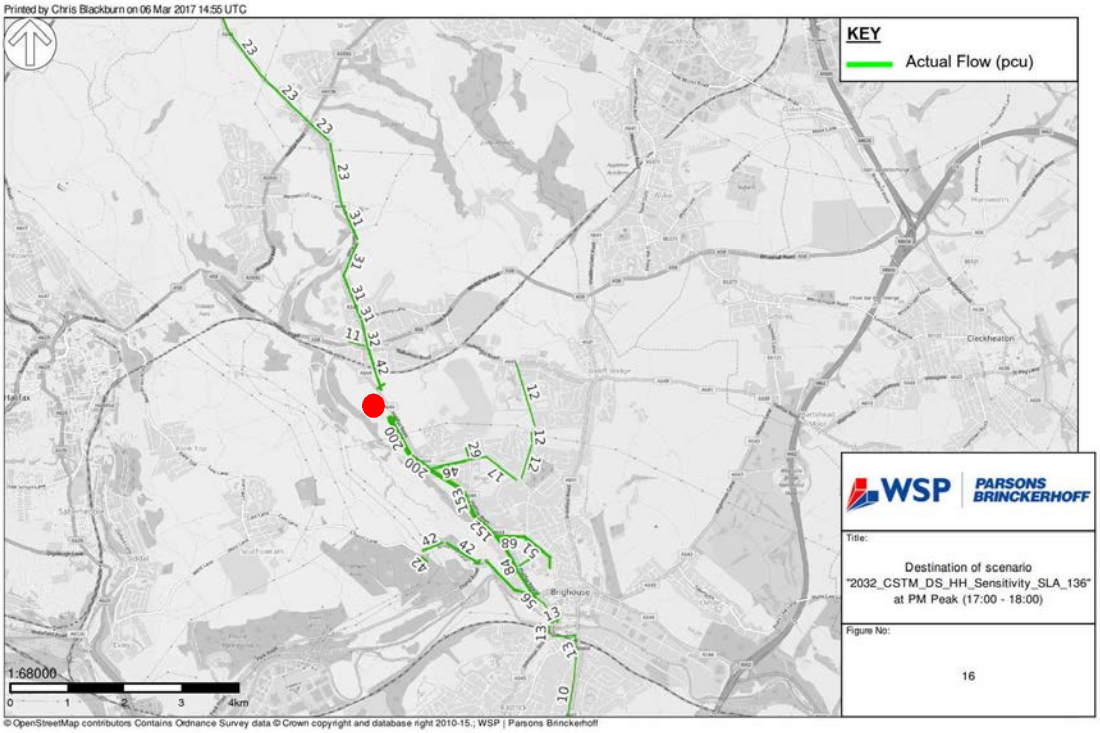


Figure 3-4 - Distribution of traffic destined for Hipperholme sites zone - PM peak



3.2.4 The PM distribution shows the majority (70%) of outbound flow from the development sites heading north towards Hipperholme cross roads.

4 IMPACTS AGAINST BASE AND DO SOMETHING SCENARIOS

4.1.1 In order to see how the additional development sites in Hipperholme affect traffic flows across the network, a comparison against the various scenarios modelled needs to be undertaken.

