



Calderdale Metropolitan Borough Council

CALDERDALE LOCAL PLAN TRANSPORT EVIDENCE BASE

Technical Note 14: Assessment of Impact on
Strategic Road Network – 2021



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Network – 2021

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70018699

OUR REF. NO. SRN_IMPACT_1.0

DATE: MARCH 2021



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Network – 2021

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft			
Date	10/3/21			
Prepared by	Icey Mathew/ Chithra Prabhakaran			
Signature				
Checked by	Tom Randall			
Signature				
Authorised by	Simon Pratt			
Signature				
Project number	70018699			
Report number	SRN_IMPACT_ 1.0			
File reference				

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

- 1.1.1. WSP have been appointed by Calderdale Metropolitan Borough Council (CMBC) to provide evidence on transport-related issues in respect of the Local Plan.
- 1.1.2. WSP previously produced the following transport documentation on behalf of CMBC to support the draft Local Plan consultation in 2017 and the Examination in Public which began in 2019. These demonstrate the implications that site allocations may have and have been used to inform the policies within the Plan.
- Technical Note 1: Future Network Baseline [TN1] (June 2016);
 - Technical Note 2: Implications of Settlement Growth [TN2] (July 2016);
 - Technical Note 3: Preferred Spatial Strategy [TN3] (April 2017);
 - Technical Note 4: Assessment of Cumulative Impact [TN4] (May 2017);
 - Technical Note 5: Hipperholme Sensitivity Test [TN5] (March 2017);
 - Technical Note 6: Site Apportionment [TN6] (July 2017);
 - Technical Note 7: Air Quality Constraints Assessment [TN7] (August 2016); and
 - Technical Note 8: Strategic Vision for South East Calderdale [TN8] (October 2016).
 - Technical Note 9: Assessment of Cumulative Impact [TN9] (July 2018)
 - Technical Note 10: Review of Previous Local Plan Evidence Base [TN10] (May 2018)
 - Technical Note 11: Cross Boundary Impacts [TN11] (January 2019)
 - Technical Note 12: Response to comments made by Highways England [TN12] (June 2019)
 - Technical Note 13: Assessment of Cumulative Impact [TN13] (August 2020)
- 1.1.3. The documents listed above were based upon assessment of the evolving Local Plan site allocations.
- 1.1.4. The set of sites to be allocated required re-assessment following the first stage of the Examination in Public, with the examiner requesting an increase in overall housing numbers within the Local Plan. This change was reflected in TN13, which is the most up to date set of modelling related to the overall impact of the Local Plan in combination with other likely growth in the region.
- 1.1.5. Following specific examination sessions related to infrastructure and in particular the impact of the plan upon the transport system, additional information regarding the potential impact on the Strategic Road Network was felt to be useful for the inspector and other parties involved in the EiP. Highways England are the custodians of the Strategic Road Network, which in the case of Calderdale is the M62 and its junctions with the local road network.
- 1.1.6. The likely impact on the SRN, in terms of additional traffic entering the M62, was detailed in TN11 which covered the cross-boundary impacts of the Local Plan (as well as contributions from other sources of growth). However, this note adds further detail to this previous information.

1.2. PURPOSE OF THE NOTE

- 1.2.1. The technical note presents a comparison of predicted congestion levels between the 2032 Local Plan update and 2014 base year, highlighting the points on the strategic road network, M62 and junctions immediately feeding onto the motorway at J23 - J26.



- 1.2.2. The note also details probable causes for the modelled congestion and the level of possible interventions that could be carried out. It should be noted that it is not possible to exactly define mitigation measures, as ultimately Highways England need to advise as to what would be acceptable in line with the prevailing strategy of the company and the constraints of policy regarding safety, environmental impact etc. It would also be the case that Highways England would make a more informed view at the time of a planning application as to the suitability and need for the suggested mitigation measures.
- 1.2.3. It should be noted that with the exception of junction 26, all of the road network beyond the slips onto and off the M62 are under the control of the Local Authority rather than Highways England.
- 1.2.4. A major intervention on the M62 through the Calderdale area is planned for the short term, with the likely introduction of all lane running between Junctions 20 and 25, matching provision on either side of this stretch and providing an additional lane of traffic across the Pennines. The impact of this scheme is also discussed in relation to the Calderdale Local Plan.
- 1.2.5. This document is split into the following sections:
 - Introduction
 - Purpose of the note
 - Comparison of V/C between 2014 base year and 2032 Local Plan Update
 - Discussion of M62 J20 -25 scheme
 - Summary

2. COMPARISON OF CONGESTION LEVELS

2.1. INTRODUCTION

- 2.1.1. To identify the areas with significant congestion in the Do Something model, the output from the modelling has been examined in terms of the ratio of volume over capacity (V/C). This compares the modelled traffic flow over an hour to the theoretical maximum capacity for an hour.
- 2.1.2. The V/C ratio is presented for the M62 between junctions feeding onto the motorway at J23, 24, 25 and 26. The junctions with at least one arm showing a V/C ratio of greater than 85%, which is generally accepted as the point where congestion begins, are identified. A comparison of congestion levels between 2014 base year and 2032 Local Plan Update is undertaken to establish whether the high V/C values already exist in the base year or the V/C values drastically increase in the forecast year due to higher traffic flow.
- 2.1.3. The subsequent analysis of these points on the model network, alongside local knowledge is done to identify the probable reasons for the congestion and estimate likely intervention to address the problem.

2.2. M62 J23

- 2.2.1. Figure 2-1 and Figure 2-2 represents the V/C ratio on M62 Junction 23, for the forecast year 2032 for AM and PM peaks respectively.

Figure 2-1 : V/C ratio M62 J23 (2032 AM Peak)

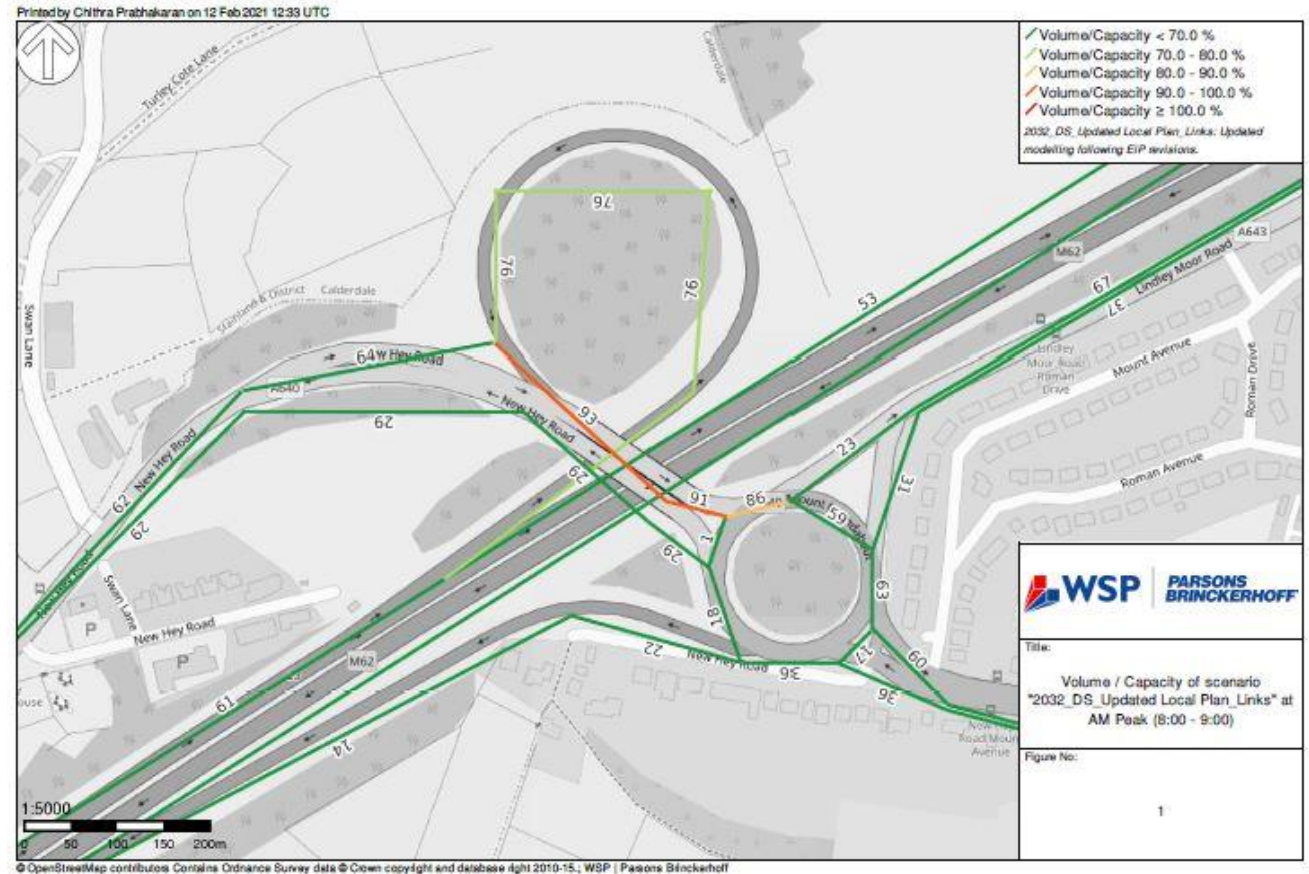
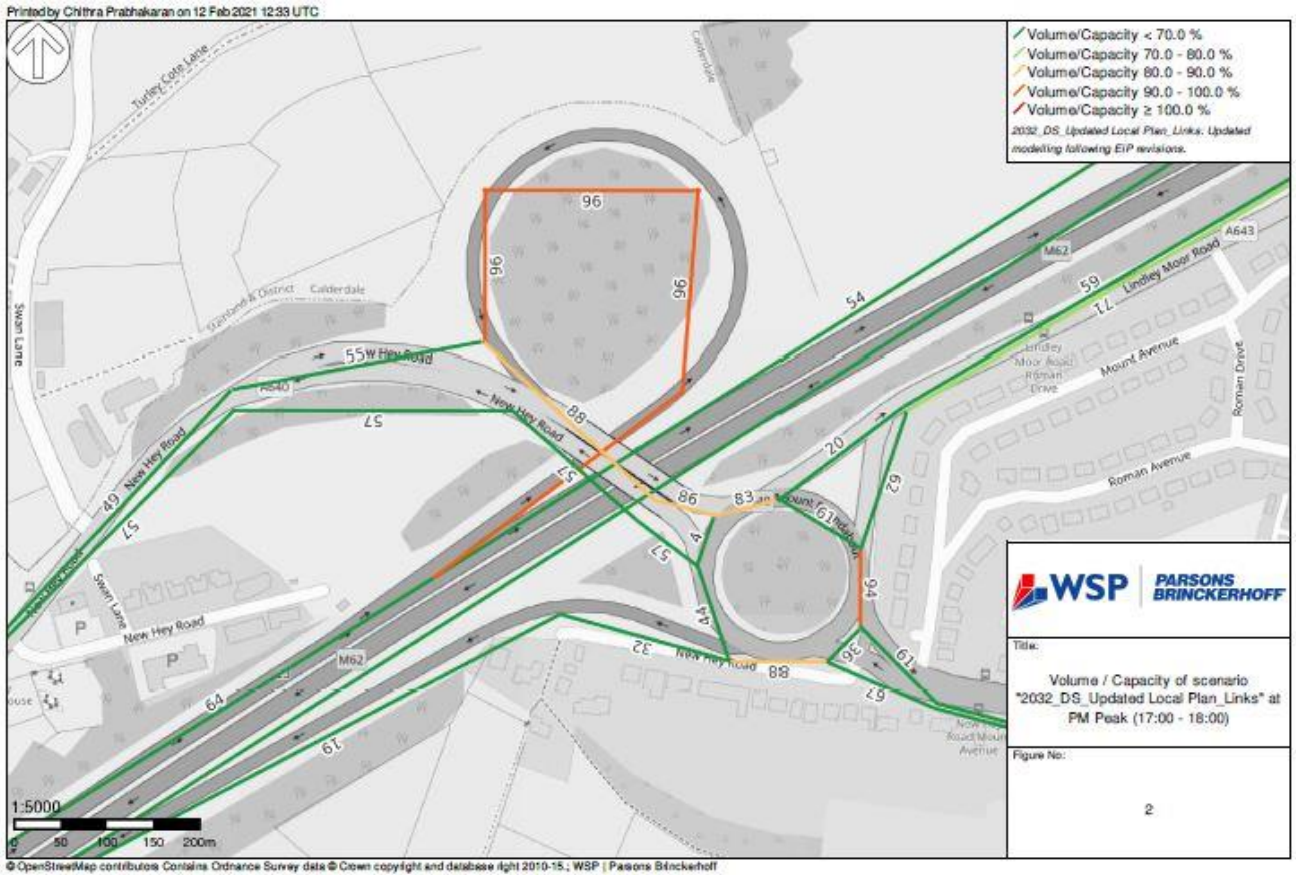


