MOTT MACDONALD

Rossendale Borough Council

Rossendale Local Plan

Highway Capacity Study

01 Oct 2018

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Issue and Revision Record

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A	01.05.18	RS/LT	RS	CS	Draft for client comment
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Contents

Glossary

Degree of Saturation – *The degree of saturation of an junction (typically under traffic signal control) or road is a measure of how much demand it is experiencing compared to its total capacity. The degree of saturation (%) is a ratio of demand to capacity on each approach to the junction, with a value of 100% meaning that demand and capacity are equal and no further traffic is able to progress through the junction.*

Highways England – *Is the government-owned company charged with operating, maintaining and improving England's motorways and major A roads.*

INSET – *Is a Mott Macdonald decision support tool that has been developed to quickly summarise and present evidence on options in a clear and consistent format. It is used to appraise scheme options using a thematic multi-criteria approach.*

Lancashire County Council – *Is the upper-tier local authority for the non-metropolitan county of Lancashire, and the local highway authority for roads within Rossendale.*

Level of Service – *Level of service is a qualitative measure used to relate the quality of traffic service. LOS is used to analyze highways by categorizing traffic flow and assigning quality levels of traffic based on performance measure like speed, density,etc*.

Local Highway Network – *The remainder of England's road network under the operation of the Local Highway Authority.*

Local Plan – *A local plan sets out local planning policies and identifies how land is used, determining what will be built where. Adopted local plans provide the framework for development across England.*

Mid Super Output Area – *Super Output Areas are stable and consistently sized areas for Neighbourhood Statistics collection.*

National Planning Policy Framework – *The National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied.*

Passenger Car Unit – *Passenger Car Unit is a metric to assess traffic-flow rate on a highway. A PCU is essentially the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single car.*

Ratio of Flow to Capacity – *Is the direct value derived from combining the calculated capacity of the road (from geometric values), and the observed or forecast flow on that link.*

Strategic Road Network – *Represents England's motorway and A road network under the operation of Highways England.*

TEMPRO – *Is the Trip End Model Presentation Program, designed to allow detailed analysis of pre-processed trip-end, journey mileage, car ownership and population/workforce planning data from the National Trip End Model. TEMPRO is also the industry standard tool for estimating traffic growth, which is required when assessing the traffic impact of a development on the local highway network.*

WebTRIS – *An online Highways England network journey time and traffic flow database for the Strategic Road Network.*

Executive Summary

This study has been undertaken to support the transport evidence base for the emerging Rossendale Local Plan.

The development of a robust evidence base enables an assessment of the transport impacts of both committed development as well as that proposed, and is used to inform the interventions that might be required to make the plan sound on highway grounds.

This highway capacity study has been undertaken on a scenario basis in accordance with National Planning Policy Guidance. This scenario based approach allows for the identification of solutions in relation to the period of the plan that they are required. This level of detail attempts to provide certainty to developers and highway authorities as to where and when interventions may be required. It can also be used to unlock housing and employment growth by strengthening the evidence base for infrastructure investment.

This study has determined that highway mitigation would not be required within the first five years of the plan. Interventions will however potentially be needed at nine locations in order to deliver the remaining build out of the plan period to 2034.

The study has identified that mitigation will be required at the following locations. Some of the schemes could be delivered within land owned either by the local authority or Highways England, whereas other schemes would require obtaining third party land.

- Junction 1 – Rawtenstall Gyratory
- Junction 5a – Tesco Haslingden Road / A56,
- Junction 6 – A56 Rising Bridge,
- Junction 8 – Grane Rd/Holcombe Rd,
- Junction 9a – Grane Rd/A56 Off-slip,
- Junction 11 – Rochdale Rd/Bury Rd Edenfield,
- Junction 13 – Waterfoot roundabout,
- Junction 14 – Toll Bar roundabout, and
- A682/A56 SB Merge.

On the basis of the above, it is considered that there are no highway grounds on which to object to the local plan.

1 Introduction

1.1 Background

Rossendale Borough Council is preparing a Local Plan to cover the period 2019 to 2034 and it will be the key planning policy document which guides decisions on the use and development of land in the borough.

Mott Macdonald have been commissioned by Rossendale Borough Council to undertake a Highway Capacity Study to provide an evidence base to assist in the production of an Infrastructure Development Plan as part of the Rossendale Local Plan

This report considers the development impact on the principal highway network within Rossendale and identifies the mitigation measures that are required to ameliorate the impact of the local plan.

1.2 Rossendale Local Plan

The evidence base for a Local Plan is a requirement of the plan making process and guidance available from the Department for Transport outlines the need, purpose and expected outcomes of the study.

Ultimately, it is important for local planning authorities to undertake an assessment of the transport implications in developing or reviewing their Local Plan so that a robust transport evidence base may be developed to support the preparation and/or review of that Plan. A robust transport evidence base can facilitate approval of the Local Plan as well as ensuring agreement of understanding is reached with key stakeholders. A robust Plan can also reduce costs and delays to the delivery of new development, thus reducing the burden on the public purse and private sector.

A key element of Local Plan evidence base production is the Council's Duty to Cooperate requirement, which in the case of this Highway Capacity Study is Lancashire County Council as the local highway authority, and Highways England as the Strategic Road Network operators.

The current timelines for the emerging Rossendale Local Plan are an expected submission in February 2019, which follows consultation on the draft document starting in Summer 2018.

the location of future residential and employment development sites, land use type and quanta which are currently included within Rossendale's Emerging Local Plan can be seen illustratively at **Appendix A**.

The development quanta proposed, and provided to Mott Macdonald for this study is listed below.

- 3,180 new dwellings,
  - Of which, 1,240 are proposed within the first five years of the plan period to 2024,
  - And, the remaining 1,940 dwellings proposed for the period 2024 to 2034.

- 20.53 (19.95 new and 0.58 on an existing site) Hectares Gross Area for employment (B1, B2, B8), and
- A further 3.08 hectares of land for mixed use sites.

1.3 Policy Background

Local Plans are at the heart of the planning system. The National Planning Policy Framework (NPPF) requires Local Plans to be "justified, effective, consistent with national policy and positively prepared to deliver sustainable development that meets local needs and national priorities". Rossendale Borough Council is in the process of developing a Local Plan to cover a 15 year period.

The NPPF was first published in 2012 and sets out the government's planning policies for England and how these are expected to be applied. The government has now undertaken a first review of this document which is currently out to consultation at the time that this report is being written.

The presumption in favour of sustainable development is still central and the importance of Transport Assessments/Statements and Travel Plans in support of development proposals remains.

The NPPF introduced the concept of developments only being refused on transport grounds if the residual cumulative impacts were severe. The new document helpfully expands this statement by being specific that this relates to the road network or road safety and in paragraph 110 provides the context for this which highlights the importance of designing developments for walking and cycling and public transport. The definition of severe impact is once again left to local authorities to determine based on local considerations.

The importance of considering transport issues from the outset is given weight in relation to addressing infrastructure and mitigation needs during the pre-application process.

In terms of local parking standards clear and compelling justification is now needed for the setting of any maximum parking standards.

Due consideration has also been given to the National Planning Policy Guidance on Transport in the derivation of the assessment methodology for this study.

The National Planning Policy Guidance on Transport notes that it is important for local planning authorities to undertake an assessment of the transport implications in developing their Local Plan so that a robust transport evidence base may be developed to support the preparation of that Plan. A robust transport evidence helps to facilitate approval of the Local Plan and reduce costs and delays to the delivery of new development, thus reducing the burden on the public purse and private sector.

1.4 Report Structure

The report incorporates seven chapters of work, as follows:

- Chapter 1 – Introduction,
- Chapter 2 – Baseline Position,
- Chapter 3 – Study Methodology,
- Chapter 4 – Operational Analysis,
- Chapter 5 – Rawtenstall Gyratory,
- Chapter 6 – Further Mitigation Considerations, and
- Chapter 7 – Summary, Conclusions and Recommendations

Each element will combine to provide both an overall Transport Evidence Base, as well as a clear strategy for enhancement, to support the Local Plan process.

A baseline technical note has already been produced that focuses upon the results from Chapter 4, presenting the baseline and future year assessment of issues and opportunities for Rossendale's highways.

This report cross-references the data collated, modelling work undertaken, and key challenges and opportunities identified from the baseline technical note and so the two documents should be considered in unison. This report takes the key challenges and opportunities forward and seeks to identify mitigation measures to provide effective solutions to transport and movement issues over the short term (2024) relating to the 5 year land supply and also long term (2034) relating to the lifetime of the local plan.

2 Baseline Position

2.1 Preamble

Mott Macdonald have undertaken a baseline review of the junctions to be considered in this study, along with the public transport provision and accident considerations. The review has utilised on-site observations, Google Live Traffic data, Trafficmaster data, Crashmap information and public transport timetables.

The above sources of data represent a comprehensive collection of information from which to understand the existing operation of the highway network, and are used to provide validation of each other rather than relying on one signle source of data.

2.2 Junctions

Seventeen junctions have been previously identified as requiring consideration in relation to the draft land allocations already outlined by Rossendale Borough Council. These junctions were supplied to Mott Macdonald at the outset of this study, and are listed below in **Table 1**.

Table 1. Junctions for Consideration within Study

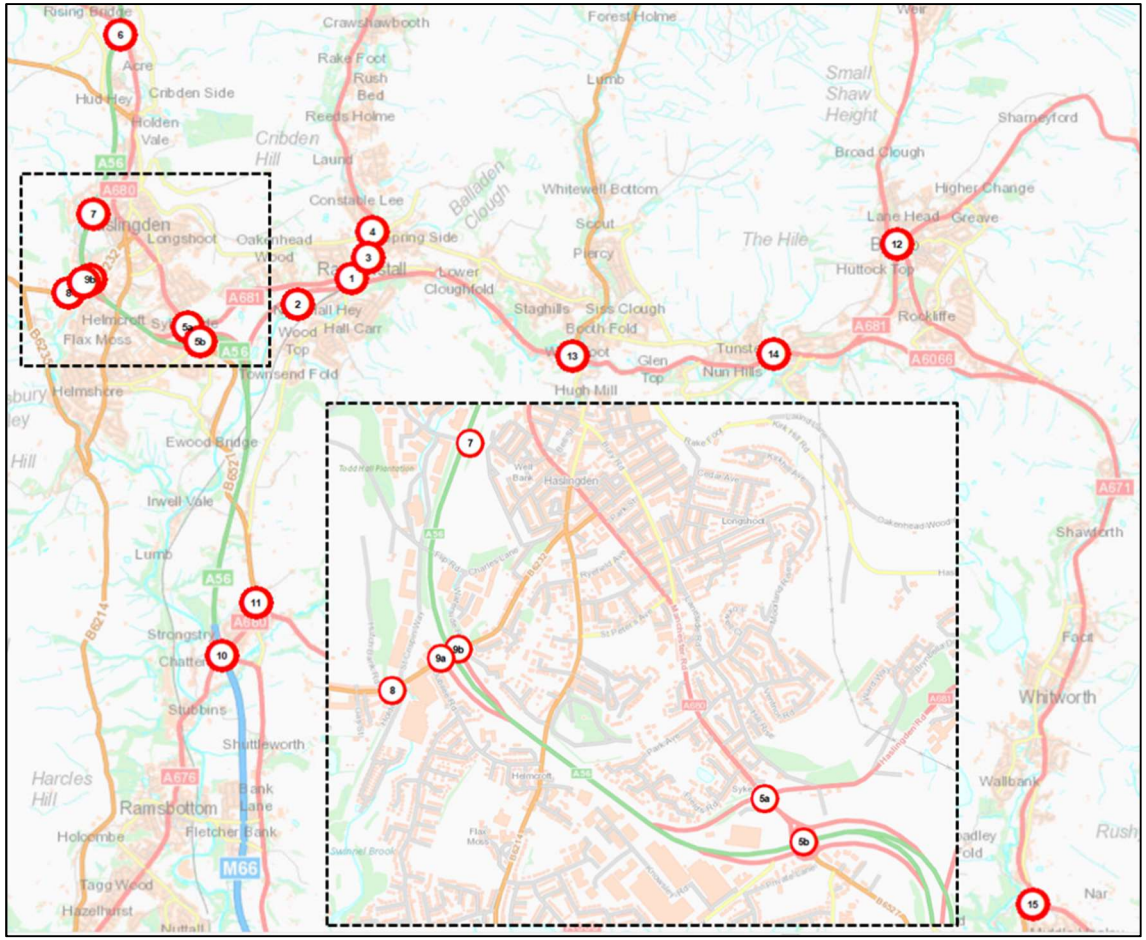
Junction Number	Description	Latitude	Longitude
J1	The Gyratory, Rawtenstall	53.699789°	-2.289610°
J2	Mini-roundabout by Hardman's Mill, Rawtenstall	53.697475°	-2.297938°
J3	Junction of St Mary's Way, Bank Street and Asda, Rawtenstall	53.701931°	-2.286668°
J4	Tup Bridge Junction, St Mary's Way, Rawtenstall	53.704607°	-2.285882°
J5a	Haslingden Road/Tesco roundabout, Haslingden	53.695174°	-2.315709°
J5b	A56 Haslingden Roundabout	53.413805°	-2.184915°
J6	Rising Bridge roundabout, A56	53.723421°	-2.326739°
J7	Todd Hall Road access	53.706076°	-2.331073°
J8	Grane Road/Holcombe Road junction	53.698447°	-2.335038°
J9a	Grane Road/A56 junctions (A56 off-slip)	53.699681°	-2.331588°
J9b	Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)	53.699681°	-2.331588°
J10	A56 / M66 'Junction 0' at Edenfield	53.663579°	-2.309594°
J11	Rochdale Road/Market St roundabout, Edenfield	53.668806°	-2.304304°
J12	Bacup St James Square	53.703389°	-2.200542°
J13	Waterfoot roundabout	53.692402°	-2.252515°
J14	Toll Bar Roundabout, Stacksteads	53.692867°	-2.220467°
J15	Market St/Shawclough Road, Whitworth	53.639837°	-2.178169°

Mott Macdonald understand that these junctions were identified by Lancashire County Council and Rossendale Borough Council in prior consultation to the Highway Capacity Study being commissioned. It is noted that the above list does not include specific site access junctions to any of the new allocations. This is because in most instances the layout of these junctions would not be known or sufficiently detailed to assess at this stage. It is also noted that the detail of any new site access junctions would be determined at the planning application stage.

The purpose of a highway capacity study associated with a Local Plan evidence base is to provide assessment of existing established junctions, thereby allowing the planning authority to make a determination in relation to the existing highway network and its ability to accommodate the life of the plan.

The junctions listed in **Table 1** are also illustrated graphically in **Figure 1** overleaf.

Figure 1: Junction Locations

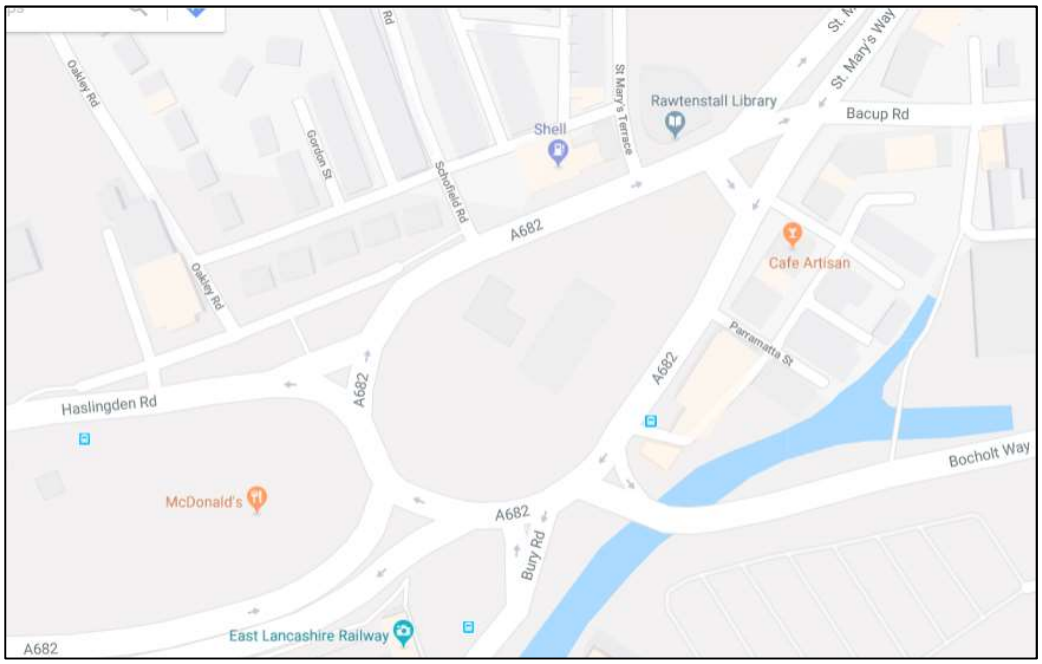


The seventeen junctions listed in **Table 1** and illustrated in **Figure 1** are described in greater detail below, in terms of their existing operation and layout. The descriptive text is derived from a site visit to observe each junction during the peak periods as well as cursory inspection of Google Live Traffic data.

2.2.1 J1 The Gyratory Rawtenstall

The Gyratory in Rawtenstall is a large junction with 10 approach arms, 6 being primary in nature and 4 being minor. The junction is shown below in **Figure 2**.

Figure 2: J1 The Gyratory Rawtenstall



Source: Google Maps 2018

The junction is located at the confluence of the A681 Haslingden Way, the Rawtenstall Spur, A682 Bury Road, Bocholt Way and St Mary's Way. Google Live Traffic indicates that the junction experiences some slow moving traffic flows on parts of the gyratory in the morning peak and more notable congestion on the A682 and in both directions on Bury Road and St Mary's Way during the evening peak.

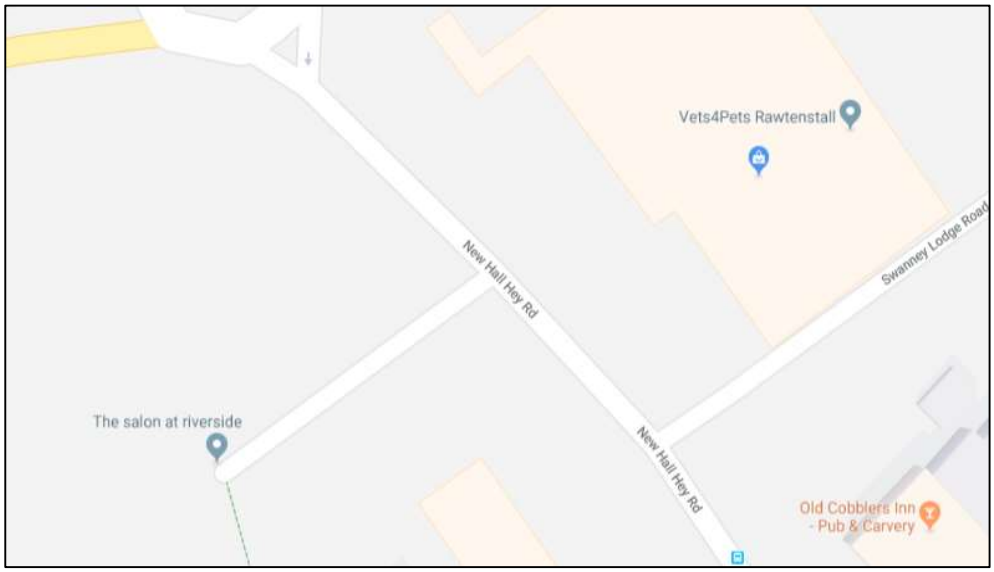
The junction is considered one of the most important junctions within Rossendale, providing connecting links to the north, south, east and west of the borough.

The Gyratory at Rawtenstall falls within Rossendale Borough Council's Air Quality Management Area 2 which covers approximately 0.6km of road stretching from the junction of Kay Street and Bacup Road to the junction of Bacup Road and St Marys Way. The Air Quality Management Area also proceeds north-east along the east side of St. Mary's Way from its junction with Bacup Road for approximately 60m and south-west along the east side of Bury Road, from its junction with Bacup Road for approximately 140m.

2.2.2 J2 Mini Roundabout by Hardman's Mill, Rawtenstall

Junction 2 is a mini roundabout located close to the Hardman's Mill in Rawtenstall, with the main approach arm linking to the A682 Rawtenstall spur. The junction is shown below in **Figure 3**.

Figure 3: J2 Mini Roundabout by Hardman's Mill



Source: Google Maps 2018

The roundabout is located on New Hall Hey Road; with the A682 to the West and New Hall Hey Road continuing to join Bury Road a short distance from the Gyratory approach.

A review of Google Live Traffic data shows minimal congestion throughout the day with fast flowing traffic seen during both the morning and evening peaks.

This junction is not located within a designated Air Quality Management Area.

2.2.3 Junction of St Mary's Way, Bank Street and Asda, Rawtenstall

Figure 4 below shows the 4-arm priority junction found on the A682 at the intersect of Bank Street and Holly Mount Way. The junction provides access to the Asda superstore located within Rawtenstall.

Figure 4: Junction of St Mary's Way, Bank Street and Asda, Rawtenstall

Source: Google Maps 2018

Google Live Traffic data shows slow moving traffic movements on St Mary's Way and Bank Street during the morning peak period. More notable congestion is seen in both directions along these routes in the evening peak. On site observations have noted that the slower movements on Bank Street are as a direct result of the setup of the signal timings which seemingly require maximum green time to be allocated to the St Mary's Way arms of the junction. It is considered that this is a direct operational intervention so as to ensure blocking back between this junction and the gyratory is minimised.

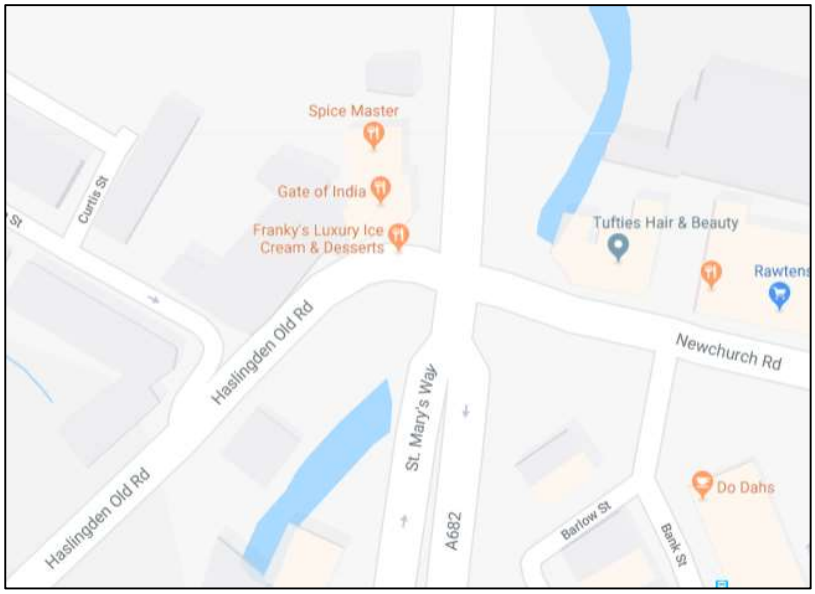
It is noted that this junction is particularly impacted during the non neutral month of December, leading up to the Christmas period.

This junction is not located within a designated Air Quality Management Area.

2.2.4 Tup Bridge Junction, St Mary's Way, Rawtenstall

This junction shown in **Figure 5** below is a 4 arm signalised intersection, located at the northern end of Rawtenstall and the St Mary's Way corridor. The junction connects St Mary's Way and Burnley Road to the north, with Haslingden Old Road and Newchurch Road to the West and East. The junction provides further linkages to Haslingden and Crawshawbooth to the north.

Figure 5: Tup Bridge Junction, St Mary's Way, Rawtenstall



Source: Google Maps 2018

Review of Google Live Traffic data shows slow traffic movements on all arms of the junction during the morning peak. More notable congestion is seen in all directions in the evening peak period. Specifically, the lowest traffic flow speeds are visible on the Haslingden Old Road approach.

The Haslingden Old Road and Newchurch Road approaches are also used as an alternative east-west route across the borough.

This junction is not located within a designated Air Quality Management Area.

2.2.5 Haslingden Road/Tesco roundabout, Haslingden

This junction, located just north of the A56 Haslingden roundbabout in the south-east of Haslingden, is an at-grade 5 arm roundabout connecting the A56 to the A680 and Tesco superstore. The roundabout forms the insection between the A680, A681 Haslingden Road, Manchester Road, Tesco access and the off-slip from the A56. **Figure 6** illustrates the layout of this roundabout.

Figure 6: Haslingden Road/Tesco roundabout, Haslingden

Source: Google Maps 2018

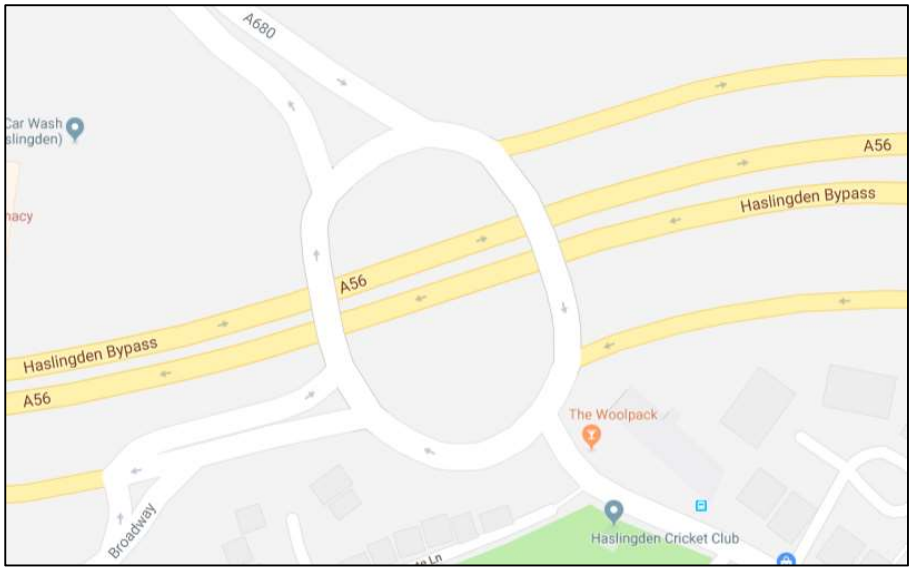
According to Google Live Traffic flows this junction experiences some slow traffic movements in the morning peak. The most notable congestion is found on the A680 approach arm. During the evening peak, slow traffic movements are still seen but more congestion is visible on the A56 off-slip.

The Haslingdon Road/Tesco roundabout falls within Rossendale Borough Council Air Quality Management Area 1 which spans approximately 0.5km stretching from Park Avenue / Manchester road Junction to the Manchester Road / Haslingdon Road roundabout. The main pollutant declared is Nitrogen Dioxide, NO2.

2.2.6 A56 Haslingden Roundabout

The A56 Haslingden Roundabout is a grade separated, 5 arm roundabout which connects the A56, A680, B6527 and Broadway. The junction, shown in **Figure 7** below, is located approximately 1-mile south-west of Rawtenstall and 1-mile south-east of Haslingden.

Figure 7: A56 Haslingden Roundabout



Source: Google Maps 2018

Google Live Traffic shows fast-flowing traffic across at the junction. Some delay, however is seen on the A56 Haslingden Bypass itself the morning peak and on the A680 Manchester Road south approach arm during both the morning and evening peaks.

This junction is not located within a designated Air Quality Management Area.

2.2.7 Rising Bridge Roundabout, A56

The Rising Bridge roundabout is an 4 arm roundabout linking the A680 and the A56 at Stone Fold, as shown in **Figure 8** below.

The A56 is a designated Trunk Road and therefore maintained and operated by Highways England. The junction was recently upgraded to a fully signalised layout by Highways England, and its operation as shown on Google Live Traffic is reasonably fast-moving traffic apart from some isolated peaks of delay at specific times.

Figure 8: Rising Bridge roundabout, A56

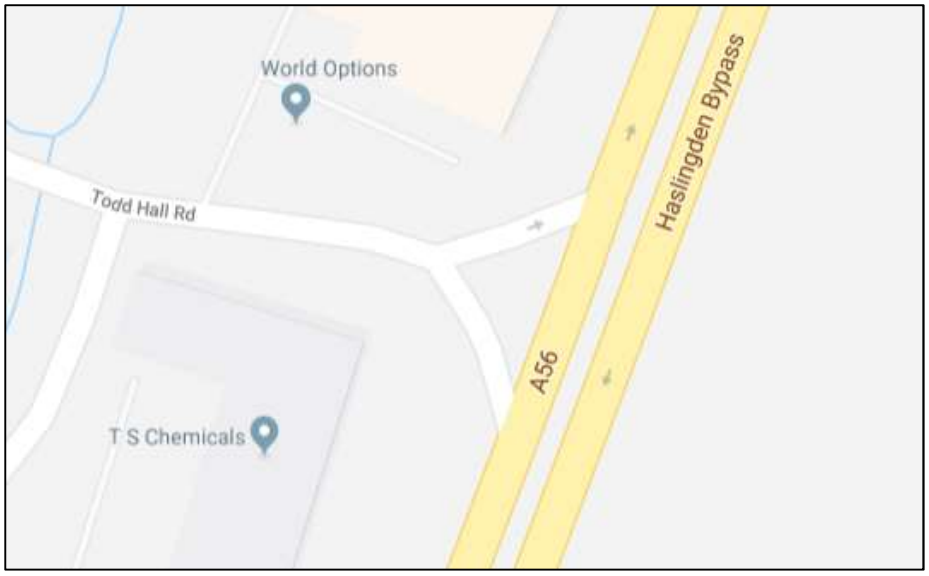
Source: Google Maps 2018

This junction is not located within a designated Air Quality Management Area.

2.2.8 Todd Hall Road access

Todd Hall Road access is a three arm priority junction (left in left out) joining the A56 northbound and providing an off-slip from the A56 onto Todd Hall Road. The junction is located north-east of Haslingden and is illustrated in **Figure 9** below.

Figure 9: Todd Hall Road access



Source: Google Maps 2018

According to Google Live Traffic data this junction has free flowing traffic during both the morning and evening peaks. The junction is not located within an Air Quality Management Area.

2.2.9 Grane Road/Holcombe Road junction

The Grane Road/Holcombe Road junction is a 3 arm priority controlled junction with a dedicated right turning lane on the the major arm. It is located to the east of Haslingden, 0.5 miles from the A56.

Figure 10 below shows the Grane Road/Holcombe road junction.

Figure 10: Grane Road/Holcombe Road junction

Source: Google Maps 2018

Review of the Google Live Traffic data shows that this junction benefits from low levels of delay during both the morning and evening peaks. It is noted that during occasional instances, low levels of delay on Grane Road occasionally block back to the junction, however this was not consistently observed or noted from the data.

Grane Road is now benefits from continuous speed camera control and is often used as a shortcut to the M65 at Blackburn.

This junction is not located within a designated Air Quality Management Area.

2.2.10 Grane Road/A56 junctions (A56 off-slip)

The Grane Road junction with the A56 off-slip is a priority junction located approximate 0.5 miles from Haslingden. It provides access to Haslingden Grane to the west and Haslingden to the north-east. **Figure 11** below shows the junction.

Figure 11: Grane Road/A56 junctions (A56 off-slip)

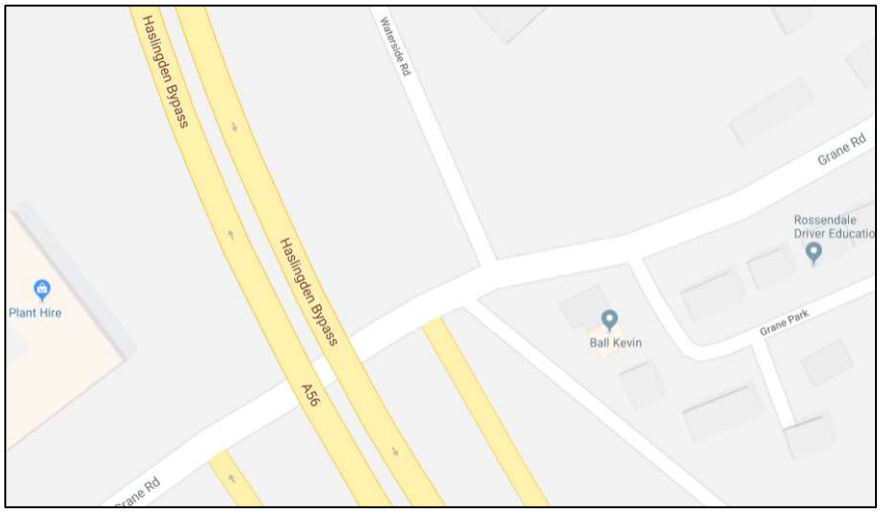
Source: Google Maps 2018

Typically, according to Google Live Traffic data, operation is found to be fast flowing with few delays on the off-slip, with some slower moving traffic on Grane Road itself. This junction is not located within a designated Air Quality Management Area.

2.2.11 Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)

The Grane Road/A56 on-slip junction provides access to the A56 southbound, as shown in **Figure 12** below. The junction serves Haslingden 0.5 miles to the north-east and Flax Moss to the south.

Figure 12: Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)



Source: Google Maps 2018

According to Google Live Traffic data the on-slip appears to experience slow-moving traffic during both the morning and evening peak, as a result of traffic merging onto the A56 and blocking back onto the on-slip. Grane Road is noted to be reasonably free flowing with limited delay. This junction is not located within a designated Air Quality Management Area.

2.2.12 A56 / M66 'Junction 0' at Edenfield

Figure 13 below illustrates the grade-separated, 5 arm motorway roundabout located to the south-west of Edenfield. This junction connects the M66 to the A56 and Bolton Road North.

The M66 and A56 form part of the Strategic Road Network, and as such are operated and maintained by Highways England.

Figure 13: A56 / M66 'Junction 0' at Edenfield

Source: Google Maps 2018

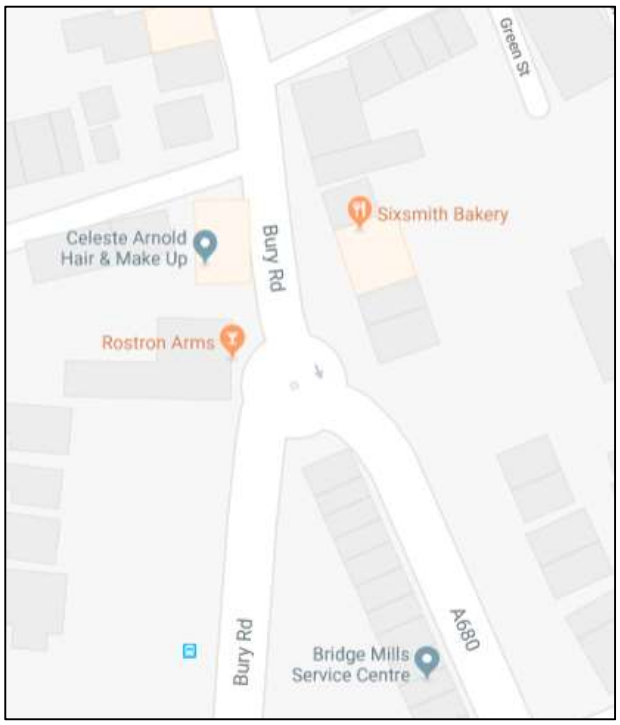
According to Google Live Traffic data the junction experiences reasonably fast-flowing traffic during the day. There is some occasional slower moving traffic recorded on Bolton Road North travelling both north and southbound during the morning peak. This junction is not located within a designated Air Quality Management Area.

2.2.13 Rochdale Road/Market St Roundabout, Edenfield

This junction is a 3 arm mini roundabout located in north Edenfield. The roundabout connects Bury Road, Rochdale Road and Market Street.

Figure 14 below shows the junction.

Figure 14: Rochdale Road/Market St Roundabout, Edenfield



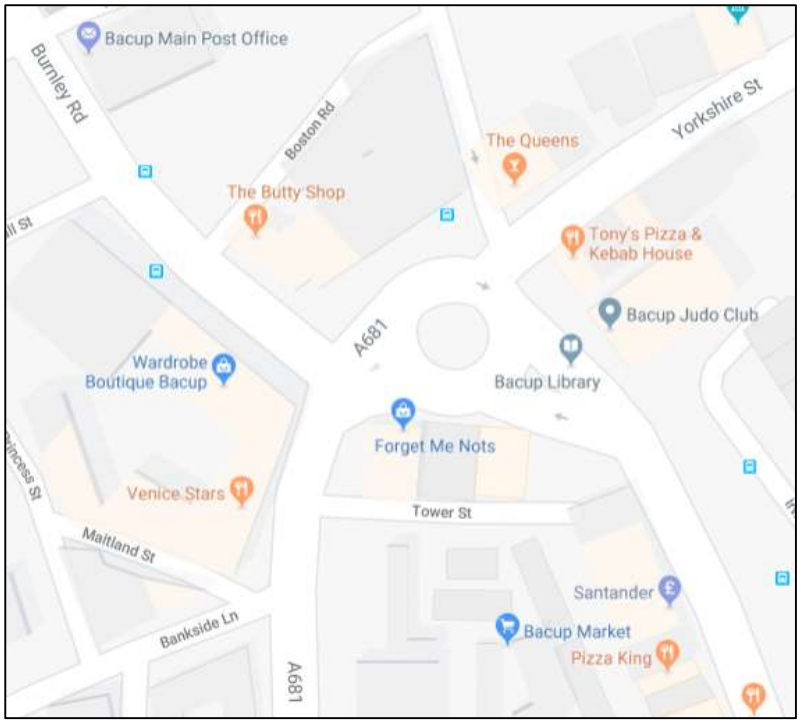
Source: Google Maps 2018

According to Google Live Traffic data there is some small traffic delay travelling both north and south on Market Street, as well as travelling north on Rochdale Road. This junction is not located within a designated Air Quality Management Area.