4.1.2 The scenario comparisons are as follows;

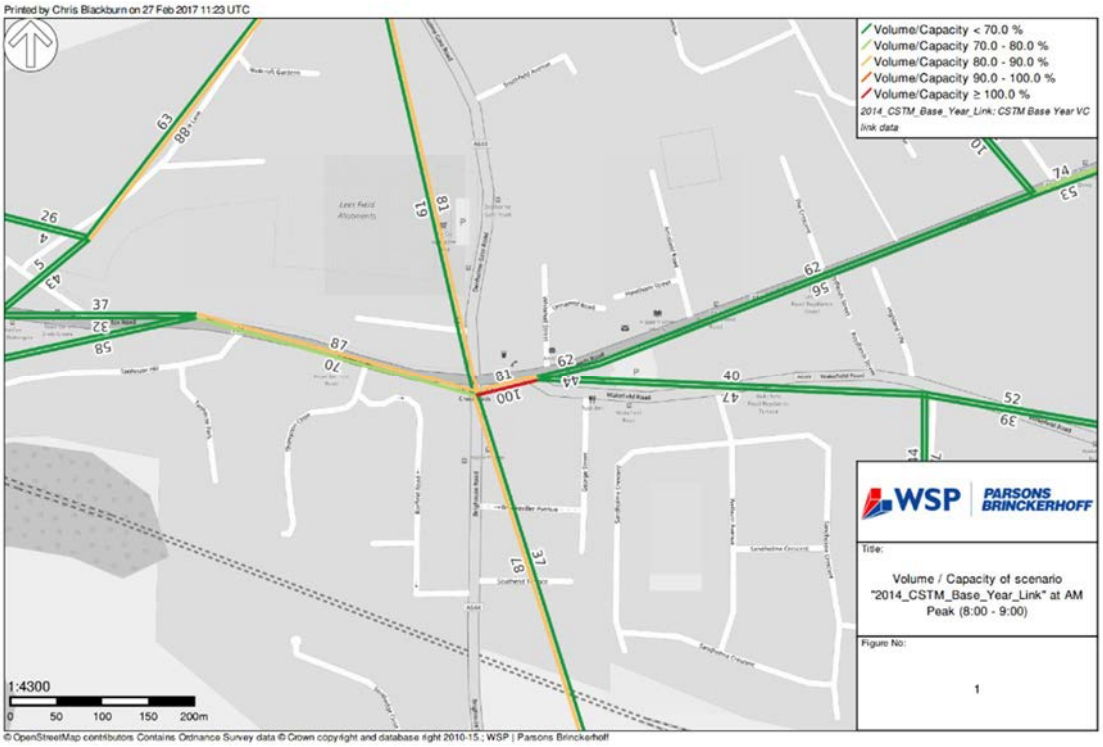
- Base Year
- 2032 Do Something
- 2032 Do Something including Hipperholme developments

4.2 BASE YEAR

4.2.1 To give some context to the impacts of the potential Hipperholme developments, initial base year analysis needs to be reviewed.

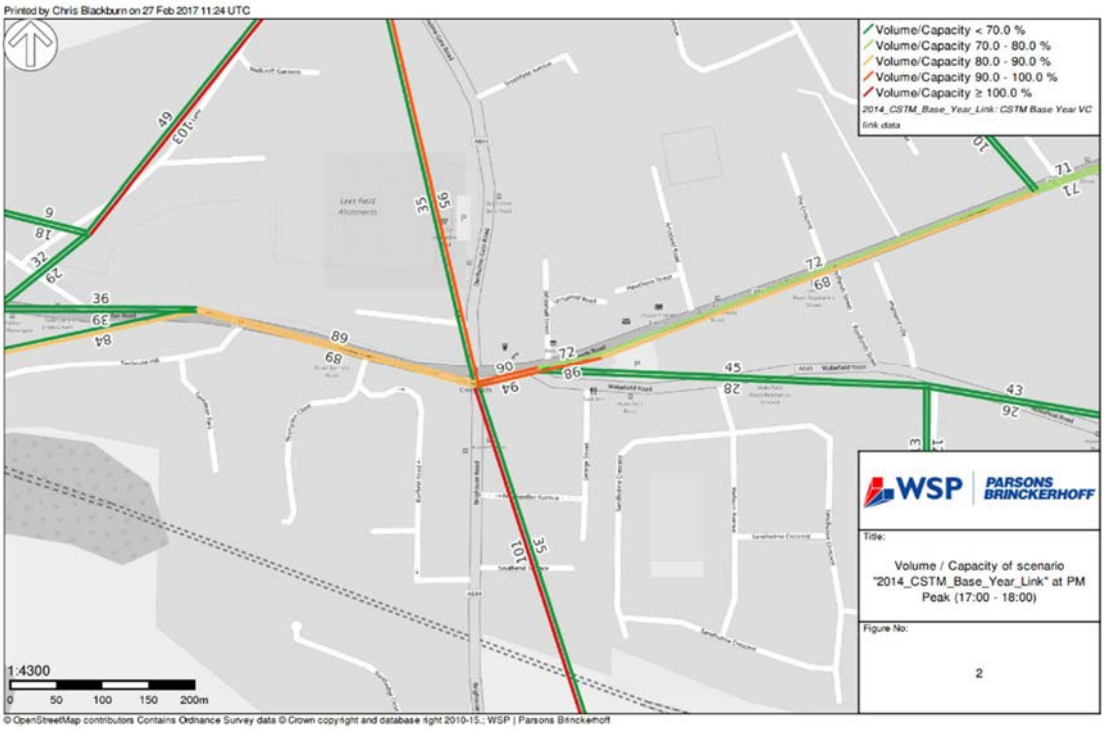
4.2.2 AM volume / Capacity % is shown in the figures below, averaged across all movements that use a single link. This shows that already in the base year the westbound movement along the A58 is at capacity, with all other approaches to the junction experiencing a ratio of greater than 80% and approaching 90% for the west and south arms.