Figure 2-2 : V/C ratio M62 J23 (2032 PM Peak)



- 2.2.2. In the AM peak, a V/C value of 93 can be observed at the merge point of the M62 northbound off-slip with New Hey Road. In the PM peak, high congestion levels are observed on the northbound off-slip and on the New Hey Road to Mount Roundabout contributing to V/C values of 96 and 94 respectively.
- 2.2.3. A comparison is done against the 2014 Base year and the corresponding V/C values in base year are depicted in Figure 2-3 and Figure 2-4.

Figure 2-3 : V/C ratio M62 J23 (2014 AM Peak)

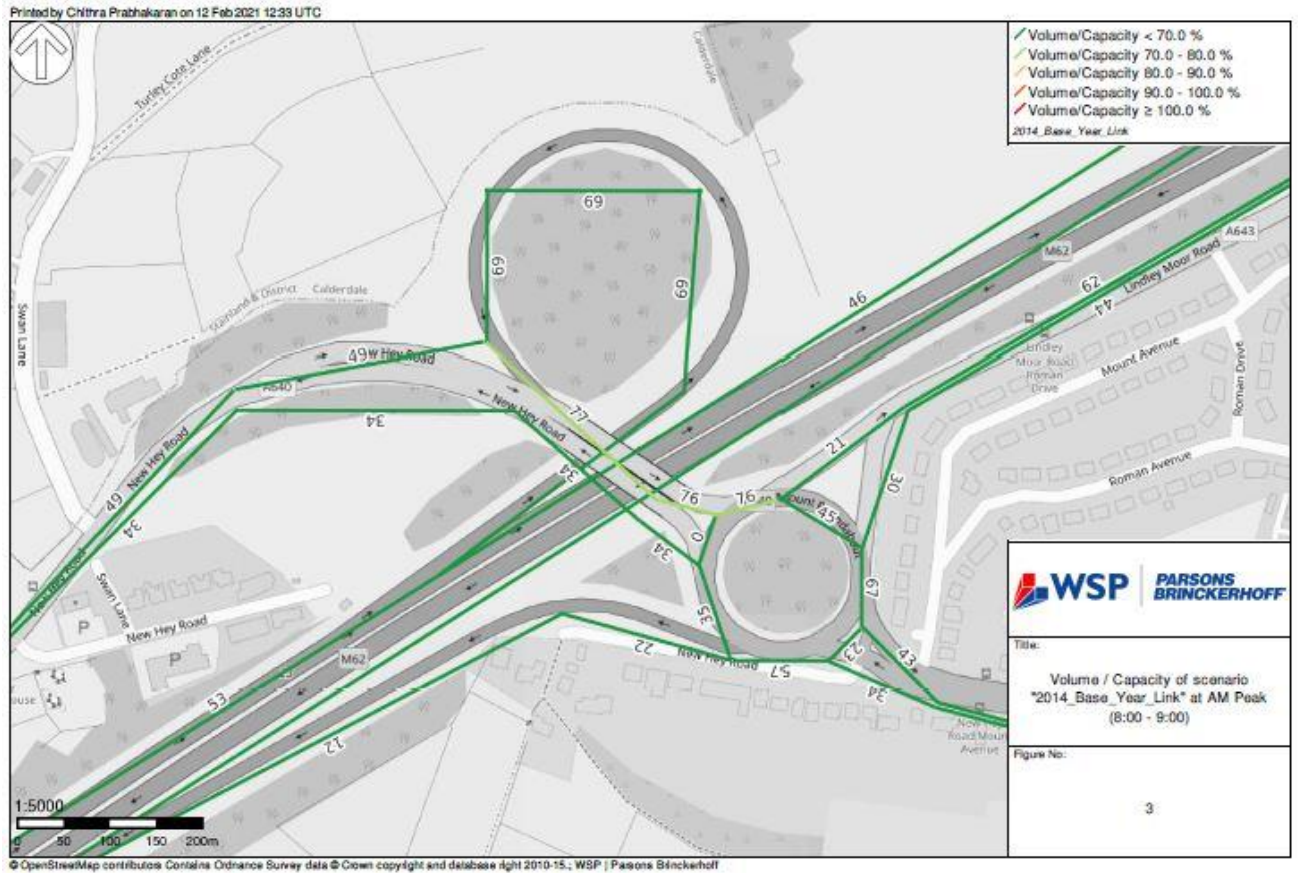
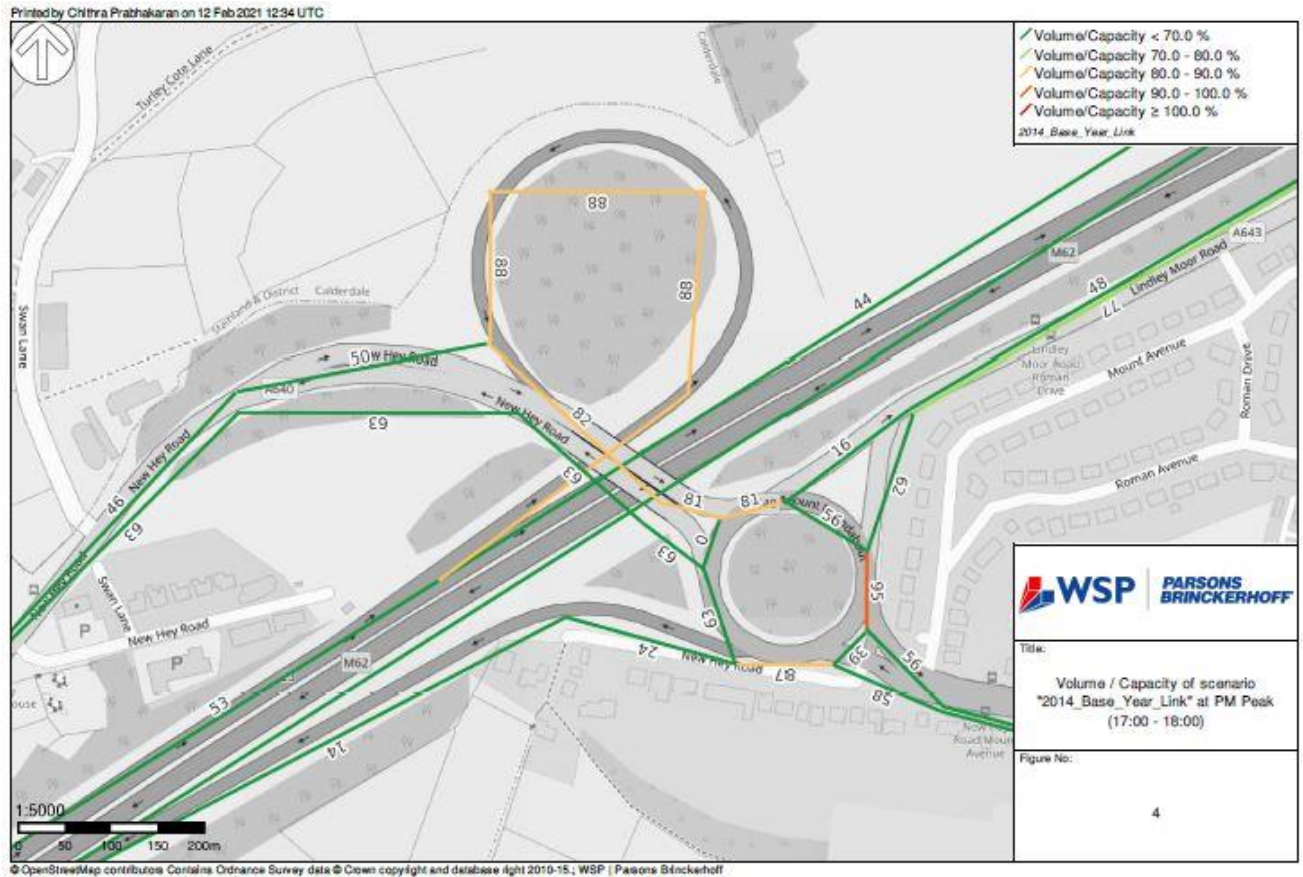