2.2.14 Bacup St James Square

Bacup St James Square, shown in **Figure 15** below, is a 4 arm roundabout located in central Bacup. The junction connects the A681 Todmorden Road with the A671 Burnley Road, the A681 Market St and A671 Rochdale Road.

Figure 15: Bacup St James Square



Source: Google Maps 2018

Google Live Traffic data shows that this is a well-used junction throughout the day with slow moving traffic during both the morning and evening peaks. This junction is not located within a designated Air Quality Management Area.

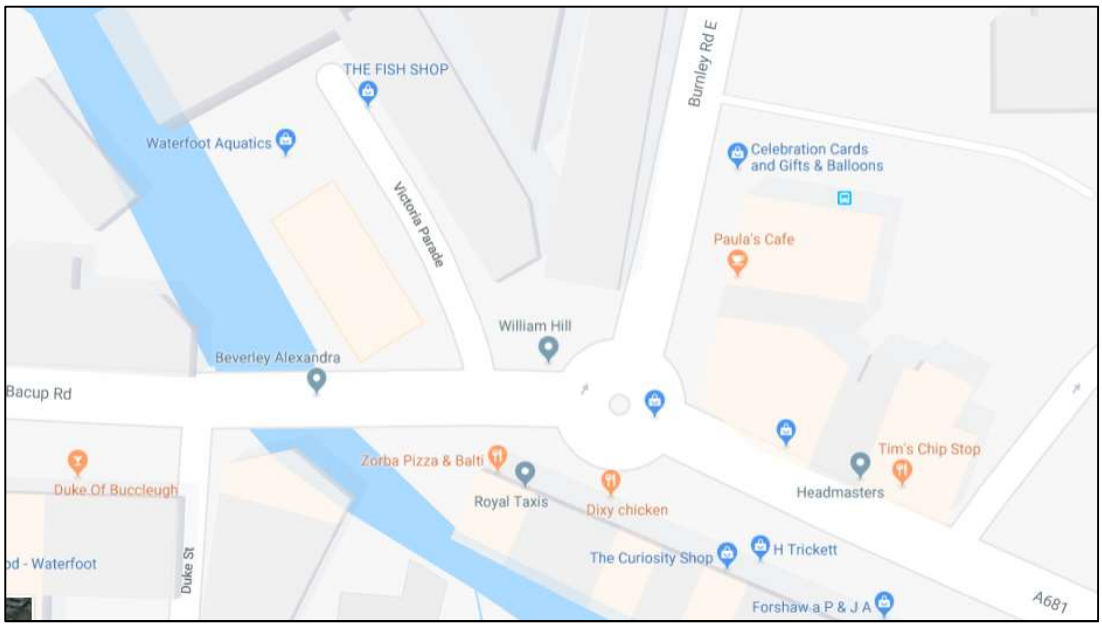
An improvement scheme, derived by Lancashire County Council, is due for implementation in 2019.

2.2.15 Waterfoot roundabout

The Waterfoot Roundabout is a 3 arm mini roundabout located in the centre of Waterfoot. It connects Burnley Road East to the A681 east and westbound.

Figure 16 below shows the junction.

Figure 16: Waterfoot roundabout



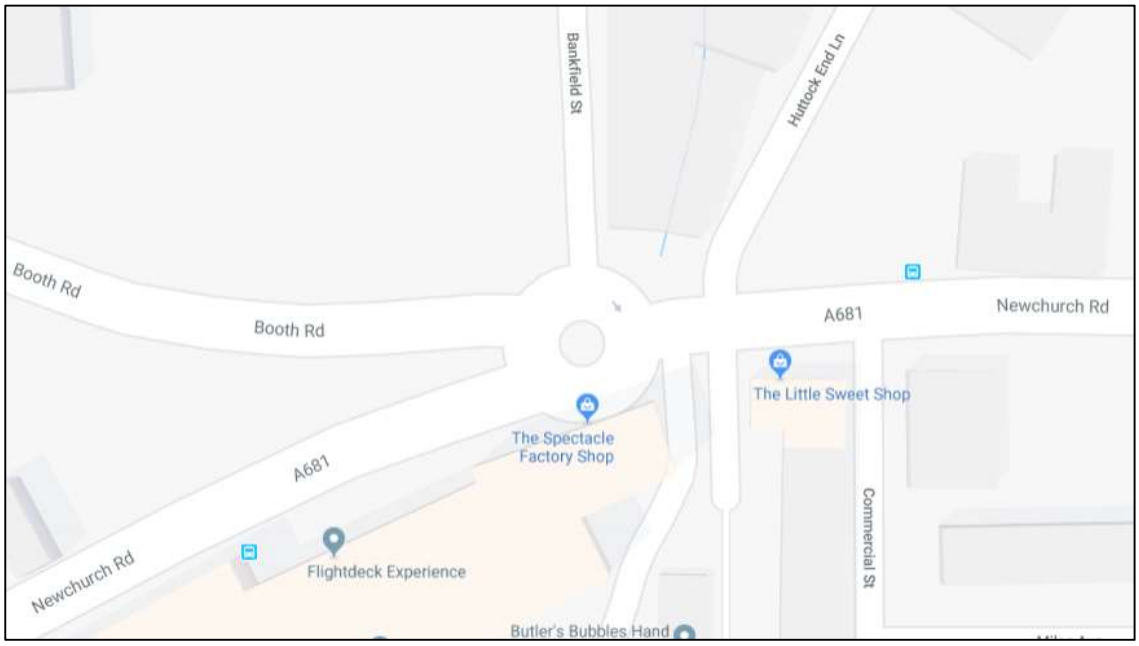
Source: Google Maps 2018

Google Live Traffic data indicates that this is a heavily used junction throughout the day with slow moving traffic flows during both the morning and evening peaks. This junction is not located within a designated Air Quality Management Area.

2.2.16 Toll Bar Roundabout, Stacksteads

The Toll Bar Roundabout is a 4 arm mini roundabout shown in **Figure 17** below. It is located 0.7 miles east of Stacksteads and provides access to A681, Booth Road and Newchurch Road.

Figure 17: Toll Bar Roundabout, Stacksteads



Source: Google Maps 2018

According to Google Live Traffic data, the operation of the junction is generally free flowing with some slower movements during both the morning and evening peak periods. The junction is located adjacent to three additional priority controlled approaches, Huttock Lane End, Commerical St and Bankfield St, which all have a bearing on the operation of the junction.

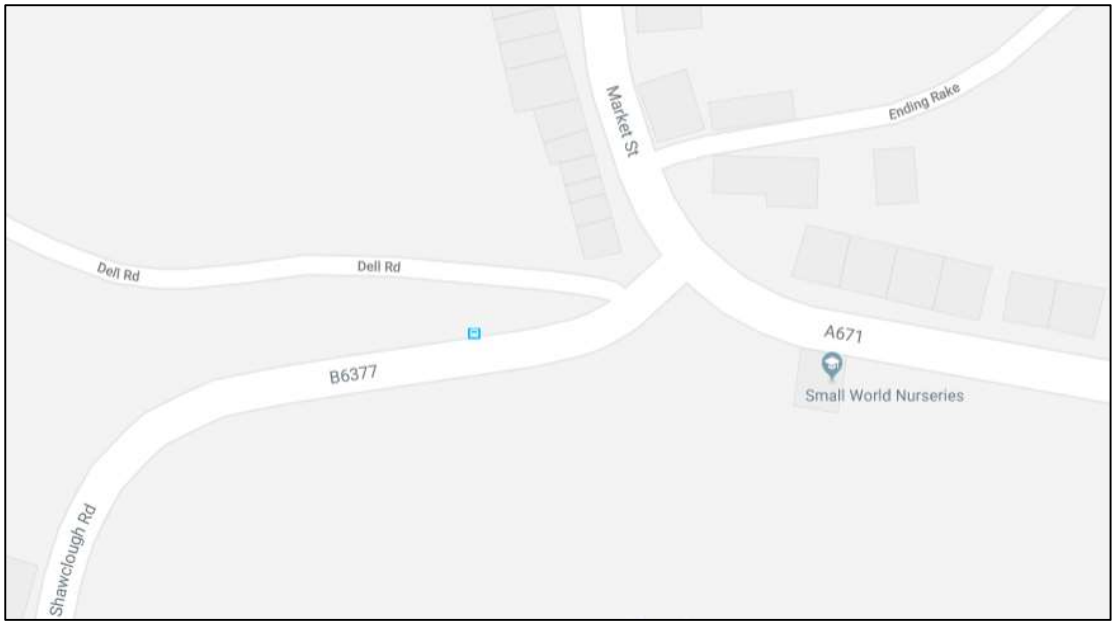
In addition to the above site observations noted that the gradient/poor sightlines from Booth Road have a bearing on A681 Newchurch Road eastbound traffic, given that traffic on the A681 struggles to observe traffic emerging from Booth Road.

This junction is not located within a designated Air Quality Management Area.

2.2.17 Market St/Shawclough Road, Whitworth

The Market Street/Showclough Road junction is a priority controlled 3 arm junction located in Healey and is shown in **Figure 18** below. The junction joins the A671 Market Street with the B6377 Shawclough Road.

Figure 18: Market St/Shawclough Road, Whitworth



Source: Google Maps 2018

Google Live Traffic data suggests that during the morning peak there is some slower moving traffic travelling southbound on the A671, whilst in the evening peak there is some slow traffic movements on the approach to the junction on the B6377.

2.3 Junction Summary

The junction review provided in section 2.2 has also been supplemented by review and comparison against Trafficmaster data supplied by Lancashire County Council. This data confirms the on-site observations and the Google Live Traffic information as being accurate.

The Trafficmaster summary sheet can be found at **Appendix B**.

2.4 Public Transport Provision

Public Transport provision has been recorded in terms of the buses which stop close to each of the key junctions included within the study area. It should be noted that buses do pass through the Waterfoot junction, however they do not stop close to the junction hence the N/A provision in **Table 2** below and overleaf.

Table 2. Public Transport Provision

Junction	Bus Service	Frequency both directions (peak period)
J1 The Gyratory, Rawtenstall	12, 273, 482, 483, 892, 998	12 – Hourly

Junction	Bus Service	Frequency both directions (peak period)
		273 – 1 service per day 482 – Hourly 483 – 2 per hour 892 – 1 service per day 998 – 1 service per day
J2 Mini-roundabout by Hardman's Mill, Rawtenstall	N/A	N/A
J3 St Mary's Way, Bank Street and Asda, Rawtenstall	11, X43, 482,	11 – Hourly 482- Hourly X43 – 4 per hour
J4 Tup Bridge Junction, St Mary's Way, Rawtenstall	743, X43	743 - 1 service per day on schooldays X43 – 4 per hour
J5 Haslingden Road/Tesco roundabout, Haslingden	464, X41	464 – 4 services per hour X41 – 2 serivices per hour
J6 Rising Bridge roundabout, A56	464, X41	464 – 4 services per hour X41 – 2 serivices per hour
J7 Todd Hall Road access	N/A	N/A
J8 Grane Road/Holcombe Road	11, 912	11 - Hourly
J9 Grane Road/A56 junctions	11, 912	11 - Hourly
J10 A56/M66 'Junction 0' at Edenfield	273, 484	273 – 1 service per day 484 – 4 per hour
J11 Rochdale Road/Market St roundabout, Edenfield	273, 482, 483, 484, 892, X41	273 - 1 service per day 482 – Hourly 483 – 2 per hour 484 – 4 per hour 892 – 1 service per day X41 – 2 serivices per hour
J12 Bacup St James Square	464, 465, 844, 482	464 – 4 services per hour 465 – 90 minute frequency 844 – 1 service per day 482 – Hourly
J13 Waterfoot roundabout	N/A	N/A
J14 Toll Bar roundabout, Stacksteads	464, 482, 999, 465, 844, 964,	464 – 4 per hour 482 – Hourly 465 – 90 minute frequency

Junction	Bus Service	Frequency both directions (peak period)
		844 – 1 service per day
		999 – 1 service per day
		964 – 1 service per day
J15 Market St/Shawclough Road, Whitworth	446, 447, 999, 463, 464, 964	446 – Hourly after 10am
		447 – Hourly before 10am
		463 – Hourly
		464 – 4 per hour
		999 – 1 service per day
		964 – 1 service per day

The data presented in **Table 2** above, shows that bus stops and bus services are key to the operation of most of the junctions within the study area, and service provision as well as accommodating buses themselves will need to be considered within any proposals to update junctions as part of this study.

2.5 Accident Occurrences

Mott Macdonald have also undertaken an exercise to determine the number of accidents at each of the junctions within this study. The accident occurrences have been recorded from the Crashmap website for the most recent five years available. The data is recorded in terms of accident severity and the number of occurrences within each category. **Table 3** below shows the derived accident statistics.

Table 3. Accident Statistics

	Number of Accidents		
Junction	**Slight**	**Serious**	**Fatal**
J1 The Gyratory, Rawtenstall	15	0	0
J2 Mini-roundabout by Hardman's Mill, Rawtenstall	0	0	0
J3 St Mary's Way, Bank Street and Asda, Rawtenstall	4	4	0
J4 Tup Bridge Junction, St Mary's Way, Rawtenstall	6	1	0
J5 Haslingden Road/Tesco roundabout, Haslingden	2	1	0
J6 Rising Bridge roundabout, A56	25	1	0
J7 Todd Hall Road access	1	0	0
J8 Grane Road/Holcombe Road	4	0	0
J9 Grane Road/A56 junctions	14	1	0
J10 A56/M66 'Junction 0' at Edenfield	10	1	0
J11 Rochdale Road/Market St roundabout, Edenfield	0	0	0
J12 Bacup St James Square	3	0	0

	Number of Accidents		
J13 Waterfoot roundabout	3	0	0
J14 Toll Bar roundabout, Stacksteads	1	1	0
J15 Market St/Shawclough Road, Whitworth	2	1	0
	90	**11**	**0**

The accident statistics show no recorded fatal accidents at any of the junctions within the last five years. It is noted however that a small cluster of serious accidents all involving more than one vehicle occurred on St Mary's Way at the Bank Street junction with ASDA. Due to time of day and type of accident, congestion can be considered to be a key cause of the accidents, given the rear end shunt accident type.

3 Study Methodology

3.1 Approach

A robust evidence base enables an assessment of the transport impacts of both existing conditions as well as that proposed, and can help identify sustainable approaches to transport at a plan-making level.

In accordance with Department for Transport guidance Mott Macdonald derived a scenario based study methodology, which provides the flexibility to consider differing planning horizons, in this case an interim year and full plan year outcome.

In terms of road traffic, but not other types of traffic, where there is a need to project existing or historical traffic data for future year assessments, the preferred option is the use of appropriate local traffic forecasts (such as the Trip End Model Presentation Program (TEMPRO) used for transport planning purposes).

In this instance, use of a formal traffic model was discounted given that no model was available that had the appropriate network coverage and local validation. The following formal models were considered and discounted;

- Highways England Trans Pennine South Regional Model,
- Central Lancs Transport Model,
- TfGM GMSM Highway Model.

The models were each discounted due to lack of suitable network coverage within the Rossendale boundary, which ultimately meant that either the base model validation or the representation of each junction was not sufficiently robust to give confidence in their modelling outputs.

In addition to the discounting of the above three models, it was also determined that derivation of a new formal model would not be possible given time constraints, as well as the associated cost of a detailed data collection exercise for a range of required data types needed to construct a strategic model.

On the basis of the above, Mott Macdonald determined that the most robust methodology for use within this study would be to utilise a series of traffic surveys and undertake manual junction assessments using a standard approach of traffic growth, committed development and trip generation.

This approach was agreed in advance of the study with the study group.

Each of the study methodology elements are summarised in the sections below, and a Technical Note at **Appendix C** provides full details of the approach adopted, along with the specific calculations etc.

3.2 Traffic Surveys

For this study all traffic surveys were undertaken by Lancashire County Council and provided to Mott Macdonald for each of the junctions listed in **Table 1**, barring J12 which had been previously modelled using the Aimsun software and already benefitted from a recent survey used within the base model.

The traffic surveys were provided in the form of Manual Classified Counts, recorded in fifteen-minute intervals between 07:00-09:00 and 16:00-18:00. This ensured that peak hour movements on the highway network were captured. Counts were undertaken on 12th October 2017.

3.3 WebTRIS Data

The study area and junctions defined at the study outset includes sections of the Strategic Road Network which are managed and operated by Highways England. On this basis it was determined that separate consideration of some of these key Strategic Road Network elements would be needed, alongside the junction analysis. Traffic flows were obtained from the WebTRIS online database for this purpose.

3.4 PCU Conversion & Peak Hour Derivation

The first task in processing the survey data for use within this study was to convert the data into Passenger Car Unit [PCU] format, using standard PCU conversion factors. PCU is a metric to assess traffic-flow rate on a highway. A PCU is essentially the impact that a mode of transport has on traffic variables (such as headway, speed, density) compared to a single car.

Following the conversion of the raw survey data into PCU format, the individual peak hour for each junction was calculated by summating the total volume from each turn movement at the junction for each of the fifteen-minute time periods recorded.

Mott Macdonald have also derived the peak hour for each of the Strategic Road Network link locations derived from the WebTRIS data. The WebTRIS peak hours were calculated by filtering the data for each of the four months data, and removing weekends and bank holidays.

The summation of the remaining dates was then undertaken for each location, and for each fifteen-minute period. The peak hours were then calculated by amalgamating each fifteen-minute period into single hours and noting the hour with the highest flow, for both the morning and evening peak hour.

The individual peak hours for all sites have been used by Mott Macdonald for this study for the purposes of robustness in relation to each assessment.

3.5 Committed Developments

A series of TAs were provided to Mott Macdonald by Rossendale Borough Council which represent those sites which could be considered as committed developments for this study. These are as follows;

- 2010-0692 - Transport Assessment-Morrisons, Bacup,
- 2012-0162 - Transport Assessment, Former Rossendale Hospital,
- 2013-0556 - Transport Assessment-Orama Mill, Whitworth,
- 2015-0438 - 2868 Rawtenstall TA (Oct 2015)-McDonalds,
- 2015-0476 - Transport Assessment-Rawtenstall Bus Station,
- 2016-0129 - New Hall Hey, Transport Assessment (Main Report),
- 2016-0267 - Transport Assessment-Reedsholme, Crawshawbooth.

The committed development traffic volumes were derived from each of the relevant TAs, and utilised as part of the pertinent scenarios.

The traffic volumes associated with the McDonalds 2015-0438 application, were added to the surveyed base volumes as this development is known to be already operational, and the survey of the junction did not include the access arm for the McDonalds site.

3.6 Traffic Growth

Mott Macdonald have derived traffic growth factors factors from the TEMPRO database.

Growth factors were derived for three assessment years, discussed in further detail later in this report. The assessment years were 2019, 2024 and 2034. The factors for each year were all derived from a 2017 baseline.

Following derivation of the initial growth factors a second set of adjusted factors was derived which takes account of the committed development traffic volumes. This ensures that there is no double counting, thereby producing a more realistic growth factor.

The adjusted and unadjusted values are shown below in **Table 4** along with an overall average of each road type for the adjusted values highlighted in red, which were ultimately used within this study.

Table 4. TEMPRO Growth Factors

	2017 to 2019		2017 to 2024				2017 to 2034			
			Unadjusted		Adjusted		Unadjusted		Adjusted	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Trunk	1.0239	1.0221	1.0528	1.0503	1.0351	1.0301	1.1388	1.134	1.0876	1.0758
Principal	1.0235	1.0216	1.0518	1.0493	1.0341	1.0291	1.1388	1.1341	1.0877	1.0758
Minor	1.024	1.0221	1.0551	1.0526	1.0373	1.0323	1.1463	1.1416	1.0948	1.0829
Average	1.0238	1.0219	1.0532	1.0507	1.0355	1.0305	1.1413	1.1366	1.0900	1.0782

3.7 Trip Generation

The first step in quantifying the impact of proposed land allocations in the Local Plan on the transport system was to provide an estimate of the vehicle trips that would be generated by it.

This exercise was undertaken via a 3-stage process, as follows.

1. Split land allocations (employment and residential) into the Mid Super Output Area they are located in and then into 1-5 year and 6-15 year build out brackets,
2. Derive vehicular trip rates for employment, mixed use and residential sites,
3. Calculate the vehicular trip generation for each Mid Super Output Area in both the 1-5 and 6-15 year brackets.

There are eight Mid Super Output Areas within Rossendale, with the centroid of each listed as follows;

- Mid Super Output Area 1 – Crawshawbooth,
- Mid Super Output Area 2 – Haslingden,
- Mid Super Output Area 3 – Bacup,
- Mid Super Output Area 4 – Rawtenstall,
- Mid Super Output Area 7 – Helmshore,
- Mid Super Output Area 8 – Edenfield,
- Mid Super Output Area 9 – Whitworth,
- Mid Super Output Area 10 – Waterfoot.

The residential and employment allocations are listed in the Technical Note at **Appendix C** also shown illustratively at **Appendix A**, alongside the Mid Super Output Areas they are in.

The Mid Super Output Areas were selected because they represent the lowest level available for disaggregation of population data, suitable for use within a Trip Distribution exercise.

3.7.1 Vehicular Trip Rates

The vehicular trip rates derived for this study are shown below in **Table 5**.

Table 5. Vehicular Trip Rates

Trip Rate Type	Arr	Dep	**Total**	Arr	Dep	**Total**
Residential (C3)	0.142	0.416	**0.558**	0.404	0.221	**0.625**
Employment (B1, B2, B8)	0.570	0.091	**0.661**	0.081	0.488	**0.570**
Mixed Use (A1, B8, C1, C3, D2)	**See Table 6 below for A1, B8, C1, D2 and C3 Trip Rates**					

The trip rates presented in **Table 5** above have been derived from reviewing the trip rates adopted in the Transport Assessments [TA] associated with the committed developments discussed in section 3.5 above, as well as a TRICS exercise.

Mott Macdonald have derived all the residential trip rates from the TAs and taken an average of all values to derive those presented in **Table 5**.

It is considered that this represents the most robust approach for this study given that the trip rates derived from the TA's were all generated for specific assessment of residential land uses in Rossendale.

With regards to the employment trip rates, Mott Macdonald have undertaken a TRICS exercise to derive trip rates relevant to B1, B2 and B8 employment uses. Vehicular trip rates from 2 differing B8 employment related land uses were derived and an average taken.

Following derivation of the initial trip rates, the trip rate values were weighted based on the B1, B2, B8 breakdown derived from review of a series of existing employment sites in Rossendale, namely the following, chosen as they represent the larger existing employment sites in Rossendale.

- Carrs Industrial Estate,
- Knowsley Road Industrial Estate
- Henrietta St Site,
- Hud Hey Industrial Estate,
- Riverside Business Park, and
- Three Point Business Park.

The review of each of the above sites derived an average site breakdown as follows;

- B1 office – 0.25 (25%)
- B2 light industrial – 0.6 (60%)
- B8 warehousing – 0.15 (15%)

It is noted that the existing employment opportunities in Rossendale are all traditional B1/B2 with an element of B8 (confirmed via discussion with RBC Economic Regenertion Team), and this

observed breakdown from the exercise above would concord with that. It was also confirmed that the new employment sites in Rossendale would be well suited to this traditional type of employment rather than any high-tech cluster developments, for which a stronger university presence, higher concentration of advanced skilled labour and entrepreneurs, enterprise zones and business support advice initiatives would be required.

The Mixed Use site trip rates are based on A1, B8, C1, D2 and C3 land uses. Trip rates for B8 and C3 already exist as part of the residential and employment site exercise, so additional rates were derived for A1, C1 and D2 land uses, as follows;

- A1 – Local Shopping Centre
- C1 - Hotel
- D2 – Leisure Centre

Table 6 below shows the abive exercise. All trip rates were derived for a total of 10 sites each.

Table 6. Derivation of Employment and Mixed Use Site Trip Rates

Trip Rate Type	Arr	Dep	**Total**	Arr	Dep	**Total**
B1 Office	0.989	0.087	**1.076**	0.074	0.923	**0.997**
B2 Industrial Unit	0.423	0.049	**0.472**	0.039	0.337	**0.376**
B8 Commerical Warehousing	0.36	0.181	**0.541**	0.086	0.288	**0.374**
B8 Parcel Distribution Centres	0.164	0.046	**0.21**	0.025	0.121	**0.146**
B8 Average	0.457	0.2675	**0.7245**	0.262	0.3695	**0.6315**
Employment Trip Rates Weighted Adjustment						
B1 Weighted	0.247	0.022	**0.269**	0.019	0.231	**0.249**
B2 Weighted	0.254	0.029	**0.283**	0.023	0.202	**0.226**
B8 Weighted	0.069	0.040	**0.109**	0.039	0.055	**0.095**
Final Emp Trip Rates	0.570	0.091	**0.661**	0.081	0.488	**0.570**
Mixed Use Site Trip Rates						
A1	6.720	6.612	**13.332**	7.938	8.612	**16.550**
B8	0.457	0.2675	**0.7245**	0.262	0.3695	**0.6315**
C1	0.258	0.652	**0.910**	0.46	0.182	**0.642**
D2*	29.253	18.257	**47.510**	61.411	74.274	**135.685**
C3	0.142	0.416	**0.558**	0.404	0.221	**0.625**

*All trip rates presented as sqm trip rates, except D2 land use presented as a per Ha trip rate

3.7.2 Trip Generation Values

Utilising the trip rates presented in section 3.7.1, the following trip generation values have been derived for each Mid Super Output Area, split between the first 5 years of the plan (1-5 years) and the final ten years of the of plan (6-15 years). The detailed values broken down by each site can be found within the Technical Note at **Appendix C**.

The values are presented in **Table 7** overleaf.

Table 7. Mid Super Output Area Total Trip Generation Values

MSOAs	Rossendale - 1-5Yrs						Rossendale - 6-15Yrs					
	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
	Arr	Dep	**Tot**	Arr	Dep	**Tot**	Arr	Dep	**Tot**	Arr	Dep	**Tot**
MSOA 1	26	75	**100**	73	40	**113**	72	134	**206**	129	93	**222**
MSOA 2	14	40	**54**	39	21	**60**	681	112	**793**	100	585	**684**
MSOA 3	48	141	**188**	137	75	**211**	106	220	**326**	214	142	**356**
MSOA 4	21	61	**82**	60	33	**92**	22	65	**87**	63	34	**97**
MSOA 7	0	0	**0**	0	0	**0**	71	117	**188**	120	91	**211**
MSOA 8	10	29	**39**	28	16	**44**	573	335	**908**	326	561	**887**
MSOA 9	13	38	**51**	37	20	**57**	21	61	**82**	59	32	**92**
MSOA 10	45	132	**177**	128	70	**198**	6	17	**22**	16	9	**25**
TOTAL	177	516	**691**	502	275	**775**	1,552	1,061	**2,612**	1,027	1,547	**2,574**

The following assumptions were made for the mixed use sites in relation to the breakdown of land uses therein.

- Site M1 – 0.09 Ha in size for A1, B1, B2 and C3 (39 dwellings). Assumption that the small site coverage results in no vehicle trips associated with the A1, B1 and B2 land uses. Residential trip rates used for the 39 dwellings.
- Site M2 – 1.56 Ha in size for A1, B1, C1, C3 (28 dwellings) and D2 land uses. Assumption that 1 Ha is provided for the 28 dwellings, 0.5 Ha (split equally) for the B1, C1 and D2 uses and the remaining 0.06 Ha for the A1 land uses. Uses the A1, B1, C1, C3 and D2 trip rates individually for each element.
- Site M3 – 1.12 Ha in size for B1, B2, B8, C3 (16 dwellings) land uses. Assumption that 0.62 Ha is for the 16 dwellings and the remaining 0.5 Ha for the B1, B2, B8 uses, using the derived weighted employment trip rates.
- Site M5 – 0.4 Ha in size for A1, B8 land uses. Assumption that 0.1 Ha is for the A1 land use and 0.9 Ha for the B8 land use. Uses the derived A1 and B8 trip rates.

3.8 Trip Distribution

Mott Macdonald have utilised Census 2011 Journey to Work data to derive a traffic distribution for this study. A separate distribution was derived for each Mid Super Output Area, both internally within Rossendale and externally of Rossendale within a one-hour drive time zone. Sections 3.8.1 and 3.8.2 below summarise the final distribution figures. Further detail can be found within the Technical Note at **Appendix C**.

3.8.1 Internal Distribution

The internal distribution between each Mid Super Output Area is presented below in **Table 8** below. The table also includes the overall external distribution percentage total.

Table 8. Rossendale Mid Super Output Area Internal Distribution Summary

		To MSOA							
From MSOA	Centroid	MSOA 001	MSOA 002	MSOA 003	MSOA 004	MSOA 007	MSOA 008	MSOA 009	MSOA 010
		Percentage							

		To MSOA							
MSOA 001	Crawshawbooth	7%	1%	1%	2%	1%	1%	0%	2%
MSOA 002	Haslingden	4%	18%	4%	7%	12%	5%	1%	6%
MSOA 003	Bacup	2%	1%	16%	2%	1%	1%	2%	6%
MSOA 004	Rawtenstall	12%	7%	7%	19%	7%	7%	2%	12%
MSOA 007	Helmshore	1%	4%	1%	2%	5%	2%	0%	2%
MSOA 008	Edenfield	5%	7%	3%	6%	7%	10%	1%	4%
MSOA 009	Whitworth	0%	0%	2%	0%	0%	0%	13%	1%
MSOA 010	Waterfoot	6%	4%	12%	7%	3%	3%	4%	19%
External		63%	58%	55%	55%	63%	70%	75%	48%

The figures derived in **Table 8** above show obvious patterns with the highest proportions for each area remaning within the individual area, and similarly in relation to adjacent areas.

3.8.2 External Distribution

The external distribution between each Mid Super Output Area and the surrounding areas within a one-hour drive time zone is presented below in **Table 9**. The table also includes the overall internal distribution percentage total.

Table 9. Rossendale Mid Super Output Area External Distribution Summary

	MSOA 001	MSOA 002	MSOA 003	MSOA 004	MSOA 007	MSOA 008	MSOA 009	MSOA 010
LaD	Percentage							
Burnley	10%	5%	7%	7%	5%	5%	2%	6%
Manchester	7%	5%	4%	6%	5%	8%	6%	4%
Blackburn with Darwen	5%	7%	3%	4%	7%	4%	2%	3%
Bury	8%	8%	5%	8%	11%	19%	4%	6%
Hyndburn	5%	10%	3%	5%	6%	4%	1%	4%
Rochdale	4%	4%	12%	5%	4%	6%	38%	6%
Pendle	4%	3%	3%	3%	2%	3%	1%	2%
Oldham	2%	1%	2%	2%	2%	2%	6%	2%
Salford	3%	2%	2%	2%	2%	3%	2%	2%
Bolton	2%	2%	1%	2%	4%	4%	1%	1%
Trafford	2%	1%	1%	2%	2%	3%	2%	1%
Calderdale	1%	0%	2%	1%	0%	0%	1%	1%
Kirklees	0%	0%	0%	0%	0%	0%	0%	1%
Other	11%	10%	9%	8%	12%	11%	8%	8%
Internal	37%	42%	45%	45%	37%	30%	25%	52%

The figures in **Table 9** above show that those Mid Super Output Areas located in the south of the borough, have a higher proportion of the population who travel south to Greater Manchester.

Given the forthcoming Greater Manchester Spatial Framework for land use development, this pattern would be unlikely to alter significantly into the future, and therefore use of the Census 2011 Journey to Work data is considered appropriate for this study.

3.9 Trip Assignment

Utilising the trip distribution data from section 3.8, the assignment of the generated trip volumes to the network was undertaken as follows;

1. Group the residential, employment and mixed use sites within each Mid Super Output Area into groups based on their location and their likely access point to the highway network,
2. Derive a central location (origin point) for each of the combined group of residential, mixed use and employment sites,
3. Utilise a fastest route analysis to define a route between each origin point and internal/external Mid Super Output Area centroid,
4. Assign traffic volumes to the derived percentage assignment splits, and
5. Repeat the above process for the 6-15 year bracket.

The assigned residential, mixed use and employment site traffic, for both the 1-5 year build out and the 6-15 year build out can be found at **Appendix D**.

The fastest route analysis is based on using the AA Route Planner feature for quickest available route in non-peak conditions. This is to ensure that traffic is assigned to the most appropriate route, and no account is taken of longer diversions which may occur in congested conditions, thereby ensuring the robustness of the methodology.

3.10 Assessment Scenarios

The defined assessment scenarios based on the traffic growth, trip generation, trip distribution and trip assignment detail above are as follows;

- 2019 Baseline,
- 2024 Reference Case,
- 2024 Local Plan,
- 2034 Reference Case,
- 2034 Local Plan.

The finalised traffic flow diagrams for each assessment scenario can be found at **Appendix E**.

The derivation of Reference Case and Local Plan scenarios is an integral part of the highway capacity study process. The Reference Case represents the position that would be reached without the Local Plan being brought forward, and the Local Plan scenario is a construct of the methodology described in the earlier sections of this chapter.

The difference between the two scenarios relates directly to the NPPF and the need to determine the specific impacts of the development proposals being considered. The difference between the results produced for each junction in relation to these scenarios is therefore the primary focus of any highway capacity study.

3.11 Assessments

Operational assessments have been undertaken for the seventeen identified junctions and for A56 merge/diverge locations on the A56. **Table 10** below identifies the industry standard software used to assess each of the junctions.

Table 10. Operational Assessment Approach

Junction Number	Junction Name	Assessment Software
J1	The Gyratory, Rawtenstall	LinSig*
J2	Mini-roundabout by Hardman's Mill, Rawtenstall	ARCADY
J3	Junction of St Mary's Way, Bank Street and Asda, Rawtenstall	LinSig*
J4	Tup Bridge Junction, St Mary's Way, Rawtenstall	LinSig*
J5a	Haslingden Road/Tesco roundabout, Haslingden	ARCADY
J5b	A56 Haslingden Roundabout	ARCADY
J6	Rising Bridge roundabout, A56	LinSig
J7	Todd Hall Road access	PICADY
J8	Grane Road/Holcombe Road junction	VISSIM
J9a	Grane Road/A56 junctions (A56 off-slip)	VISSIM
J9b	Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)	VISSIM
J10	A56 / M66 'Junction 0' at Edenfield	ARCADY
J11	Rochdale Road/Market St roundabout, Edenfield	ARCADY
J12	Bacup St James Square	AIMSUN**
J13	Waterfoot roundabout	ARCADY
J14	Toll Bar Roundabout, Stacksteads	ARCADY
J15	Market St/Shawclough Road, Whitworth	PICADY

*combined within one LinSig model **Lancashire County Council Aimsun model

Table 11 below identifies the locations assessed using merge/diverge analysis.

Table 11. A56 Merge / Diverge Assessment Locations

Merge / Diverge No.	Description
1	A56 / Grane Road SB Merge
2	A56 / Grane Road NB Diverge
3	A56 / Tesco Haslingden SB Diverge
4	A56 / Haslingden Roundabout NB Merge
5	A56 / Haslingden Roundabout NB Diverge
6	A56 / Tesco Haslingden SB Merge
7	A56 / Junction '0' Edenfield SB Diverge
8	A56 / Junction '0' Edenfield NB Merge
9	A56 / A682 (Rawtenstall Spur) NB Diverge
10	A682 (Rawtenstall Spur) / A56 SB Merge

The operational assessments are discussed further in Chapter 4.

4 Operational Analysis

4.1 Preamble

The junctions identified were assessed through nationally accepted junction modelling software, namely PICADY for priority junctions, ARCADY for roundabout junctions and LinSig for signalised junctions. In addition, a VISSIM microsimulation model was also developed for the Grane Road corridor, and an existing Lancashire County Council AIMSUN microsimulation model was also utilised for the Bacup St James Sq junction.

The key output of the ARCADY and PICADY assessments is the Ratio of Flow to Capacity [RFC] and for LinSig analysis it is the Degree of Saturation [DoS]. These outputs provide a simple value for understanding demand compared to the available capacity. The models present an RFC and DoS figure for each junction arm during the modelled period, which ensures any RFC and DoS 'spike' is captured and not overlooked by an average across all junction arms. This is a standard industry tool for measuring congestion at a junction.