Figure 4-1 - V/C %, 2014 Base Year AM (8-9)



4.2.3 PM Volume / Capacity % is shown in the figure below. This shows a worse situation than in the AM, notably the northbound and southbound arms of the junction show a significantly higher volume to capacity ratio compared to the AM peak. Both the east and west movements also have an increase in the volume to capacity ratio compared to the AM.

Figure 4-2 - V/C %, 2014 Base Year PM (17-18)

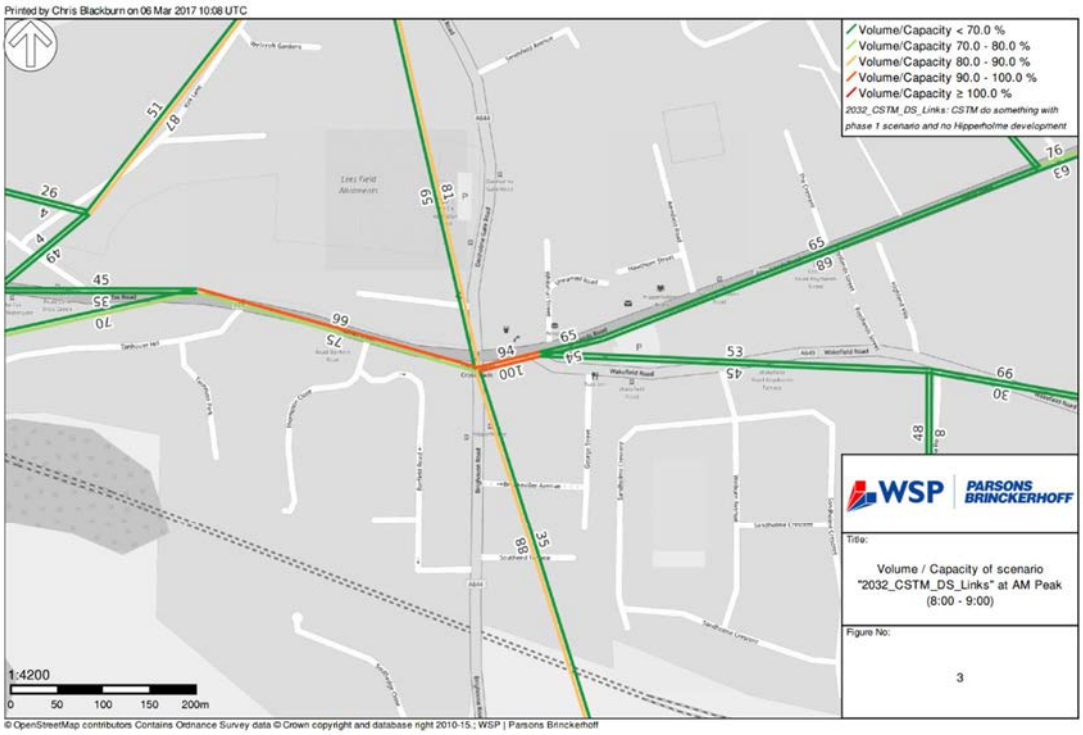


4.3 DO SOMETHING COMPARISON

4.3.1 The do something forecast model incorporates the full A629 Phase 1 West Yorkshire plus Transport