Figure 2-4 : V/C ratio M62 J23 (2014 PM Peak)



- 2.2.4. It can be observed that the congestion levels in the base year are well within the acceptable limits in the AM peak whereas the PM peak shows starting levels of congestion. Hence it can be inferred that the increase in V/C in the forecast year is primarily due to the increase in traffic flow in 2032.
- 2.2.5. The issue at this junction stems from the roundabout to the south of the junction, which is shown to queue back to impact the slip road. In order to mitigate this the junction would require improvement, including improved signing and lane designations and the potential for peak period signals to allow improved flow of traffic onto the roundabout.
- 2.2.6. As previously described in TN11, the proportion of the traffic at this junction related to Calderdale is a maximum of 14%, with the majority of traffic related to other areas in the region and beyond.

2.3. M62 J24

- 2.3.1. Figure 2-5 and Figure 2-6 presents the V/C ratio for M62 Junction 24, for the forecast year 2032 for AM and PM peaks respectively. The AM peak shows very high levels of congestion (V/C >100%) on the entry and exit arms of Blackley Roundabout. In the PM peak, the entry arm of Blackley Roundabout is highly congested with V/C value of 105% whereas the exit arm is at starting levels of congestion. This is primarily because the entire roundabout is modelled with 2 lanes to capture the traffic whereas the entry arm from Blackley Road and exit arm to northbound on-slip are modelled as single lane to carry similar levels of traffic flow. The circulatory arms are well within the congestion levels.

2.3.2. The 2032 model also shows the westbound off-slip with v/c ratios of over 100% in both peaks. The model is likely to be over-playing the congestion at this point as in reality the traffic exiting the M62 does not need to give way to the traffic on Blackley New Road. However, the model is indicating that there is a potential for traffic merging to become problematic. Local knowledge indicates that the main existing issue at this point is traffic backing up from the main Ainley Top roundabout, rather than a specific issue at this slip road.

Figure 2-5 : V/C ratio M62 J24 (2032 AM Peak)

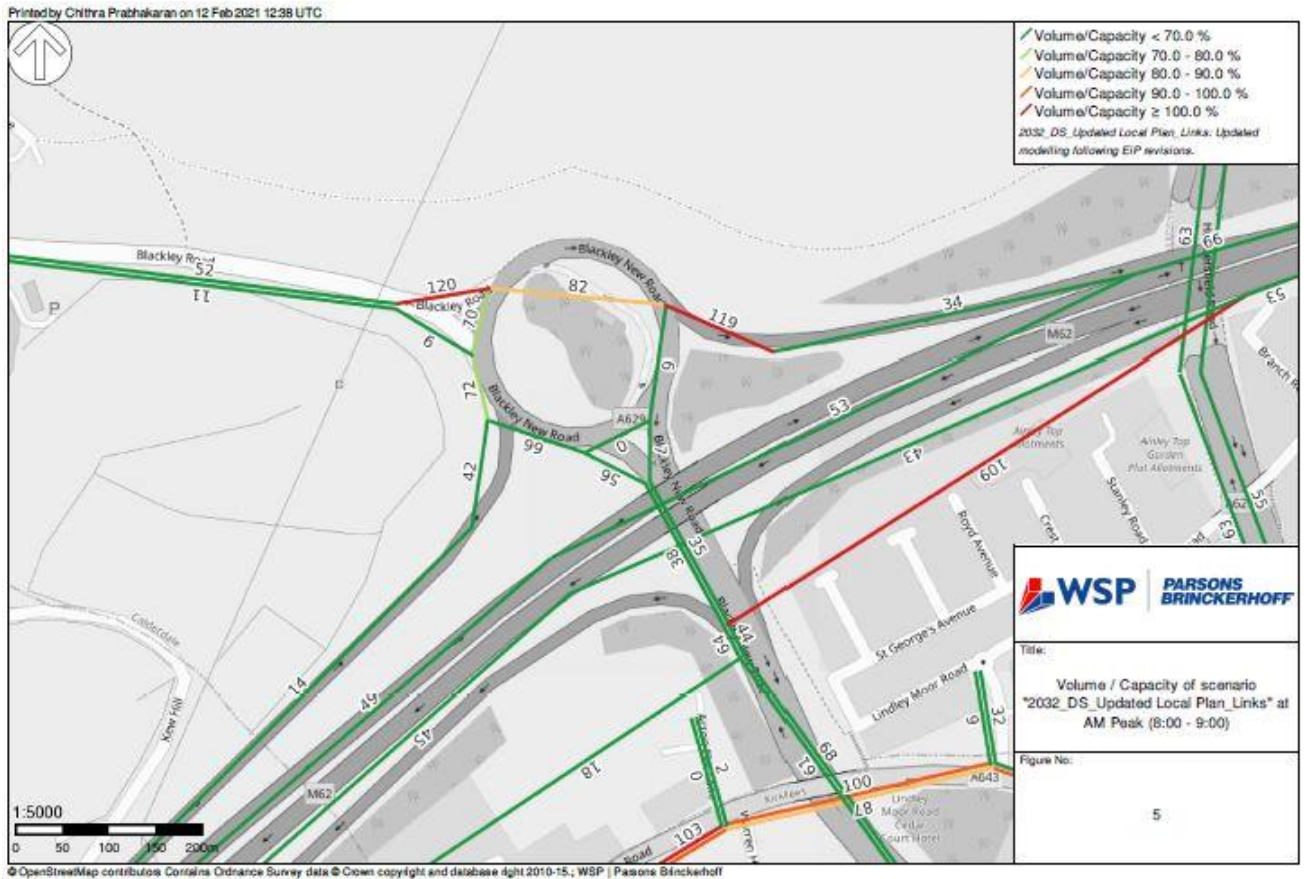
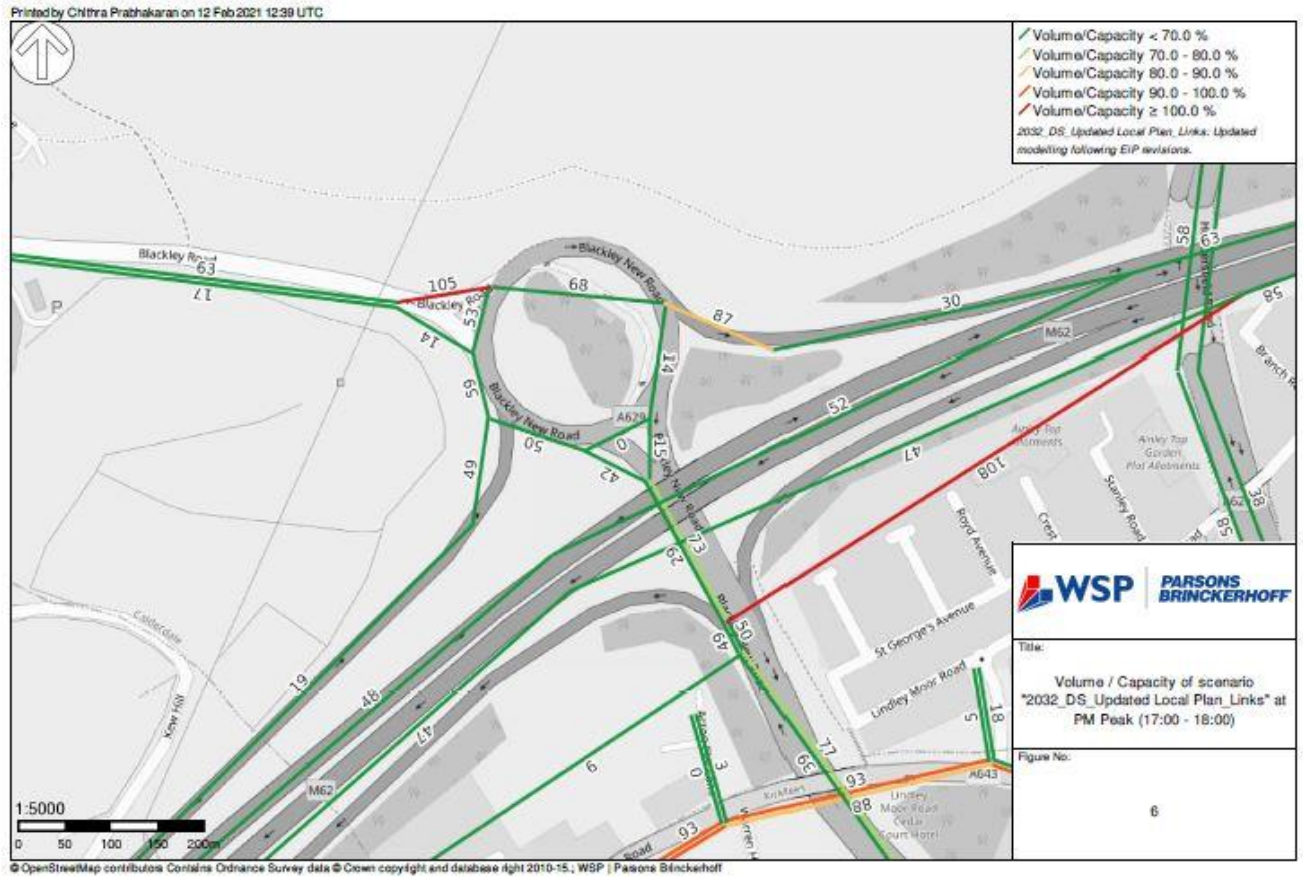
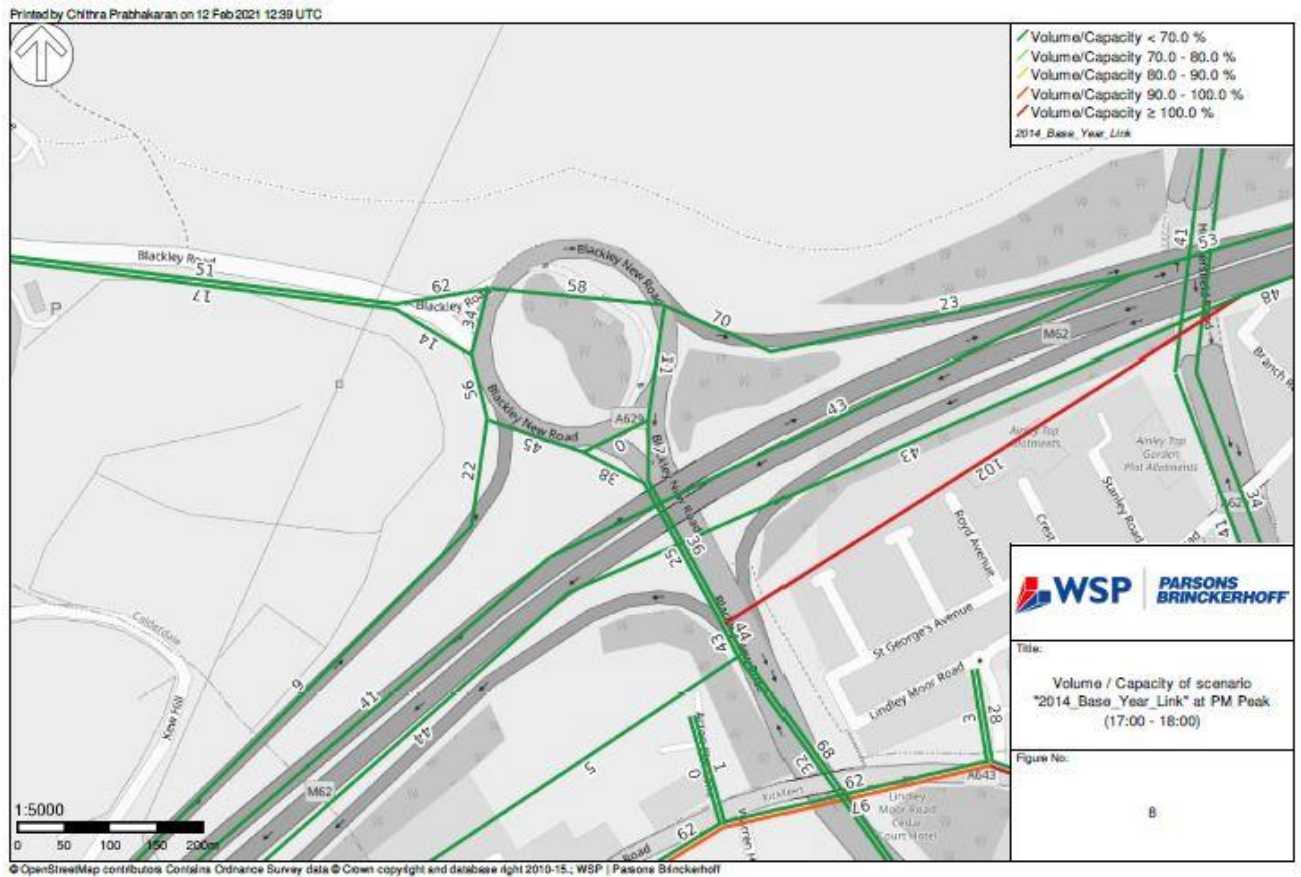