The RFC and DoS output values are reported using a nationally accepted traffic light colouring system. The traffic light colouring system works as follows:

- **Green** – RFC / DoS less than 0.85 / 0.90, junction is likely to operate with minimal or no delays;
- **Amber** - RFC / DoS between 0.85 and 1 / 0.9 and 1, junction is approaching design capacity and may be subject to delay with greater fluctuations in day to day travel times;
- **Red** - RFC / DoS greater than 1, junction is over design capacity with frequent delays impacting on journey time reliability.

In addition to the RFC and DoS outputs, the Mean Max Queue [MMQ] for each approach arm is also recorded. The RFC/DoS and MMQ recordings are both required as they provide a complete picture of the approach arm operation. For example, an approach may be considered over capacity with a high DoS but can still have a relatively low MMQ recording, or little change from the Reference Case.

Level of Service [LoS] results are also presented for the priority controlled junctions. Level of service is a qualitative measure used to relate the quality of traffic service. It is used to analyze highways by categorizing traffic flow and assigning quality levels based on performance measurse like speed and density.

For the microsimulation analysis, differing outputs have been derived from the microsimulation models. These are as follows for each software;

- VISSIM – Turn delay and LoS.
- AIMSUN – Delay plots and maximum virtual queue plots.

The VISSIM output values have also been reported using the traffic light colouring system.

The AIMSUN output values have been provided directly by Lancashire County Council and are presented as received with Mott Macdonald interpretation.

4.2 Junction Analysis

The 2019 assessment year represents the start year for the Rossendale Local Plan, and as such the baseline from which all other assessment years can be compared. The key aspect of the

baseline analysis is to ensure representation of the existing delay issues at each junction. The 2019 input traffic flows were derived by applying the calculated TEMPRO value for 2017-2019 to the surveyed flows.

2024 represents the completion of the first five years of the Local Plan, and 2034 the full build out and completion of the Local Plan. The 2024 and 2034 input traffic flows were also derived by applying the calculated TEMPRO value for 2017-2024/2034 to the surveyed flows, along with the addition of committed development and Local Plan traffic volumes.

4.2.1 Junctions 1, 3 and 4 – St Mary's Way Corridor

As noted in Chapter 3, junctions 1, 3 and 4 have been combined within one LinSig model as they form the St Mary's Way corridor, and their operation was observed to be closely linked to each other. An image of the model is shown overleaf in **Figure 19**. The operational analysis results are presented in **Tables 12** to **17**, also overleaf.

Figure 19: Junctions 1, 3 and 4 St Mary's Way Corridor LinSig Model

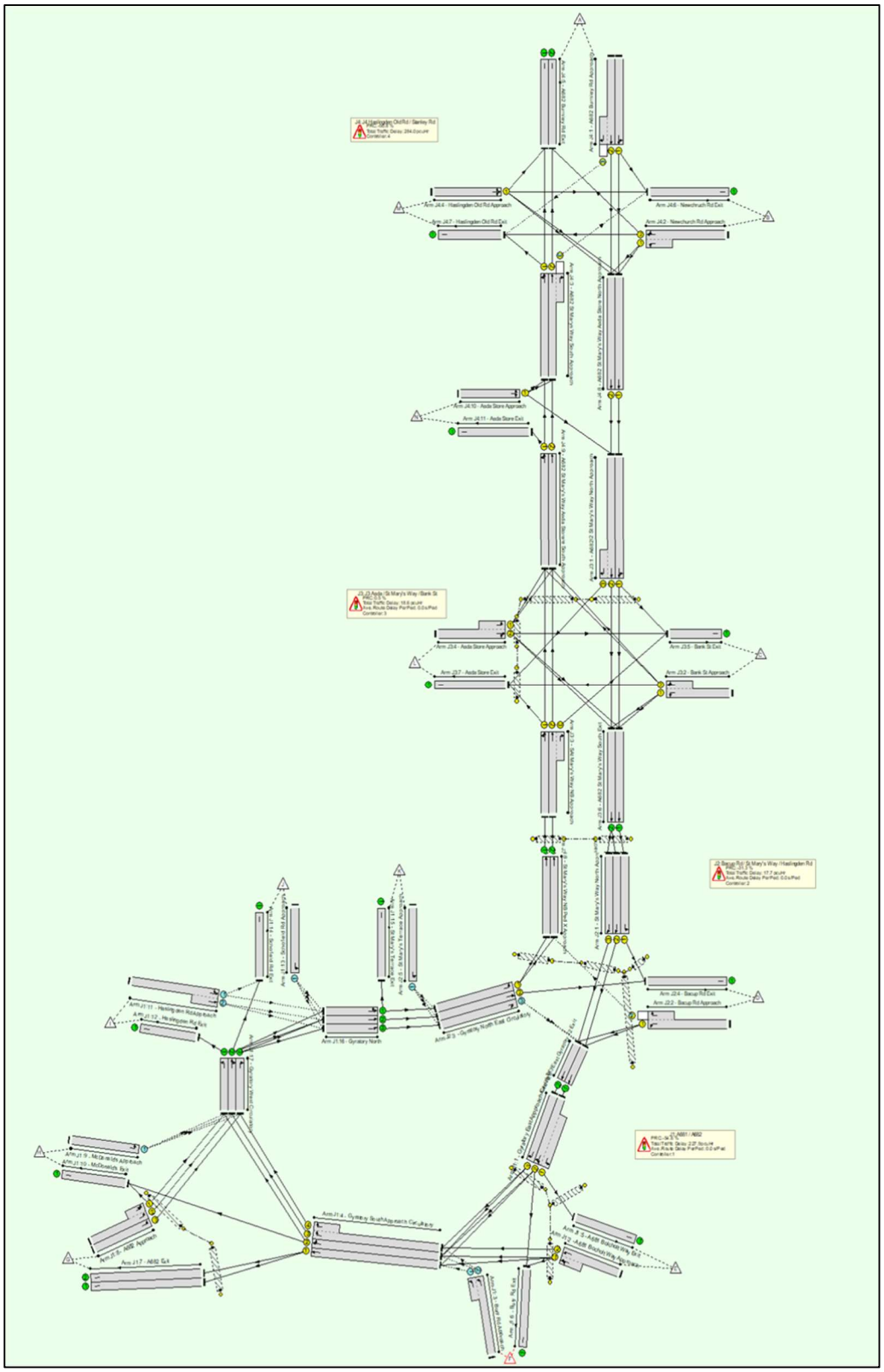


Table 12. Junction 1 Rawtenstall Gyratory Morning Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
Gyratory East Appproach Circulatory Right Left Ahead	94.0%	20.0	99.9%	32.4	106.0%	59.9	104.8%	52.1	111.9%	104.6
Gyratory East Appproach Circulatory Right	31.4%	2.9	31.6%	3.0	33.5%	3.0	33.3%	2.8	34.6%	3.5
A681 Bocholt Way Approach Ahead Left	96.4%	16.1	99.7%	21.3	107.4%	45.3	104.9%	35.0	144.8%	175.2
Bury Rd Approach Left	48.1%	1.9	52.3%	2.2	57.5%	2.9	57.7%	3.1	69.3%	4.6
Gyratory South Approach Circulatory Ahead	63.3%	6.2	67.1%	6.5	68.4%	9.2	68.8%	6.7	71.2%	10.0
Gyratory South Approach Circulatory Ahead Right	68.8%	7.3	65.1%	7.0	69.6%	7.7	65.4%	7.0	78.6%	9.0
Gyratory South Approach Circulatory Right	22.3%	2.1	21.9%	2.0	24.9%	2.4	22.4%	2.1	32.2%	2.8
A682 Approach U-Turn Left	51.4%	4.2	58.7%	4.8	57.5%	4.8	65.6%	5.4	58.9%	5.1
A682 Approach Left	45.0%	4.0	50.8%	4.3	49.9%	4.4	56.2%	4.7	50.7%	4.8
McDonald's Approach Left	10.4%	0.2	10.5%	0.2	10.7%	0.2	11.4%	0.2	12.1%	0.2
Haslingden Rd Approach Left Ahead	76.1%	4.0	82.0%	6.8	85.2%	8.7	87.6%	10.2	109.2%	82.0
Schofield Rd Approach Left	20.8%	0.2	22.1%	0.2	24.7%	0.3	24.3%	0.3	30.0%	0.4
Gyratory West Circulatory Left	34.9%	0.3	35.5%	0.3	36.7%	0.3	36.8%	0.3	40.1%	0.3
Gyratory West Circulatory Ahead Right	21.4%	0.1	22.2%	0.1	23.4%	0.2	23.5%	0.2	26.3%	0.2
Gyratory West Circulatory Right	19.4%	0.1	19.7%	0.1	20.6%	0.1	20.5%	0.1	22.9%	0.1
Gyratory North Ahead Left	29.1%	0.2	29.7%	0.2	31.0%	0.2	31.2%	0.2	33.9%	0.3
Gyratory North Ahead	31.4%	0.2	32.2%	0.2	33.9%	0.3	33.9%	0.3	36.5%	0.3
Gyratory North Ahead	22.8%	0.1	24.5%	0.2	24.9%	0.2	25.6%	0.2	28.8%	0.2

Table 13. Junction 3 St Mary's Way, Bank St, Asda Morning Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 St Mary's Way North Approach Left Ahead	34.6%	2.3	35.5%	2.3	37.3%	2.4	37.9%	2.5	44.4%	2.3
A682 St Mary's Way North Approach Ahead Right	58.6%	5.0	59.9%	5.2	60.4%	5.1	61.8%	5.2	69.7%	6.4
Bank St Approach Right Left Ahead	44.9%	2.3	45.7%	2.3	46.5%	2.3	48.7%	2.5	46.1%	2.5
St Mary's Way NB Approach Ahead Left	32.2%	6.1	32.6%	6.2	33.6%	6.4	34.0%	6.4	40.0%	7.6
St Mary's Way NB Approach Ahead Right	45.6%	5.4	46.0%	5.6	46.9%	5.8	48.3%	6.0	52.3%	6.7
Asda Store Approach Left Ahead Right	62.4%	5.3	63.3%	5.4	66.4%	5.6	66.7%	5.8	63.5%	5.7

Table 14. Junction 4 Tup Bridge Junction St Mary's Way Morning Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 Burnley Rd Approach Left Ahead	85.9%	15.1	88.5%	16.2	90.4%	17.6	93.6%	19.1	104.3%	34.1
A682 Burnley Rd Approach Right Ahead	89.9%	17.7	91.3%	18.6	93.2%	20.5	96.7%	22.9	104.9%	43.5
Newchurch Rd Approach Right Ahead Left	96.7%	29.6	98.1%	32.1	99.7%	35.5	103.0%	46.5	108.2%	66.8
A682 St Marys Way South Approach Ahead Left	53.4%	4.6	54.4%	4.6	54.6%	4.8	66.1%	6.3	59.2%	5.6
A682 St Marys Way South Approach Ahead Right	64.0%	6.2	65.8%	6.4	66.1%	6.6	78.6%	8.9	71.8%	7.5
Haslingden Old Rd Approach Left Ahead Right	94.6%	14.8	95.9%	15.6	103.7%	22.1	101.5%	20.5	112.8%	34.5
A682 St Mary's Way Asda Store North Approach Ahead	17.6%	0.6	18.1%	0.6	19.4%	0.7	19.3%	0.8	21.3%	0.7
A682 St Mary's Way Asda Store North Approach Ahead	30.8%	1.5	31.5%	1.7	32.4%	1.7	32.6%	1.8	34.7%	1.9
A682 St Mary's Way Asda Store South Approach Ahead Left	15.1%	0.2	15.4%	0.1	16.0%	0.1	16.1%	0.1	17.4%	0.1
A682 St Mary's Way Asda Store South Approach Ahead	22.1%	0.2	22.7%	0.2	23.4%	0.2	24.0%	0.2	25.3%	0.2
Asda Store Approach Left Right	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
A682 Burnley Rd Approach Left Ahead	85.9%	15.1	88.5%	16.2	90.4%	17.6	93.6%	19.1	104.3%	34.1

Table 15. Junction 1 Rawtenstall Gyratory Evening Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
Gyratory East Appproach Circulatory Right Left Ahead	95.2%	21.1	99.9%	31.8	103.5%	41.7	101.5%	34.3	100.8%	69.0
Gyratory East Appproach Circulatory Right	31.4%	3.3	31.6%	3.3	32.7%	3.3	32.0%	3.3	35.1%	3.4
A681 Bocholt Way Approach Ahead Left	93.9%	14.6	96.8%	17.9	103.1%	32.7	105.6%	39.8	118.9%	94.2
Bury Rd Approach Left	54.4%	2.4	61.4%	3.1	68.6%	4.3	65.5%	3.7	84.0%	6.9
Gyratory South Approach Circulatory Ahead	61.3%	6.5	63.2%	8.0	65.0%	7.5	64.8%	8.1	67.0%	7.6
Gyratory South Approach Circulatory Ahead Right	86.5%	10.8	89.0%	12.4	91.1%	13.9	91.3%	13.9	99.8%	25.4
Gyratory South Approach Circulatory Right	30.4%	2.7	31.3%	2.7	34.9%	2.7	32.6%	2.5	42.5%	3.2
A682 Approach U-Turn Left	83.6%	11.7	87.8%	13.3	89.8%	14.4	91.9%	15.8	97.0%	22.2
A682 Approach Left	61.5%	7.1	63.8%	7.4	69.1%	8.5	66.6%	7.9	77.6%	10.7
McDonald's Approach Left	12.5%	0.3	13.3%	0.3	14.4%	0.4	14.7%	0.4	17.9%	0.5
Haslingden Rd Approach Left Ahead	84.2%	8.7	89.6%	10.9	99.6%	22.4	97.1%	17.8	132.4%	146.6
Schofield Rd Approach Left	35.1%	1.0	37.8%	1.0	45.1%	1.6	44.2%	1.5	68.9%	3.0
Gyratory West Circulatory Left	37.8%	0.3	40.6%	0.3	41.5%	0.4	41.7%	0.4	46.9%	0.4
Gyratory West Circulatory Ahead Right	37.2%	0.3	38.2%	0.3	40.0%	0.3	39.9%	0.3	44.3%	0.4
Gyratory West Circulatory Right	29.5%	0.2	30.8%	0.2	33.5%	0.3	32.1%	0.2	38.8%	0.3
Gyratory North Ahead Left	52.2%	0.5	53.3%	0.6	55.4%	0.6	55.7%	0.6	62.1%	0.8
Gyratory North Ahead	30.8%	0.2	32.0%	0.2	35.7%	0.3	33.5%	0.3	39.7%	0.3
Gyratory North Ahead	26.5%	0.2	27.4%	0.2	28.1%	0.2	28.6%	0.2	27.5%	0.2

Table 16. Junction 3 St Mary's Way, Bank St, Asda Evening Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 St Mary's Way North Approach Left Ahead	28.8%	2.7	31.0%	2.8	31.4%	2.8	32.1%	3.0	32.9%	3.4
A682 St Mary's Way North Approach Ahead Right	54.8%	10.9	55.4%	11.5	57.3%	12.1	58.1%	12.1	63.2%	12.3
Bank St Approach Right Left Ahead	78.2%	7.4	78.7%	7.5	79.7%	7.8	82.3%	8.6	85.2%	9.5
St Mary's Way NB Approach Ahead Left	68.8%	15.1	69.8%	15.5	72.6%	16.8	74.9%	17.4	83.0%	21.1
St Mary's Way NB Approach Ahead Right	77.8%	13.1	78.3%	13.8	80.0%	13.8	81.3%	14.0	85.8%	15.9
Asda Store Approach Left Ahead Right	75.1%	5.6	75.2%	5.6	80.1%	6.2	78.7%	6.1	85.0%	7.1

Table 17. Junction 4 Tup Bridge Junction St Mary's Way Evening Peak Analysis Results

	2019 Baseline		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 Burnley Rd Approach Left Ahead	61.2%	10.8	63.8%	11.4	65.6%	11.9	66.2%	12.0	67.2%	12.5
A682 Burnley Rd Approach Right Ahead	59.1%	9.8	59.9%	9.9	63.7%	11.0	63.2%	11.0	72.1%	14.1
Newchurch Rd Approach Right Ahead Left	90.8%	14.9	91.5%	15.3	93.7%	17.0	95.8%	19.1	105.9%	38.8
A682 St Marys Way South Approach Ahead Left	75.3%	9.1	76.6%	9.7	84.1%	13.8	84.9%	14.5	97.4%	28.2
A682 St Marys Way South Approach Ahead Right	81.1%	12.2	82.7%	12.4	87.5%	13.3	88.7%	13.7	99.0%	20.5
Haslingden Old Rd Approach Left Ahead Right	89.5%	15.7	90.2%	16.0	94.2%	18.4	94.0%	18.2	100.9%	26.0
A682 St Mary's Way Asda Store North Approach Ahead	12.9%	0.9	13.9%	1.0	14.4%	1.0	14.4%	1.2	15.1%	1.5
A682 St Mary's Way Asda Store North Approach Ahead	26.9%	2.2	27.2%	2.2	28.6%	2.3	28.6%	2.6	31.5%	2.8
A682 St Mary's Way Asda Store South Approach Ahead Left	28.6%	0.3	29.1%	0.3	32.0%	0.4	32.3%	0.5	38.1%	0.6
A682 St Mary's Way Asda Store South Approach Ahead	31.6%	0.4	32.5%	0.4	32.1%	0.4	32.2%	0.5	33.4%	0.5
Asda Store Approach Left Right	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0
A682 Burnley Rd Approach Left Ahead	61.2%	10.8	63.8%	11.4	65.6%	11.9	66.2%	12.0	67.2%	12.5

The results for junctions 1, 3 and 4 demonstrate that there are some noted operational issues experienced along the St Mary's Way corridor in the baseline scenario. On-site observations and model performance have shown that the performance of junctions 3 and 4 are heavily linked to the operation of junction 1 (Rawtenstall Gyratory).

The analysis suggests that junctions 3 and 4 could operate more efficiently in isolation. This consideration is derived from both on-site observations and the modelled outputs which demonstrate that the operation of these junctions is controlled to an extent by the gyratory, and signal timings at the junction are adjusted to accommodate traffic flow on St Mary's Way. The performance of these junctions could be notably different if they weren't part of the St Mary's Way corridor, and existed instead in isolation.

At 2024 the issues experienced are likely to be marginally further exacerbated, however the difference in recorded performance between the Reference Case and the Local Plan scenario is considered minimal, therefore suggesting that the first five years of Local Plan growth can be accommodated.

At 2034, further operational issues are recorded in both the Reference Case and Local Plan scenarios. The recorded differences between the two scenarios are noted to be of greater difference than the 2024 scenarios. On this basis, mitigation options for the corridor are considered further within Chapter 5 of this report.

4.2.2 Junction 2 – Roundabout by Hardman's Mill

Junction 2 is the mini roundabout located close to Hardman's Mill. The junction has been modelled using the ARCADY software.

Tables 18 and **19** present the analysis results for junction 2.

Table 18. Junction 2 Mini Roundabout by Hardman's Mill Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
New Hall Hey Rd North	0.3	0.23	A	0.55	0.35	A	0.55	0.36	A	0.57	0.36	A	2.15	0.69	C
Pets At Home	0.04	0.04	A	0.07	0.07	A	0.07	0.07	A	0.07	0.07	A	0.1	0.09	A
New Hall Hey Rd South	0.13	0.11	A	0.19	0.16	A	0.19	0.16	A	0.2	0.17	A	0.4	0.29	A
Development Land West	0	0	A	0.02	0.02	A	0.02	0.02	A	0.02	0.02	A	0.14	0.12	A

Table 19. Junction 2 Mini Roundabout by Hardman's Mill Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
New Hall Hey Rd North	0.48	0.32	A	0.77	0.44	A	0.79	0.44	A	0.78	0.44	A	1.21	0.55	B
Pets at Home	0.12	0.11	A	0.46	0.32	A	0.47	0.32	A	0.47	0.32	A	0.57	0.36	B
New Hall Hey Rd South	0.66	0.4	A	0.95	0.49	A	0.96	0.49	A	1.02	0.51	A	1.2	0.55	A
Development Land West	0	0	A	0.13	0.11	A	0.14	0.12	A	0.13	0.12	A	1.4	0.59	B

The results for junction 2 show that the junction operates satisfactorily at the 2019 baseline, 2024 and 2034 scenarios. On this basis, mitigation is not required.

4.2.3 Junction 5a – Haslingden Road, Tesco's Roundabout

Junction 5a is the access roundabout to the Tesco superstore in Haslingden, and has direct access from the A56 southbound. The junction has been modelled using the ARCADY software.

Tables 20 and **21** overleaf presents the operational results.

Table 20. Junction 5a Haslingden Road, Tesco's Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
A680 Manchester Rd S	0.71	0.41	A	0.73	0.42	A	0.76	0.43	A	0.81	0.45	A	1.03	0.51	A
Tesco	0.35	0.26	A	0.36	0.26	A	0.36	0.27	A	0.39	0.28	A	0.44	0.31	A
A56 Off-Slip	0.77	0.43	A	0.83	0.44	A	0.86	0.45	A	0.96	0.48	A	1.71	0.63	A
A680 Manchester Rd N	3.08	0.76	C	3.77	0.8	C	4.78	0.84	D	6.42	0.88	E	55.2	1.14	F
A681 Haslingden Rd E	2.21	0.69	B	2.38	0.7	B	2.85	0.74	B	3.12	0.76	B	12.6	0.95	E

Table 21. Junction 5a Haslingden Road, Tesco's Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
A680 Manchester Rd S	1.09	0.52	A	1.16	0.54	A	1.25	0.56	A	1.3	0.57	A	1.61	0.62	A
Tesco	0.88	0.47	A	0.92	0.48	A	0.96	0.49	A	1.04	0.51	A	1.18	0.54	A
A56 Off-Slip	1.14	0.53	A	1.22	0.55	A	1.33	0.57	A	1.45	0.59	A	3.25	0.77	B
A680 Manchester Rd N	2.89	0.75	C	3.32	0.78	C	4.44	0.83	D	5.25	0.85	D	76.7	1.24	F
A681 Haslingden Rd E	3.28	0.77	C	4.72	0.83	C	5.83	0.87	D	7.59	0.9	D	51.7	1.09	F

The results for junction 5a show that the junction is operating satisfacotirly at the 2019 and 2024 scenarios, and as such the junction can accommodate the build out associated with the first five years of the Local Plan.

At 2034 there is a downgrading in operational performance with the Manchester Road N and the Haslingden Road E approaches forecast to operate over capacity in the Local Plan scenario.

The difference in performance at 2034 between the Reference Case and Local Plan scenarios is considered to require further consideration in relation to the delivery of the full Local Plan. As such, this junction is considered further within Chapter 6 of this report.

4.2.4 Junction 5b – A56 Haslingden Roundabout

Junction 5b provides direct access to the A56, and links further afield into Helmshore and Edenfield. The junction has been modelled using the ARCADY software.

Tables 22 and **23** overleaf presents the operational assessment results.

Table 22. Junction 5b A56 Haslingden Road Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
B6527 Manchester Rd S	0.55	0.35	A	0.58	0.36	A	0.61	0.37	A	0.67	0.4	A	1.33	0.57	A
A56 WB Slip Rd / Broadway	0.38	0.27	A	0.38	0.27	A	0.39	0.28	A	0.42	0.29	A	0.46	0.31	A
A681 Manchester Rd N	0.97	0.49	A	1	0.49	A	1.05	0.51	A	1.12	0.52	A	1.42	0.58	A
A56 Off-Slip	0.19	0.15	A	0.19	0.16	A	0.2	0.16	A	0.21	0.17	A	0.26	0.2	A

Table 23. Junction 5b A56 Haslingden Road Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
B6527 Manchester Rd S	0.64	0.39	A	0.69	0.41	A	0.74	0.43	A	0.83	0.45	A	1.56	0.61	B
A56 WB Slip Rd / Broadway	0.29	0.22	A	0.29	0.23	A	0.3	0.23	A	0.31	0.24	A	0.36	0.26	A
A681 Manchester Rd N	0.85	0.46	A	0.9	0.47	A	0.93	0.48	A	0.98	0.49	A	1.2	0.54	A
A56 Off-Slip	0.39	0.28	A	0.4	0.29	A	0.43	0.3	A	0.46	0.31	A	0.58	0.37	A

The results for junction 5b show that the junction is operating satisfactorily at the 2019 baseline, 2024 and 2034 positions. As such, it is considered that this junction can accommodate the full build out of the Local Plan.

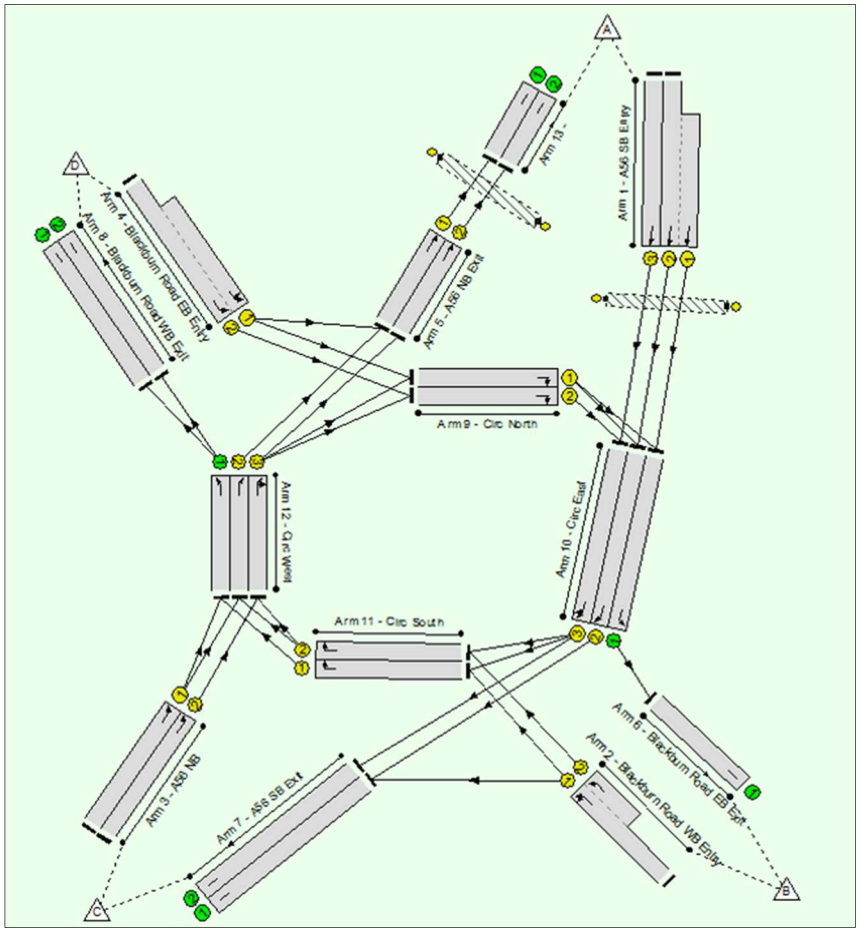
4.2.5 Junction 6 – Rising Bridge Roundabout

Junction 6 links the A56 and Blackburn Road, providing connection between Haslingden and Hyndburn, Burnley and Accrington beyond. The junction is operated by Highways England as part of the Strategic Road Network, and has been upgraded recently to full signalisation. The junction has been modelled using the LinSig software.

At the time of writing, on site signal specification detail was still pending, and as such results may vary slightly were these to be incorporated to the model. Notwithstanding this, the key consideration for this study is the differences derived from the Reference Case and Local Plan results and these are considered further in this report.

Figure 20 below shows the junction 6 LinSig model.

Figure 20: Junction 6 Rising Bridge LinSig Model



Tables 24 and **25** overleaf presents the operational assessment results.

Table 24. Junction 6 Rising Bridge Morning Peak Results

AM	2019		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A56 SB Entry Ahead	86.3%	15.4	88.5%	17.1	87.5%	16.4	92.0%	20.5	91.4%	18.3
A56 SB Entry Ahead	66.9%	9.8	67.4%	9.9	68.6%	10.1	72.0%	11.2	89.8%	18.8
Blackburn Road WB Entry Left Left2	78.1%	5.6	79.0%	5.7	78.3%	5.8	83.1%	6.5	91.3%	9.2
A56 NB Ahead	80.8%	14.1	81.6%	14.6	82.1%	14.8	86.3%	17.2	98.8%	34.5
A56 NB Ahead	78.2%	13.9	79.2%	14.2	79.2%	14.2	83.1%	16.3	87.5%	19.1
Blackburn Road EB Entry U-Turn Left	93.8%	7.2	93.4%	7.3	95.4%	7.4	98.2%	8.0	94.3%	7.8
A56 NB Exit Ahead	75.7%	11.0	76.7%	11.3	78.0%	13.1	81.2%	12.9	87.8%	18.1
A56 NB Exit Ahead	77.7%	2.5	78.5%	2.6	78.8%	2.7	82.2%	3.2	87.2%	4.2
Circ North Right	81.7%	3.9	80.5%	3.7	82.8%	4.4	85.1%	5.4	87.3%	8.7
Circ North Right	69.0%	4.7	71.7%	4.9	69.6%	4.8	75.1%	5.6	64.6%	5.4
Circ East Right	74.9%	4.5	76.4%	4.6	78.0%	5.7	79.4%	5.0	74.4%	2.6
Circ East Right Right2	79.1%	10.6	80.2%	10.8	83.0%	11.6	85.4%	12.8	97.3%	31.8
Circ South Right	74.5%	2.7	75.0%	2.7	75.0%	2.8	79.1%	3.2	91.4%	9.7
Circ South Right	62.7%	1.0	63.4%	1.0	66.5%	1.2	66.7%	1.1	73.1%	6.1

AM	2019		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Circ West Ahead	65.5%	6.4	66.4%	6.5	67.6%	8.3	70.3%	7.3	76.4%	11.2
Circ West Ahead Right	79.6%	4.8	80.4%	4.9	80.6%	4.0	84.2%	5.9	92.9%	8.7

Table 25. Junction 6 Rising Bridge Evening Peak Results

PM	2019		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A56 SB Entry Ahead	84.1%	13.1	84.4%	13.2	83.1%	12.5	89.5%	15.8	95.8%	24.3
A56 SB Entry Ahead	64.6%	9.1	65.6%	9.3	67.8%	9.9	67.4%	9.8	66.6%	9.4
Blackburn Road WB Entry Left Left2	70.7%	4.8	71.5%	4.9	71.7%	4.9	79.1%	5.8	88.8%	8.4
A56 NB Ahead	78.7%	13.2	79.6%	13.5	80.0%	13.9	84.3%	15.8	87.1%	17.5
A56 NB Ahead	75.1%	12.6	76.2%	13.1	76.1%	13.1	78.8%	14.0	83.9%	16.5
Blackburn Road EB Entry U-Turn Left	93.4%	7.7	94.2%	7.8	94.7%	7.8	89.4%	7.5	91.8%	9.6
A56 NB Exit Ahead	56.9%	5.6	57.4%	5.5	57.8%	6.0	63.5%	6.9	70.3%	9.0
A56 NB Exit Ahead	72.2%	2.1	73.3%	2.1	73.7%	2.2	77.2%	2.5	84.6%	3.5
Circ North Right	75.9%	1.8	76.6%	1.9	77.1%	2.0	79.2%	2.3	91.1%	7.5
Circ North Right	65.1%	5.1	65.7%	5.1	65.3%	5.1	69.5%	5.3	90.9%	10.2
Circ East Right	68.6%	4.5	68.9%	4.3	67.7%	4.4	70.8%	4.4	77.5%	6.2
Circ East Right Right2	78.0%	9.9	79.1%	10.1	80.8%	10.8	79.8%	10.7	88.3%	12.3
Circ South Right	75.6%	3.6	76.3%	3.7	76.3%	3.7	79.5%	4.0	81.2%	4.9
Circ South Right	38.5%	0.5	38.7%	0.5	40.2%	0.5	40.6%	0.4	50.8%	0.6

Circ West Ahead	50.4%	3.7	50.9%	3.9	51.2%	3.8	56.4%	4.8	62.7%	6.8
Circ West Ahead Right	73.3%	2.4	74.5%	2.8	74.9%	2.6	78.5%	3.4	86.3%	5.1

The results in **Tables 24** and **25** above demonstrate that the A56 Rising Bridge junction is operating close to capacity in some locations, but is generally operating satisfactorily at the baseline scenario.

At 2024 the junction operation is consistent between the Reference Case and Local Plan scenarios. It is considered therefore that this junction can accommodate the first five years of Local Plan growth.

At 2034 the performance of the junction deteriorates further at the Reference Case scenario, and this is exacerbated further in the Local Plan scenario. Additional arms are noted to be operating over capacity compared to the Reference Case.

It is noted that Highways Englands has recently consulted Local Authorities, including Rossendale, on the '*Shaping the Future of England's Strategic Roads: Moving Britain Ahead'*, document, which alludes to the desire of Highways England to ensure the efficient operation of the Trunk Road network in the future and the potential upgrade of roads such as the A56 to Expressway standard.

It is considered that any small-scale scheme that could be derived to mitigate the minor impacts of the Rossendale Local Plan might not be an appropriate way forward, and a more efficient approach would be to consider the A56 Rising Bridge junction as part of any Expressway concept, perhaps within Highway England's Regional Investment Programme.

In response to the consultation on the 'Shaping the Future of England's Strategic Roads: Moving Britain Ahead' document, Rossendale Borough Council has noted the following;

Analysis undertaken as part of the Rossendale Local Plan Highway Capacity Study *'has derived a series of initial conclusions as to the future performance of the A56, which has been presented to Highways England and Lancashire County Council. The analysis identifies the following three overarching themes relevant to the future resilience and growth of Rossendale;*

1. *The A56 provides the most important strategic link for travel between the north-south of the borough as well as providing direct access to key existing and future employment areas.*
2. *It represents the only directly appropriate main route connecting external authorities to the north and south of Rossendale, such as Greater Manchester (2.8million) and East Lancashire (circa 450,000)*
3. *Is used for both longer distance strategic journeys and short hop-on-hop-off journeys.*

The analysis specifically identifies forecast operational issues expected on the junctions associated with the A56 as well as the A56 mainline itself. The analysis demonstrates that operational concerns relating to journey time reliability/unreliability and capacity are likely to be experienced irrespective of the Rossendale Local Plan proposals, and in some instances could be deemed problematic enough to impact upon the delivery of the plan, meaning that existing operational concerns could be significant enough to result in objections to specific planning applications as the plan progresses through its life cycle. This would jeopardise at local level the achievement of the four goals set out in the National Transport Strategy.

Rising Bridge junction (A56/Blackburn Road A680) is a particular issue. This represents the only direct access junction which remains 'at grade' over the 20mile or so distance between the M60 and the M65, which connects Greater Manchester with Burnley, Hyndburn and beyond. This location is important to the delivery of future employment opportunities within Rossendale, as well as securing the success of existing businesses. It also forms an important intersection on the primary east-west bus corridor in Rawtenstall (464) and a link into southern Accrington. While recently signalised, grade separation would, in the view of the Council, deliver significant benefits.

On the basis of the operational analysis results and the qualitative review of the importance of the A56 to the Rossendale economy and livelihood of its residents, it is considered that there is a good case for why the A56 be considered for further investment. Studies should be undertaken related to either an upgrading

of its classification to Expressway or, as a minimum, further bespoke interventions to assist with and improve the transport user experience for residents and businesses, and to assist the future growth and prosperity of Rossendale'.

Notwithstanding the above, further consideration to Local Plan mitigation for this junction is detailed in Chapter 6.

4.2.6 Junction 7 – Todd Hall A56 Access

Junction 7 provides direct access onto and egress from the A56, associated with the Carrs Industrial Estate. The Carrs Industrial Estate is important to the Rossendale Local Plan as a location of retained employment and additional employment allocations.

The junction itself is a left-in-left-out arrangement with the A56, and has been modelled using the PICADY software. The operational results are presented In **Table 26** below.

Given that the junction is a left-in-left-out arrangement, there is only one movement that gives way to another, and that is the left turn onto the A56 from Todd Hall Road.

Table 26. Junction 7 A56 Todd Hall Access Morning and Evening Peak Results

	AM			PM		
	Queue (PCU)	**RFC**	**LOS**	**Queue (PCU)**	**RFC**	**LOS**
			2019			
Todd Hall Road Access to A56	0.3	0.19	B	2.5	0.72	D
			2024 Ref Case			
Todd Hall Road Access to A56	0.3	0.19	B	2.6	0.73	D
			2024 Local Plan			
Todd Hall Road Access to A56	0.3	0.19	B	2.6	0.73	D
			2034 Ref Case			
Todd Hall Road Access to A56	0.3	0.20	B	3.0	0.76	D
			2034 Local Plan			
Todd Hall Road Access to A56	0.4	0.27	C	4.1	0.82	E

The results in **Table 26** above demonstrate that the junction operates satisfactorily in all assessment scenarios. As such, this junction does not require mitigation to improve capacity and is not considered further within this study.