Fund Scheme and the demand associated with the preferred local plan developments, and is a representative future year scenario of a do something network in which the Hipperholme comparison can be undertaken.

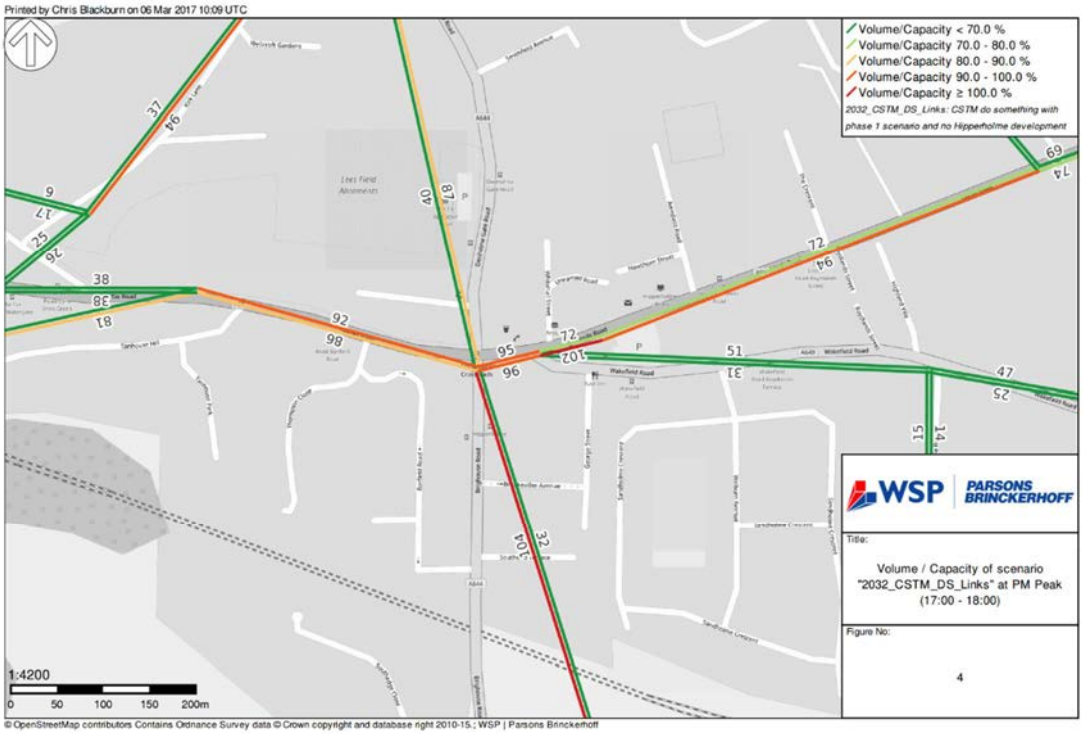
4.3.2 The do something AM shows a similar trend to the base year AM with all approach arms experiencing a close to capacity situation, as shown in Figure 4-3. The east-west movements are now close to capacity with westbound at 99%, and eastbound at full capacity (100%). The north-south movements have also experienced a slight increase and remain above the 80% level.