Figure 2-6 : V/C ratio M62 J24 (2032 PM Peak)



2.3.3. Figure 2-7 and Figure 2-8 shows that the V/C ratios for the 2014 base year model for both peaks are within 85%. As shown earlier, the westbound off-slip displays a V/C greater than 100% in both peaks of forecast year model. This congestion level already exists in the base model for PM peak due to the high traffic flow greater than 1500pcu/hr.

Figure 2-8 : V/C ratio M62 J24 (2014 PM Peak)



- 2.3.4. If the issues shown at Blackley Road and the eastbound slip onto the M62 are seen in future, it is believed that they could be mitigated by widening of the entry (at Blackley Road) and making the exit slip two lanes from the roundabout. However, this is probably not desirable for the SRN given that the current arrangement will meter traffic onto the M62.
- 2.3.5. As mentioned above, and based on typical traffic patterns and local knowledge, the true issue at this location is caused by the build-up of queueing from the Ainley Top Roundabout to the south. If a 3rd approach lane could be provided at the roundabout this would help mitigate queueing back onto the M62.
- 2.3.6. As mentioned in TN13, an improvement to Ainley Top is envisaged as part of the A629 Phase 4, however this is primarily a cycling and walking improvement scheme rather than focused on additional capacity for vehicles.
- 2.3.7. TN11 showed that the traffic entering the SRN at this location was a reasonably equal share between Calderdale and Kirklees, as expected due to the location being on the boundary between the two authorities.

2.4. M62 J25

- 2.4.1. Figure 2-9 and Figure 2-10 presents the V/C ratio for M62 Junction 25, for the forecast year 2032 for AM and PM peaks respectively. Figure 2-11 and Figure 2-12 presents the V/C for 2014 Base model.

Figure 2-9 : V/C ratio M62 J25 (2032 AM Peak)

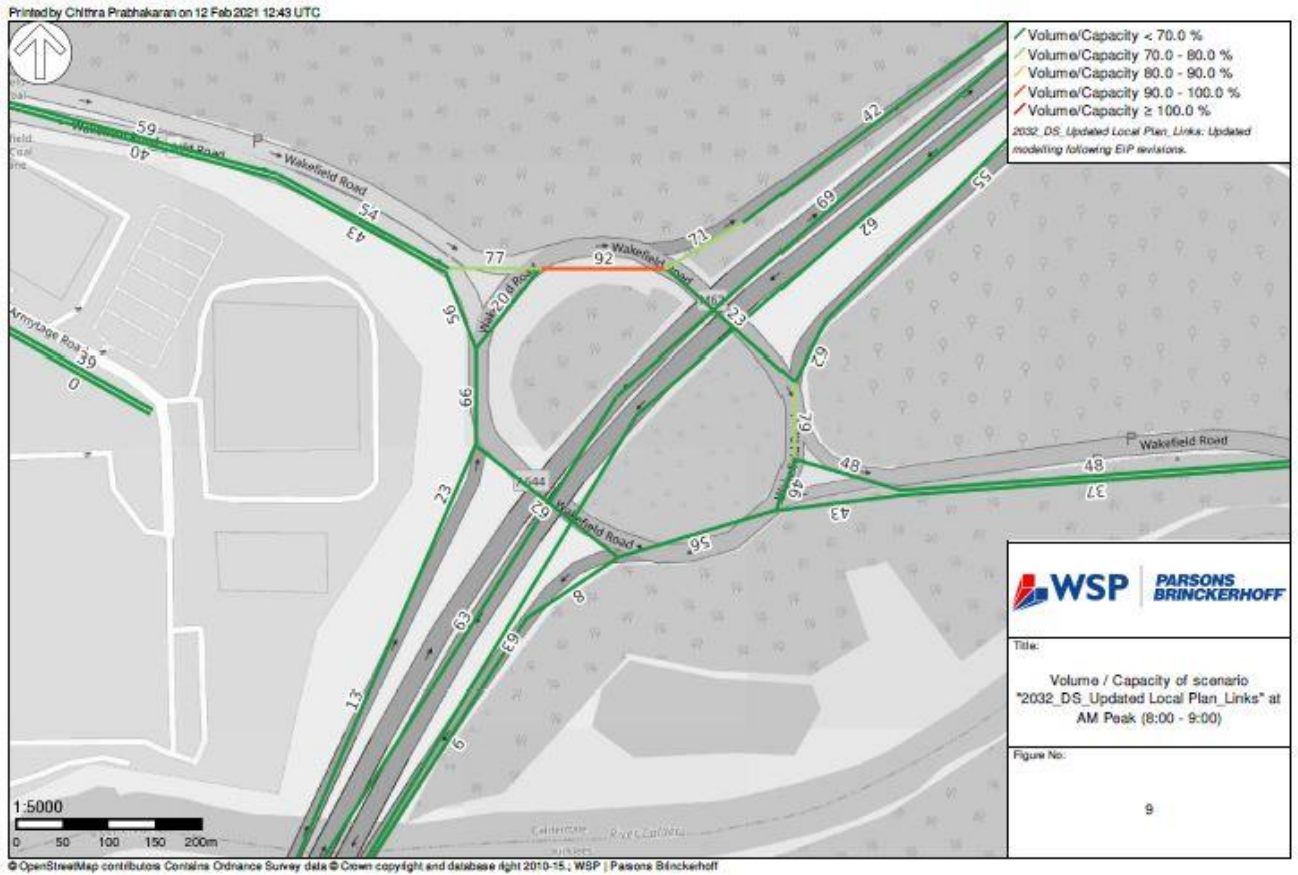


Figure 2-10 : V/C ratio M62 J25 (2032 PM Peak)