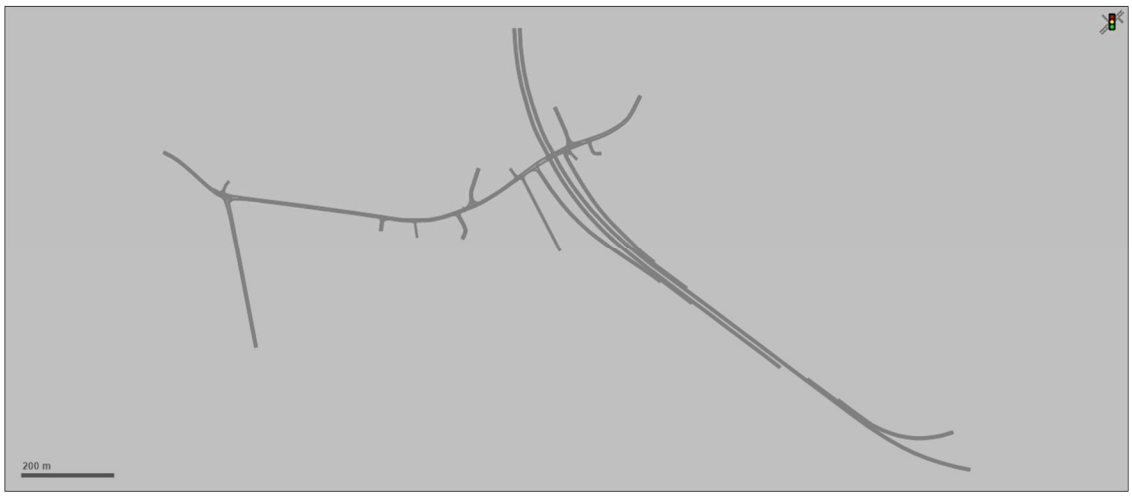
4.2.7 Junctions 8, 9a and 9b – Grane Road Corridor

Junctions 8, 9a and 9b are located along the Grane Road corridor. Junction 8 forms a three-arm priority controlled junction with Holcombe Road. Junction 9a is the off-slip from the A56 with Grane Road and junction 9b is the on-slip onto the A56 and the adjacent Waterside Road junction as well.

These junctions have been modelled using the VISSIM software. This software was chosen as initial testing using PICADY software, did not adequately reflect on-site behaviour. A microsimulation approach was therefore adopted in order to better replicate the bespoke driver behaviour which was noted in relation to the right turn onto the A56 from Grane Road in particular.

The VISSIM model is shown overleaf in **Figure 21**.

Figure 21: Grane Road Corridor VISSIM Model



The operational results from the VISSIM model are presented In **Tables 27** and **28** overleaf. Results are presented for LoS and delay for each turn movement at the three individual junctions.

Table 27. Junctions 8, 9a and 9b Grane Road Corridor Morning Peak Results

From Description	To Description	AM 0800-0900 Scenarios									
		2019 Base		2024 Reference Case		2024 Local Plan		2034 Reference Case		2034 Local Plan	
		LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)
Junction 9a Grane Road/A56 junctions (A56 off-slip)											
A56 Off-slip	Grane Rd Westbound	A	6.3	A	6.72	A	6.77	B	11.04	B	9.87
A56 Off-slip	Grane Rd Eastbound	A	5.62	A	6.27	A	6.04	A	7.75	A	8.29
Junction 9b Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)											
Grane Rd Eastbound	A56 On-slip	A	1.49	A	1.5	A	1.43	A	1.48	A	1.73
Grane Rd Eastbound	Waterside Rd	A	0.1	A	0.11	A	0.1	A	0.13	A	0.15
Grane Rd Eastbound	Care Home Access	A	0	A	0	A	0	A	0	A	0
Waterside Rd	Grane Rd Eastbound	A	0.49	A	0.33	A	0.29	A	0.4	A	0.48
Waterside Rd	Grane Rd Westbound	A	1.31	A	1.26	A	1.21	A	1.3	A	1.28
Waterside Rd	Care Home Access	A	0	A	0	A	0	A	0	A	0
Grane Rd Westbound	A56 On-slip	A	0.02	A	0.03	A	0.03	A	0.02	A	0.02
Grane Rd Westbound	Care Home Access	A	-0.12	A	-0.16	A	-0.16	A	-0.12	A	-0.14
Grane Rd Westbound	Waterside Rd	A	0.36	A	0.44	A	0.44	A	0.35	A	0.38
Junction 8 Grane Road / Holcombe Road											
Holcombe Road	Grane Road Eastbound	C	19.47	C	17.24	C	17.48	C	20.04	D	32.02
Holcombe Road	Grane Rd Westbound	B	10.57	B	11	B	11.68	B	11.62	C	23.94
Grane Road Eastbound	Holcombe Road	A	5.18	A	7.03	A	6.79	A	4.83	A	5.02
Grane Rd Westbound	Holcombe Road	A	2.08	A	1.37	A	1.48	A	1.6	A	1.54

Table 28. Junctions 8, 9a and 9b Grane Road Corridor Evening Peak Results

From Description	To Description	PM 1700-1800 Scenarios									
		2019 Base		2024 Reference Case		2024 Local Plan		2034 Reference Case		2034 Local Plan	
		LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)	LoS	VehDelay (secs)
Junction 9a Grane Road/A56 junctions (A56 off-slip)											
A56 Off-slip	Grane Rd Westbound	B	12.05	B	12.69	B	12.57	C	18.65	E	38.76
A56 Off-slip	Grane Rd Eastbound	D	29.24	C	24.5	C	22.9	E	42.54	F	69.65
Junction 9b Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)											
Grane Rd Eastbound	A56 On-slip	A	4.06	A	4.25	A	4.26	A	4.45	A	5.01
Grane Rd Eastbound	Waterside Rd	A	2.15	A	2.36	A	2.17	A	2.36	A	2.46
Grane Rd Eastbound	Care Home Access	A	4.55	A	7.47	A	7.3	A	5.2	B	10.46
Waterside Rd	Grane Rd Eastbound	A	0.87	A	0.82	A	0.78	A	0.77	A	1.22
Waterside Rd	Grane Rd Westbound	A	1.39	A	1.64	A	1.81	A	1.54	A	2.16
Waterside Rd	Care Home Access	A	0	A	0	A	0	A	0	A	0
Grane Rd Westbound	A56 On-slip	A	0.05	A	0.02	A	0.02	A	0.04	A	0.05
Grane Rd Westbound	Care Home Access	A	-0.18	A	-0.25	A	-0.25	A	-0.22	A	-0.2
Grane Rd Westbound	Waterside Rd	A	0.98	A	0.79	A	0.77	A	1.53	A	0.92
Junction 8 Grane Road / Holcombe Road											
Holcombe Road	Grane Road Eastbound	D	36.82	E	39.06	E	40.04	E	48.41	F	79.86
Holcombe Road	Grane Rd Westbound	C	23.51	C	23.66	C	23.56	D	36.45	F	63.07
Grane Road Eastbound	Holcombe Road	A	6.63	A	7.64	A	7.37	A	9.15	A	9.8
Grane Rd Westbound	Holcombe Road	A	1.76	A	1.66	A	1.69	A	1.41	A	1.7

The results in **Table 27** demonstrate that the junctions operate satisfactorily in all assessment scenarios during the morning peak.

The results in **Table 28** demonstrate the there is a worsening of performance on the A56 off-slip and on Holcombe Road at the 2034 Local Plan scenario. Further consideration of these issues is given in Chapter 6 of this report.

It is noted from both the VISSIM model simulation and the on-site observations that traffic flow toward the A56 (and seeking to turn right onto it) is 'metered' along Grane Road by the presence of bus stops, pedestrian crossings and multiple minor side arms. This ensures a limiting effect on traffic arriving at Junction 9b in particular, which curtails the build-up of traffic queues from this location.

The new traffic speed cameras will also likely have had an effect in terms of moderating speeds on Grane Road, thereby providing a positive effect in terms of traffic management and control.

It is this specific operation that could not be reflected in software such as PICADY, hence the need for a microsimulation assessment in this instance.

4.2.8 Junction 10 – A56 / M66 'Junction 0' at Edenfield

Junction 10 is a priority controlled four arm roundabout providing access into Edenfield and onto/off the A56. The junction is located at the point at which the M66 ends and the A56 begins.

The junction is modelled using the ARCADY software.

Operational assessment results are presented in **Tables 29** and **30** overleaf.

Table 29. Junction 10 A56/M66 Junction '0' Edenfield Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
M66	0.53	0.35	A	0.54	0.35	A	0.54	0.35	A	0.58	0.37	A	0.61	0.38	A
Bolton Rd N North	0.51	0.34	A	0.53	0.35	A	0.53	0.35	A	0.58	0.37	A	0.64	0.39	A
A56 Wood Ln	0.18	0.15	A	0.18	0.15	A	0.18	0.15	A	0.2	0.16	A	0.2	0.17	A
A676 Bolton Rd N S	0.78	0.44	A	0.8	0.44	A	0.8	0.45	A	0.89	0.47	A	1.03	0.51	A

Table 30. Junction 10 A56/M66 Junction '0' Edenfield Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
M66	0.77	0.43	A	0.78	0.44	A	0.79	0.44	A	0.85	0.46	A	0.97	0.49	A
Bolton Rd N North	0.26	0.21	A	0.27	0.21	A	0.27	0.21	A	0.28	0.22	A	0.3	0.23	A
A56 Wood Ln	0.21	0.18	A	0.22	0.18	A	0.22	0.18	A	0.23	0.19	A	0.24	0.19	A
A676 Bolton Rd N S	0.7	0.41	A	0.71	0.42	A	0.71	0.42	A	0.78	0.44	A	0.8	0.45	A

Results in **Tables 29** and **30** above demonstrate that the junction operates within capacity in all tested scenarios, for both the morning and evening peaks.

As such, it is considered that this junction can accommodate the full build out of the Local Plan, and is therefore not considered further within this study.

4.2.9 Junction 11 – Rochdale Road / Market Street Edenfield

Junction 11 is a three-arm priority controlled roundabout within the village of Edenfield.

The junction is modelled using the ARCADY software.

Operational assessment results are presented in **Tables 31** and **32** overleaf.

Table 31. Junction 11 Rochdale Road / Market Street Edenfield Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Bury Rd North	1.85	0.65	B	1.93	0.66	B	2.31	0.7	B	2.34	0.71	B	9.09	0.92	E
Rochdale Rd	3.02	0.76	C	3.32	0.78	C	3.74	0.8	C	4.49	0.83	C	26.9	1.04	F
Bury Rd South	0.92	0.48	A	0.97	0.5	A	1.04	0.51	A	1.09	0.52	A	2.67	0.73	C

Table 32. Junction 11 Rochdale Road / Market Street Edenfield Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Bury Rd North	0.5	0.34	A	0.53	0.35	A	0.59	0.37	A	0.58	0.37	A	1.51	0.6	A
Rochdale Rd	1.63	0.62	A	1.69	0.63	A	1.82	0.65	B	1.93	0.66	B	3.72	0.8	C
Bury Rd South	4.61	0.83	C	4.87	0.84	D	6.73	0.88	D	6.95	0.89	E	62.5	1.13	F

The results for junction 11 presented in **Tables 31** and **32** above demonstrate that the junction operates satisfactorily at both the 2019 baseline and 2024 scenarios. On that basis it is considered that the junction can accommodate the first five years of the Local Plan up to 2024.

The 2034 analysis results show a notable difference between the Reference Case and Local Plan scenario results for the Rochdale Road arms in the morning peak and the Bury Road South arm in the evening peak.

On further inspection of the results it is considered that they are over representing the forecast delay in the 2034 Local Plan scenario. This is a function of the derived study methodology which distributes and assigns all traffic heading to the Edenfield Mid Super Output Area, to the centroid of that Mid Super Output Area. It is considered in reality, that many of the new residential housing allocations are located to the north of Edenfield adjacent to the A56, and traffic arriving at these locations from further north would not pass through this junction. Similarly, traffic departing from these new housing allocations would not pass through this junction if heading north.

The same is also true for traffic originating from new housing and employment allocations in other Mid Super Output Areas and heading to the Edenfield Mid Super Output Area.

As such, the above paragraphs demonstrate that the analysis presented has for this junction, been overly robust, and the impacts reported would in reality, not be expected to be this notable.

It is noted that in the Reference Case that delay is comparable to the Local Plan scenarios, on some approach arms, demonstrating that without the additional robustness of the assessment methodology at this location, with two sets of results from each scenario would be comparable.

In addition to the above, both Rossendale Borough Council and Mott Macdonald are aware of a suggested scheme in the neighbouring borough of Bury, which could if constructed provide a southern ‘bypass’ of Edenfield. The scheme currently has no status, however would likely provide a reduction in traffic volumes within Edenfield, thereby representing a much more efficient and sensible approach to delaing with forecast future delay within the village.

Further consideration of this junction is given in Chapter 6.

4.2.10 Junction 12 – St James Square, Bacup

Junction 12 is a four-arm priority controlled roundabout within the town of Bacup.

The junction has been modelled by Lancashire County Council using an existing AIMSUN model, with results supplied to Mott Macdonald in the form of Max Virtual Queue [MVQ] plots and delay plots.

Operational assessment results are presented in **Tables 33** and **34** overleaf, and the supplied result plots are presented at **Appendix F**.

Table 33. Junction 12 St James Square Bacup Morning Peak Results

	2019 Base		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**
Yorkshire St	1	7	1	6	4	8	1	6	4	11
St James Sq	0	6	1	5	6	6	0	6	4	9
Burnley Rd	1	4	1	4	4	4	2	4	4	5
Market St	0	0	1	0	5	0	0	0	3	0
Lane Head Ln	0	6	0	7	0	11	0	10	0	12

Table 34. Junction 12 St James Square Bacup Evening Peak Results

	2019 Base		2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan	
Lane Description	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**	**MVQ (vehs)**	**Delay (secs)**
Yorkshire St	1	6	1	5	1	6	1	7	4	8
St James Sq	1	4	1	4	1	4	1	5	5	7
Burnley Rd	1	4	1	4	1	5	1	4	6	6
Market St	2	0	2	0	2	0	2	0	10	0
Lane Head Ln	0	5	0	8	0	10	0	9	0	10

Results in **Tables 33** and **34** above demonstrate that the junction operates within capacity in all tested scenarios, for both the morning and evening peaks.

As such, it is considered that this junction can accommodate the full build out of the Local Plan, and is therefore not considered further within this study.

4.2.11 Junction 13 – Waterfoot Roundabout

Junction 13 is a three-arm priority controlled roundabout within Waterfoot.

The junction has been modelled using the ARCADY software.

Operational assessment results are presented in **Tables 35** and **36** overleaf.

Table 35. Junction 13 Waterfoot Roundabout Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Burnley Rd East	20.7	1.07	F	25.6	1.11	F	37.4	1.18	F	38.0	1.19	F	107	1.43	F
Bacup Rd East	5.91	0.87	D	6.86	0.89	E	23.6	1.01	F	10.1	0.93	F	106	1.22	F
Bacup Rd West	13.3	0.96	F	16.6	0.99	F	34.2	1.06	F	28.9	1.04	F	107	1.24	F

Table 36. Junction 13 Waterfoot Roundabout Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Burnley Rd East	4.75	0.85	F	5.34	0.87	F	12.2	0.99	F	6.84	0.91	F	45.1	1.19	F
Bacup Rd East	2.7	0.74	C	3.03	0.76	C	4.62	0.83	C	3.77	0.8	C	15.4	0.97	F
Bacup Rd West	97.5	1.22	F	117	1.26	F	205	1.39	F	157	1.32	F	408	1.68	F

Results in **Tables 35** and **36** above demonstrate that the junction operates over capacity on specific arms in the baseline position, which is exacerbated through the rest of the scenarios.

It is noted that although there are arms operating over capacity, the difference between the Reference Case and Local Plan results at 2024 is very marginal, and as such no impact associated with Local Plan traffic can be attributed, in NPPF severity terms. As such, it is considered that this junction can accommodate the build out of the Local Plan up to 2024.

The 2034 results also show a number of arms operating with a LoS F, however the difference between the Reference Case and Local Plan scenarios is more pronounced than the 2024 scenarios. It could be argued that because the junction is failing in the 2034 Reference Case scenarios that no further consideration of this junction is required. Notwithstanding this, the length of the recorded queues and the disparity between recorded queue lengths on differing arms, means that this junction is considered further within this study at Chapter 6.

4.2.12 Junction 14 – Toll Bar Roundabout, Stacksteads

Junction 14 is a three-arm priority controlled roundabout close to Stacksteads.

The junction has been modelled using the ARCADY software.

Operational assessment results are presented in **Tables 37** and **38** overleaf.

Table 37. Junction 14 Toll Bar Stacksteads Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Newchurch Rd East	3.1	0.76	C	3.37	0.78	C	6.42	0.88	D	4.25	0.82	C	41.3	1.06	F
Newchurch Rd West	4.72	0.84	D	5.29	0.86	D	8.21	0.91	E	8.07	0.91	E	26.5	1.04	F
Booth Rd	44.0	1.17	F	49.8	1.2	F	64.2	1.28	F	71.2	1.31	F	115	1.46	F

Table 38. Junction 14 Toll Bar Stacksteads Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Newchurch Rd East	53.2	1.09	F	62.7	1.11	F	97.6	1.18	F	87.3	1.16	F	190	1.31	F
Newchurch Rd West	2.58	0.73	C	2.86	0.75	C	6.17	0.88	E	3.44	0.78	C	35.9	1.07	F
Booth Rd	2.16	0.69	C	2.34	0.71	D	3.63	0.8	E	2.98	0.76	D	10.1	0.97	F

Results in **Tables 37** and **38** above demonstrate that the junction operates over capacity on specific arms in the baseline position, which is exacerbated through the rest of the scenarios.

It is noted that although there are arms operating over capacity, the difference between the Reference Case and Local Plan results at 2024 is very marginal, suggesting that this junction can accommodate the build out of the Local Plan up to 2024 without further detriment to its operational performance.

The 2034 results also show the multitude of arms operating with a LoS F, however the difference between the Reference Case and Local Plan scenarios is more pronounced, than the 2024 scenarios especially in terms of recorded queues. It could be argued that because the junction is failing in the 2034 Reference Case scenarios that no further consideration of this junction is required. Notwithstanding this, the length of the recorded queues and the disparity between recorded queue lengths on differing arms, means that this junction is considered further within this study at Chapter 6.

4.2.13 Junction 15 – Market St/Shawclough Road, Whitworth

Junction 15 is a three-arm priority controlled junction close to Whitworth.

The junction has been modelled using the PICADY software.

Operational assessment results are presented in **Tables 39** and **40** overleaf.

Table 39. Junction 15 Market St / Shawclough Rd Morning Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Shawclough Road Left Turn	0.2	0.17	A	0.2	0.18	A	0.2	0.18	A	0.3	0.19	A	0.3	0.21	A
Shawclough Road Right Turn	0	0.03	C	0	0.04	C	0	0.04	C	0	0.04	C	0.1	0.04	C
Market Street Straight Ahead and Right Turn	3.8	0.67	B	4.0	0.68	B	4.8	0.71	B	5.0	0.72	B	8.0	0.80	C

Table 40. Junction 15 Market St / Shawclough Rd Evening Peak Results

	2019 Base			2024 Ref Case			2024 Local Plan			2034 Ref Case			2034 Local Plan		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Shawclough Road Left Turn	1.5	0.58	C	1.6	0.59	C	1.8	0.62	C	1.8	0.63	C	2.7	0.71	C
Shawclough Road Right Turn	0.1	0.05	C	0.1	0.05	C	0.1	0.05	C	0.1	0.06	C	0.1	0.07	C
Market Street Straight Ahead and Right Turn	0.8	0.38	B	0.9	0.38	B	1.0	0.40	B	1.0	0.41	B	1.4	0.47	B

Results in **Tables 39** and **40** above demonstrate that the junction operates within capacity in all tested scenarios, for both the morning and evening peaks.

As such, it is considered that this junction can accommodate the full build out of the Local Plan, and is therefore not considered further within this study.

4.3 Merge / Diverge Analysis

In addition to the junction capacity analysis a series of DMRB Merge / Diverge assessments were undertaken in order to understand the operation of key sections of the Strategic Road Network. The results of the analysis are presented below in **Table 41**. The results presented relate to the merge and diverge type required based on the analysis, as per DMRB TD22/06. The full Merge / Diverge outputs can be found at **Appendix G** of this report.

Table 41. Merge / Diverge Analysis Results

Merge-Diverge No.	Description	2024 Ref Case		2024 Local Plan		2034 Ref Case		2034 Local Plan		Further consideration within this study?
		Merge / Diverge Type								
		AM	PM	AM	PM	AM	PM	AM	PM	
1	A56 / Grane Road SB Merge	A/D	B	A/D	B	A/D	B	A/D	E	Yes (see text below)
2	A56 / Grane Road NB Diverge	C	C	C	C	C	A	C	A	No
3	A56 / Tesco Haslingden SB Diverge	A	A	C	C	**A**	C	**C**	C	Yes (see text below)
4	A56 / Haslingden Roundabout NB Merge	A/D	E	A/D	E	B	E	B	E	No
5	A56 / Haslingden Roundabout NB Diverge	A	A	A	A	A	C	A	C	No
6	A56 / Tesco Haslingden SB Merge	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D	No
7	A56 / Junction '0' Edenfield SB Diverge	C	C	C	C	C	C	C	C	No
8	A56 / Junction '0' Edenfield NB Merge	B	A/D	B	A/D	E	A/D	E	A/D	No
9	A56 / A682 (Rawtenstall Spur) NB Diverge	C	C	C	C	C	A	C	A	No
10	A682 (Rawtenstall Spur) / A56 SB Merge	B	A/D	B	A/D	E	A/D	E	B	Yes (See Chapter 6)

The analysis presented in **Table 41** above demonstrates that the required Merge / Diverge type does not alter between the Reference Case and Local Plan scenarios for all locations barring the A56 Grane Rd SB Merge, the A56 – Tesco Haslingden SB Diverge and the A682 Rawtenstall Spur SB Merge.

Whereas the results of the analysis do show differing Merge / Diverge Types being required between morning and evening tests, as well as between 2024 and 2034, It is only those three

locations which show a change in provision between the Reference Case and Local Plan scenarios.

The analysis demonstrates that the first five years of the plan can be accommodated to 2024.

The 2034 analysis demonstrates that there might need to be alterations to Merge/Diverge provision considered alongside any A56 upgrade that Highways England wish to promote. Upgrade to Expressway has been considered, and is discussed in greater detail within the summary of junction 6.

Notwithstanding any potential Expressway considerations, in order to understand the operation of the Grane Road merge and Tesco Haslingden diverge in greater detail, additional analysis has been derived from the Grane Road corridor VISSIM model.

The VISSIM model network includes both the A56/Grane Road merge and the A56/Tesco Haslingden divere, and as such a link analysis has been undertaken to compare the 2034 Reference Case and 2034 Local Plan scenarios at both the morning and evening peaks.

The analysis outputs are included at **Appendix G** along with the Merge / Diverge outputs. In summary the output analysis demonstrates that the delay increase on the key select links between the two locations is minimal, therefore suggesting that delivery of the Local Plan is not subject to upgrade of this Merge and Diverge. It is noted from on-site observations and the VISSIM model analysis that the flows from Grane Road to the A56, approach overwhelmingly from the west (right turning onto the on-slip), and are 'metered' onto the slip road by network features along Grane Road, such as pedestrian crossings, bus stops and multiple minor side arms. This ensures a limiting effect on traffic arriving at Junction 9b in particular, which curtails the build-up of traffic queues from this location.

The new traffic speed cameras will also likely have had an effect in terms of moderating speeds on Grane Road, thereby providing a positive effect in terms of traffic management and control.

In addition to the above, it is also recommended by Mott Macdonald that the alteration from Type B to E (Merge) and A to C (Diverge) would not necessarily be a practical idea at this location given the comparative short distance between the two locations.

With regards to the A682 SB merge, this is considered further in Chapter 6.

4.4 Analysis Summary

Based on the junction analysis results presented above the following junctions are taken forward for further consideration within this study, as presented in **Table 42** below.

Table 42. Operational Analysis Summary

Junction Number	Description	Can accommodate first five years of plan?	Can accommodate full fifteen years of plan?	Further consideration as part of this study?
1	The Gyratory, Rawtenstall	✓	×	Yes
2	Mini-roundabout by Hardman's Mill, Rawtenstall	✓	✓	No
3	Junction of St Mary's Way, Bank Street and Asda, Rawtenstall	✓	×*	No*
4	Tup Bridge Junction, St Mary's Way, Rawtenstall	✓	×*	No*
5a	Haslingden Road/Tesco roundabout, Haslingden	✓	×	Yes
5b	A56 Haslingden Roundabout	✓	×	No

Junction Number	Description	Can accommodate first five years of plan?	Can accommodate full fifteen years of plan?	Further consideration as part of this study?
6	Rising Bridge roundabout, A56	✓	×	Yes
7	Todd Hall Road access	✓	✓	No
8	Grane Road/Holcombe Road junction	✓	×	Yes
9a	Grane Road/A56 junctions (A56 off-slip)	✓	×	Yes
9b	Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)	✓	✓	Yes**
10	A56 / M66 'Junction 0' at Edenfield	✓	✓	No
11	Rochdale Road/Market St roundabout, Edenfield	✓	×	Yes
12	Bacup St James Square (recently modelled by Lancashire CC)	✓	✓	No
13	Waterfoot roundabout	✓	×	Yes
14	Toll Bar Roundabout, Stacksteads	✓	×	Yes
15	Market St/Shawclough Road, Whitworth	✓	✓	No

* junctions 3 and 4 may be able to accommodate full extent of plan in isolation, however their performance is determined by their proximity to the Rawtenstall gyratory and will need to be considered alongside those junctions.

** considered alongside junction 9a

5 Rawtenstall Gyratory

5.1 Preamble

The Rawtenstall gyratory has been identified from chapters 2 and 4 as being the most critical junction within Rossendale. This is because a significant proportion of the residential and/or employment allocations withn the emerging Local Plan are likely to travel through the gyratory in the morning and evening peaks.

The junction is therefore considered to be pivotal in relation to the delivery of the Local Plan.

Given the complexities of the junction operation and the impact that any queuing and delay has on upstream junctions, a series of options have been developed around a number of key themes. These have been appraised using Mott Macdonald's bespoke INSET tool which is similar to the Department for Transport's Early Assessment Sifting Tool.

INSET is a decision support tool that has been developed to quickly summarise and present evidence on options in a clear and consistent format. It provides decision makers with relevant, high level, information to help them form an early view of how options perform and compare.

The tool can be used to:

- help refine options by highlighting adverse impacts or unanticipated consequences;
- compare options, for example, within or across modes, geographical areas and networks;
- identify trade-offs between objectives aiding package development;
- filter the number of options, i.e. discount non-runners early on to ease the appraisal burden and avoid resources being spent unnecessarily; and identify key uncertainties in the analysis and areas where further appraisal effort should focus.

Following the INSET appraisal, options have been shortlisted for junction assessments using industry standard traffic engineering software to determine their operational performance.

5.2 Optioneering

The optioneering process has been based around the identification of a framework for assessing appraisal themes taking into account location specific themes centred around environmental, economic and social impact. Once the themes were developed, designs were then developed.

5.2.1 Appraisal Themes

The appraisal themes identified for the Rawtenstall Gyratory, and agreed with Rossendale Borough Council are shown below in **Table 43**. They relate to vehicular and non vehicular traffic and also include townscape and environmental impacts.

Table 43. Appraisal Themes Summary

Primary Themes	Sub Themes	Indicators
Congestion Relief	Improve Road Safety	Reducing rear end shunts

Primary Themes	Sub Themes	Indicators
		Reducing last minute lane changing
	Improve Bus Reliability	Reduction in bus journey times
		Reduction in bus operating costs
	Simplify wayfinding and traffic movements	Reduction in distance travelled
	Deliver environmental benefits	Reduction in CO2 and NOX emissions from queing and stationary traffic
	Improve journey time reliability	Improvements in day to day journey time reliability
		Reduction in peak spreading
Facilitate Bus Provision	Assist in reducing car dependency	Improvement in competiveness of the bus
	Prioritising bus access to station	Providjng bus priority to the station
	Maintain bus accessibility	Maintaining bus accessibility to communities around the Rawtenstall Gyratory
	Links to bus station upgrade	Compatibility with future bus proposals
	Make traversing the junction easier for large buses	Greater flexibility in use of bus fleet
Reduce severance and better cater for cyclists and pedestrians	Prioritise Non Motorised User movements and desire lines	Reduction in severance
	Simplify NMU crossing points	Increase in crossings catering for cyclists and pedestrians and visually impaired
	NMU safety	Reduction in cycle and pedestrian KSI's
	Access to heritage rail line	Walking and Cycling access to the East Lancasire Railway
	Doesn't prejudice access to local retail outlets	Maintain delivery/servicing access and custom from passing trade
Facilitate public realm enhancements	Creation of managed natural space	Accessible and usasble public space
	Fit with Rawtenstall townscape theme (aesthetics)	Scheme improves attractivenessof town centre
	Enhancement of existing public realm	Increase in landscaped areas
	Fit with heritage assets	Enhances the visual appearance of surrounding buildings

Primary Themes	Sub Themes	Indicators
	Supports existing local amenities	Increase in footfall to town centre through accessibility improvements

Of the above themes, congestion relief is considered to be the most important theme. It is noted however that the fifth sub theme in the congestion relief category can only be determined via junction capacity analysis and not via INSET.

5.2.2 Options

Option development using the Design Manual for Roads and Bridges (DMRB) has considered the following:-

- Existing adopted highway boundary extents,
- Key turning movements from traffic count data,
- Wayfinding and simplification of movements.

Sixteen options were developed, based around the following three concepts.

1. Do Minimum concept,
2. Roundabout concept,
3. Signalised corridor concept.

The sixteen options are described below in **Table 44**, along with their category of concept.

Table 44. Option Summary

Option ID	Option Description	Concept
Option 1	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Help with west to east movements. No right turn from Haslingden Rd into Bacup Rd	Do Minimum
Option 2	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Right turn from Haslingden Rd into Bacup Rd. Help with west to east movements.	Do Minimum
Option 3	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Right turn from Haslingden Rd into Bacup Rd. The exit to St Mary's Way is a continuous two lanes. Exit to Bacup Rd and uturn within gyratory are from a flare. Widening of southern gyratory section to accommodate additional ahead movement	Do Minimum
Option 4	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Right turn from Haslingden Rd into Bacup Rd (bus only). The exit to St Mary's Way is a continuous two lanes. Exit to Bacup Rd and uturn within gyratory are from a flare.	Do Minimum
Option 5	Converting the gyratory into a roundabout by creating two lanes along St Mary's Way (by removing the uturn within the gyratory and the right turn from Haslingden Rd into Bacup Rd).	Roundabout
Option 6	Converting the gyratory into a roundabout by creating two lanes along St Mary's Way (by removing the uturn within the gyratory). Right turn from Haslingden Rd to Bacup Rd buses only.	Roundabout
Option 7	Converting the gyratory into a roundabout by creating two lanes along St Mary's Way (the uturn with the gyratory remains whilst the right turn from Haslingden Rd to Bacup Rd is removed.	Roundabout
Option 8	Converting the gyratory into a roundabout by creating two carriage ways along St Mary's Way (the uturn with the gyratory remains whilst the right turn from Haslingden Rd to Bacup Rd remains but is bus only.	Roundabout
Option 9	Converting the gyratory into a four arm signalised crossroads, creating a link from Haslingden to Bocholt Road. Two continuous lanes will approach the crossroads from St Mary's Way. The uturn within the existing gyratory and the right turn from Haslingden Rd to Bacup Rd remain.	Signalised Corridor
Option 10	Converting the gyratory into a four arm signalised crossroads, creating a link from Haslingden to Bocholt Road. Two continuous lanes will approach the crossroads from St Mary's Way. The uturn within the existing gyratory is removed whilst the right turn from Haslingden Rd to Bacup Rd remains.	Signalised Corridor
Option 11	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Two continuous lanes run from St Mary's Way joining Haslingden Rd. The uturn within the existing gyratory is removed along with right turn from Haslingden Rd to Bacup Rd is removed.	Signalised Corridor

Option ID	Option Description	Concept
Option 12	New road from Haslingden Rd towards Bocholt Way through existing gyratory. Two continuous lanes run from St Mary's Way joining Haslingden Rd. The uturn within the existing gyratory is removed whilst the right turn from Haslingden Rd to Bacup Rd remains.	Signalised Corridor
Option 13	New road from Haslingden Rd to Bocholt Way though existing gyratory. Two continuous lanes run from St Mary's Way and join Bury Rd. The uturn within the existing gyratory along with the right turn from Haslingden Rd to Bacup Rd are removed.	Signalised Corridor
Option 14	Built new road from Haslingden Rd to Bocholt Way though existing gyratory. Two continuous lanes run from St Mary's Way and join Bury Rd. The uturn within the existing gyratory is removed whilst the right turn from Haslingden Rd to Bacup Rd remains.	Signalised Corridor
Option 15	Shorten Haslingden Rd so it joins Bury Rd opposite Paramatta St. Two continuous lanes run from St Mary's Way to join Bury Rd. The right turn from Haslingden Rd to Bacup Rd is restricted. 3 signalised nodes are present along Bury Road/St Mary's Way.	Signalised Corridor
Option 16	Use the existing uturn in the gyratory to join Haslingden Rd to Bury Rd. Two continuous lanes run from St Mary's Way joining Bury Rd. Vehicles can turn right from Haslingden Rd to Bacup Rd. 2 signalised nodes occur along Bury Rd / St Mary's Way.	Signalised Corridor

The sixteen options can be seen at **Appendix H**.

The derived options provide a complete set of options for the Rawtenstall Gyratory, from which to derive either a specific solution for the full Local Plan or an understanding of which concept works most efficiently. In addition, the options present a wide scope of variety in terms of the themes discussed in section 5.2.1, allowing for a robust consideration of which option(s) to consider further in the future.

Options 5 to 8 would require the relocation of the fire station, potentially to a location within the middle of the new roundabout included in these designs, and this is indicatively shown on options 5 and 6.

Options 9 to 16 would require the relocation of the fire station to a new location away from the junction entirely.

The high level costs for each option are listed below.

- Option 1 = £800,000,
- Option 2 = £900,000,
- Option 3 = £900,000,
- Option 4 = £900,000,
- Option 5 = £3,000,000,
- Option 6 = £3,200,000,
- Option 7 = £2,000,000,
- Option 8 = £2,200,000,
- Option 9 = £3,500,000,
- Option 10 = £3,500,000,
- Option 11 = £5,000,000,
- Option 12 = £5,500,000,
- Option 13 = £3,500,000,
- Option 14 = £3,700,000,
- Option 15 = £2,900,000,
- Option 16 = £3,000,000.

The value of works listed above is approximate only, and does not allow for any land purchase requirements, alterations to statutory undertakers equipment, earthworks over and above typical excavation or any unforeseeable construction requirments, including costs to relocate the fire

station. The layouts are subject to a detailed highway, signal and drainage design which may impact significantly on the costs.

5.3 INSET Appraisal

Following the options derivation an EAST style appraisal using the bespoke Mott Macdonald INSET tool was undertaken to understand based on all the derived themes (except improved travel time reliability, which can only be determined via capacity analysis) which of the options provided the most overall benefits.

An INSET appraisal works in a similar manner to the Department for Transport EAST approach however it allows for greater flexibility in relation to deriving location specific objectives and themes.

An in built Mulit Criteria Assessment approach using the following scoring system, is integral to the INSET tool.

- Large Negative,
- Small Negative,
- Neutral,
- Small Positive,
- Large Positive.

Each of the sub themes (except the travel time reliability) was scored using the above criteria and a summary overall score produced at the conclusion of the process. This enabled a ranking to be produced to understand which schemes score highest, whilst also enabling an understanding of which schemes perform well against specific themes.

In addition to the primary equally weighted assessment, three sensitivity assessments were undertaken by adjusting the weightings associated with the key themes. The three sensitivies were as follows;

1. Double the weight applied to ‘Congestion Relief’,
2. Double the weight applied to ‘Facilitation of Bus Provision’, and
3. Double the weight applied to ‘NMU Provision’ and ‘Public Realm Enhancements’.

The purpose of the sensitivity tests was to validate the first test and provide additional understanding of how each option performs under different criteria. If the same options are consistently scoring high under a range of sensitivity tests then a higher degree of confidence can be placed in their ability to meet key aims and objectives.

The derived rankings are shown in **Table 45** overleaf.