Figure 4-3 - V/C %, 2032 Local Plan Do Something AM (8-9)



4.3.3 The do something PM plot (Fig 4-4) shows a significant worsening compared to the base year on all movements in Hipperholme. The most overcapacity movement in this scenario is the northbound movement into Hipperholme cross roads at 104% volume to capacity ratio. The next is the westbound movement, which shows a large increase from the base year PM to 96% at the stop line for the cross roads and 102% at the pedestrian crossing. This then blocks traffic exiting the previous link which is very high at 94% capacity. This increase will give rise to traffic trying to re-route to find a faster journey time through Hipperholme.

Figure 4-4 - V/C %, 2032 Local Plan Do Something PM (17-18)

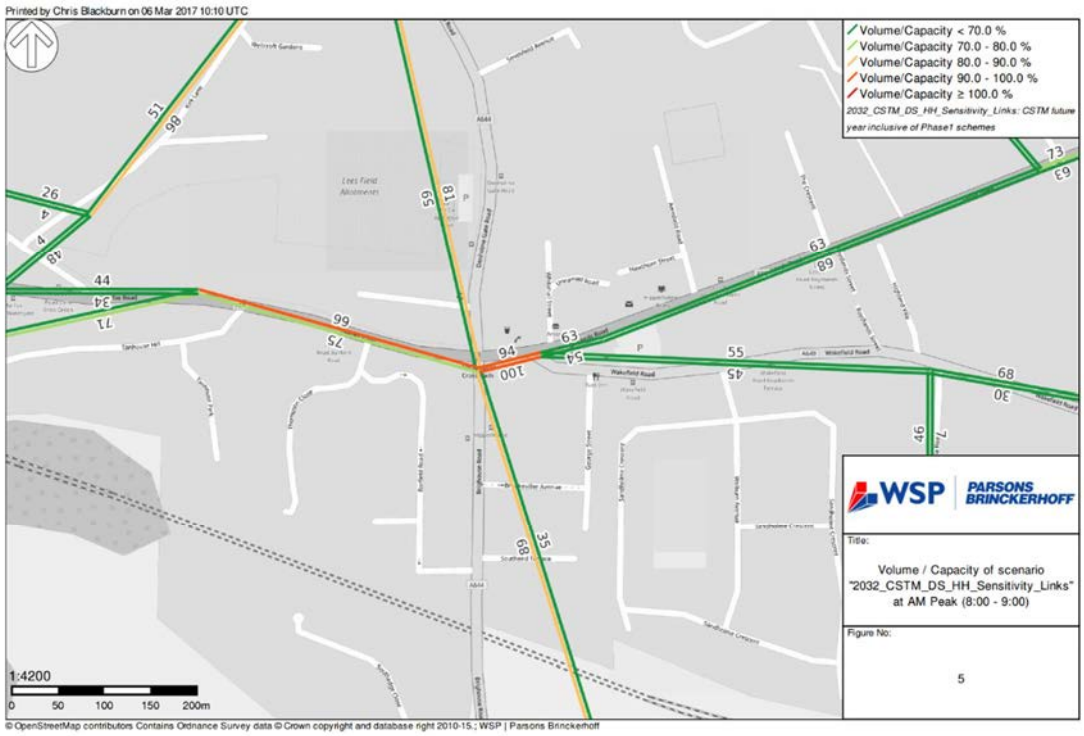


4.4 DO SOMETHING COMPARISON - DO SOMETHING AGAINST DO SOMETHING INCLUDING HIPPERHOLME SITES

4.4.1 The AM modelling, as shown in Fig 4-5 and Fig 4-6, shows the east-west movements to be closer to capacity on all arms in the Hipperholme sensitivity test than in the standard do something scenario. It is seen that the whole cross roads in the centre of Hipperholme has an increase in the capacity used, with most arms experiencing a small uplift of traffic usage and more delay caused.