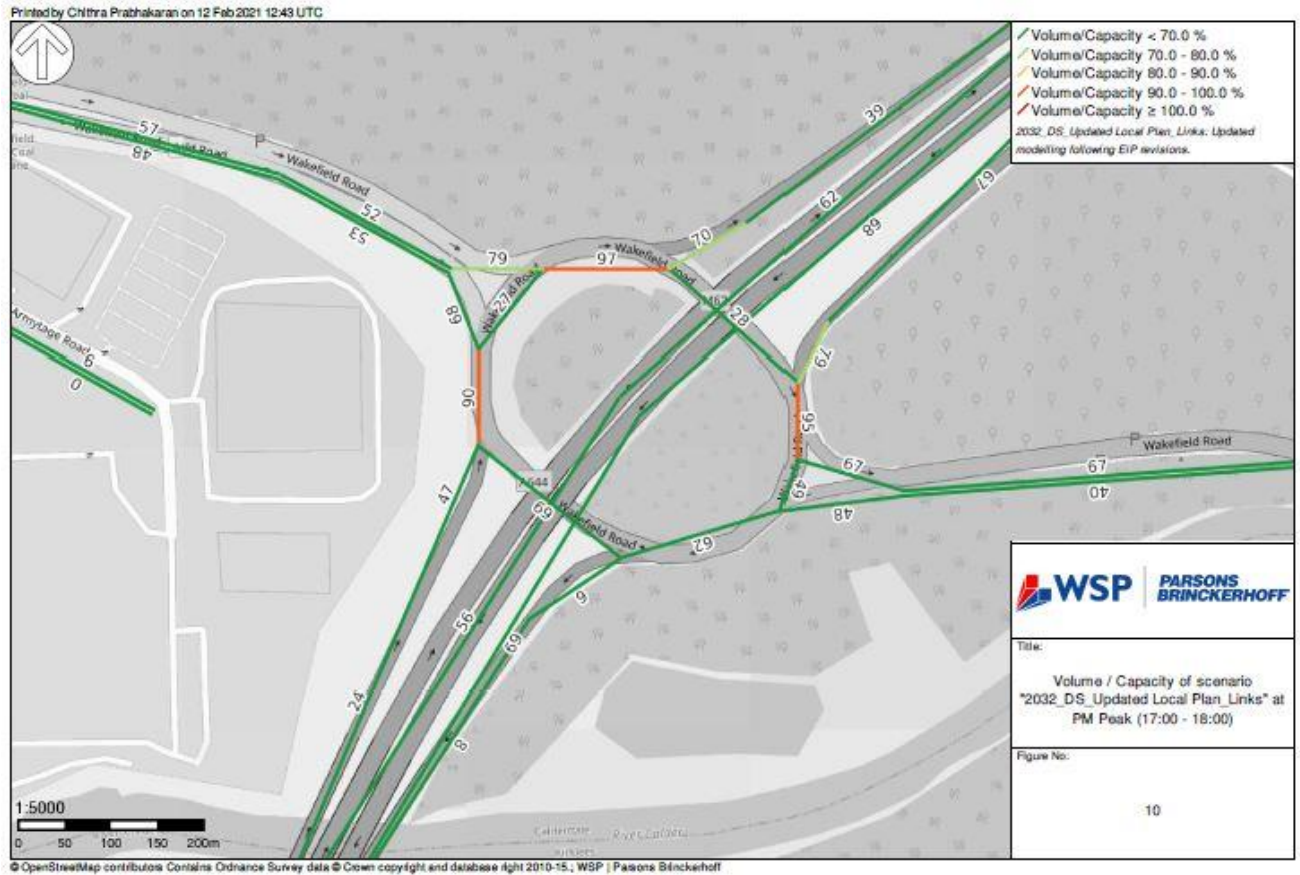


Figure 2-11 : V/C ratio M62 J25 (2014 AM Peak)

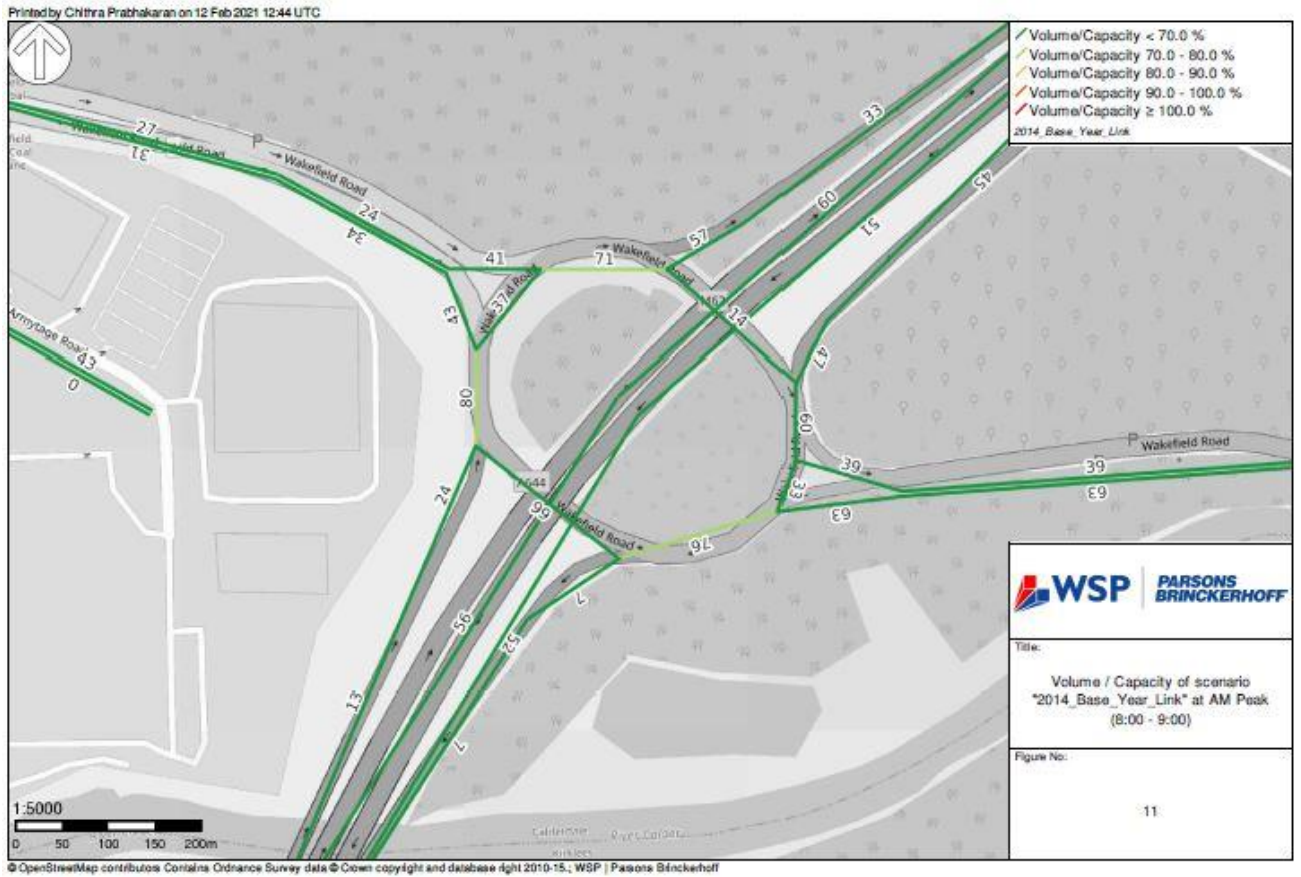
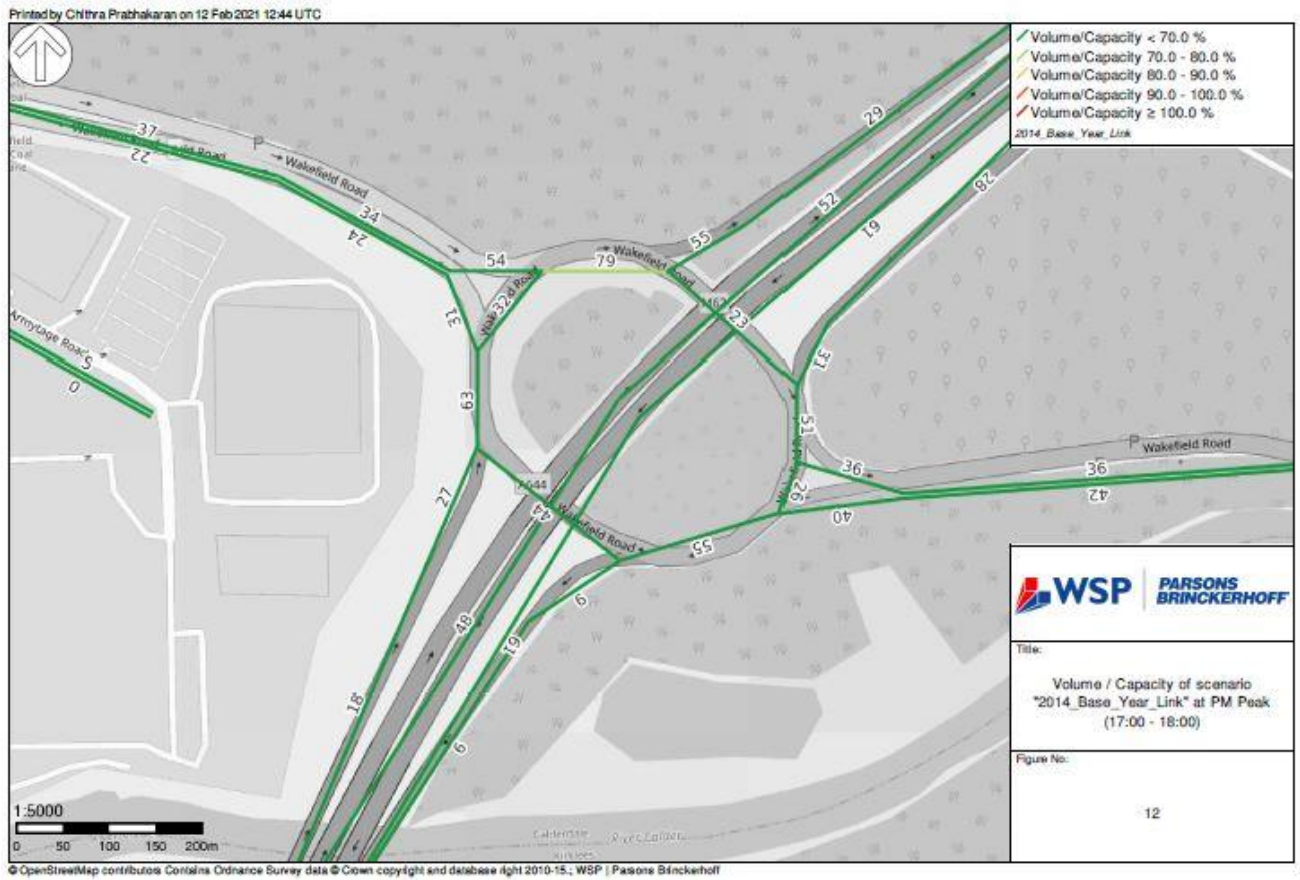