Table 45. INSET Ranking

Name	Concept	EQUAL WEIGHTINGS		ALTERNATIVE SCENARIO 1: [Congestion Relief]		ALTERNATIVE SCENARIO 2: [Facilitation of Bus Provision]		ALTERNATIVE SCENARIO 3: [NMU and Public Realm Enhancement]	
		Assessment score	*Rank*	*Assessment score*	*Rank*	*Assessment score*	*Rank*	*Assessment score*	*Rank*
Option 1	Do Minimum	**-0.20**	**16**	**-0.12**	**15**	**-0.36**	**15**	**-0.13**	**16**
Option 2	Do Minimum	**0.15**	**13**	**0.24**	**11**	**0.12**	**11**	**0.10**	**13**
Option 3	Do Minimum	**0.40**	**6**	**0.52**	**5**	**0.44**	**5**	**0.27**	**10**
Option 4	Do Minimum	**0.20**	**10**	**0.32**	**8**	**0.16**	**10**	**0.13**	**12**
Option 5	Roundabout	**-0.10**	**14**	**-0.12**	**14**	**-0.28**	**14**	**0.07**	**14**
Option 6	Roundabout	**0.30**	**8**	**0.28**	**9**	**0.28**	**6**	**0.33**	**8**
Option 7	Roundabout	**-0.20**	**15**	**-0.20**	**16**	**-0.36**	**16**	**-0.07**	**15**
Option 8	Roundabout	**0.20**	**10**	**0.20**	**12**	**0.20**	**9**	**0.20**	**11**
Option 9	Signalised Corridor	**0.40**	**6**	**0.40**	**7**	**0.24**	**7**	**0.53**	**6**
Option 10	Signalised Corridor	**0.80**	**1**	**0.80**	**1**	**0.80**	**1**	**0.80**	**1**
Option 11	Signalised Corridor	**0.45**	**5**	**0.48**	**6**	**0.24**	**7**	**0.60**	**5**
Option 12	Signalised Corridor	**0.75**	**2**	**0.72**	**2**	**0.72**	**2**	**0.80**	**2**
Option 13	Signalised Corridor	**0.25**	**9**	**0.28**	**9**	**0.08**	**12**	**0.37**	**7**
Option 14	Signalised Corridor	**0.65**	**3**	**0.68**	**3**	**0.64**	**3**	**0.63**	**3**
Option 15	Signalised Corridor	**0.15**	**12**	**0.12**	**13**	**0.00**	**13**	**0.30**	**9**
Option 16	Signalised Corridor	**0.65**	**3**	**0.68**	**4**	**0.64**	**4**	**0.63**	**3**

The thematic assessment results presented in **Table 45** above identified the highest scoring options as follows;

1. Option 10,
2. Option 12,
3. Option 14 and 16,
5. Option 11.

It is noted that each of the above options are all from the signalised corridor concept; the highest roundabout concept scored a ranking of 8, and the highest Do Minimum concept scored a ranking of 6.

In addition to the above, it is also noted that the above options continue to score high in the assessment in each of the alternative assessments, with adjusted weightings.

The analysis therefore demonstrates that the provision of a signalised corridor offers the highest scores in terms of meeting key theme and sub-theme objectives.

The signalised corridor options provide greater volumes of land for enhancement of the public realm, whilst also providing added or enhanced safety for pedestrians. In addition, they create the ability to accommodate better desire lines for non motorised users.

In order to understand the operation of these options, the two highest scoring signalised corridor schemes from the INSET analysis as well as the highest scoring Do Minimum and Roundabout concepts were taken forward for further analysis.

5.4 Shortlisted Options

As noted above, the shortlisted options included two from the signalised corridor concept, which were the highest scoring overall, and the highest scoring design from each of the other two concepts (Roundabout and Do Minimum). This approach allowed for an understanding of which layout type was best suited to accommodate the additional traffic demand from the full build out of the Local Plan.

Three options were selected for operational assessment, these are as follows;

- Option 3 – Do Minimum Concept,
- Option 6 – Roundabout Concept, and
- Option 12 – Signalised Corridor Concept.

5.4.1 Option 3

The results for Option 3 can be found in **Tables 46** to **48** overleaf. The results also contain outputs for junctions 3 and 4, as they are part of the St Mary's Way corridor and as noted earlier in this report, their operation is tied to that of the Rawtenstall Gyratory (J1).

Table 46. Junction 1 Rawtenstall Gyratory Morning and Evening Peak Analysis Results – Option 3

	2034 AM Opt 3		2034 PM Opt 3	
Lane Description	**DoS (%)**	**MMQ (pcu)**	**DoS (%)**	**MMQ (pcu)**
Gyratory East Appproach Circulatory R/A/L	98.5%	29.8	92.5%	13.8
Gyratory East Appproach Circulatory Right	53.3%	7.0	57.8%	5.5
A681 Bocholt Way Approach Ahead Left	98.6%	30.9	89.2%	12.6
Bury Rd Approach Left	51.8%	2.7	59.5%	2.8
Gyratory South Approach Circulatory Ahead	74.8%	16.2	63.4%	9.2
Gyratory South Approach Circulatory A/R	86.3%	21.9	104.2%	62.3
Gyratory South Approach Circulatory Right	59.3%	5.9	111.0%	73.4
A682 Approach U-Turn Left	79.0%	11.1	84.6%	16.8
A682 Approach Left	12.7%	0.3	16.6%	0.6
McDonald's Approach Left	70.7%	8.3	76.4%	9.9
Haslingden Rd Approach Left Ahead	61.9%	11.5	79.3%	13.7
Haslingden Rd Approach Ahead	22.3%	0.3	38.9%	1.9
Schofield Rd Approach Left	45.0%	0.4	46.0%	0.4
Gyratory West Circulatory Left	48.0%	4.6	68.6%	5.8
Gyratory West Circulatory Ahead Right	55.1%	3.1	64.5%	3.9
Gyratory West Circulatory Right	16.0%	0.1	29.8%	0.2
Gyratory North Ahead Left	17.5%	0.1	27.1%	0.2
Gyratory North Ahead	42.4%	0.4	50.1%	0.5
Gyratory North Ahead	84.2%	18.3	85.9%	14.6
Ahead	98.5%	0.0	19.8%	0.1
St Mary's Terrace Approach Left	53.3%	29.8	92.5%	13.8

Table 47. Junction 3 St Mary's Way, Bank St, Asda Morning and Evening Peak Analysis Results – Option 3

	2034 AM Opt 3		2034 PM Opt 3	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 St Mary's Way North Approach Left Ahead	44.9%	2.7	35.4%	3.4
A682 St Mary's Way North Approach Ahead Right	65.1%	5.2	63.6%	12.3
Bank St Approach Right Left Ahead	51.9%	2.7	79.6%	8.5
St Mary's Way NB Approach Ahead Left	38.1%	7.4	81.0%	19.9
St Mary's Way NB Approach Ahead Right	52.5%	6.7	84.1%	14.5
Asda Store Approach Left Ahead Right	68.5%	6.0	85.0%	7.1

Table 48. Junction 4 Tup Bridge Junction St Mary's Way Morning and Evening Peak Analysis Results – Option 3

	2034 AM Opt 3		2034 PM Opt 3	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 Burnley Rd Approach Left Ahead	97.9%	24.4	71.3%	13.4
A682 Burnley Rd Approach Right Ahead	99.5%	31.1	71.6%	13.6
Newchurch Rd Approach Right Ahead Left	110.4%	73.8	103.1%	32.0
A682 St Marys Way South Approach Ahead Left	74.5%	9.8	95.7%	24.9
A682 St Marys Way South Approach Ahead Right	82.3%	9.2	97.6%	18.8
Haslingden Old Rd Approach Left Ahead Right	119.0%	41.5	100.9%	26.0
A682 St Mary's Way Asda Store North Approach Ahead	22.9%	0.8	15.9%	0.4
A682 St Mary's Way Asda Store North Approach Ahead	34.8%	1.8	31.0%	0.7
A682 St Mary's Way Asda Store South Approach Ahead Left	18.2%	0.1	36.5%	2.6
A682 St Mary's Way Asda Store South Approach Ahead	25.2%	0.2	32.4%	1.6
Asda Store Approach Left Right	0.0%	0.0	0.0%	0.0

The results for the Option 3 analysis have been compared against those for the 2034 Reference Case and original Local Plan results presented in Chapter 4.

The comparisons show that the proposed Do Minimum scheme provides a significant overall improvement to the forecast operation of the junction when comparing against the Local Plan scenario results, in both the morning and evening peaks.

When comparing against the 2034 Reference Case results it is noted that the operation shows markedly similar performance in some locations, improvement in others and a potential worsening in others, as such it can be stated that the assessed Do Minimum scheme has the ability to accommodate the majority of Local Plan demand up to 2034, however specific trigger points would need to be identified .

It is recommended therefore that this scheme be considered as a low cost option for accommodating the Local Plan.

5.4.2 Option 6

The results for Option 6 can be found in **Tables 49** to **51** overleaf. The results also contain outputs for junctions 3 and 4, as they form part of the St Mary's Way corridor and as noted earlier in this report, their operation is tied to that of the Rawtenstall Gyratory (J1).

Table 49. Junction 1 Rawtenstall Gyratory Morning and Evening Peak Analysis Results – Option 6

	2034 AM Opt 6		2034 PM Opt 6	
Lane Description	**DoS (%)**	**MMQ (pcu)**	**DoS (%)**	**MMQ (pcu)**
Gyratory East Appproach Circulatory Right Left Ahead	118.20%	92.5	148.20%	146.7
Gyratory East Appproach Circulatory Right	28.80%	2.6	44.20%	3.2
A681 Bocholt Way Approach Ahead Left	218.30%	381.9	153.80%	247.6
Bury Rd Approach Left	85.60%	7.5	110.10%	46.9
Gyratory South Approach Circulatory Ahead Ahead2	50.60%	0.5	50.70%	0.5
Gyratory South Approach Circulatory Ahead	16.10%	0.1	16.30%	0.1
Gyratory South Approach Circulatory Ahead	13.80%	0.1	16.20%	0.1
A682 Approach U-Turn Left	107.50%	26	81.00%	13.6
A682 Approach Left	100.60%	15.8	69.10%	12.4
McDonald's Approach Left	11.70%	0.3	17.50%	0.6
Haslingden Rd Approach Ahead	104.60%	90.9	158.80%	236.7
Gyratory Connector Ahead	33.90%	0.3	36.40%	0.3
Gyratory Connector U-Turn Right	14.00%	0.1	10.40%	0.1
Gyratory Connector U-Turn	0.70%	0	0.40%	0
Gyratory Link to A682 Ahead Right	33.30%	4.7	55.80%	9.9
Gyratory Link to A682 Right	24.70%	2.7	40.70%	5.7
Gyratory Link to A682 Right	8.20%	1	14.90%	2.4

Table 50. Junction 3 St Mary's Way, Bank St, Asda Morning and Evening Peak Analysis Results – Option 6

	2034 AM Opt 6		2034 PM Opt 6	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 St Mary's Way North Approach Left Ahead	19.20%	3.5	38.20%	1.7
A682 St Mary's Way North Approach Ahead Right	68.90%	13.1	147.50%	126.2
Bank St Approach Right Left Ahead	37.20%	1.9	98.90%	14.4
St Mary's Way NB Approach Ahead Left	60.40%	10.5	171.20%	172
St Mary's Way NB Approach Ahead Right	61.10%	4.3	97.60%	25.9
Asda Store Approach Left Ahead Right	71.40%	4.9	71.00%	4.5

Table 51. Junction 4 Tup Bridge Junction St Mary's Way Morning and Evening Peak Analysis Results – Option 6

	2034 AM Opt 6		2034 PM Opt 6	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 Burnley Rd Approach Left Ahead	102.20%	23.1	55.40%	8.2
A682 Burnley Rd Approach Right Ahead	177.00%	224.2	77.50%	13.6
Newchurch Rd Approach Right Ahead Left	150.90%	193.9	124.20%	84
A682 St Marys Way South Approach Ahead Left	80.00%	13.4	72.20%	8.8
A682 St Marys Way South Approach Ahead Right	56.90%	4.6	225.00%	174
Haslingden Old Rd Approach Left Ahead Right	105.20%	23.2	110.60%	40.5
A682 St Mary's Way Asda Store North Approach Ahead	9.30%	0.2	9.30%	0.6
A682 St Mary's Way Asda Store North Approach Ahead	32.20%	1.4	39.00%	5.8
A682 St Mary's Way Asda Store South Approach Ahead Left	30.90%	1.2	28.80%	3.7
A682 St Mary's Way Asda Store South Approach Ahead	18.10%	0.6	34.00%	3.6
Asda Store Approach Left Right	1.70%	0.1	1.70%	0.1

The results for the Option 6 analysis have been compared against those for the 2034 Reference Case and original Local Plan results presented in Chapter 4.

The comparisons show that the proposed scheme provides limited operational relief to the performance of the junction when compared to the 2034 Local Plan scenario results, and therefore does not fully mitigate the Local Plan impacts when compared to the 2034 Reference Case results.

The junction which replaces the gyratory operates with very large predicted queues on the Haslingden Way and Bocholt Way approaches, which are notably worse than in the Reference Case position.

This option is not considered able to accommodate the build out of the Local Plan to 2034.

5.4.3 Option 12

The results for Option 12 can be found in **Tables 52** to **54** overleaf. The results also contain outputs for junctions 3 and 4, as they form part of the St Mary's Way corridor and as noted earlier in this report, their operation is tied to that of the Rawtenstall Gyratory (J1).

Table 52. Junction 1 Rawtenstall Gyratory Morning and Evening Peak Analysis Results – Option 12

	2034 AM Opt 3		2034 PM Opt 3	
Lane Description	**DoS (%)**	**MMQ (pcu)**	**DoS (%)**	**MMQ (pcu)**
A681 Bocholt Way Approach Left Ahead	85.7%	14.4	91.3%	16.1
A681 Bocholt Way Approach Right	97.2%	23.3	100.5%	24.1
Bury Rd Approach Left Ahead	91.0%	8.0	84.4%	7.0
Bury Rd Approach Ahead	90.6%	8.5	107.5%	18.9
Bury Rd Approach Right	75.2%	5.4	89.5%	8.5
A682 Approach Left	55.7%	6.6	84.0%	16.5
A682 Approach Left	48.6%	6.0	79.4%	16.0
A682 Approach Ahead Right	99.3%	23.3	100.2%	34.1
McDonald's Approach Right Left	7.6%	0.0	7.1%	0.0
Haslingden Rd Approach Ahead	56.1%	11.5	68.0%	12.1
Haslingden Rd Approach Ahead Right	78.4%	18.3	74.3%	10.8
Haslingden Rd towards St Mary's Way Ahead	25.0%	0.1	39.2%	0.2
Connecting Arm North Left	58.7%	4.6	60.7%	11.7
Connecting Arm North Right	67.0%	8.3	61.5%	10.7
Connecting Arm North Right	69.8%	9.5	79.0%	4.2
Connecting Arm South Left Ahead Right	97.7%	21.4	96.5%	24.2
Connecting Arm South Right	93.4%	11.0	93.6%	17.5
St Mary's Way towards Haslingden Rd Left	76.9%	13.1	74.7%	11.8
St Mary's Way towards Haslingden Rd Ahead	49.5%	8.7	64.3%	10.4
St Mary's Terrace Approach Left	23.7%	0.2	45.0%	0.4

Table 53. Junction 3 St Mary's Way, Bank St, Asda Morning and Evening Peak Analysis Results – Option 12

	2034 AM Opt 12		2034 PM Opt 12	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 St Mary's Way North Approach Left Ahead	46.4%	2.8	42.5%	8.2
A682 St Mary's Way North Approach Ahead Right	69.0%	5.7	60.8%	11.9
Bank St Approach Right Left Ahead	51.9%	2.7	88.3%	10.3
St Mary's Way NB Approach Ahead Left	45.3%	9.1	83.5%	21.7
St Mary's Way NB Approach Ahead Right	52.5%	5.5	84.9%	15.3
Asda Store Approach Left Ahead Right	65.7%	5.8	85.0%	7.1

Table 54. Junction 4 Tup Bridge Junction St Mary's Way Morning and Evening Peak Analysis Results – Option 12

	2034 AM Opt 12		2034 PM Opt 12	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A682 Burnley Rd Approach Left Ahead	98.1%	25.2	72.6%	15.8
A682 Burnley Rd Approach Right Ahead	99.0%	29.9	65.7%	12.8
Newchurch Rd Approach Right Ahead Left	110.4%	74.4	105.0%	38.6
A682 St Marys Way South Approach Ahead Left	63.5%	6.3	97.8%	32.1
A682 St Marys Way South Approach Ahead Right	62.6%	8.6	99.0%	21.2
Haslingden Old Rd Approach Left Ahead Right	126.8%	53.9	105.2%	35.2
A682 St Mary's Way Asda Store North Approach Ahead	23.4%	1.0	20.2%	2.3
A682 St Mary's Way Asda Store North Approach Ahead	35.8%	4.9	28.5%	3.7
A682 St Mary's Way Asda Store South Approach Ahead Left	19.9%	0.2	39.3%	0.4
A682 St Mary's Way Asda Store South Approach Ahead	23.6%	0.2	32.1%	0.3
Asda Store Approach Left Right	0.0%	0.0	0.0%	0.0

The results for the Option 12 analysis have been compared against those for the 2034 Reference Case and original Local Plan results presented in Chapter 4.

The comparisons show that the proposed signalised corridor scheme is able to provide an overall improvement to the operation of the St Mary's Way corridor compared to the 2034 Local Plan scenario. In addition, the results also compare favourably with the 2034 Reference Case scenario outputs as well, thereby demonstrating the ability of this layout to accommodate the full build out of the Local Plan.

Specificially, the improvement in performance is noted to be greatest in the evening peak.

The operation of this proposed layout is primarily controlled by the efficient operation of the connecting links between the Haslingden Way approach and the Rawtenstall Spur / Bocholt Way approaches. In order to ensure the efficient operation of these links it is recommended that should the design for this layout be progressed further, consideration should be given to the use of a linked signal system, such as MOVA or SCOOT, to maximise the abilites of this layout.

Further consideration would also need to be given to the Bocholt Way approach and the Paramatta bridge to determine how a new bridge could be constructed with sufficient capacity.

Paying due cognisance to the above, it is recommended therefore that this scheme be considered as a high cost option for accommodating the full Local Plan.

5.5 Options Summary

The process adopted by Mott Macdonald for the Rawtenstall Gyratory has resulted in sixteen options being derived for the junction. All sixteen options have been assessed using a thematic appraisal approach to determine their abilities to meet a series of objectives relating to Townscape, Public Realm and Safety amongst others. The options have been derived based around three separate concepts; Do Minimum, Roundabout and Signalised corridor.

It is recommended that all sixteen options should be interrogated further if and when the need to directly consider upgrade and intervention to the junction exists. The variety of options presented, provides Lancashire County Council (as the highway authority) with the ability to determine which layout (or hybrid version of layouts) best suits their own strategies and funding approaches.

The purpose of this study has been to demonstrate that the ability exists to accommodate the full build out of the Local Plan, thereby providing an appropriate evidence base for the plan consultation process.

The operational assessment results for each junction demonstrate that the Do Minimum concept, and option 3 specifically, and the signalised corridor concept, option 12 specifically, provide additional capacity with which to accommodate the full build out of the proposed Local Plan or a significant proportion of it.

As well as the capacity results presented in the previous tables for options 3 and 12, additional information pertaining to summary practical reservce capacity and overall delay has also been extracted from the models to further demonstrate the improvements provided by the proposed high cost option. The DoS and MMQ results are sufficient for demonstrating the comparison against the Reference Case scenario to determine that the mitigation is appropriate in NPPF terms. The prc and delay information helps to further relate the benefits of the scheme.

Table 55 overleaf show the summary statistics of each demand scenario with a comparison against the high cost option 12 and low cost option 3.

Table 55. All Scenario Summary Statistics – High Cost Option 12 Comparison

Scenario	PRC (%)	Delay (pcu/Hr)	Scenario	PRC (%)	Delay (pcu/Hr)
2019 AM	-7.5	110.99	2019 PM	-5.8	123.7
2024 AM Ref Case	-11	133.24	2024 PM Ref Case	-11	143.73
2024 AM LP	-19.3	195.7	2024 PM LP	-15	195.09
2034 AM Ref Case	-16.5	194.83	2034 PM Ref Case	-17.3	193.85
2034 AM LP	-60.9	506.87	2034 PM LP	-47.2	466.63
2034 AM LP with Mitigation (opt 3)	-32.2	247.95	2034 PM LP with Mitigation (opt 3)	-23.3	279.16
2034 AM LP with Mitigation (opt 12)	-30.9	286.75	2034 PM LP with Mitigation (opt 12)	-19.5	296.79

6 Further Mitigation Solutions

6.1 Preamble

The summary table presented in section 4.4 identifies eight further locations that require consideration in relation to the operational results presented in Chapter 4.

The eight locations are as follows;

- Junction 5a – Tesco Haslingden Road / A56,
- Junction 6 – A56 Rising Bridge,
- Junction 8 – Grane Rd/Holcombe Rd,
- Junction 9a – Grane Rd/A56 Off-slip,
- Junction 11 – Rochdale Rd/Bury Rd Edenfield,
- Junction 13 – Waterfoot roundabout,
- Junction 14 – Toll Bar roundabout, and
- A682/A56 SB Merge.

Schemes were developed for each location based on a number of factors including the availability of land within the highway boundary,pedestrian and cycling requirements and 'fit' with the local townscape, as well as review of the existing and forecast traffic issues at the junctions based on results presented in Chapter 4.

The proposed improvement schemes for each of the eight locations can be found at **Appendix I**.

6.2 Junction 5a – Tesco Haslingden Road/ A56

Junction 5a provides access to Haslingden, the Tesco superstore and also links to the A56. The results presented in Chapter 4 forecast that some of the arms of the existing roundabout would operate over capacity in the 2034 Reference Case and this would be further exacerbated by local plan growth. Based on the forecast issues identified, seven varying upgrade schemes have been identified.

The seven options for upgrade are described below in **Table 56**.

Table 56. Junction 5a Options

Option	Advantages	Disadvantages
Option 1 provides a left turn free flow slip road from Manchester Rd N to Haslingden Rd.	Provides a scheme for one of the larger turn movements at the junction	Requires third party land and would blight a number of local properties or require demolition
Option 2 provides an extended flare from the A56 off-slip, as well as rationalising the junction circulatory and altering the exit alignment slightly toward the A56 Haslingden Junction (5b).	Minimises the chances of blocking back to A56 mainline	Gas pipeline affected, and potentially difficult for HGV to traverse the junction from the widened section of carriageway
Option 3 provides a 5 arm signalised junction	Provides a good opportunity to control traffic to suit LCC and RBCs aims	Similar to layout which existed prior to the construction of the roundabut to accommodate the Tesco's supermarket. The number of phases/stages would limit the ability to accommodate increased traffic volumes because of reduced green times

Option	Advantages	Disadvantages
Option 4 creates a new link under the A680 Manchester Rd for Tesco sole access, forming a 3 arm signalised junction with Haslignden Rd. The Tesco roundabout becomes a 4 arm priority controlled roundabout	Reduces traffic volumes at the existing roundabout. Provides a dedicated Tesco access. Potentially provides access to new development opportunities such as land at Sykeside site	Engineering challenges because of headroom requirements under Haslingden Road. Third party land would be required , and would be a costly scheme
Option 5 creates a new link under the A680 Manchester Rd for Tesco sole access, forming a 3 arm signalised junction with Haslignden Rd. The Tesco roundabout becomes a 4 arm signal controlled junction	Reduces traffic volumes at junction 5a. Provides a dedicated Tesco access. Potentially provides access to new development opportunities such as land at Sykeside site	Engineering challenges because of headroom requirements under Haslingden Road. Third party land would be required , and would be a costly scheme
Option 6a provides a larger roundabout and an additional lane on the A56 off-slip. Improved crossing provided on the A56 off-slip	Maintains existing junction control type and formalises existing uncontrolled crossing on A56. Reduces chance of blocking back to A56	3 lane pedestrian crossing on A56 at setback location may delay traffic on A56. May not be on pedestrian desire line. Requires third party land
Option 6b provides a larger roundabout. Improved crossing provided on the A56 off-slip	Maintains existing junction control type and formalises existing uncontrolled crossing on A56.	Setback crossing point may still result in NMUs crossing at the junction access point. May delay A56 off-slip traffic. Requires third party land.

Based on the above the Option 6b layout was selected as the most appropriate for further consideration. The high level cost of the scheme is £1,500,000.

The proposed improvement schemes for each of the seven options can be found at **Appendix I**.

The value of works listed above is approximate only, and does not allow for any land purchase requirements, alterations to statutory undertakers equipment, earthworks over and above typical excavation or any unforeseeable construction requirments. The layouts are subject to a detailed highway, signal and drainage design which may impact significantly on the costs.

Table 57 below shows the results for the selected option 6b improvement.

Table 57. Junction 5a Haslingden Road, Tesco's Morning and Evening Peak Results – Option 6b

	2034 AM LP Opt 6b			2034 PM LP Opt 6b		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
A680 Manchester Rd S	1.06	0.51	A	1.71	0.63	A
Tesco	0.36	0.27	A	0.9	0.47	A
A56 Off-Slip	1.41	0.58	A	2.21	0.69	A
A680 Manchester Rd N	6.99	0.89	D	9.74	0.93	F
A681 Haslingden Rd E	5.42	0.85	C	16.9	0.98	F

The results in **Table 57** above demonstrate that the option 6b scheme would return the operation of the junction to that of the the 2034 Reference Case and would therefore fully mitigate local plan growth in both the morning and evening peak periods. .

6.3 Junction 6 – Rising Bridge Junction

Junction 6 provides an interface between the SRN and the local highway network. Upgrades to the junction were recently provided by Highways England, to the benefit of the A56 and A680. The analysis presented in Chapter 4 demonstrated that a further upgrade scheme might be necessary to accommodate full Local Plan growth by 2034. The scheme has been derived to ensure it would not prejudice the delivery of a larger scheme Highways England may wish to deliver in the future as a part of a future expressway intiative.

The scheme involves provision of an extended flare length on the A56 southbound approach and a dedicated left turn flare on the A56 northbound approach. Spiral markings have also been provided to aid traffic flow on the junction circulatory, and can be seen in **Appendix I**.

The provision of the dedicated left turn lane would likely require land outside of the existing highway boundary.

The high level cost of the proposed scheme is £1,000,000. The value of works is approximate only, and does not allow for any land purchase requirements, alterations to statutory undertakers equipment, earthworks over and above typical excavation or any unforeseeable construction requirments. The layouts are subject to a detailed highway, signal and drainage design which may impact significantly on the costs.

Table 58 below shows the results for the proposed improvement scheme, and the scheme drawing can be found at **Appendix I**.

Table 58. Junction 6, A56 Rising Bridge 2034 Local Plan Growth- Morning and Evening Peak – Upgrade Option

	2034 Local Plan AM		2034 Local Plan PM	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
A56 SB Entry Ahead	91.1%	19.4	89.2%	17.5
A56 SB Entry Ahead	79.0%	13.6	69.8%	10.2
Blackburn Road WB Entry Left Left2	91.3%	9.2	88.8%	8.4
A56 NB Ahead	89.0%	13.6	80.9%	10.1
A56 NB Ahead	82.7%	15.7	74.0%	12.0
Blackburn Road EB Entry U-Turn Left	98.2%	8.6	92.9%	9.6
A56 NB Exit Ahead	87.4%	19.5	77.6%	6.5
A56 NB Exit Ahead	82.8%	3.1	77.7%	2.4

	2034 Local Plan AM		2034 Local Plan PM	
Circulatory North Right	90.6%	9.3	85.2%	8.7
Circulatory North Right	74.8%	6.3	82.9%	8.6
Circulatory East Right	80.1%	2.9	77.0%	2.7
Circulatory East Right Right2	91.5%	23.1	88.8%	21.2
Circulatory South Right	77.3%	7.0	69.6%	6.0
Circulatory South Right	61.8%	5.6	43.5%	4.0
Circulatory West Ahead	76.4%	5.3	69.7%	4.4
Circulatory West Ahead Right	88.4%	7.3	79.5%	5.0

The results in **Table 58** above demonstrate that the operation of the junction has been appropriately mitigated in relation to a comparison against the Reference Case results with all arms operating within practical design capacity.

As with the main scenario results presented in chapter 4 for this junction, on-site signal timing data will need to be checked in order to determine the applicability of the phase/stage structure utilised within the LinSig model.

6.4 Junctions 8 and 9a – Grane Road/Holcombe Road & Grane Road / A56 Off Slip

Junctions 8 and 9a are located on the Grane Road corridor, and two separate issues have been identified from the junction assessment analysis. These are as follows;

- Junction 8 – Additional delay on Holcombe Road for both right and left turning traffic.
- Junction 9a – Additional delay for both right and left turning traffic from the A56 off-slip.

Three separate schemes have been derived to address these concerns.

At junction 8, three options have been derived, these are described as follows and can been seen at **Appendix I**;

1. Three arm signalised junction – seeks to realign the junction layout to maintain access from the cemetery.
2. Three arm priority controlled junction, with priorities refined to benefit the Holcombe Rd traffic stream.
3. Three arm signalised junction maintaining the existing junction arrangement and providing treatment and accommodation for the cemetery access.

Option 1 provides reduced capacity for the eastbound Grane Road movement and was therefore rejected on that basis.

Option 2 provides improvements to the Holcombe Road movements, but a notable disbenefit to the Grane Rd westbound movement, and was rejected on that basis.

Option 3 provides a signalised layout utilising the existing geometries of the junction. The cemetery arm of the junction requires consideration in the form of a demand dependent signal stage for whenever a vehicle seeks to egress that arm of the junction. It is considered that this arm could not be left as a priority arrangement as conflict with signal controlled traffic movements in the middle of the junction could occur. However, as the scheme develops this could be considered further if appropriate treatment for the cemetery access can be determined. Option 3 has been selected for further consideration .

At Junction 9a two separate schemes have been identified. These are as follows;

4. Signalisation of junction 9b, the A56 on-slip/Waterside Rd junction. This would potentially neccessitate the closure of the Highfield Care Home access in order to adequately provide a signalised scheme. It is possible that a demand dependent stage associated with the care home could be incorporated into the design, however this would require the consideration of LCC in relation to locally suitable highway design standards.
    - The potential alternative access for the care home has been identified as being from the Highfield Park road to the south of the site. It is recommended that further consideration on the feasibility of this access arrangement will need to take place as the plan progresses. **Figure 22** below shows the potential new access location.
5. The existing Jubilee Road bus stop located on Grane Rd to the west of the A56 would be relocated to a location approximately 60m further to the west. This is because traffic is forecast to block back from this bus stop whenever a stationary bus is present and there are not enough gaps in opposing traffic to manoeuvre around the bus.

Figure 22: Potential Highfield Park Access to the Highfield Care Home

The recorded demand for the care home is of the order of 3 or 4 vehicles in each peak, as per the LCC surveys.

At the time of writing the land ownership for the proposed access is unknown, and consultation with the owners of the care home would be required to understand views associated with altered access arrangements from their commercial perspective.

The high level costs for each of the three selected schemes is as follows;

- Grane Rd/Holcombe Rd signalisation (option 3) = £600,000
- Grane Rd/Waterside Rd signalisation (option 4) = £850,000
- Relocation of Jubilee Rd bus stop (option 5) = £25,000

The scheme drawings for the above can be found at **Appendix I**.

Table 59 below shows the results for the proposed improvement schemes.

Table 59. Junctions 8, 9a and 9b Grane Road Corridor Upgrade Option Results

From	To	2034 AM LP		2034 PM LP	
		LoS	VehDelay (secs)	LoS	VehDelay (secs)
A56 Off-slip	Grane Rd Westbound	A	9.41	D	35.44
A56 Off-slip	Grane Rd Eastbound	A	9.48	D	31.07
Grane Rd Eastbound	A56 On-slip	A	6.77	A	8.25
Grane Rd Eastbound	Waterside Rd	A	3.76	A	4.86
Grane Rd Eastbound	Care Home Access	N/A	N/A	N/A	N/A
Waterside Rd	Grane Rd Eastbound	C	25.95	C	35.34
Waterside Rd	Grane Rd Westbound	C	25.34	D	37.6
Waterside Rd	Care Home Access	N/A	N/A	N/A	N/A
Grane Rd Westbound	A56 On-slip	B	11.02	B	11.94
Grane Rd Westbound	Care Home Access	N/A	N/A	N/A	N/A
Grane Rd Westbound	Waterside Rd	B	12.29	B	13.34
Holcombe Road	Grane Road Eastbound	D	50.09	D	39.52
Holcombe Road	Grane Rd Westbound	D	44.34	D	37.91
Grane Road Eastbound	Holcombe Road	C	24.51	C	33.13
Grane Rd Westbound	Holcombe Road	B	15.26	B	16.71

The results presented in **Table 59** demonstrate that theproposed highway capacity measures at the Grane Rd / Holcombe Rd junction and the Grane Rd / A56 off-slip junction will mitigate the impact of local plan growth.

It is also noted that there would be a small increase in delay on the Grane Road arms of the junction as a result of the introduction of signals. This has been accommodated by testing each arm with an early release (indicative arrow) phase for the right turn movements, and by reducing the minor arms (Waterside Rd and Holcombe Rd) to their minimum green times.

6.5 Junction 11 – Rochdale Rd/Bury Rd Edenfield

The Rochdale Rd / Bury Rd junction in Edenfield was noted to be operating over capacity on the Rochdale Rd arm of the junction in the morning and the Bury Rd South arm in the evening, in the 2034 Local Plan scenario. It should be noted, as is stated in Chapter 4, that those results are providing an over exaggerated understanding of the forecast operation of the junction, due the assessment methodology adopted, in particular the distribution and assignment element.

Consideration has been given to the formalisation of the existing uncontrolled crossing on the Bury Rd North arm of the junction into a demand controlled signalised crossing. This has been tested in the ARCADY model and the results are provided in **Table 60** overleaf.

Table 60. Junction 11 Rochdale Road / Market Street Edenfield Upgrade Option Results

	2034 AM LP			2034 PM LP		
Lane Description	**Q (pcu)**	**RFC**	**LoS**	**Q (pcu)**	**RFC**	**LoS**
Bury Rd North	9.09	0.92	E	1.63	0.63	A
Rochdale Rd	27	1.04	F	3.72	0.8	C
Bury Rd South	2.63	0.73	C	54.0	1.11	F

The results in **Table 60** demonstrate that provision of a formalised signalised crossing could provide some benefit to the operation of the Bury Rd South arm of the junction, particularly during the evening peak when delay is noted to be at its worst.

It is noted that the Rochdale Rd (morning peak) and Bury Rd South (evening peak) arms are still operating over capacity compared to the Reference ase position. This would suggest that further mitigation measures are required in order to deliver the Local Plan up to 2034.

In order to determine the level of Local Plan demand that the junction can accommodate, analysis has been undertaken to adjust the Local Plan traffic volumes, which have found that at 2034 the following additional demand in **Table 61** can be accommodated at the junction, by turn movement. This analysis has been undertaken using the proposed controlled crossing version of the model reported in **Table 60** above.

Table 61. Junction 11 Rochdale Road / Market Street Edenfield Demand Accomodation

	2034 AM LP			2034 PM LP		
Lane Description to from	Bury Rd North	Rochdale Rd	Bury Rd South	Bury Rd North	Rochdale Rd	Bury Rd South
Bury Rd North	N/A	28	105	N/A	33	75
Rochdale Rd	48	N/A	2*	20	N/A	7*
Bury Rd South	99	7*	N/A	74	4*	N/A

* Unadjusted values

The demands shown in **Table 61** above can be accommodated by the junction if the proposed crossing upgrade is implemented. Any further demand beyond those values shown reduces the performance of the junction away from that of the 2034 Reference Case position.

Any further mitigation solutions considered valid for this junction should only be determined in consultation with LCC, given the extremely land locked nature of the junction and it's proximity to a number of residential units.

6.6 Junction 13 – Waterfoot roundabout

The Waterfoot roundabout is a constrained junction providing access to the Waterfoot area, as well as east-west access through Rossendale. The results presented in Chapter 4 demonstrate that the junction is forecast to operate over capacity in both the 2034 Reference Case and Local Plan scenarios.

It is also noted that forecast levels of queuing are predicted to be very unequal on each of the three approach arms of the junction, with a consequential impact on reliability that is likely to vary on a day to day basis.

Paying due cognisance to the land locked nature of the junction, the presence of the the River Irwell and the proximity of a number of retail and commercial frontage buildings, a scheme has been developed which seeks to manage the forecast queues more efficiently creating a balanced level of queues on each approach to reduce junction unreliability and overall delay.

A signalised scheme has been derived for the junction and can be seen at **Appendix I**. The high level cost of the proposed scheme is £800,000. The value of works is approximate only, and does not allow for any land purchase requirements, alterations to statutory undertakers equipment, earthworks over and above typical excavation or any unforeseeable construction requirments. The layouts are subject to a detailed highway, signal and drainage design which may impact significantly on the costs.

Table 62 below shows the results of the proposed junction upgrade.

Table 62. Junction 13 Waterfoot Roundabout Morning and Evening Peak Results – Upgrade Option

	2034 AM Upgrade		2034 PM Upgrade	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
Burnley Rd East	87.4%	14.0	94.7%	15.3
Bacup Rd East	89.6%	23.4	66.6%	12.7
Bacup Rd West	79.7%	17.6	96.6%	34.7

The results in **Table 62** above demonstrate that the provision of a signalised junction has the ability to manage the traffic queues in a balanced way at the junction and provide greater reliability at the junction compared to the existing uncontrolled arrangement.