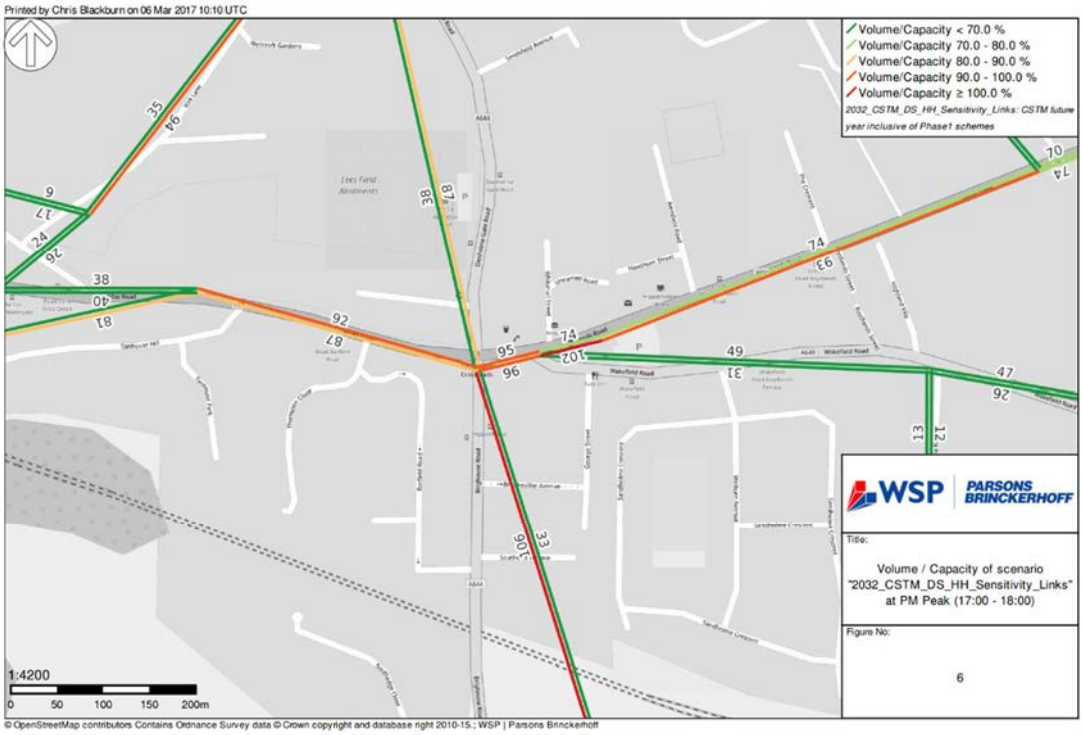
4.4.2 The east-west movements have an uplift of traffic heading away from the junction due to the movements from the additional Local Plan sites located south of the cross roads. This has also had an effect of traffic re-routing to use the junction from other areas due to standard priority junctions having to deal with more traffic usage.

Figure 4-5 - V/C %, 2032 Local Plan Do Something AM (8-9) including Hipperholme Sites



4.4.3 The PM shows a similar trend to the do something scenario with no Hipperholme development in that the only large difference is the northbound movement towards the junction, increasing an already over capacity arm by an extra 2%. The western arm of the junction experiences an uplift in the volume to capacity ratio by carrying an extra 13 vehicles away from the junction.

Figure 4-6 - V/C %, 2032 Local Plan Do Something PM (17-18) including Hipperholme Sites



4.4.4 The comparison of the two model runs shows a limited level of worsening for the Hipperholme junction, this is partly due to the scale of developments now proposed meaning that the impact of the additional traffic is effectively lost in the background re-routing of traffic. A limitation of a strategic model such as the CSTM is that in situations where there are existing capacity constraints, such as Hipperholme cross roads, the addition of extra traffic will cause re-routing and not necessarily show the worst-case impact.

4.4.5 Figures 4-9 and 4-10 demonstrate the re-routing of traffic between the two models in comparison to the minor changes at the cross-roads. The most notable additional traffic movements are seen on the A644 south of the development sites.