Figure 2-12 : V/C ratio M62 J25 (2014 PM Peak)



- 2.4.2. It can be observed from the figures that the base year model link flows are well within theoretical capacity. The increase in future year traffic flow causes one of the circulatory arms of AM peak to exceed the 85% V/C threshold. In the forecast year PM peak, it is observed that three arms on the roundabout show congestion with V/C greater than 90%. However, the mainline and the slip roads around J25 do not show any indication of congestion.
- 2.4.3. It is acknowledged that the model does not show the true extent of current congestion at this junction, with the primary cause being the pinch-point at Cooper Bridge which causes traffic to back up onto the roundabout in both peak periods. A planned mitigation scheme for this location is being progressed by Kirklees Council which will aim to significantly reduce the queuing back into the roundabout from the east.
- 2.4.4. A minor scheme to provide amended signing and lining arrangements for the roundabout has been agreed as part of outline planning permission granted for the Clifton Business Park scheme. This has not been modelled as yet.
- 2.4.5. Possible further interventions to mitigate the local plan could be either widening the roundabout junction, on either side of the M62, and/or signalling the entry arms to accommodate the increase in demand in the future year. The need for these interventions would need to be considered in further detail alongside the impact of the Cooper Bridge scheme.

2.5. M62 J26

2.5.1. The V/C ratio for M62 Junction 26, 2032 model year for AM and PM peak are presented in Figure 2-13 and Figure 2-14 respectively.

Figure 2-13 : V/C ratio M62 J26 (2032 AM Peak)

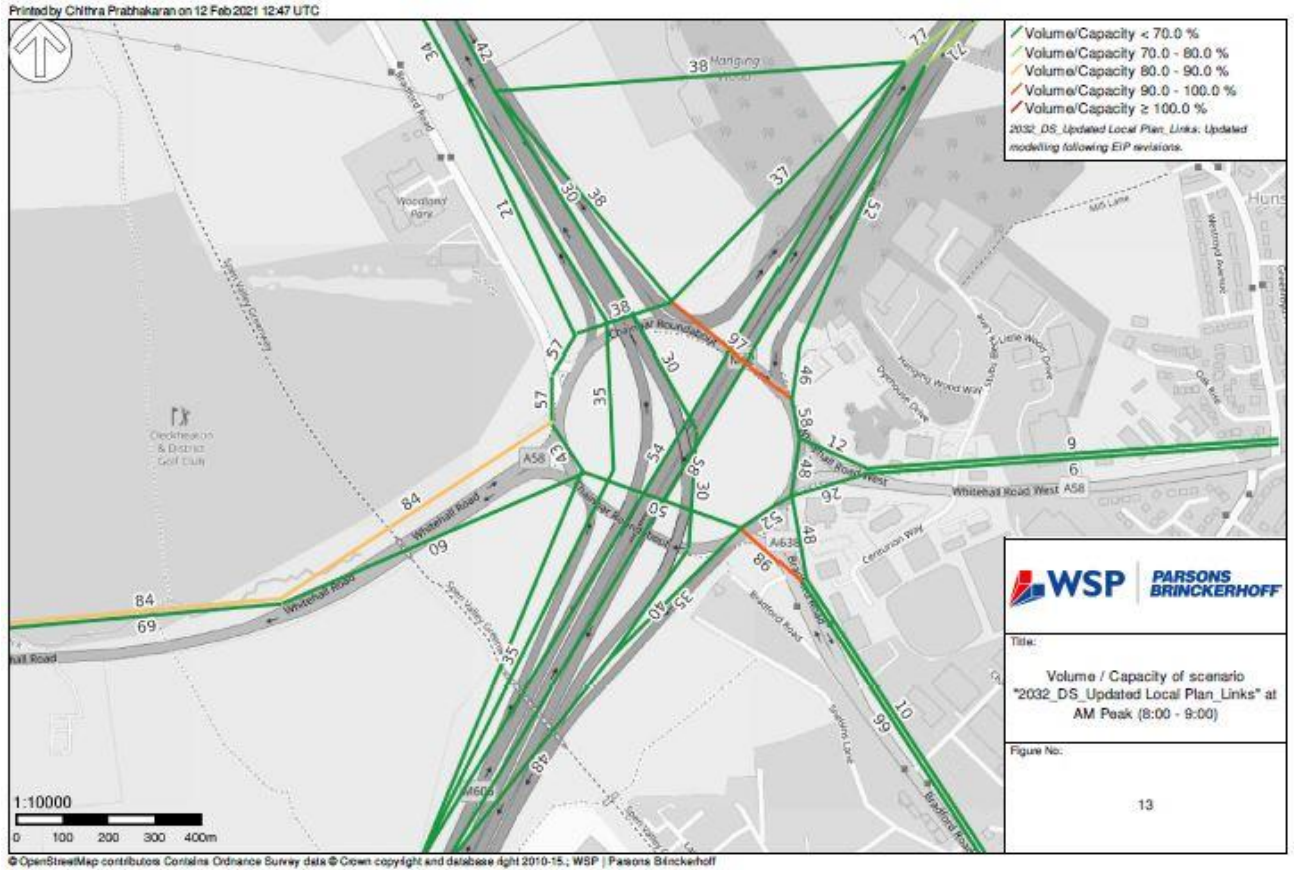
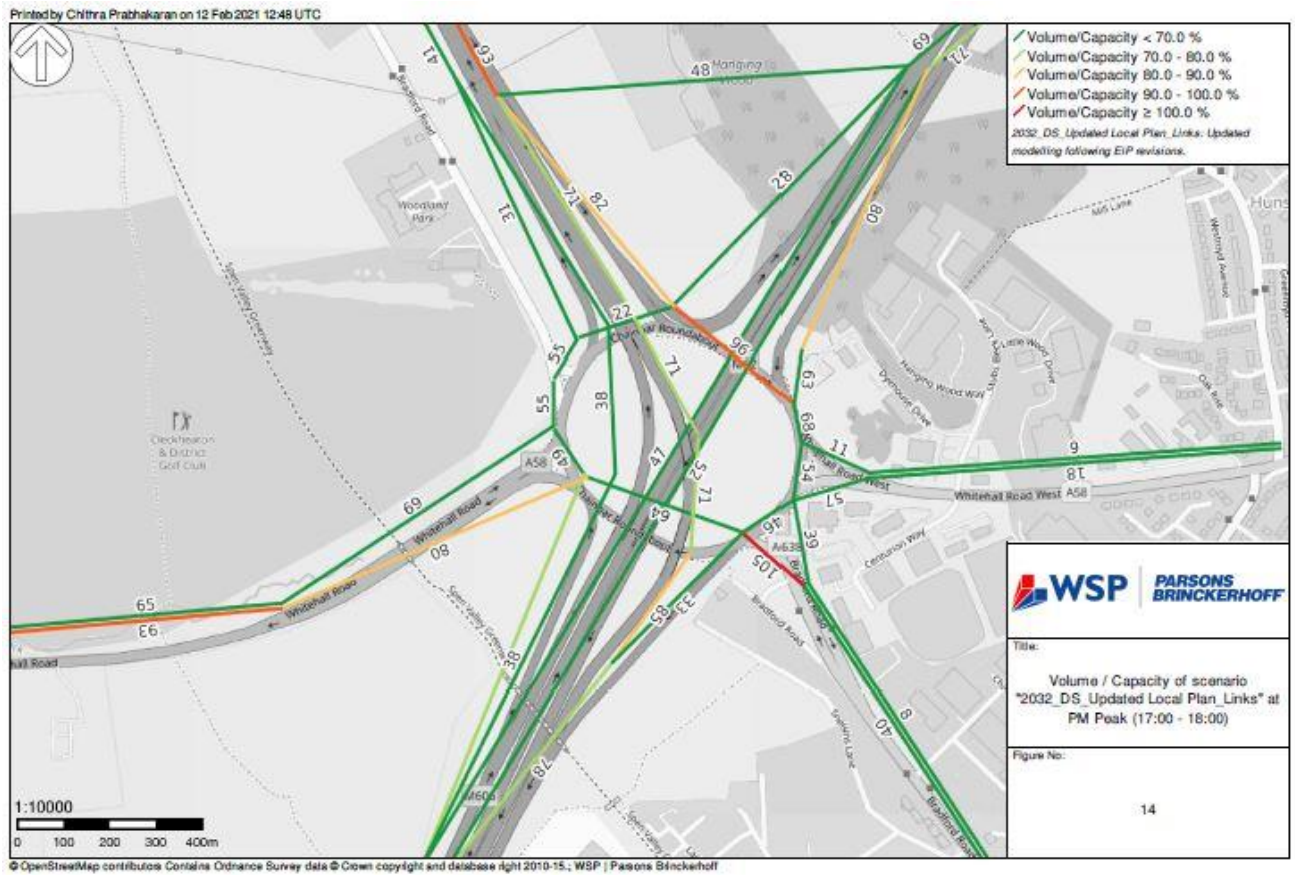