The results in both the morning and evening peak demonstrate an improved performance at the junction when compared to the 2034 Reference Case position.

The key aspect of the scheme is the dedicated right turn lane from Bacup Rd East into Burnley Rd. This aspect allows for the improved performance of the junction when compared to a layout without the right turn lane.

6.7 Junction 14 – Toll Bar roundabout

The Toll Bar roundabout is a notably constrained junction providing access to the Stacksteads area, as well as east-west access through Rossendale. The results presented in Chapter 4 demonstrate that the junction is forecast to operate over capacity in both the 2034 Reference Case and Local Plan scenarios.

Similar to the Waterfoot roundabout it is noted that forecast levels of queuing are predicted to be very unequal on each of the three approach arms of the junction, with a consequential impact on reliability that is likely to vary on a day to day basis.

Paying due cognisance to the land locked nature of the junction, the presence of the Huttock Lane End, Bankfield and Commercial St priority approaches close to the junction, and the proximity of a number of commercial frontage buildings, a scheme has been developed which seeks to manage the forecast queues more efficiently creating a balanced level of queues on each approach to reduce junction unreliability.

A signalised scheme has been derived for the junction and can be seen at **Appendix I**. The high level cost of the proposed scheme is £900,000. The value of works is approximate only, and does not allow for any land purchase requirements, alterations to statutory undertakers equipment, earthworks over and above typical excavation or any unforeseeable construction requirments. The layouts are subject to a detailed highway, signal and drainage design which may impact significantly on the costs.

Table 63 below shows the results of the proposed junction upgrade.

Table 63. Junction 14 Toll Bar Stacksteads Morning and Evening Peak Local PlanResults – Upgrade Option

	2034 AM Upgrade		2034 PM Upgrade	
Lane Description	**Deg Sat (%)**	**MMQ (pcu)**	**Deg Sat (%)**	**MMQ (pcu)**
Newchurch Rd East	93.5%	25.4	89.3%	30.4
Newchurch Rd West	67.5%	13.4	54.7%	12.0
Booth Rd	90.7%	16.3	91.1%	14.1

The results in **Table 63** above demonstrate that the provision of a signalised junction has the ability to manage the traffic queues in a balanced way at the junction and provide greater reliability at the junction compared to the existing uncontrolled arrangement.

The results also demonstrate an improvement when compared to the 2034 Local Plan position, and results which are comparable to the Reference Case position.

It should be noted that the improvement in performance derived from this scheme relates to the ability to provide a dedicated right turn lane into Booth Rd. This would require one third party property to the south of the junction, and should be considered carefully by RBC and LCC on that basis.

6.8 A682/A56 SB Merge

The A682/A56 southbound merge represents a location solely on the SRN, and under the remit of Highways England. The merge/diverge analysis demonstrated that Local Plan growth would result in a need to alter the merge provision at this location.

On closer inspection of the merge it is noted to be a Type F option 2 with a lane gain. The arrangement is considered non-standard due to the manner in which A682 traffic merges from the right.

Taking into account the existing sub standard arrangement as well as the forecast increase in traffic flows, Mott MacDonald have sought to maintain a lane gain arrangement whilst providing

additional capacity at this location. On this basis three options involving a Type G 2 lane gain have been derived.

- Option 1 = requires widening to the bridge over the heritage railway line and a full additional lane to the A56/M66 Edenfield junction,
- Option 2 = requires widening of the bridge over the river and a new parallel bridge over the heritage railway line accommodating a separate lane gain to Edenfield junction.
- Option 3 = requires two new parallel bridges to accommodate a separate lane gain to Edenfield junction.

Option 1 would likely be the least costly option but would be the most disruptive during construction.

Option 2 would be the highest cost option and large disruption during construction.

Option 3 would potentially limit construction disruption to a minimum, and be the middle cost option.

It is recommend that RBC undertake further consideration and discussion with Highways England to determine how they would view these potential scheme ideas and to understand how they would fit with their own aspirations and ideas. It is noted that each of the options would greatly assist in alleviating the existing delay on the A56 southbound thereby providing an upgrade consistent with Expressway concept and delivery of ‘mile a minute’ journey times.

The cost of each option would be comparatively high at around an initial figure of £10-£25million.

The three options are shown at **Appendix I**.

7 Summary and Conclusions

7.1 Summary

Mott Macdonald were commissioned by Rossendale Borough Council to undertake a highway capacity study to understand the impact of the draft Local Plan on the strategic and local road network. The study is part of a wider evidence base to support the plan through consultation and subsequent examination. It meets the council's Duty to Cooperate requirement and has been produced with input from Lancashire County Council and Highways England.

The study has adopted a standard methodology utilising survey data, the manual application of traffic uplifts and junction assessments using a variety of appropriate software. It should be noted that the application of traffic growth directly to each junction in isolation is a robust method of assessing capacity, as in reality upstream traffic constraints on the highway network can act as a throttle on capacity.. No consideration has been given to public transport interventions which could be derived as an accompanying measure to any highway schemes and Local Plan development. The potential for travel planning benefits and enhanced sustainable transport provision has not been considered in this study.

The overall approach has been agreed as being proportionate to the level of analysis required at this stage of the local plan. More supporting site specific analysis will still be required by developers as individual sites come forward and will need to be undertaken within the context of this study.

The study has identified locations where the existing highway network would be able to accommodate the full build out of the Local Plan, and other locations where interventions might be needed before the end of the plan period.

In specific locations, mitigation has been identified and tested in order to demonstrate that growth from the Local Plan can be accommodated on the local and strategic road network.

7.2 Conclusions

The following conclusions have been derived from this study.

1. The analysis has demonstrated that in the first five years of the plan growth can be accommodated on the existing highway network without any physical intervention.

2. No interventions are therefore required prior to or at 2024.

3. Nine of the seventeen junctions assessed within this study are considered able to accommodate the full build out of the Local Plan up to 2034.

4. Eight of the locations assessed have been identified as possibly requiring intervention before 2034 so as to accommodate the full build out of the Local Plan.

5. Options identified for the Rawtenstall Gyratory were based on three concepts, from which the Do Minimum and Signalised concepts showed the ability to improve operational performance compared to the Local Plan scenario results.

6. The optioneering process for the Rawtenstall Gyratory has sought to ensure that a variety of options could be presented to the local highway authority, thereby providing them with a number of considerations against their own movement, place and regeneration priorities.

7. Solutions have also been identified for a series of additional locations, demonstrating their ability to accommodate the full build out of the Local Plan. Although it is recommended that RBC undertake further discussion with LCC and Highways England with regards to the manner in which these upgrades could be delivered and their potential funding routes.

    - Junction 5a Tesco Haslingden
    - Junction 6 Rising Bridge
    - Junction 8 Grane Rd/Holcombe Rd
    - Junction 9b Grane Rd/Waterside Rd/A56 on-slip (as a result of impacts of junction 9a)
    - Junction 11 Rochdale Rd/Bury Rd Edenfield
    - Junciton 13 Waterfoot
    - Junction 14 Toll Bar
    - A682/A56 southbound merge

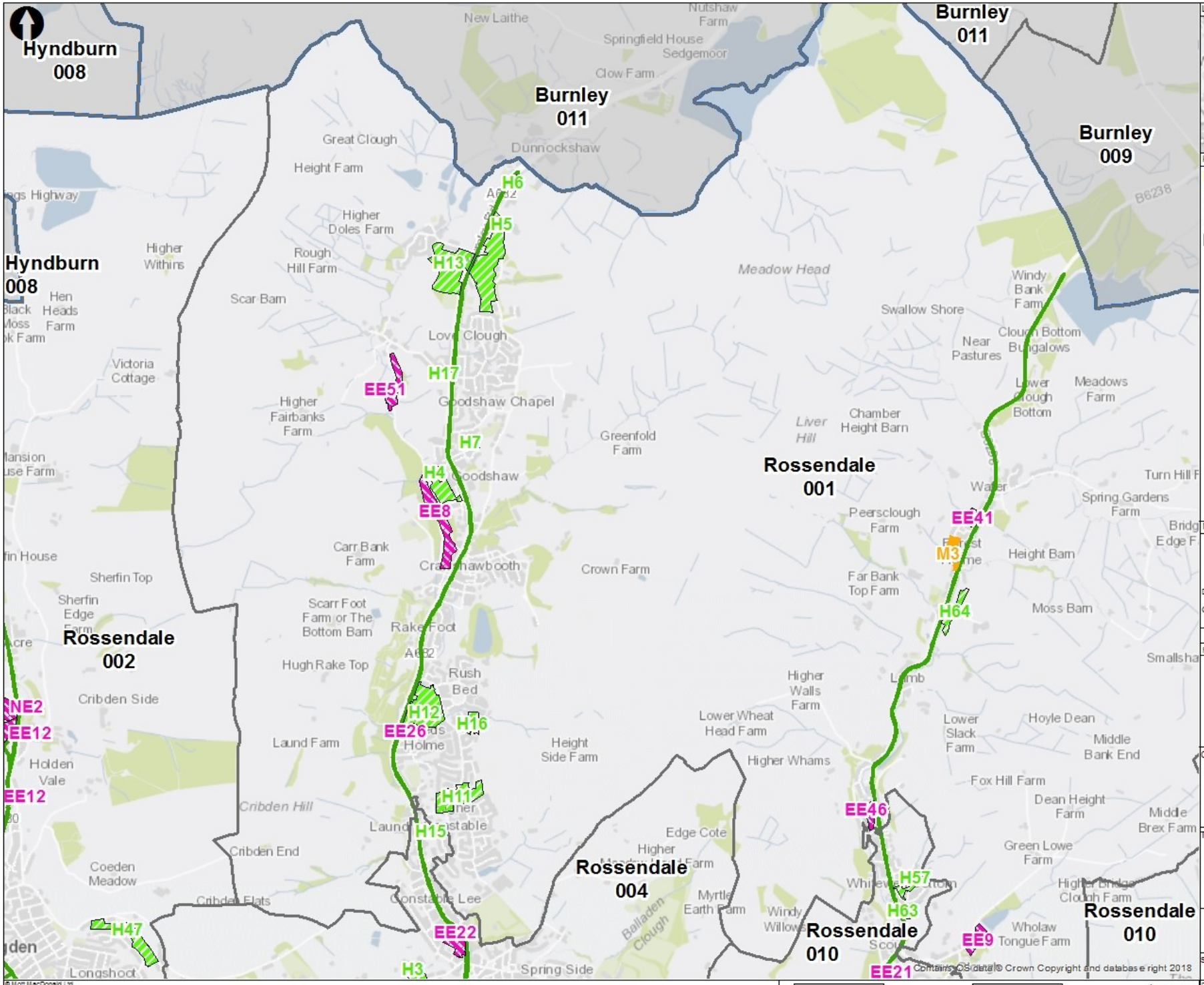
8. It is also recommended that Road Safety Audits be considered for each of the options identified following views being sought from LCC and Highways England.

9. In accordance with National Planning Policy Framework guidance, the ability to accommodate Local Plan traffic growth has been demonstrated by this study and therefore there should be no grounds for objection.

MOTT MACDONALD

APPENDIX A

LOCAL PLAN LAND ALLOCATIONS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Sedgemoor
Clow Farm
Great Clough
Dunnockshaw
Height Farm
Higher Doles Farm
Rough Hill Farm
Higher Withins
Hen Heads Farm
Scar Barn
Victoria Cottage
Higher Fairbanks Farm
Goodshaw Chapel
Greenfold Farm
Carr Bank Farm
Crawshawbooth
Crown Farm
Sherfin Top
Sherfin Edge Farm
Scarr Foot Farm or The Bottom Barn
Rake Foot
Hugh Rake Top
Rush Bed
Cribden Side
Laund Farm
Holden Vale
Cribden Hill
Cribden End
Coeden Meadow
Cribden Flats
Constable Lee
Longshoot
Spring Side
Height Side Farm
Meadow Head
Swallow Shore
Windy Bank Farm
Near Pastures
Clough Bottom Bungalows
Lower Clough Bottom
Meadows Farm
Liver Hill
Chamber Height Barn
Peersclough Farm
Far Bank Top Farm
Height Barn
Moss Barn
Spring Gardens Farm
Turn Hill
Edge F
Smallsha
Higher Walls Farm
Lamb
Lower Wheat Head Farm
Lower Slack Farm
Hoyle Dean
Middle Bank End
Higher Whams
Fox Hill Farm
Dean Height Farm
Middle Brex Farm
Green Lowe Farm
Higher Bridge Clough Farm
Edge Cote
Higher Meadow Head Farm
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Location Map
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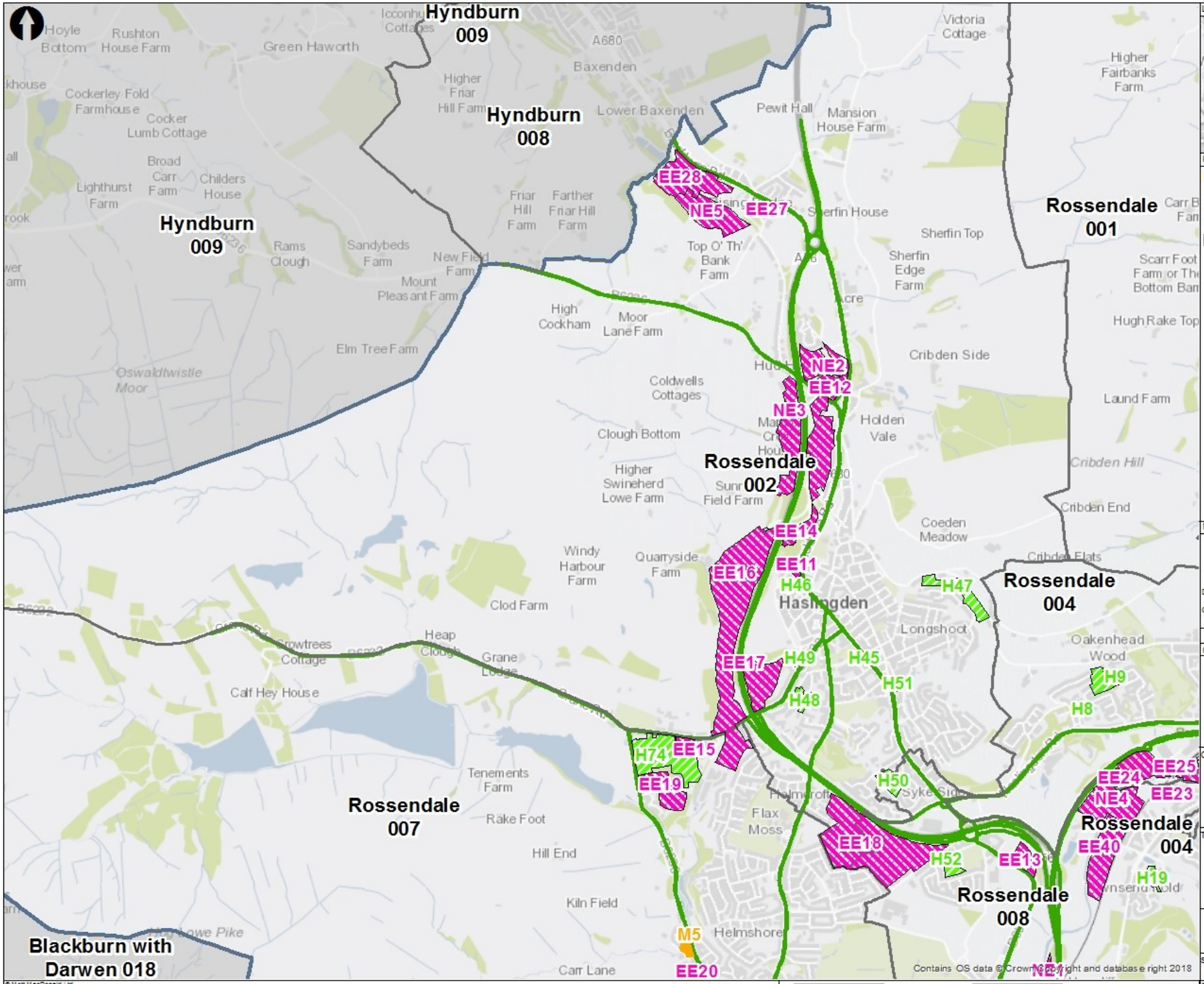

Location Map

Key to Symbols

- Mixed Use Site
- Housing Sites
- Employment Sites
- Medium Super Output Area

Notes

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Rev	Date	Drawn	Description	Chk'd	Appd
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Title: Rossendale MSOA 002

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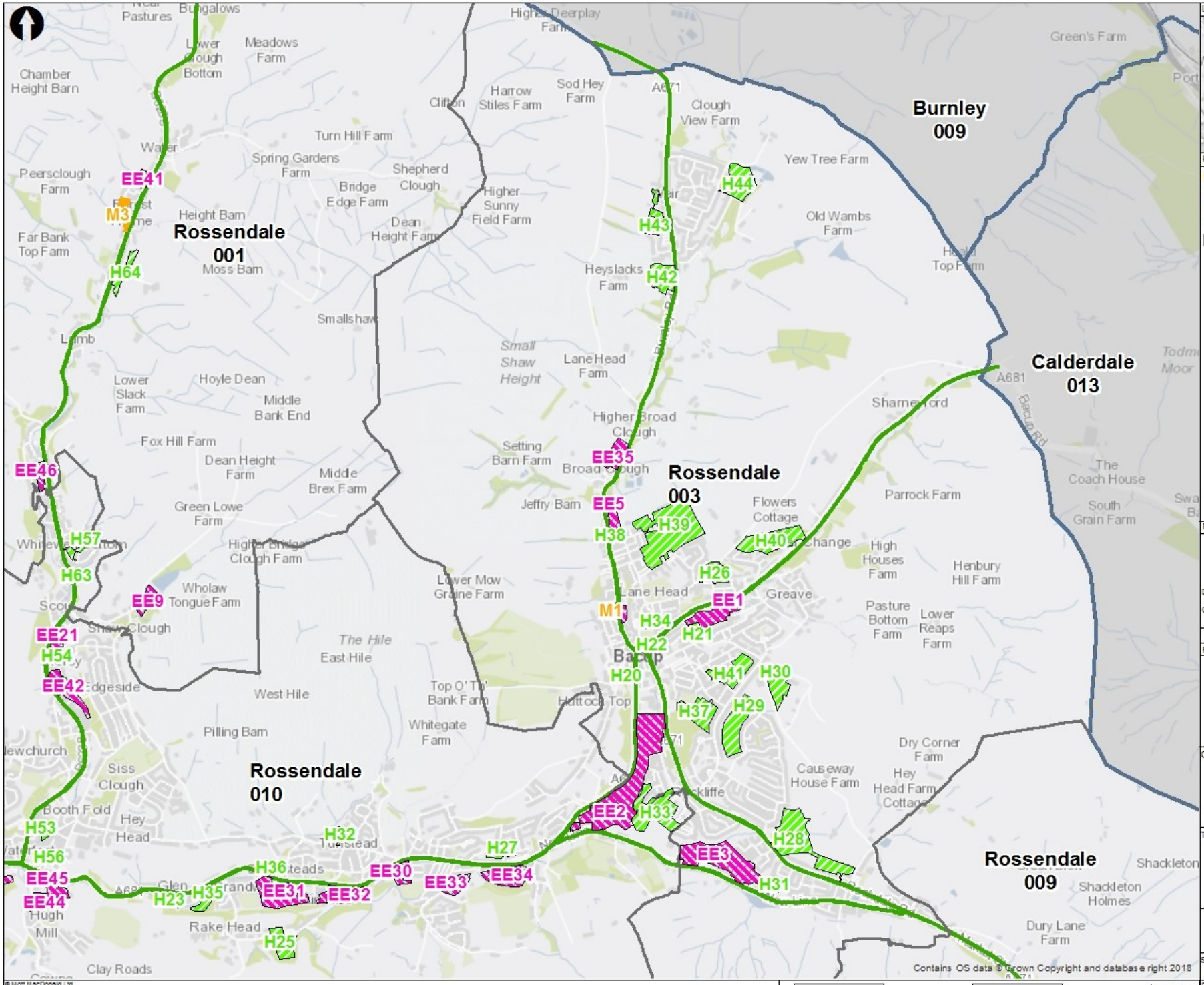

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Key to Symbols

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- Housing Sites
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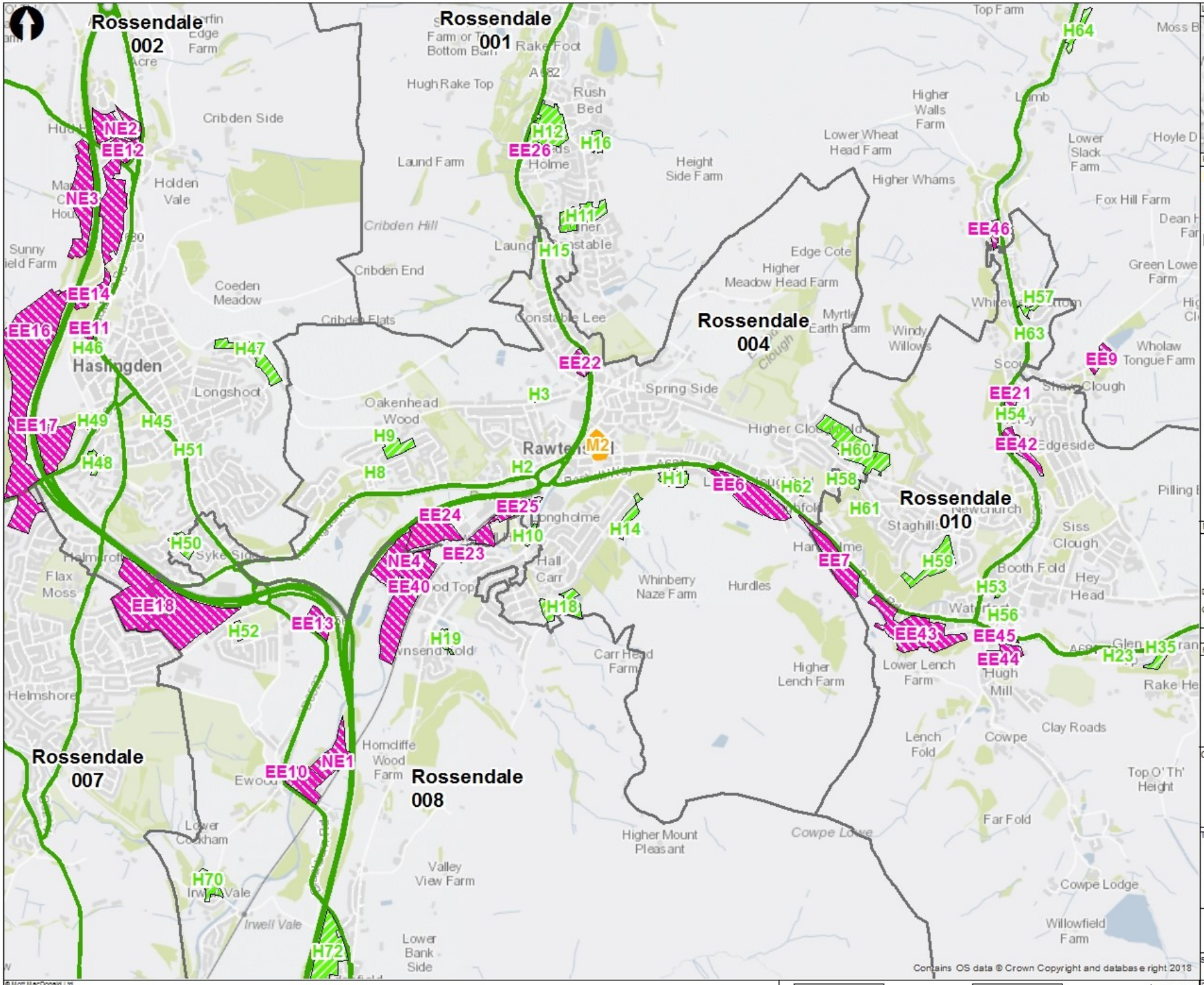

Location Map

Key to Symbols

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- Medium Super Output Area

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Client

Rossendale Local Authority

Title

Rossendale MSOA 004

Scale at A3	Status	Rev	Security
1:20,000	PRE	P1	STD

Drawing Number

391034-MMD-ITD-GIS-00X

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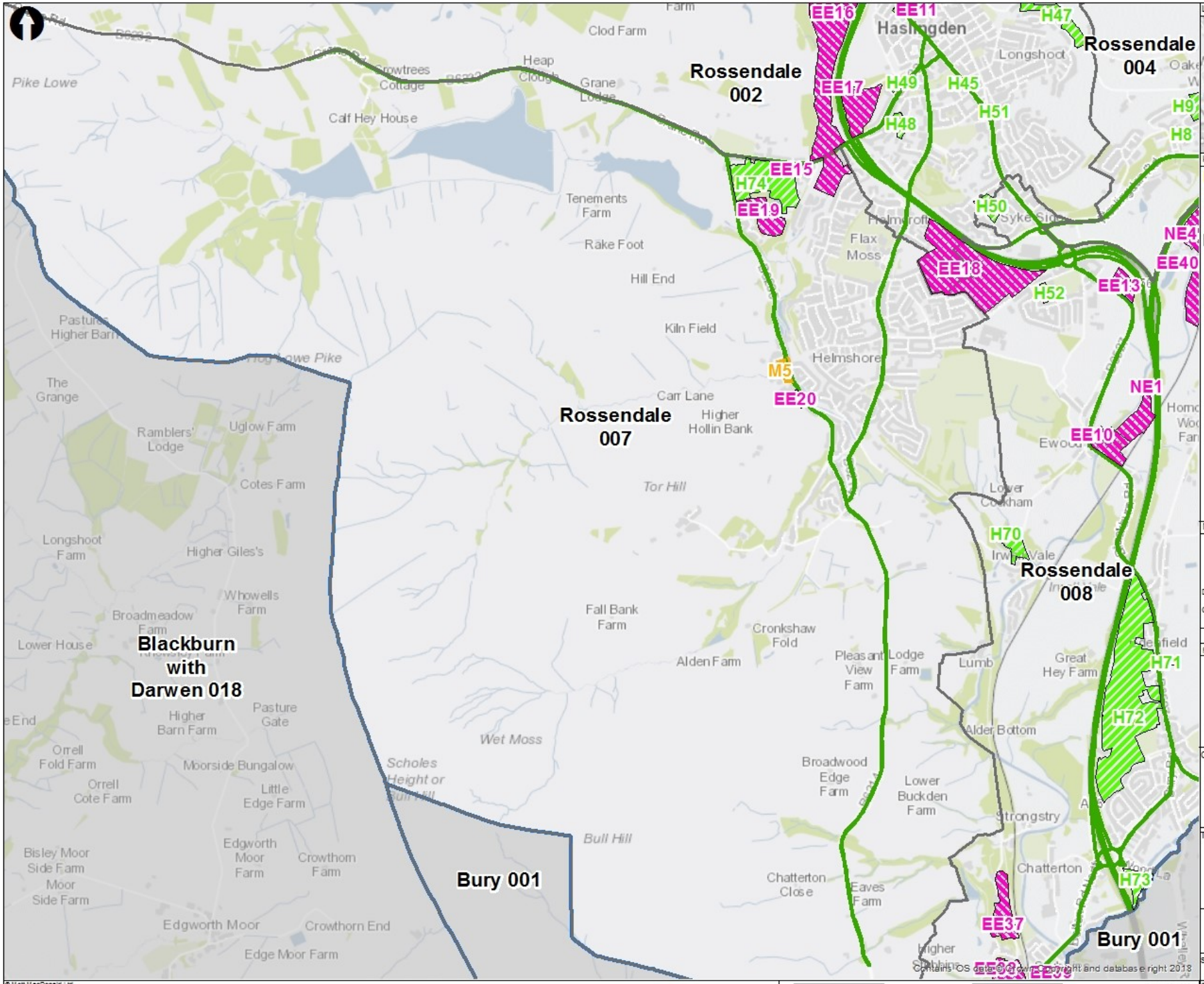

Location Map

Key to Symbols

Notes

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Rev	Date	Drawn	Description	Chk'd	Appd
-	Oct 17	LG	DRAFT	JK	-

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Client

Rossendale Local Authority

Title

Rossendale MSOA 007

Scale at A3	Status	Rev	Security
1:20,000	PRE	P1	STD

Drawing Number

391034-MMD-ITD-GIS-00X

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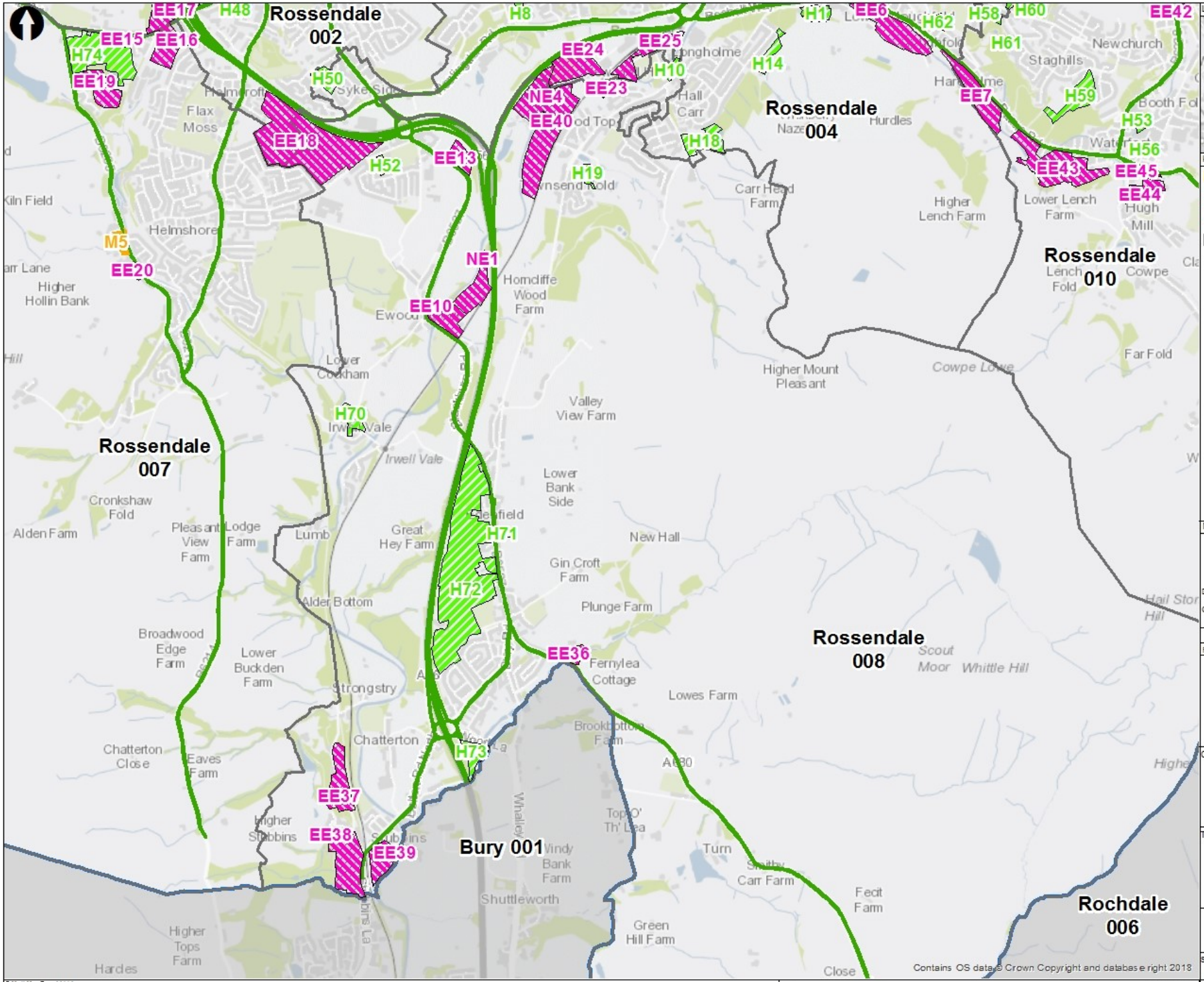

Location Map

Key to Symbols

- Mixed Use Site
- Housing Sites
- Employment Sites
- Medium Super Output Area

Notes

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Client: Rossendale Local Authority

Title: Rossendale MSOA 008

Scale at A3	Status	Rev	Security
1:20,000	PRE	P1	STD

Drawing Number: 391034-MMD-ITD-GIS-00X

Kilometers: 0, 0.5, 1, 1.5, 2

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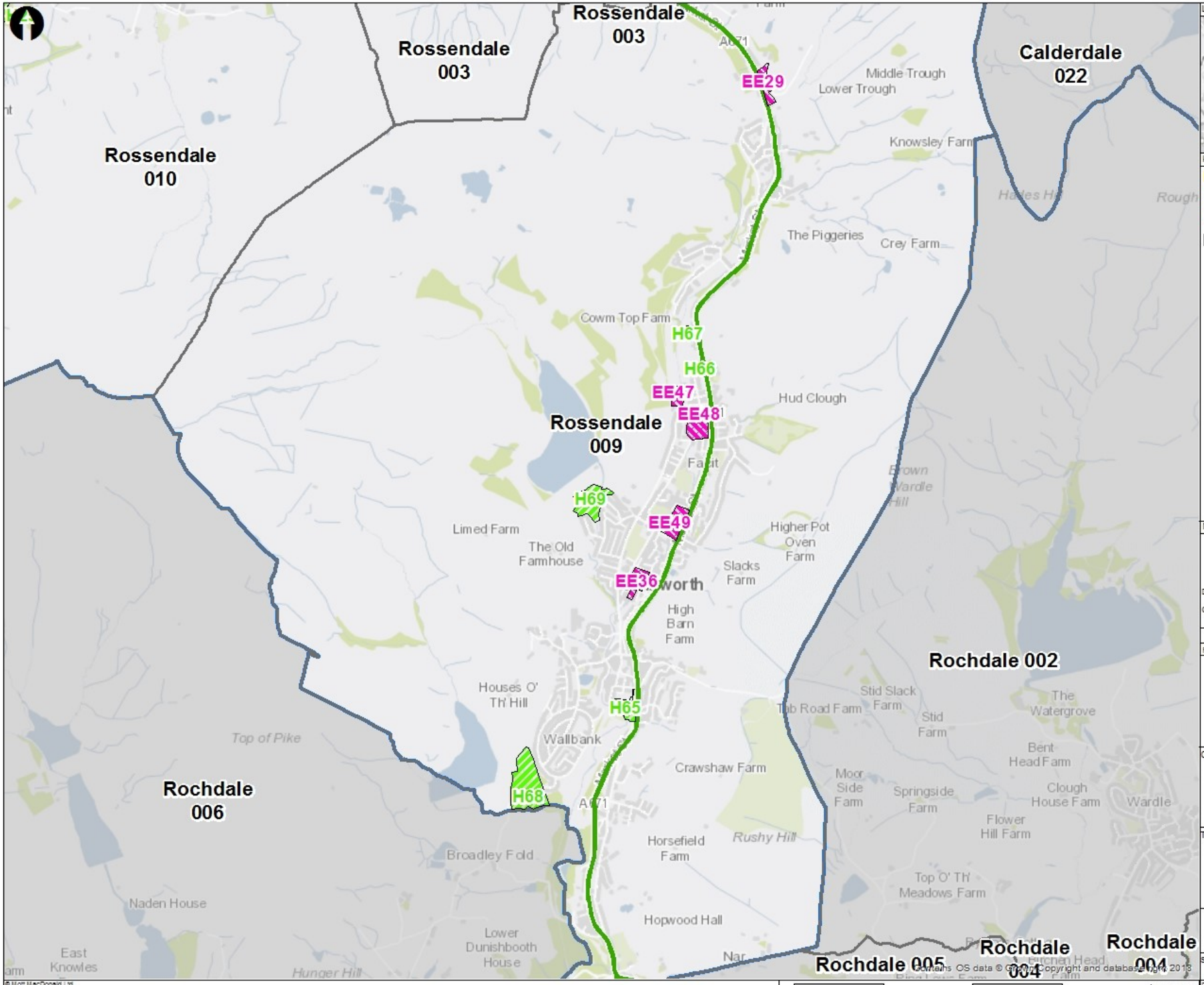