Figure 4-7 - AM wider traffic re-routing

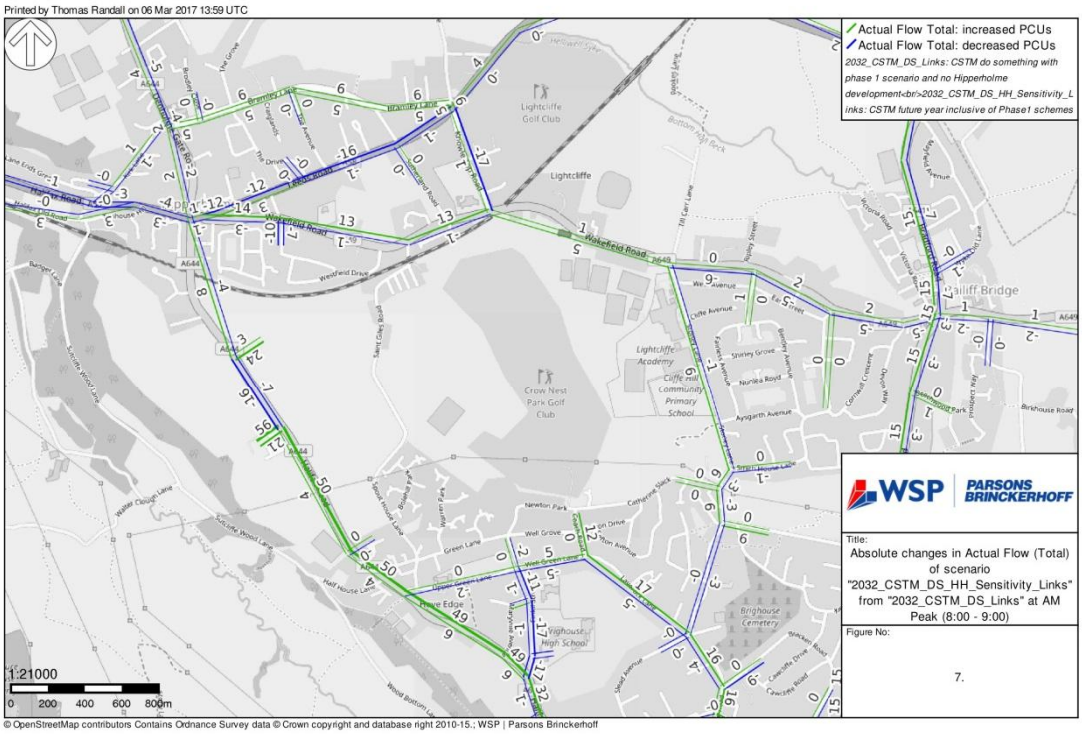
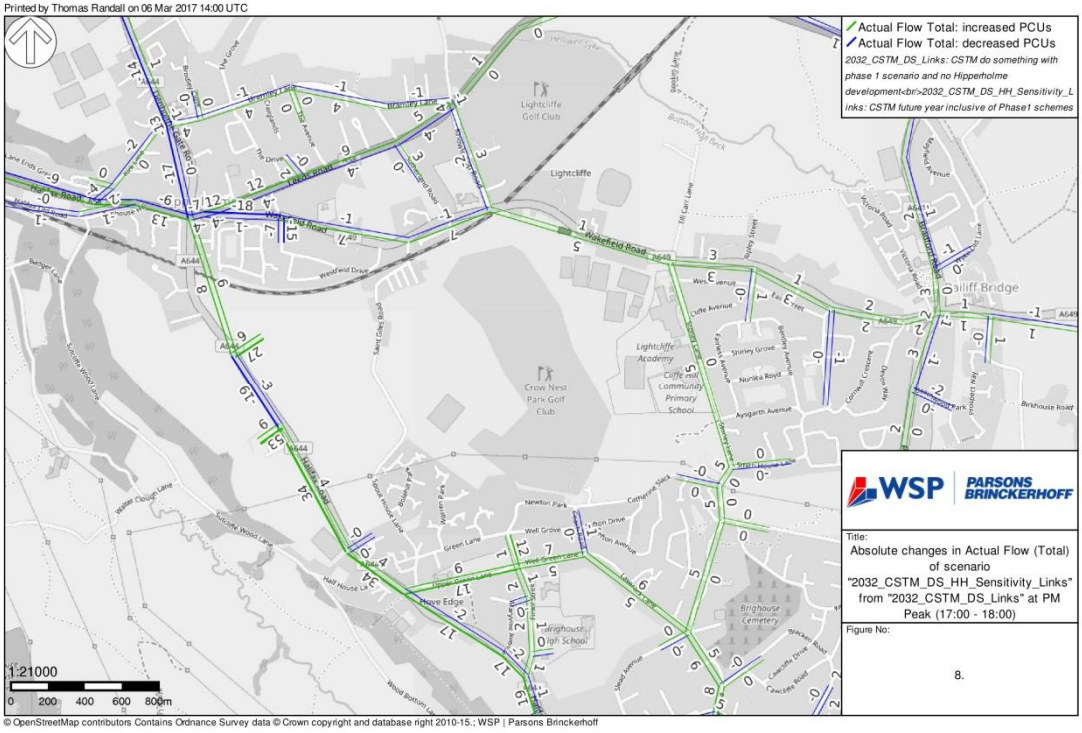