Figure 2-14 : V/C ratio M62 J26 (2032 PM Peak)



2.5.2. High values of V/C ratio can be observed in the entry arm of Bradford Road northbound and one of the circulatory arms in both the peaks in the forecast year. The slip roads are at starting levels of congestion in the PM peak. It can be inferred from Figure 2-15 and Figure 2-16 that these congestion levels exist in the base year and continues to future year.

Figure 2-15 : V/C ratio M62 J26 (2014 AM Peak)

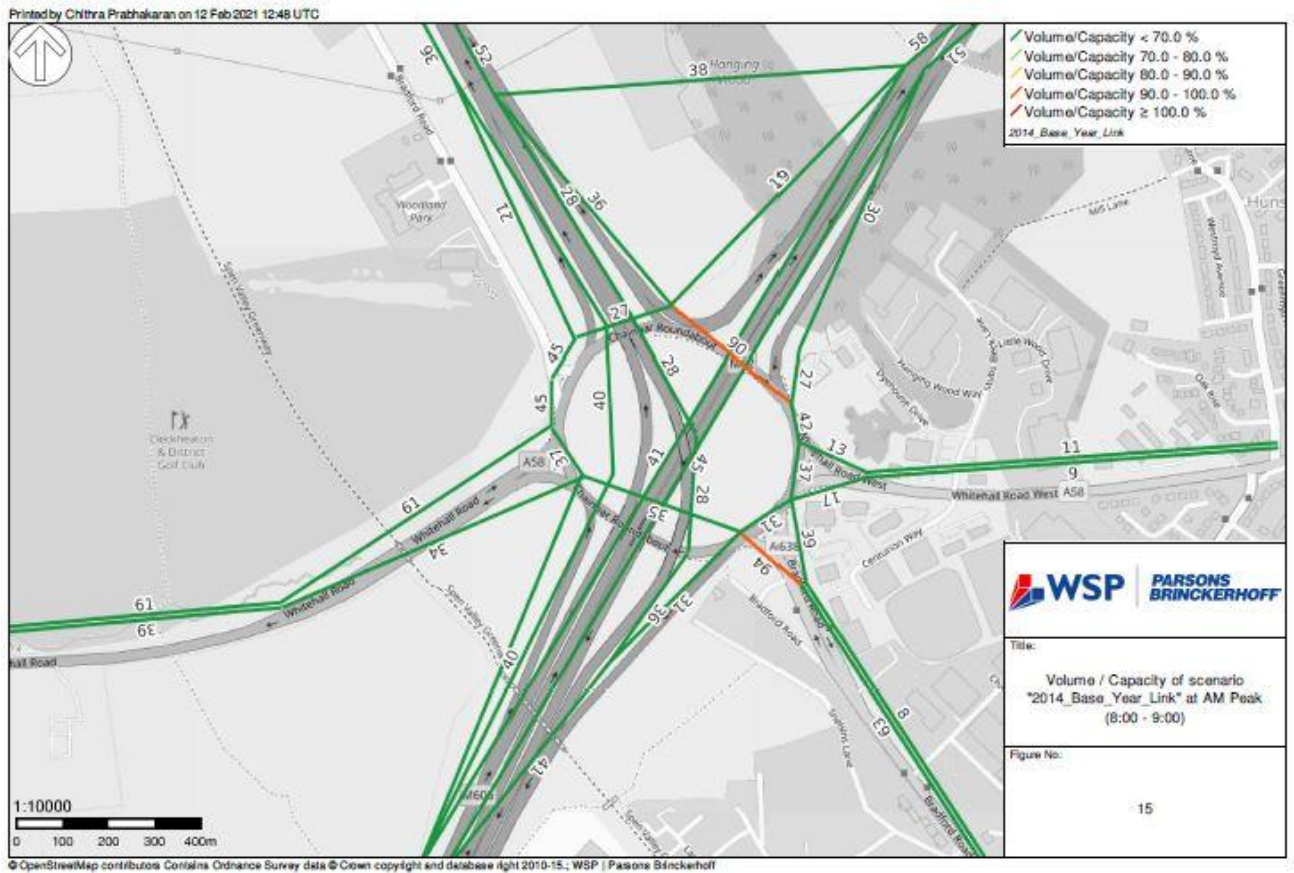
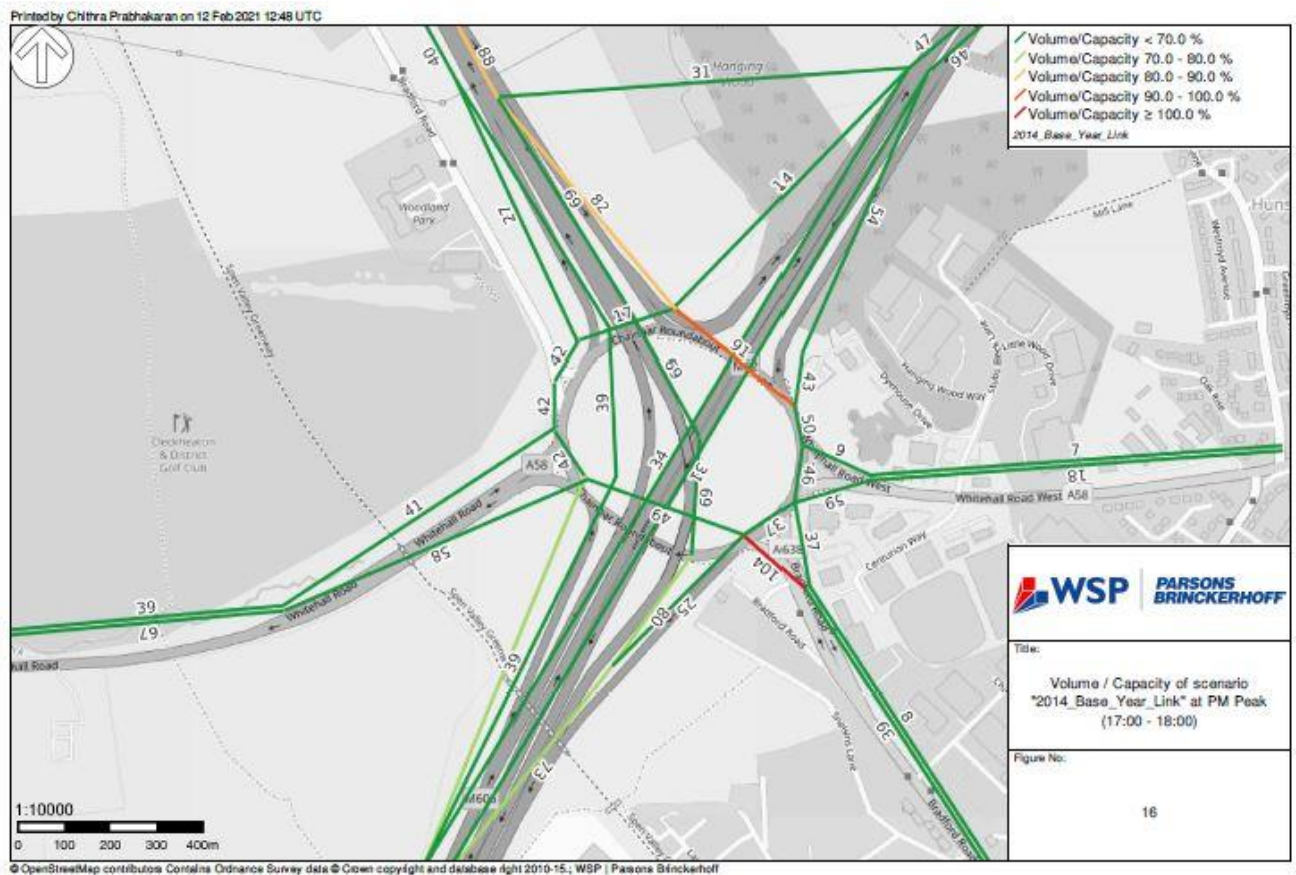