Location Map

Key to Symbols

- Mixed Use Site
- Housing Sites
- Employment Sites
- Medium Super Output Area

Notes

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-	Oct 17	LG	DRAFT	JK	-

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Client

Rossendale Local Authority

Title

Rossendale MSOA 009

Scale at A3	Status	Rev	Security
1:20,000	PRE	P1	STD

Drawing Number

391034-MMD-ITD-GIS-00X

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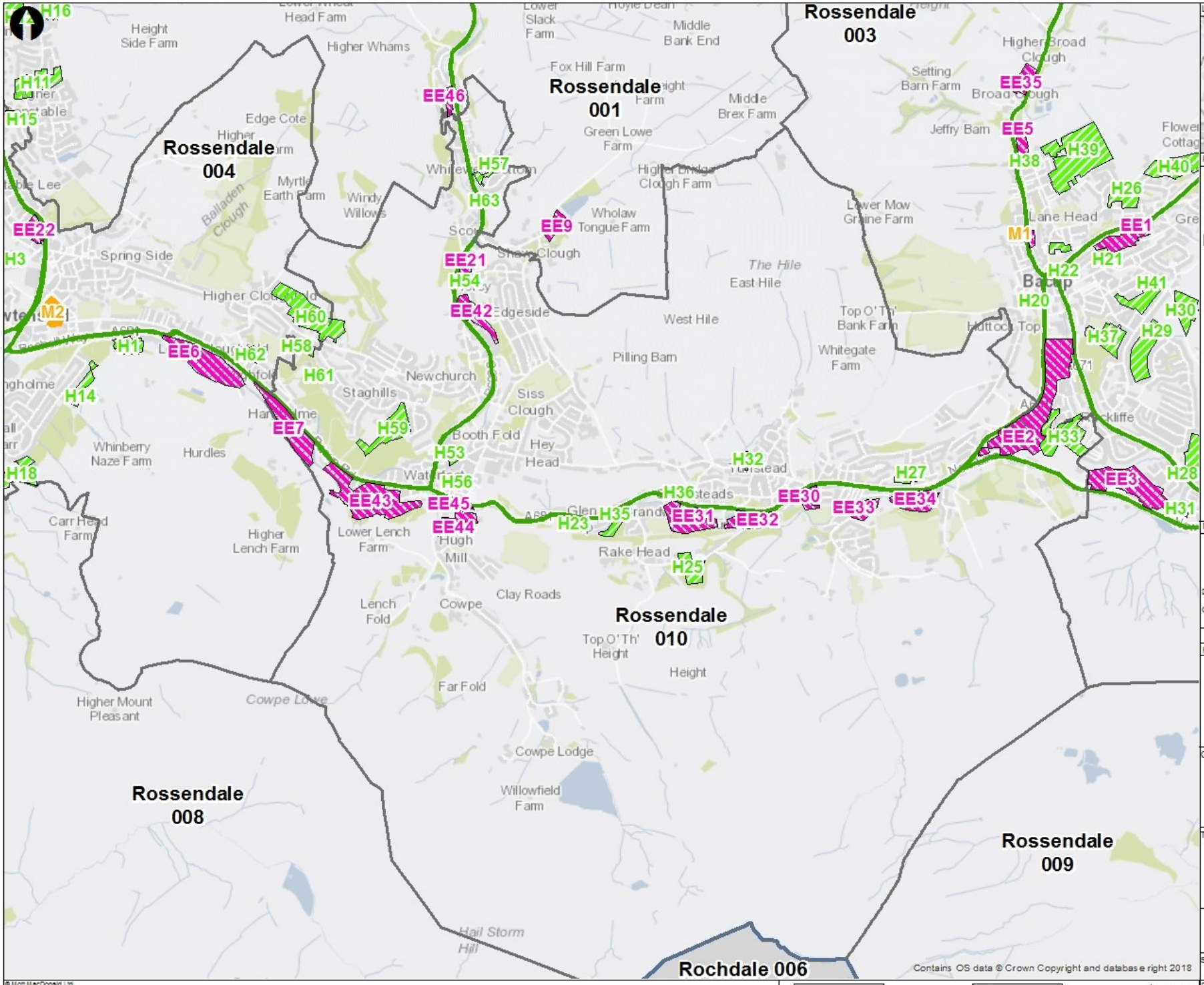

Location Map

Key to Symbols

- Mixed Use Site
- Housing Sites
- Employment Sites
- Medium Super Output Area

Notes

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Client

Rossendale Local Authority

Title

Rossendale MSOA 010

Scale at A3	Status	Rev	Security
1:20,000	PRE	P1	STD

Drawing Number

391034-MMD-ITD-GIS-00X

Kilometers: 0, 0.5, 1, 1.5, 2

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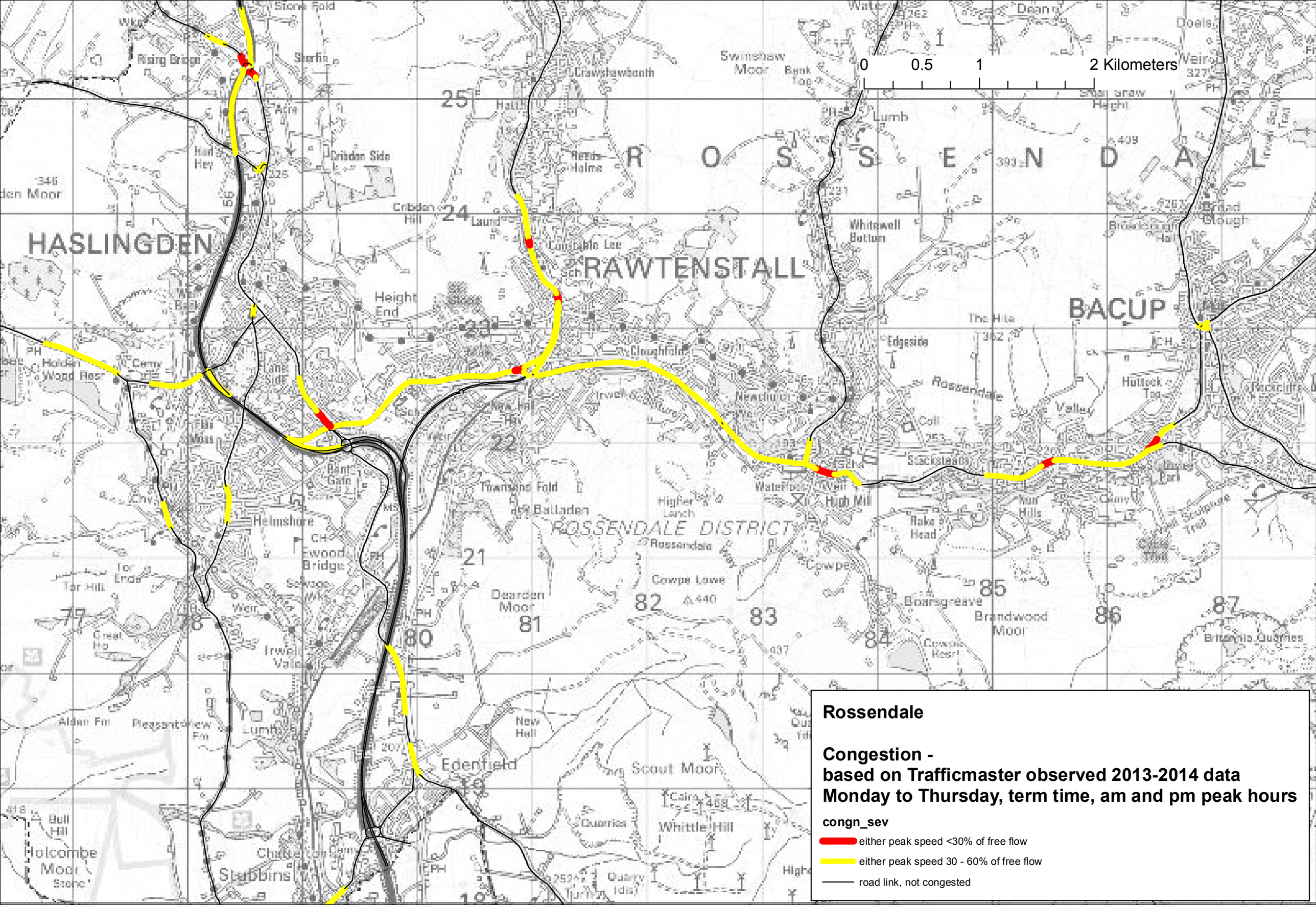
APPENDIX B

TRAFFICMASTER SUMMARY SHEET


0 0.5 1 2 Kilometers
HASLINGDEN
RAWTENSTALL
ROSSENDALE
BACUP
ROSSENDALE DISTRICT
Rossendale
Congestion -
based on Trafficmaster observed 2013-2014 data
Monday to Thursday, term time, am and pm peak hours
congn_sev
either peak speed <30% of free flow
either peak speed 30 - 60% of free flow
road link, not congested

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APPENDIX C

DETAILED ASSESSMENT METHODOLOGY TECHNICAL NOTE

MOTT MACDONALD

Technical Note

Project:	Rossendale Local Plan		
Our reference:	391034	**Your reference:**	N/A
Prepared by:	JK/RS	**Date:**	08.12.17 (updated 11.09.18)
Approved by:	RS	**Checked by:**	CS
Subject:	Detailed Study Methodology		

1 Preamble

A robust evidence base enables an assessment of the transport impacts of both existing development as well as that proposed, and can inform sustainable approaches to transport at a plan-making level.

In accordance with DfT guidance Mott Macdonald derived a scenario based study methodology, which allowed the flexibility to consider differing two different projections to look at both an interim and full plan outcome.

In terms of road traffic, but not other types of traffic, where there is a need to project existing or historical traffic data for future year assessments, the preferred option is the use of appropriate local traffic forecasts (such as the Trip End Model Presentation Program (TEMPRO) used for transport planning purposes), provided they offer a robust assessment.

In this instance, use of a formal traffic model was discounted given that no model was available that had the appropriate network coverage and local validation. The following formal models were considered and discounted;

- Highways England Trans Pennine South Regional Model,
- Central Lancs Transport Model,
- TfGM GMSM Highway Model.

The models were each discounted due to lack of suitable network coverage within the Rossendale boundary, which ultimately meant that either the base model validation or the representation of each junction could be queried for use in this study.

In addition to the discounting of the above three models, it was also determined that derivation of a new formal model would not be possible given time constraints, as well as the associated cost of a detailed data collection exercise for a range of required data types needed to construct a strategic model.

On the basis of the above, Mott Macdonald determined that the most robust methodology for use within this study would be to utilise a series of traffic surveys and undertake manual junction assessments using a standard approach of traffic growth, committed development and trip generation. Each of the study methodology elements are discussed in greater detail in the sections below.

2 Traffic Surveys

Transport data should be included that reflects the typical (neutral) flow conditions on the network (for example, non-school holiday periods, typical weather conditions etc) for the key junctions identified, and should be valid for the intended purposes. It should also take account of holiday periods in tourist areas, where peaks could occur in periods that might normally be considered non-neutral.

For this study all traffic surveys were undertaken by LCC and provided to Mott Macdonald, barring J12 which had been previously modelled using the Aimsun software and already benefitted from a recent survey used within the base model. The traffic surveys were provided in the form of Manual Classified Counts [MCC] for the following time periods, recorded in fifteen-minute intervals.

- 07:00-09:00, and
- 16:00-18:00

3 WebTRIS Data

The study area and junctions defined at the study outset included sections of the SRN managed and operated by HE. On this basis it was determined that separate consideration of some of these key SRN elements would be needed, alongside the junction analysis. Traffic flows were obtained from the WebTRIS online database for the following locations on the SRN.

- TAME Site 30361036 on link A56 northbound between A681 and A6177,
- TAME Site 30361037 on link A56 southbound between A6177 and A681,
- TAME Site 30361214 on link A56 northbound between M66, A680, A676 and A682,
- TAME Site 30361215 on link A56 southbound between A682 and M66, A680, A676,
- TAME Site 30361537 on link A56 northbound between A682 and A681,
- TAME Site 30361538 on link A56 southbound access from A681,
- TAME Site 30361539 on link A56 southbound within the A681 junction,
- TMU Site 8501-1 on link M66 southbound between A56-A680-A676 and J1,
- TMU Site 9029 -1 on link A56 northbound between A680 and A679,
- TMU Site 9031-1 on link A56 northbound between A6177 and A680, and
- TMU Site 9032-1 on link A56 southbound between A680 and A6177.

WebTRIS data is downloaded in fifteen-minute intervals between 06:00 and 00:00. The data was downloaded for March, April, May and September 2017.

4 PCU Conversion & Peak Hour Derivation

The first task in processing the survey data for use within this study was to convert the data into Passenger Car Unit [PCU] format. The PCU conversion factors used are listed below.

- Cars = 1.00,
- Light Goods Vehicles = 1.00,
- Buses = 2.00,
- Single Unit Trucks = 2.00,
- Articulated Trucks = 2.00,
- Motorcycles = 0.40,

- Pedal Cycles = 0.20.

Following the conversion of the raw survey data into PCU format, the individual peak hour for each junction was calculated by summating the total volume from each turn movement at the junction for each of the fifteen-minute time periods, for the following ten single hours.

- 07:00-08:00,
- 07:15-08:15,
- 07:30-08:30,
- 07:45-08:45,
- 08:00-09:00,
- 16:00-17:00,
- 16:15-17:15,
- 16:30-17:30,
- 16:45-17:45, and
- 17:00-18:00.

The following individual junction peak hours, shown in **Table 1** below, were derived using this approach.

Table 1. **Individual Junction Calculated Peak Hours**

Junction Number	Junction Name	AM Peak Hour	PM Peak Hour
J1	The Gyratory, Rawtenstall	08:00-09:00	17:00-18:00
J2	Mini-roundabout by Hardman's Mill, Rawtenstall	08:00-09:00	16:15-17:15
J3	Junction of St Mary's Way, Bank Street and Asda, Rawtenstall	08:00-09:00	16:45-17:45
J4	Tup Bridge Junction, St Mary's Way, Rawtenstall	08:00-09:00	17:00-18:00
J5a	Haslingden Road/Tesco roundabout, Haslingden	08:00-09:00	16:45-17:45
J5b	A56 Haslingden Roundabout	08:00-09:00	16:45-17:45
J6	Rising Bridge roundabout, A56	07:30-08:30	16:30-17:30
J7	Todd Hall Road access	07:15-08:15	16:00-17:00
J8	Grane Road/Holcombe Road junction	07:00-08:00	16:30-17:30
J9a	Grane Road/A56 junctions (A56 off-slip)	07:00-08:00	16:30-17:30
J9b	Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)	07:15-08:15	16:30-17:30
J10	A56 / M66 'Junction 0' at Edenfield	08:00-09:00	17:00-18:00
J11	Rochdale Road/Market St roundabout, Edenfield	07:30-08:30	16:45-17:45
J12	Bacup St James Square	*	*
J13	Waterfoot roundabout	07:45-08:45	16:30-17:30
J14	Toll Bar Roundabout, Stacksteads	08:00-09:00	17:00-18:00
J15	Market St/Shawclough Road, Whitworth	07:15-08:15	16:45-17:45

* Peak hours as per LCC Aimsun model

Mott Macdonald have also derived the peak hour for each of the SRN link locations derived from the WebTRIS online database. The WebTRIS peak hours were calculated by filtering the data for each of the four months data was derived for, in order to remove weekends and bank holidays.

The summation of the remaining dates was then undertaken for each location, and for each fifteen-minute period. The peak hours were then calculated by amalgamating each fifteen-minute period into single hours and noting the hour with the highest flow, for both the morning and evening peak hour.

The calculated peak hours for each of these sites is shown below in **Table 3**.

Table 3. WebTRIS SRN Location Peak Hours

Site ID	Name	AM Peak Hour	PM Peak Hour
30361036	A56 northbound between A681 and A6177	07:15-08:15	16:30-17:30
30361037	A56 southbound between A6177 and A681	06:45-07:45	16:45-17:45
30361214	A56 northbound between M66, A680, A676 and A682	07:30-08:30	16:30-17:30
30361215	A56 southbound between A682 and M66, A680, A676	06:45-07:45	16:45-17:45
30361537	A56 northbound between A682 and A681	08:30-09:30	17:15-18:15
30361538	A56 southbound access from A681	06:45-07:45	17:00-18:00
30361539	A56 southbound within the A681 junction	06:30-07:30	16:45-17:45
8501-1	M66 southbound between A56-A680-A676 and J1	06:30-07:30	16:30-17:30
9029 -1	A56 northbound between A680 and A679	07:30-08:30	16:30-17:30
9031 -1	A56 northbound between A6177 and A680	07:30-08:30	16:45-17:45
9032 -1	A56 southbound between A680 and A6177	06:30-07:30	16:45-17:45

The individual peak hours for all sites have been used by Mott Macdonald for this study for the purposes of robustness in relation to each assessment.

5 Committed Developments

A series of TAs were provided to Mott Macdonald by Rossendale Borough Council which represent those sites which could be considered as committed developments for this study. These were as follows;

- 2010-0692 - Transport Assessment-Morrisons, Bacup,
- 2012-0162 - Transport Assessment,
- 2013-0556 - Transport Assessment-Orama Mill, Whitworth,
- 2015-0438 - 2868 Rawtenstall TA (Oct 2015)-McDonalds,
- 2015-0476 - Transport Assessment-Rawtenstall Bus Station,
- 2016-0129 - New Hall Hey, Transport Assessment (Main Report),
- 2016-0267 - Transport Assessment-Reedsholme, Crawshawbooth.

The committed development traffic volumes were derived from each of the relevant TAs, and utilised as part of the pertinent scenarios.

The traffic volumes associated with the McDonalds 2015-0438 application, were added to the surveyed base volumes as this development is known to be already operational, and the survey of the junction did not include the access arm for the McDonalds site.

6 Traffic Growth

Mott Macdonald have derived traffic growth factors from the TEMPRO database.

Growth factors were derived for three assessment years, discussed in further detail later in this report. The assessment years were 2019, 2024 and 2034. The factors for each year were all derived from a 2017 baseline.

Following derivation of the initial growth factors a second set of adjusted factors was derived which takes account of the committed development traffic volumes. This ensures that there is no double counting thereby producing a more realistic growth factor.

The adjusted and unadjusted values are shown below in **Table 4** along with an overall average of each road type for the adjusted values highlighted in red, which were ultimately used within this study.

Table 4. TEMPRO Growth Factors

	2017 to 2019		2017 to 2024				2017 to 2034			
			Unadjusted		Adjusted		Unadjusted		Adjusted	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Trunk	1.0239	1.0221	1.0528	1.0503	1.0351	1.0301	1.1388	1.134	1.0876	1.0758
Principal	1.0235	1.0216	1.0518	1.0493	1.0341	1.0291	1.1388	1.1341	1.0877	1.0758
Minor	1.024	1.0221	1.0551	1.0526	1.0373	1.0323	1.1463	1.1416	1.0948	1.0829
Average	1.0238	1.0219	1.0532	1.0507	1.0355	1.0305	1.1413	1.1366	1.0900	1.0782

7 Trip Generation

The first step in quantifying the impact of proposed land allocations in the Local Plan on the transport system is to provide an estimate of the vehicle trips that are likely to be generated by it.

This exercise was undertaken via a 3-stage process, as follows.

- Split land allocations (employment and residential) into the Mid Super Output Area [MSOA] they are located in and then into 1-5 year and 6-15 year build out brackets,
- Derive vehicular trip rates for employment and residential allocations,
- Calculate the vehicular trip generation for each MSOA in both the 1-5 and 6-15 year brackets.

There are eight MSOAs within Rossendale, with the centroid of each listed as follows;

- MSOA 1 – Crawshawbooth,
- MSOA 2 – Haslingden,
- MSOA 3 – Bacup,
- MSOA 4 – Rawtenstall,
- MSOA 7 – Helmshore,
- MSOA 8 – Edenfield,
- MSOA 9 – Whitworth,

- MSOA 10 – Waterfoot.

7.1 Allocation Delivery Timescales

Tables 5 to **12** below and overleaf summarise the delivery timescales for each of the employment and residential allocations, split by the MSOA in which they are located. The delivery timescales have been defined based on information supplied by RBC.

Table 5. Rossendale MSOA 1 Delivery Timescales

Rossendale 001	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.42	78	0
HS2.43	0	123
HS2.45	0	11
HS2.46	0	20
HS2.47	53	0
HS2.48	6	0
HS2.49	0	106
HS2.50	34	0
HS2.51	10	0
HS2.52	0	8
HS2.100	0	26
Emp Sites (ID)	1-5 Yrs	6-15 Yrs
M3	0	11,200

Table 6. Rossendale MSOA 2 Delivery Timescales

Rossendale 002	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.33	25	0
HS2.35	15	0
HS2.36	9	0
HS2.37	34	0
HS2.38	0	7
HS2.40	6	0
HS2.41	9	0
Emp Sites (ID)	1-5 Yrs	6-15 Yrs

Rossendale 002	Delivery Timescale (No. Units / Ha)	
EMP12	0	44,000
EMP13	0	27,000
ADD6	0	48,400

Table 7. Rossendale MSOA 3 Delivery Timescales

Rossendale 003	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.1	29	0
HS2.2	18	0
HS2.3	19	0
HS2.6	0	59
HS2.7	0	169
HS2.8	0	58
HS2.9	0	11
HS2.10	0	51
HS2.12	0	39
HS2.14	0	7
HS2.15	70	0
HS2.16	94	0
HS2.17	57	0
HS2.18	15	0
HS2.19	25	0
HS2.21	11	0
HS2.22	0	51
HS2.23	0	70
Emp Sites (ID)	1-5 Yrs	6-15 Yrs
EMP61	0	5,800

Table 8. Rossendale MSOA 4 Delivery Timescales

Rossendale 004	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.53	0	89

Rossendale 004	Delivery Timescale (No. Units / Ha)	
HS2.61	35	0
HS2.63	12	0
HS2.64	21	0
HS2.65	8	0
HS2.67	0	28
HS2.70	0	29
HS2.81	72	0
HS2.85	0	89

Table 9. Rossendale MSOA 7 Delivery Timescales

Rossendale 007	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.78	0	195
Emp Sites (ID)	1-5 Yrs	6-15 Yrs
M5	0	4,000

Table 10. Rossendale MSOA 8 Delivery Timescales

Rossendale 008	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.39	0	34
HS2.60	10	0
HS2.69	0	8
HS2.71	0	447
HS2.72	10	0
HS2.73	0	53
HS2.110	50	0
Emp Sites (ID)	1-5 Yrs	6-15 Yrs
EMP10	0	28,100
EMP11	0	22,000
EMP72	0	30,000
M2	0	15,600

Table 11. Rossendale MSOA 9 Delivery Timescales

Rossendale 009	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.102	6	0
HS2.103	31	0
HS2.105	55	0
HS2.107	0	124
HS2.108	0	22

Table 12. Rossendale MSOA 10 Delivery Timescales

Rossendale 010	Delivery Timescale (No. Units / Ha)	
Resi Sites (ID)	1-5 Yrs	6-15 Yrs
HS2.4	70	0
HS2.5	6	0
HS2.24	46	0
HS2.25	10	0
HS2.26	8	0
HS2.28	11	0
HS2.30	0	25
HS2.31	0	10
HS2.80	10	0
HS2.82	89	0
HS2.83	10	0
HS2.89	6	0
HS2.90	23	0
HS2.93	0	6
HS2.94	8	0
HS2.95	7	0
HS2.96	12	0

7.2 Vehicular Trip Rates

The vehicular trip rates derived for this study are shown below in **Table 13**.

Table 13. Vehicular Trip Rates

Trip Rate Type	Arr	Dep	**Total**	Arr	Dep	**Total**
Residential	0.142	0.416	**0.558**	0.404	0.221	**0.625**
Employment	0.570	0.091	**0.661**	0.081	0.488	**0.570**
Mixed Use	**See Table 14 below for A1, B8, C1, D2 and C3 Trip Rates**					

The trip rates presented in **Table 13** above have been derived from reviewing the trip rates adopted in the Transport Assessments [TA] associated with the committed developments discussed in section 3.5 above, as well as a TRICS exercise.

Mott Macdonald have derived all the residential trip rates from the TAs and taken an average of all values to derive those presented in **Table 13**.

It is considered that this represents the most robust approach for this study given that the trip rates derived from the TA's were all generated for specific assessment of residential land uses in Rossendale.

With regards to the employment trip rates, Mott Macdonald have undertaken a TRICS exercise to derive trip rates relevant to employment uses. Vehicular trip rates from 5 differing employment related land uses were derived and an average. **Table 14** below shows this exercise.

Table 14. Derivation of Employment Trip Rates

Trip Rate Type	Arr	Dep	**Total**	Arr	Dep	**Total**
B1 Office	0.989	0.087	**1.076**	0.074	0.923	**0.997**
B2 Industrial Unit	0.423	0.049	**0.472**	0.039	0.337	**0.376**
B8 Commerical Warehousing	0.36	0.181	**0.541**	0.086	0.288	**0.374**
B8 Parcel Distribution Centres	0.164	0.046	**0.21**	0.025	0.121	**0.146**
B8 Average	0.457	0.2675	**0.7245**	0.262	0.3695	**0.6315**
Employment Trip Rates Weighted Adjustment						
B1 Weighted	0.247	0.022	**0.269**	0.019	0.231	**0.249**
B2 Weighted	0.254	0.029	**0.283**	0.023	0.202	**0.226**
B8 Weighted	0.069	0.040	**0.109**	0.039	0.055	**0.095**
Final Emp Trip Rates	0.570	0.091	**0.661**	0.081	0.488	**0.570**
Mixed Use Site Trip Rates						
A1	6.720	6.612	**13.332**	7.938	8.612	**16.550**
B8	0.457	0.2675	**0.7245**	0.262	0.3695	**0.6315**
C1	0.258	0.652	**0.910**	0.46	0.182	**0.642**
D2*	29.253	18.257	**47.510**	61.411	74.274	**135.685**
C3	0.142	0.416	**0.558**	0.404	0.221	**0.625**

*All trip rates presented as sqm trip rates, except D2 land use presented as a per Ha trip rate

7.3 Trip Generation Values

Utilising the trip rates presented above, the following trip generation values have been derived for each MSOA, split between the first 5 years of the plan (1-5 years) and the final ten years of the of plan (6-15 years).

The values are presented in **Tables 15** to **22** below and overleaf.

Table 15. MSOA 1 Trip Generation

	Rossendale 001 - 1-5Yrs						Rossendale 001 - 6-15Yrs					
Rossendale 001	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.42	11	33	44	32	17	49	0	0	0	0	0	0
HS2.43	0	0	0	0	0	0	17	51	69	50	27	77
HS2.45	0	0	0	0	0	0	2	5	6	5	2	7
HS2.46	0	0	0	0	0	0	3	8	11	8	4	13
HS2.47	7	22	29	21	12	33	0	0	0	0	0	0
HS2.48	1	2	3	2	1	3	0	0	0	0	0	0
HS2.49	0	0	0	0	0	0	15	44	59	43	23	66
HS2.50	5	14	19	14	7	21	0	0	0	0	0	0
HS2.51	1	4	6	4	2	6	0	0	0	0	0	0
HS2.52	0	0	0	0	0	0	1	3	4	3	2	5
HS2.100	0	0	0	0	0	0	4	11	14	10	6	16
Emp Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
M3	0	0	0	0	0	0	31	11	42	11	28	38

Table 16. MSOA 2 Trip Generation

	Rossendale 002 - 1-5Yrs						Rossendale 002 - 6-15Yrs					
Rossendale 002	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.33	3	10	**14**	10	5	**15**	0	0	**0**	0	0	**0**
HS2.35	2	6	**8**	6	3	**9**	0	0	**0**	0	0	**0**
HS2.36	1	4	**5**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.37	5	14	**19**	14	7	**21**	0	0	**0**	0	0	**0**
HS2.38	0	0	**0**	0	0	**0**	1	3	**4**	3	1	**4**
HS2.40	1	2	**3**	2	1	**3**	0	0	**0**	0	0	**0**
HS2.41	1	4	**5**	4	2	**6**	0	0	**0**	0	0	**0**

	Rossendale 002 - 1-5Yrs						Rossendale 002 - 6-15Yrs					
Emp Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
EMP12	0	0	0	0	0	0	251	40	291	36	215	251
EMP13	0	0	0	0	0	0	154	25	178	22	132	154
ADD6	0	0	0	0	0	0	276	44	320	39	236	276

Table 17. MSOA 3 Trip Generation

	Rossendale 003 - 1-5Yrs						Rossendale 003 - 6-15Yrs					
Rossendale 003	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.1	4	12	**16**	12	6	**18**	0	0	**0**	0	0	**0**
HS2.2	3	7	**10**	7	4	**11**	0	0	**0**	0	0	**0**
HS2.3	3	8	**11**	8	4	**12**	0	0	**0**	0	0	**0**
HS2.6	0	0	**0**	0	0	**0**	8	25	**33**	24	13	**37**
HS2.7	0	0	**0**	0	0	**0**	24	70	**94**	68	37	**106**
HS2.14	0	0	**0**	0	0	**0**	1	3	**4**	3	1	**4**
HS2.18	2	6	**8**	6	3	**9**	0	0	**0**	0	0	**0**
HS2.19	3	10	**14**	10	5	**15**	0	0	**0**	0	0	**0**
HS2.8	0	0	**0**	0	0	**0**	8	24	**32**	24	13	**36**
HS2.9	0	0	**0**	0	0	**0**	2	5	**6**	5	2	**7**
HS2.10	0	0	**0**	0	0	**0**	7	21	**29**	21	11	**32**
HS2.15	10	29	**39**	28	16	**44**	0	0	**0**	0	0	**0**
HS2.16	13	39	**52**	38	21	**59**	0	0	**0**	0	0	**0**
HS2.17	8	24	**32**	23	13	**36**	0	0	**0**	0	0	**0**
HS2.21	2	5	**6**	5	2	**7**	0	0	**0**	0	0	**0**
HS2.22	0	0	**0**	0	0	**0**	7	21	**29**	21	11	**32**
HS2.23	0	0	**0**	0	0	**0**	10	29	**39**	28	16	**44**
HS2.12	0	0	0	0	0	0	6	16	**22**	16	9	**24**
Emp Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
EMP61	0	0	0	0	0	0	33	5	38	5	28	33

Table 18. MSOA 4 Trip Generation

	Rossendale 004 - 1-5Yrs						Rossendale 004 - 6-15Yrs					
Rossendale 004	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.53	0	0	**0**	0	0	**0**	13	37	**50**	36	20	**56**
HS2.61	5	14	**19**	14	8	**22**	0	0	**0**	0	0	**0**
HS2.63	2	5	**7**	5	3	**8**	0	0	**0**	0	0	**0**
HS2.64	3	9	**12**	9	5	**13**	0	0	**0**	0	0	**0**
HS2.65	1	3	**4**	3	2	**5**	0	0	**0**	0	0	**0**
HS2.67	0	0	**0**	0	0	**0**	4	12	**16**	11	6	**17**
HS2.70	0	0	**0**	0	0	**0**	4	12	**16**	12	6	**18**
HS2.81	10	30	**40**	29	16	**45**	0	0	**0**	0	0	**0**
HS2.85	0	0	**0**	0	0	**0**	1	4	**5**	4	2	**6**

Table 19. MSOA 7 Trip Generation

	Rossendale 007 - 1-5Yrs						Rossendale 007 - 6-15Yrs					
Rossendale 007	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.78	0	0	0	0	0	0	28	81	**109**	79	43	**122**
Emp Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
M5	0	0	0	0	0	0	43	36	**79**	41	48	**89**

Table 20. MSOA 8 Trip Generation

	Rossendale 008 - 1-5Yrs						Rossendale 008 - 6-15Yrs					
Rossendale 008	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.39	0	0	**0**	0	0	**0**	5	14	**19**	14	7	**21**
HS2.60	1	4	**6**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.69	0	0	**0**	0	0	**0**	1	3	**4**	3	2	**5**
HS2.71	0	0	**0**	0	0	**0**	63	186	**250**	181	99	**280**
HS2.72	1	4	**6**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.73	0	0	**0**	0	0	**0**	7	22	**29**	21	12	**33**
HS2.110	7	21	**28**	20	11	**31**	0	0	**0**	0	0	**0**

	Rossendale 008 - 1-5Yrs						Rossendale 008 - 6-15Yrs					
Emp Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
EMP10	0	0	0	0	0	0	160	26	**186**	23	137	**160**
EMP11	0	0	0	0	0	0	125	20	**145**	18	107	**125**
EMP72	0	0	0	0	0	0	171	27	**198**	24	147	**171**
M2	0	0	0	0	0	0	40	37	77	42	50	92

Table 21. MSOA 9 Trip Generation

	Rossendale 009 - 1-5Yrs						Rossendale 009 - 6-15Yrs					
Rossendale 009	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.102	1	2	**3**	2	1	**3**	0	0	**0**	0	0	**0**
HS2.103	4	13	**17**	13	7	**20**	0	0	**0**	0	0	**0**
HS2.105	8	23	**31**	22	12	**34**	0	0	**0**	0	0	**0**
HS2.107	0	0	**0**	0	0	**0**	18	52	**69**	50	27	**78**
HS2.108	0	0	**0**	0	0	**0**	3	9	**12**	9	5	**14**

Table 22. MSOA 10 Trip Generation

	Rossendale 010 - 1-5Yrs						Rossendale 010 - 6-15Yrs					
Rossendale 010	AM Pk Hr			PM Pk Hr			AM Pk Hr			PM Pk Hr		
Resi Sites (ID)	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot	Arr	Dep	Tot
HS2.4	10	29	**39**	28	16	**44**	0	0	**0**	0	0	**0**
HS2.5	1	2	**3**	2	1	**3**	0	0	**0**	0	0	**0**
HS2.24	7	19	**26**	19	10	**29**	0	0	**0**	0	0	**0**
HS2.25	1	4	**6**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.26	1	3	**4**	3	2	**5**	0	0	**0**	0	0	**0**
HS2.28	2	5	**6**	5	2	**7**	0	0	**0**	0	0	**0**
HS2.30	0	0	**0**	0	0	**0**	3	10	**14**	10	5	**15**
HS2.31	0	0	**0**	0	0	**0**	1	4	**6**	4	2	**6**
HS2.80	1	4	**6**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.82	13	37	**50**	36	20	**56**	0	0	**0**	0	0	**0**
HS2.83	1	4	**6**	4	2	**6**	0	0	**0**	0	0	**0**
HS2.89	1	2	**3**	2	1	**3**	0	0	**0**	0	0	**0**

	Rossendale 010 - 1-5Yrs						Rossendale 010 - 6-15Yrs					
HS2.90	3	10	**13**	9	5	**15**	0	0	**0**	0	0	**0**
HS2.93	0	0	**0**	0	0	**0**	1	2	**3**	2	1	**3**
HS2.94	1	3	**4**	3	2	**5**	0	0	**0**	0	0	**0**
HS2.95	1	3	**4**	3	1	**4**	0	0	**0**	0	0	**0**
HS2.96	2	5	**7**	5	3	**8**	0	0	**0**	0	0	**0**

8 Trip Distribution

Mott Macdonald utilised Census 2011 Journey to Work data to derive a traffic distribution for this study. A separate distribution was derived for each MSOA, both internally within Rossendale and externally of Rossendale within a one-hour drive time zone.

8.1 Internal Distribution

The internal distribution between each MSOA is presented below in **Tables 23** to **30** below and overleaf. The tables also include the overall external distribution percentage total.

Table 23. MSOA 1 Internal Distribution

Rossendale 001		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	7%
Rossendale 002	Haslingden	4%
Rossendale 003	Bacup	2%
Rossendale 004	Rawtenstall	12%
Rossendale 007	Helmshore	1%
Rossendale 008	Edenfield	5%
Rossendale 009	Whitworth	0%
Rossendale 010	Waterfoot	6%
External		63%

Table 24. MSOA 2 Internal Distribution

Rossendale 002		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	1%
Rossendale 002	Haslingden	18%
Rossendale 003	Bacup	1%

Rossendale 002		
Rossendale 004	Rawtenstall	7%
Rossendale 007	Helmshore	4%
Rossendale 008	Edenfield	7%
Rossendale 009	Whitworth	0%
Rossendale 010	Waterfoot	4%
External		58%

Table 25. MSOA 3 Internal Distribution

Rossendale 003		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	1%
Rossendale 002	Haslingden	4%
Rossendale 003	Bacup	16%
Rossendale 004	Rawtenstall	7%
Rossendale 007	Helmshore	1%
Rossendale 008	Edenfield	3%
Rossendale 009	Whitworth	2%
Rossendale 010	Waterfoot	12%
External		55%

Table 26. MSOA 4 Internal Distribution

Rossendale 004		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	2%
Rossendale 002	Haslingden	7%
Rossendale 003	Bacup	2%
Rossendale 004	Rawtenstall	19%
Rossendale 007	Helmshore	2%
Rossendale 008	Edenfield	6%
Rossendale 009	Whitworth	0%
Rossendale 010	Waterfoot	7%
External		55%

Table 27. MSOA 7 Internal Distribution

Rossendale 007		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	1%
Rossendale 002	Haslingden	12%
Rossendale 003	Bacup	1%
Rossendale 004	Rawtenstall	7%
Rossendale 007	Helmshore	5%
Rossendale 008	Edenfield	7%
Rossendale 009	Whitworth	0%
Rossendale 010	Waterfoot	3%
External		63%

Table 28. MSOA 8 Internal Distribution

Rossendale 008		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	1%
Rossendale 002	Haslingden	5%
Rossendale 003	Bacup	1%
Rossendale 004	Rawtenstall	7%
Rossendale 007	Helmshore	2%
Rossendale 008	Edenfield	10%
Rossendale 009	Whitworth	0%
Rossendale 010	Waterfoot	3%
External		70%

Table 29. MSOA 9 Internal Distribution

Rossendale 009		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	0%
Rossendale 002	Haslingden	1%
Rossendale 003	Bacup	2%

Rossendale 009		
Rossendale 004	Rawtenstall	2%
Rossendale 007	Helmshore	0%
Rossendale 008	Edenfield	1%
Rossendale 009	Whitworth	13%
Rossendale 010	Waterfoot	4%
External		75%

Table 30. MSOA 10 Internal Distribution

Rossendale 010		
MSOA	Centroid	Percentage
Rossendale 001	Crawshawbooth	2%
Rossendale 002	Haslingden	6%
Rossendale 003	Bacup	6%
Rossendale 004	Rawtenstall	12%
Rossendale 007	Helmshore	2%
Rossendale 008	Edenfield	4%
Rossendale 009	Whitworth	1%
Rossendale 010	Waterfoot	19%
External		48%

8.2 External Distribution

The external distribution between each MSOA and the surrounding areas within a one-hour drive time zone is presented below in **Tables 31** to **38** below and overleaf. The tables also include the overall internal distribution percentage total.