Figure 4-8 - PM wider traffic re-routing



5 SUMMARY - HIPPERHOLME SENSITIVITY TESTING

5.1 METHODOLOGY

5.1.1 As set out in section 1, modelling has been undertaken of the local plan preferred sites with and without the residential developments in Hipperholme. The final sites used are based on the most up to date information for the local plan allocations.

5.2 OUTPUTS

5.2.1 The forecast model has been used inclusive of the A629 Phase 1 schemes as they are seen to be the most certain improvements of the network, with a weight of commitment behind them having passed Gateway 1 of the West Yorkshire + Transport Fund process and having Gateway 2 submissions developed.

5.2.2 The outputs show that an already congested network, as shown in the base year, does not contain unused capacity for the traffic related to the Hipperholme sites to utilise. There is a marginal worsening shown for the Hipperholme cross roads by the modelling of the additional sites, however due to the model's strategic nature there is also re-routing of traffic away from the area in order to accommodate the new traffic.

5.3 CONCLUSION

5.3.1 In terms of the allocation of the potential sites in Hipperholme, the modelling carried out gives the following information to be taken into account for decision making:

- It can be clearly demonstrated that the Hipperholme cross roads junction is at an unacceptable level of congestion currently and this is worsened by the overall predicted growth in traffic as a result of the wider local plan allocations.
- The potential sites in Hipperholme are of a scale which does worsen the situation at the Hipperholme cross roads even though they create relatively minor additions to traffic.
- There are re-routing impacts shown upon minor routes which are not necessarily appropriate for through traffic
- The traffic demand calculations do not account for the potential for above average active travel/public transport usage or travel outside the traditional peak hours (peak spreading).

5.3.2 The traffic modelling exercise has not given sufficient evidence to support the rejection of these sites, given that they are relatively sustainable, being close to the village centre amenities, located on a high frequency bus routes and on brownfield land. However, if it is decided that they should be allocated, the provision of a small scale mitigation scheme for the Hipperholme cross-roads should be included as a necessity.

5.4 NEXT STEPS

5.4.1 The next step following this report is Technical Note 6: Mitigation procedures for schemes.

5.4.2 Following the final provision for sites around Calderdale to include the Hipperholme sites, and upon advice from CMBC the mitigation schemes are to be developed with the Hipperholme sites included within the final allocation of development.