Figure 2-16 : V/C ratio M62 J26 (2014 PM Peak)

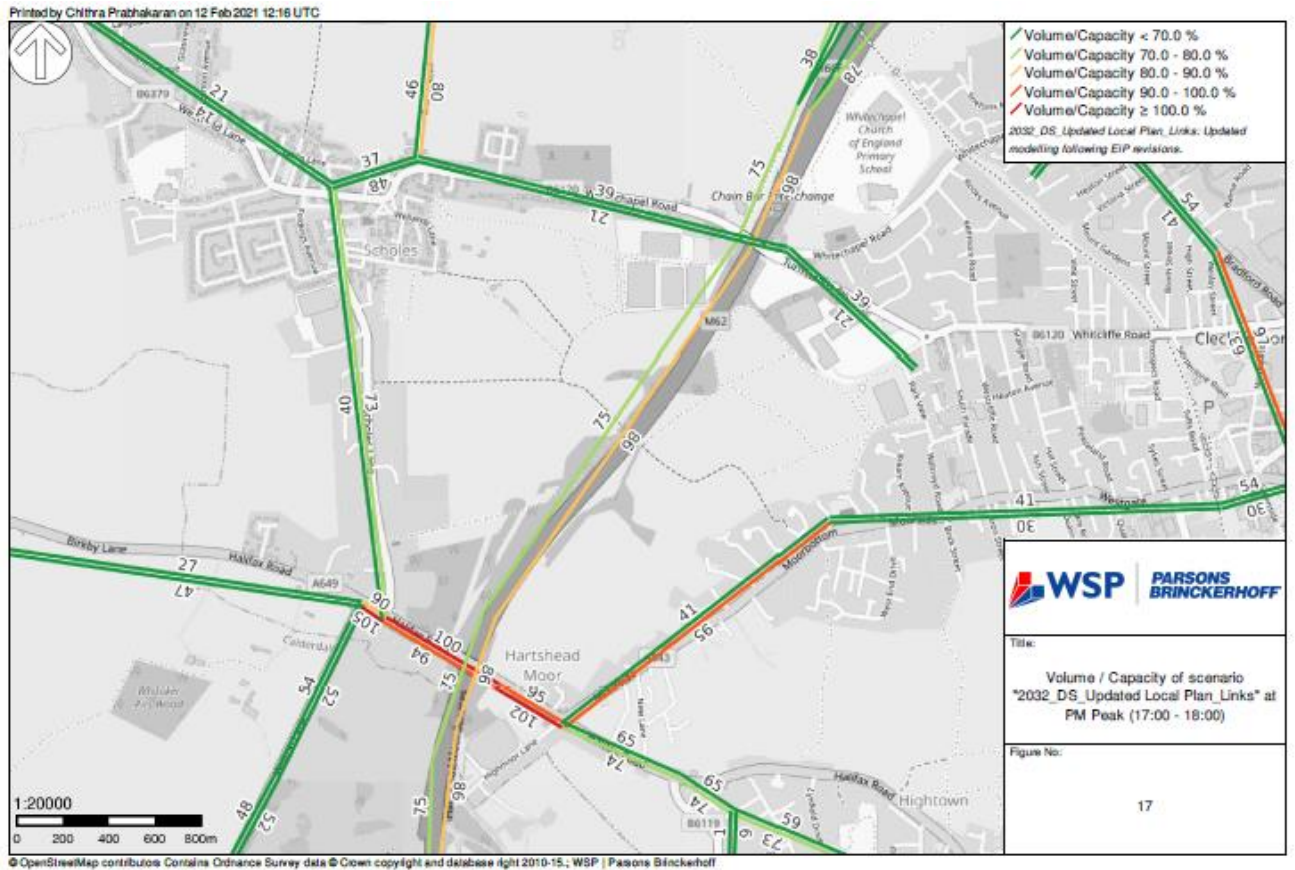


2.5.3. As this area is on the periphery of the Calderdale network, the model has not been updated to reflect the recent upgrade of the Chain Bar roundabout with additional circulatory lanes. As such the model is reflecting levels of congestion that are worse than expected and it is not expected that further mitigation is required.

2.6. M62 MAINLINE

- 2.6.1. The M62 mainline between junctions 23-26 do not show any congestion issues in the AM peak. However, in the PM peak, the mainline section between J25 and J26 northbound records a V/C of 86% which is slightly above the threshold limit, as represented in Figure 2-17.
- 2.6.2. As detailed in Section 4 below, a planned intervention for the M62 by way of a smart motorway with all lanes running will provide additional capacity for the M62 mainline. However, the current local plan modelling has not incorporated this scheme.

Figure 2-17 : V/C ratio M62 Mainline between J25 and J26 (2032 PM Peak)



3. SUMMARY

- 3.1.1. The technical note identifies the links/ road sections between junctions 23 and 26 on M62 with a V/C ratio >85%. It is observed that the mainline traffic volumes are considerably less than the capacity provided, except for the mainline section between J25 and J26 southbound in the PM peak.
- 3.1.2. M62 J23 has maximum V/C value of 96% in the PM peak on the northbound slip road and on the New Hey Road to Mount Roundabout. Addition of signals at the roundabout could be expected to mitigate this issue.
- 3.1.3. Very high levels of congestion (V/C >100%) are observed at J24 on the entry and exit arms of Blackley Roundabout in both the peaks. The westbound off-slip also shows a V/C in the range of 108% in both peaks of 2032 which already exist in the base model in the PM peak. To alleviate queuing back onto the SRN, amendments are required for the main Ainley top roundabout.
- 3.1.4. At J25, the increase in future year traffic flow causes one circulatory arm of AM peak to exceed the 85% V/C threshold. In the future year PM peak, three arms of the circulatory show congestion with V/C more than 90%. However, the modelling does not show the true picture regarding the impact of queuing through the junction as a result of capacity issues at Cooper Bridge. The Kirklees led scheme has the greatest potential mitigation impact for this junction, with further improvements possible via installation of signals and localised widening requiring further detailed modelling at the time of a planning application.
- 3.1.5. Very high V/C ratios can be observed at J26 in the entry arm of Bradford Road northbound and one of the circulatory arms in both the peaks in the forecast year which exist in the base year and continues to future year. This does not have a severe impact on the operation of the SRN and no mitigation is envisaged for this junction given the recent improvements in capacity.

4. M62 J20-25 SCHEME

- 4.1.1. A major improvement scheme for the Strategic Road Network running through Calderdale is the upgrade to a smart motorway, which will add an additional running lane through this stretch via all-lane running conversion of the hard shoulder into a permanent traffic lane.
- 4.1.2. The scheme is currently at an advanced stage and planned for a start of construction in Spring 2023. As such, it will be provided early on in the Local Plan period for Calderdale.
- 4.1.3. The scheme aims are to:
- Reduce congestion and delays
 - Improve journey time reliability
 - Maintain a high standard of safety
 - Support economic growth and job creation
- 4.1.4. The final bullet point above is directly related to the Local Plan in Calderdale (and neighbouring districts). The traffic modelling undertaken by Highways England for the scheme has been based on future forecasts for 2037, which although less detailed than the modelling undertaken for the Local Plan, incorporate key sites for planned growth alongside the national forecasts from the DfT's National Trip End Model (NTEM).
- 4.1.5. The work undertaken by Highways England to appraise the benefits of the scheme have shown it to be beneficial for traffic congestion and able to accommodate future growth predictions within the capacity that the scheme designs provide.
- 4.1.6. The scheme intends to standardise all lane running across the Pennines. Matching with the provision on either side of the scheme and creating an additional lane of traffic, primarily for the benefit of long-distance traffic. No major changes are planned for the slip roads and as such the arrival patterns onto the local road network are not expected to change significantly.
- 4.1.7. The Local Plan modelling has not incorporated the smart motorways scheme and therefore the impact has not been shown. It is however, considered a key form of mitigation for the Strategic Road Network to be able to accommodate planned growth in Calderdale and elsewhere in the region.

5. SUMMARY

A review of the evidence relating to the potential impact of the Calderdale plan upon the Strategic Road Network has been undertaken. This has concluded that the following measures may be necessary to mitigate the impacts of the Local Plan upon the Strategic Road Network:

Table 5-1 - Potential Mitigation Measures

Location	Description
Junction 23	Signalisation of roundabout
Junction 24	Additional lane on entry to Ainley Top roundabout from J24.
Junction 25	Cooper Bridge improvement on local road network (minor improvements to roundabout to be investigated when planning applications submitted)
Junction 26	No intervention required
M62 Mainline	No intervention required (Smart Motorway planned)

- 5.1.1. Of significance is the Highways England scheme to upgrade the M62 between Junctions 20 and 25 to a smart motorway with All Lane running. This would provide an additional lane of capacity and has been designed to accommodate future traffic flows, and as such will provide significant mitigation for the potential impacts of additional traffic related to planned growth in Calderdale and elsewhere.
- 5.1.2. The interventions shown in Table 5-1 are considered to be feasible schemes that could be implemented during the plan period if necessary. They would need to be considered on a case by case basis when major planning applications are received.
- 5.1.3. It should be noted that travel patterns have been changing over recent years and the Covid-19 pandemic has accelerated change in a number of areas, as described in the Local Plan: Covid-19 Travel Impacts – Technical Report (appended to HS8.1-Growth Delivery, Infrastructure and Viability Statement). This re-iterates the need for assessment of the need for these interventions when planning applications are submitted.



APPENDIX

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