Table 31. MSOA 1 External Distribution

Rossendale 001	
LaD	Percentage
Burnley	10%
Manchester	7%
Blackburn with Darwen	5%
Bury	8%
Hyndburn	5%

Rossendale 001	
Rochdale	4%
Pendle	4%
Oldham	2%
Salford	3%
Bolton	2%
Trafford	2%
Calderdale	1%
Kirklees	0%
Other	11%
Internal	37%

Table 32. MSOA 2 External Distribution

Rossendale 002	
LaD	Percentage
Burnley	5%
Manchester	5%
Blackburn with Darwen	7%
Bury	8%
Hyndburn	10%
Rochdale	4%
Pendle	3%
Oldham	1%
Salford	2%
Bolton	2%
Trafford	1%
Calderdale	0%
Kirklees	0%
Other	10%
Internal	42%

Table 33. MSOA 3 External Distribution

Rossendale 003	
LaD	Percentage
Burnley	7%
Manchester	4%
Blackburn with Darwen	3%
Bury	5%
Hyndburn	3%
Rochdale	12%
Pendle	3%
Oldham	2%
Salford	2%
Bolton	1%
Trafford	1%
Calderdale	2%
Kirklees	0%
Other	9%
Internal	45%

Table 34. MSOA 4 External Distribution

Rossendale 004	
LaD	Percentage
Burnley	7%
Manchester	6%
Blackburn with Darwen	4%
Bury	8%
Hyndburn	5%
Rochdale	5%
Pendle	3%
Oldham	2%
Salford	2%
Bolton	2%
Trafford	2%
Calderdale	1%
Kirklees	0%

Rossendale 004	
Other	8%
Internal	45%

Table 35. MSOA 7 External Distribution

Rossendale 007	
LaD	Percentage
Burnley	5%
Manchester	5%
Blackburn with Darwen	7%
Bury	11%
Hyndburn	6%
Rochdale	4%
Pendle	2%
Oldham	2%
Salford	2%
Bolton	4%
Trafford	2%
Calderdale	0%
Kirklees	0%
Other	12%
Internal	37%

Table 36. MSOA 8 External Distribution

Rossendale 008	
LaD	Percentage
Burnley	5%
Manchester	8%
Blackburn with Darwen	4%
Bury	19%
Hyndburn	4%
Rochdale	6%
Pendle	3%

Rossendale 008	
Oldham	2%
Salford	3%
Bolton	4%
Trafford	3%
Calderdale	0%
Kirklees	0%
Other	11%
Internal	30%

Table 37. MSOA 9 External Distribution

Rossendale 009	
LaD	Percentage
Burnley	2%
Manchester	6%
Blackburn with Darwen	2%
Bury	4%
Hyndburn	1%
Rochdale	38%
Pendle	1%
Oldham	6%
Salford	2%
Bolton	1%
Trafford	2%
Calderdale	1%
Kirklees	0%
Other	8%
Internal	25%

Table 38. MSOA 10 External Distribution

Rossendale 010	
LaD	Percentage
Burnley	6%

Rossendale 010	
Manchester	4%
Blackburn with Darwen	3%
Bury	6%
Hyndburn	4%
Rochdale	6%
Pendle	2%
Oldham	2%
Salford	2%
Bolton	1%
Trafford	1%
Calderdale	1%
Kirklees	1%
Other	8%
Internal	52%

9 Trip Assignment

Utilising the trip distribution data, the assignment of the generated trip volumes to the network was undertaken as follows;

1. Group the residential, employment and mixed-use sites within each Mid Super Output Area into groups based on their location and their likely access point to the highway network,
2. Derive a central location (origin point) for each of the combined group of residential, mixed use and employment sites,
3. Utilise a fastest route analysis to define a route between each origin point and internal/external Mid Super Output Area centroid,
4. Assign traffic volumes to the derived percentage assignment splits, and
5. Repeat the above process for the 6-15 year bracket.

The fastest route analysis is based on using the AA Route Planner feature for quickest available route in non-peak conditions. This is to ensure that traffic is assigned to the most appropriate route, and no account is taken of longer diversions which may occur in congested conditions, thereby ensuring the robustness of the methodology.

10 Assessment Scenarios

The defined assessment scenarios based on the traffic growth, trip generation, trip distribution and trip assignment detail above are as follows;

- 2019 Baseline,
- 2024 Reference Case,
- 2024 Local Plan,
- 2034 Reference Case,
- 2034 Local Plan.

11 Assessments

Operational assessments have been undertaken for junctions and merge/diverge locations on the A56.

Table 39 below identifies the industry standard software used to assess each of the junctions.

Table 39. Operational Assessment Approach

Junction Number	Junction Name	Assessment Software
J1	The Gyratory, Rawtenstall	LinSig*
J2	Mini-roundabout by Hardman's Mill, Rawtenstall	ARCADY
J3	Junction of St Mary's Way, Bank Street and Asda, Rawtenstall	LinSig*
J4	Tup Bridge Junction, St Mary's Way, Rawtenstall	LinSig*
J5a	Haslingden Road/Tesco roundabout, Haslingden	ARCADY
J5b	A56 Haslingden Roundabout	ARCADY
J6	Rising Bridge roundabout, A56	LinSig
J7	Todd Hall Road access	PICADY
J8	Grane Road/Holcombe Road junction	VISSIM
J9a	Grane Road/A56 junctions (A56 off-slip)	VISSIM
J9b	Grane Road/A56 junctions (Waterside Rd Access Rd A56 on-slip Road)	VISSIM
J10	A56 / M66 'Junction 0' at Edenfield	ARCADY
J11	Rochdale Road/Market St roundabout, Edenfield	ARCADY
J12	Bacup St James Square	AIMSUN**
J13	Waterfoot roundabout	ARCADY
J14	Toll Bar Roundabout, Stacksteads	ARCADY
J15	Market St/Shawclough Road, Whitworth	PICADY

* combined within one LinSig model

** LCC Aimsun model

Table 40 below identifies the locations assessed using merge/diverge analysis.

Table 40. A56 Merge / Diverge Assessment Locations

Merge / Diverge No.	Description
1	A56 / Grane Road SB Merge
2	A56 / Grane Road NB Diverge
3	A56 / Tesco Haslingden SB Diverge
4	A56 / Haslingden Roundabout NB Merge
5	A56 / Haslingden Roundabout NB Diverge
6	A56 / Tesco Haslingden SB Merge
7	A56 / Junction '0' Edenfield SB Diverge
8	A56 / Junction '0' Edenfield NB Merge
9	A56 / A682 (Rawtenstall Spur) NB Diverge
10	A682 (Rawtenstall Spur) / A56 SB Merge

12 Mitigation Identification

Based on the results of the operational analysis mitigation would be identified as required. Reference was made to NPPF with regards to determining the severity of the recorded impact and thereby determining whether each location warranted further consideration beyond the initial assessments.

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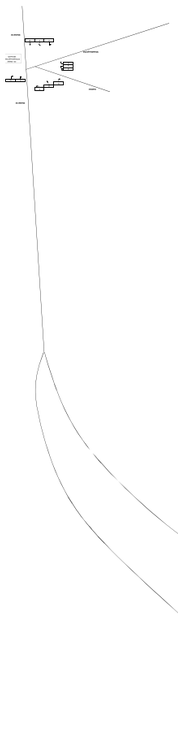
APPENDIX D

ASSIGNED RESIDENTIAL AND EMPLOYMENT TRAFFIC

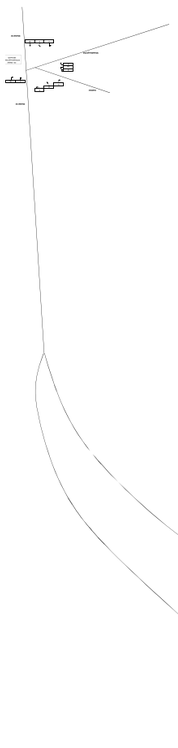
MOTT MACDONALD

AM 1-5 years



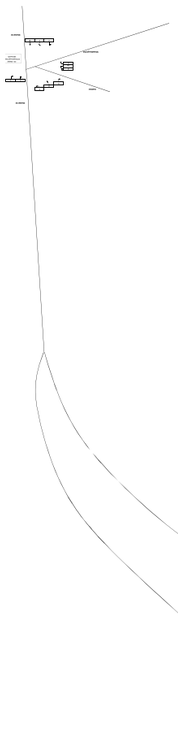
MOTT MACDONALD

AM 6-15 years



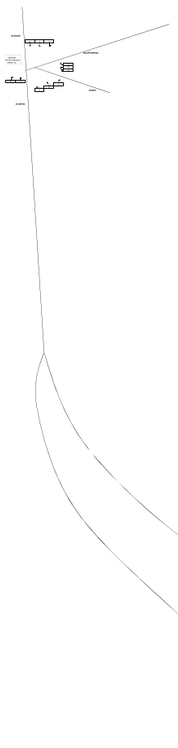
MOTT MACDONALD

PM 1-5 years



MOTT MACDONALD

PM 6-15 years



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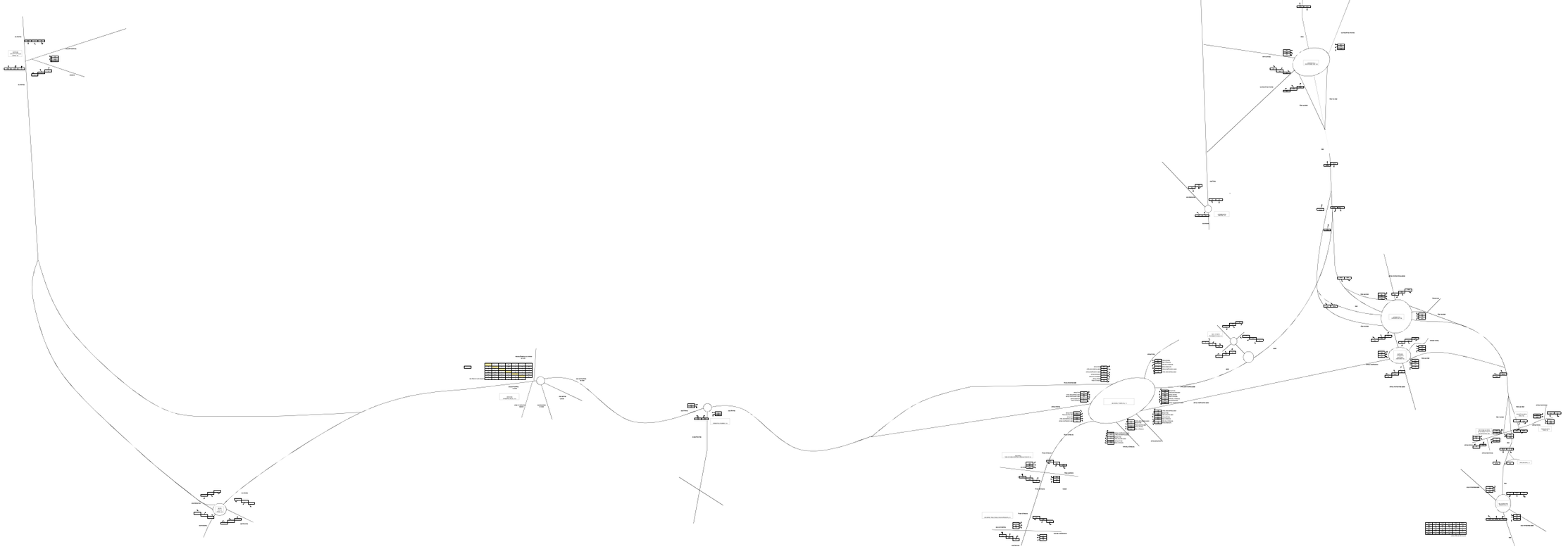
APPENDIX E

2019, 2024 & 2034 SCENARIO TRAFFIC FLOW DIAGRAMS

MOTT MACDONALD

2019 AM and PM



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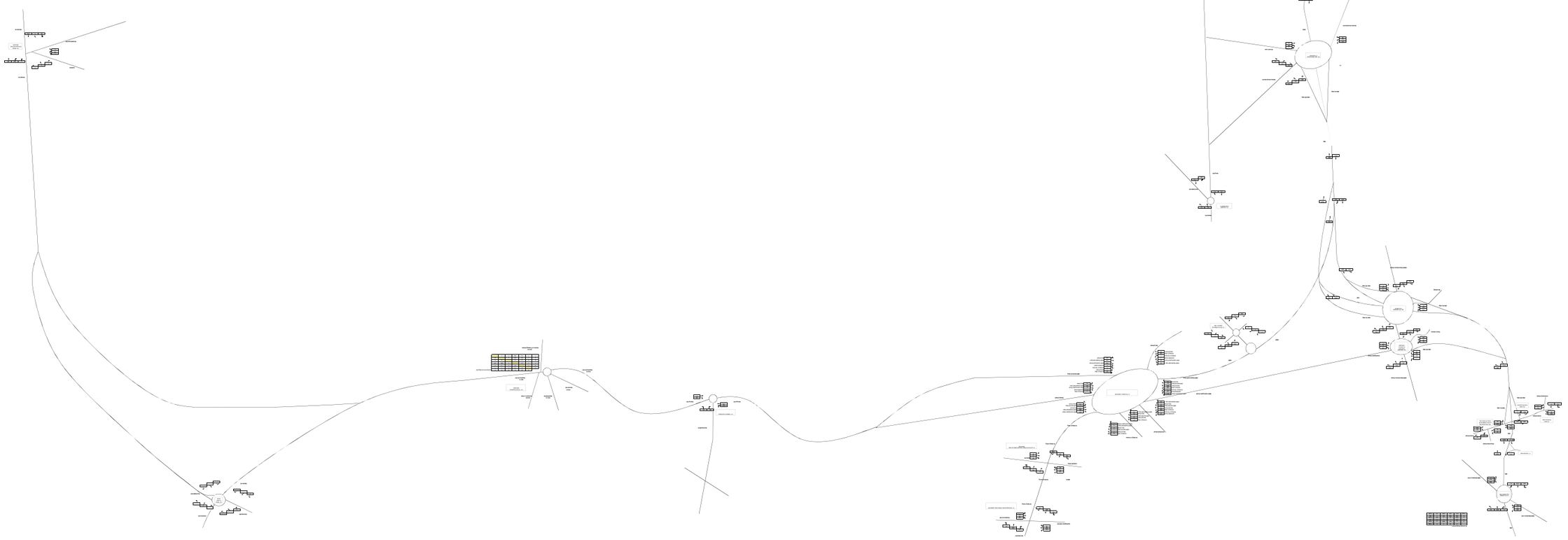

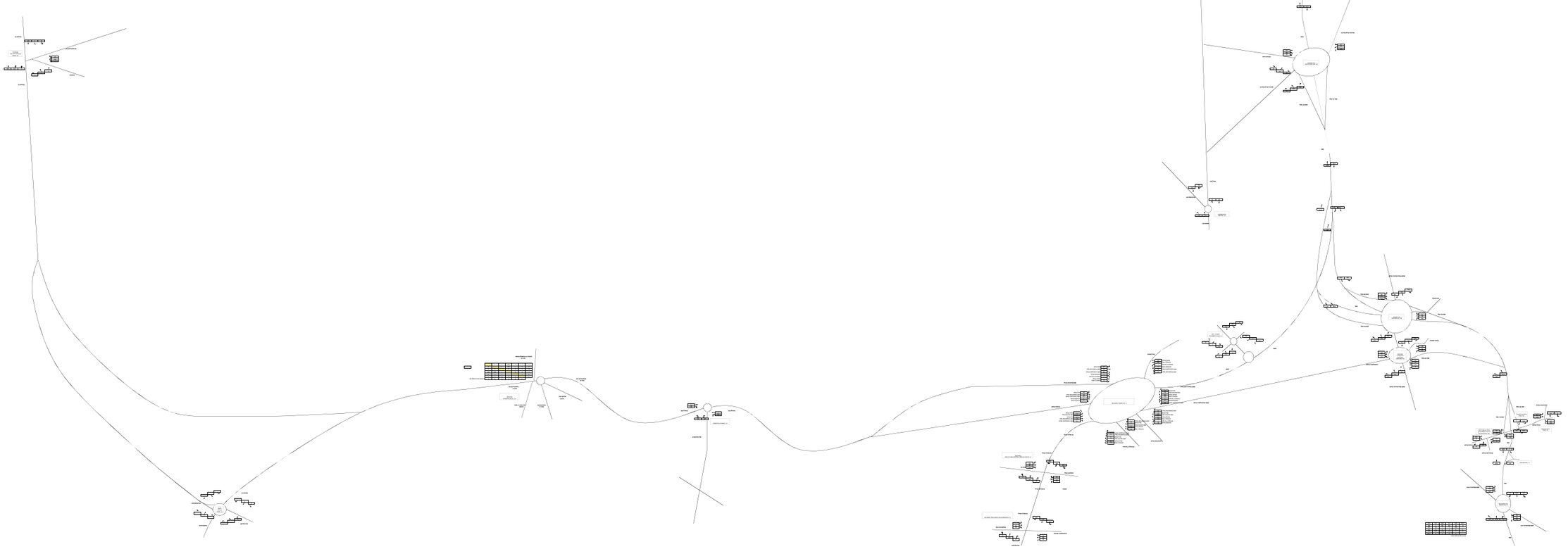

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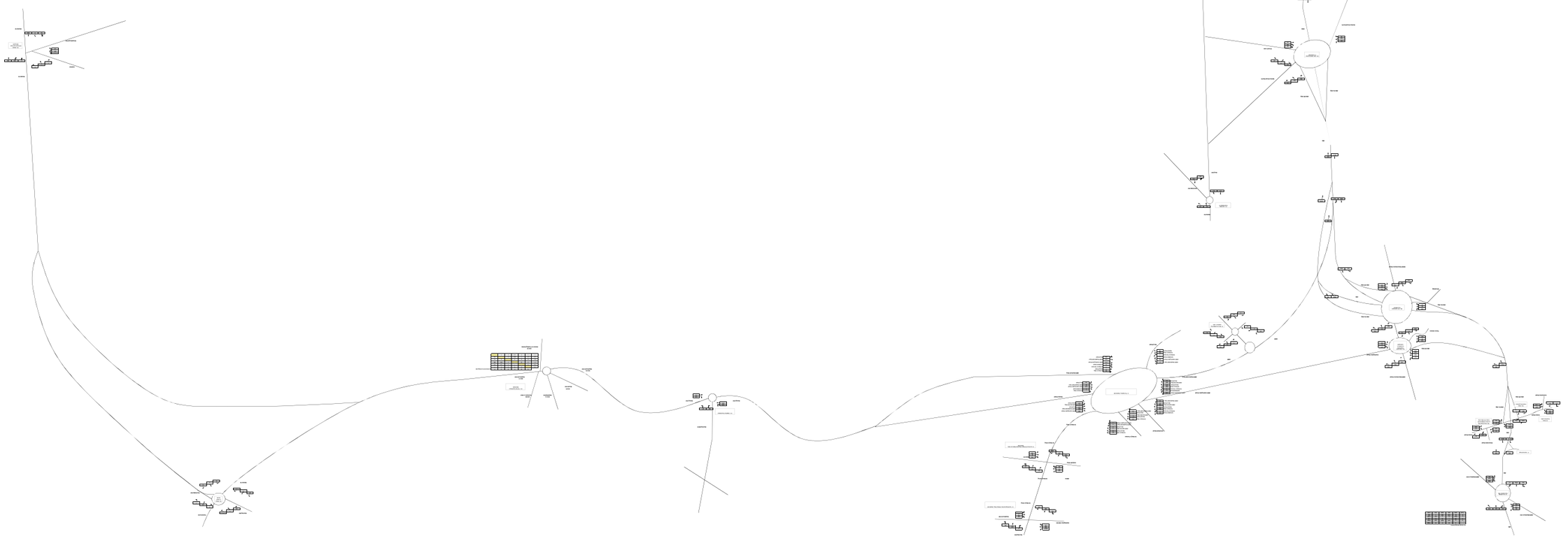
2024 Local Plan AM and PM



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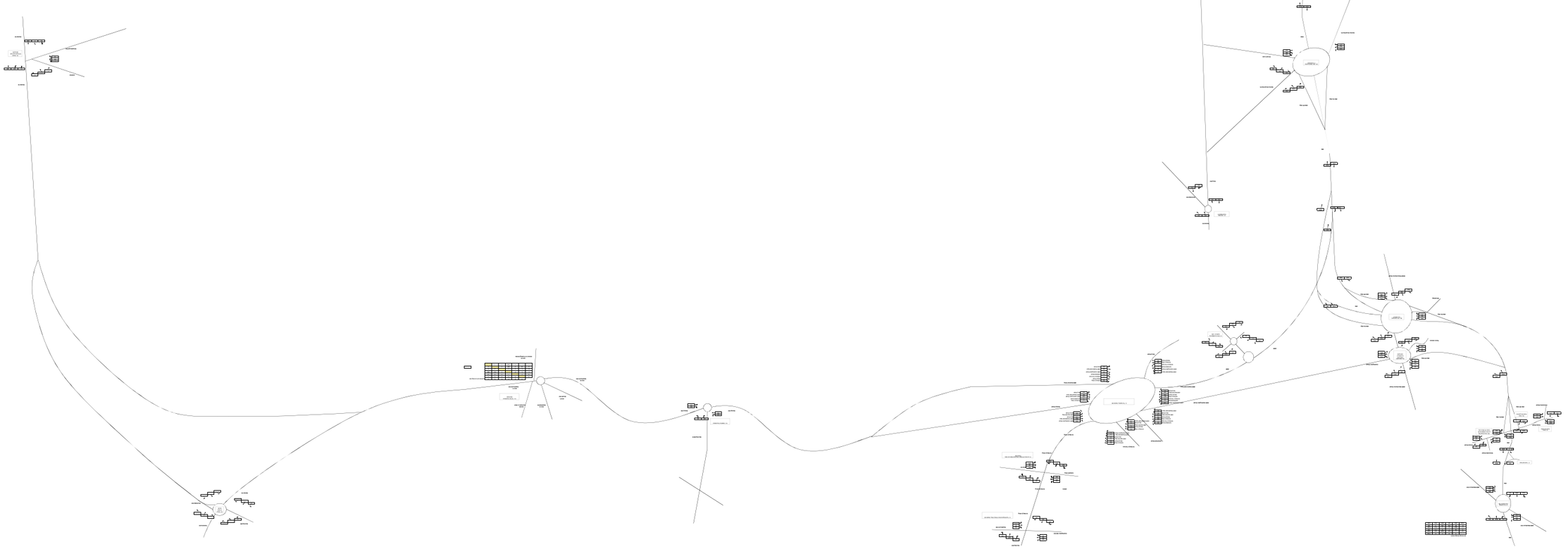
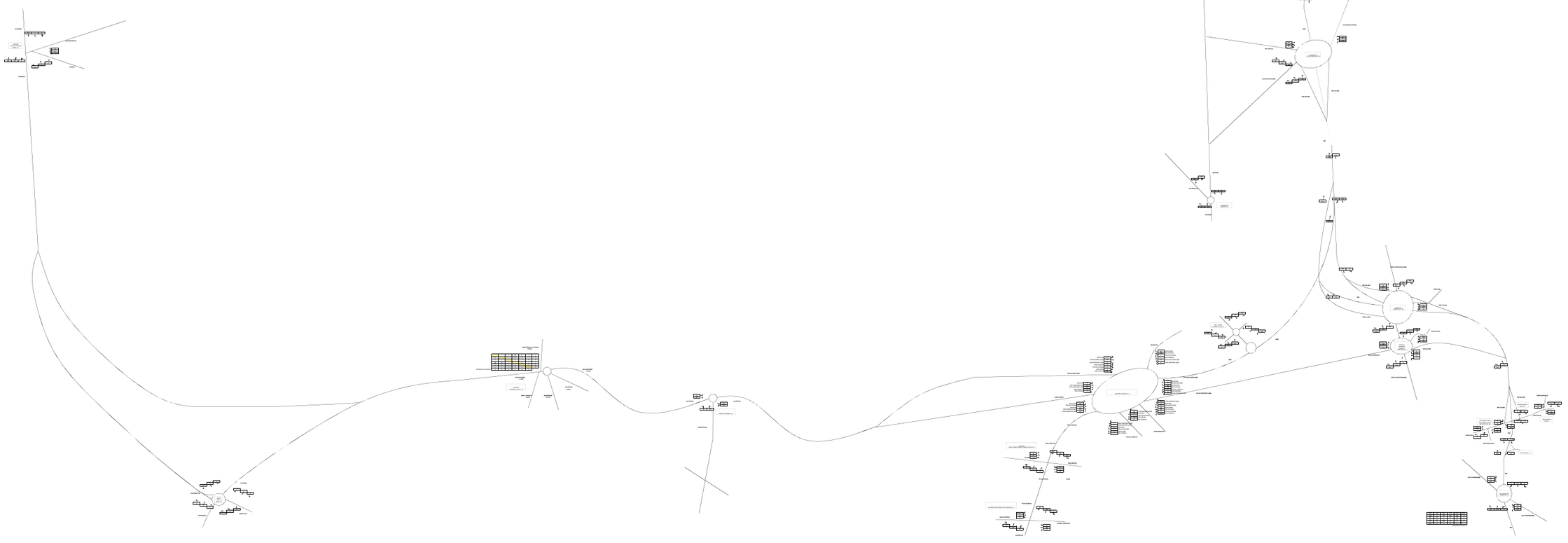
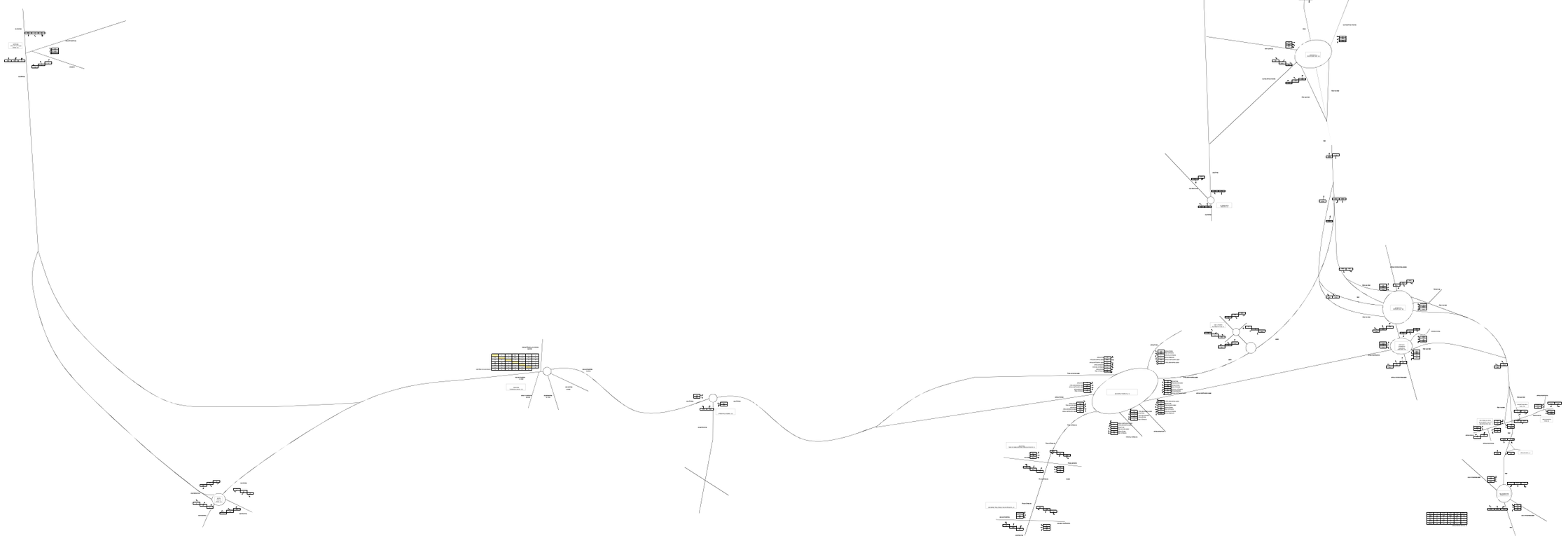


MOTT MACDONALD

2034 Local Plan AM and PM





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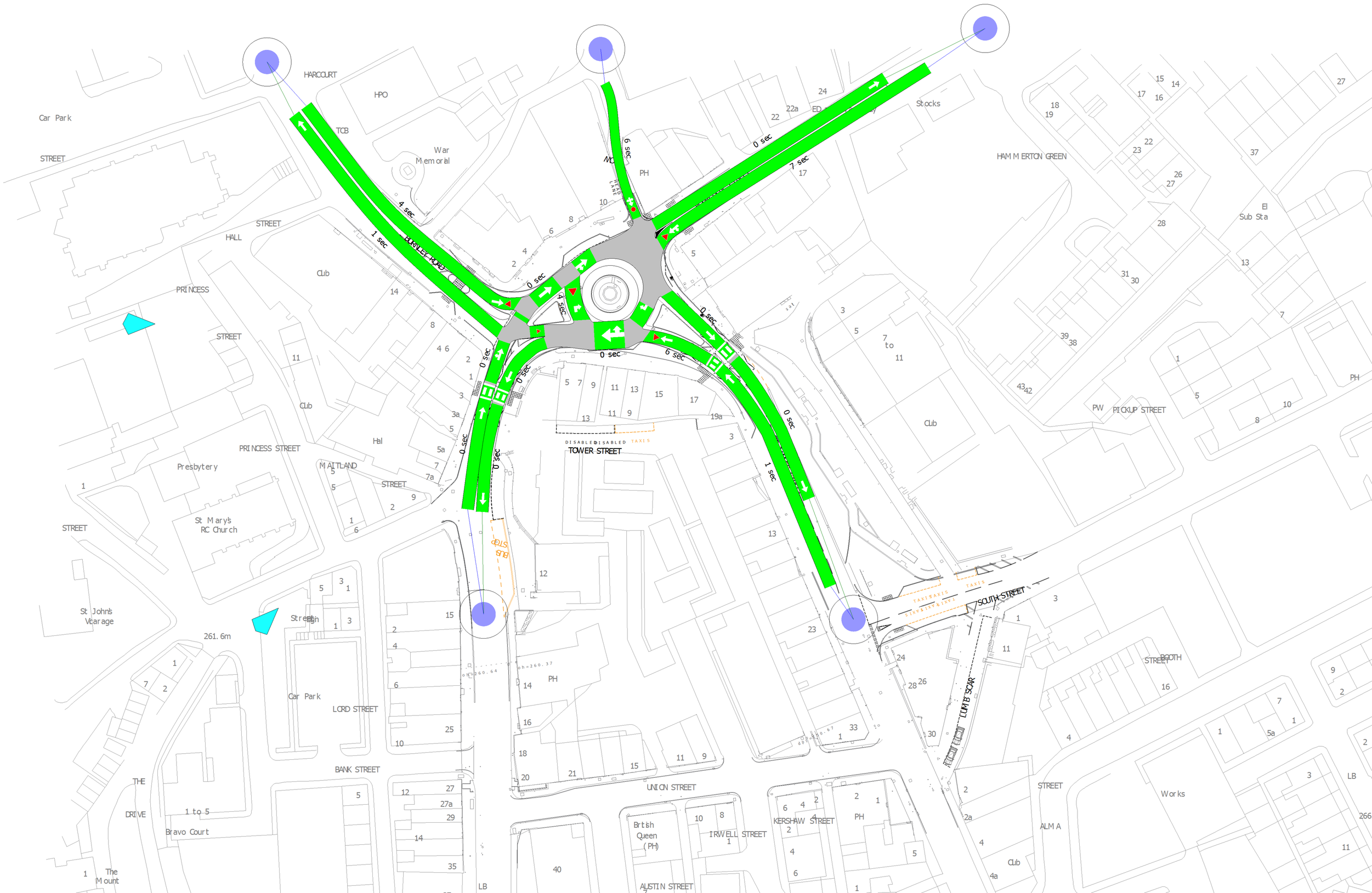
APPENDIX F

AIMSUN RESULT PLOTS

MOTT MACDONALD

2019 Delay Time and Max Virtual Queue Plots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LORD STREET
BANK STREET
THE DRIVE
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ALM A
Works
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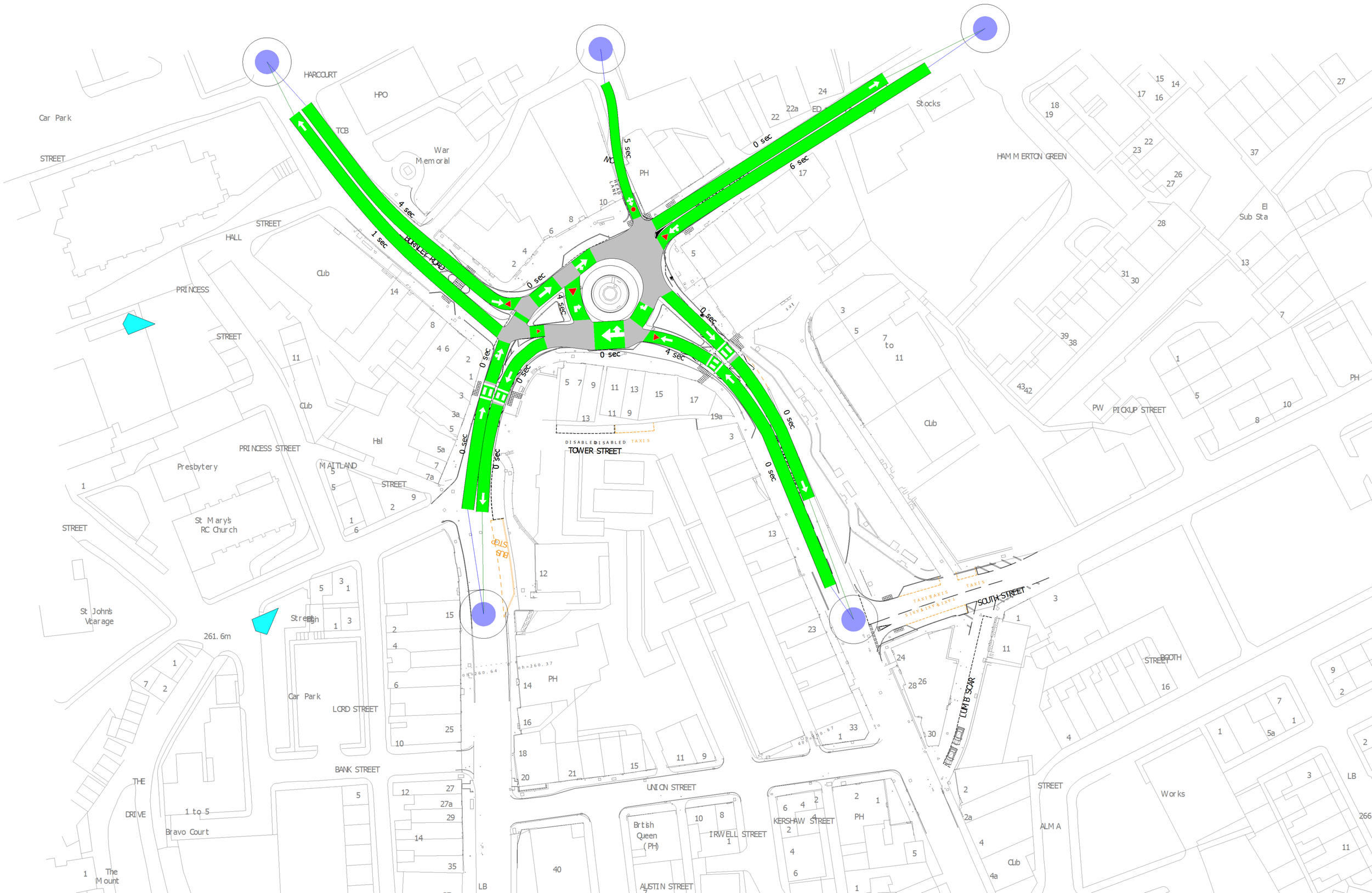
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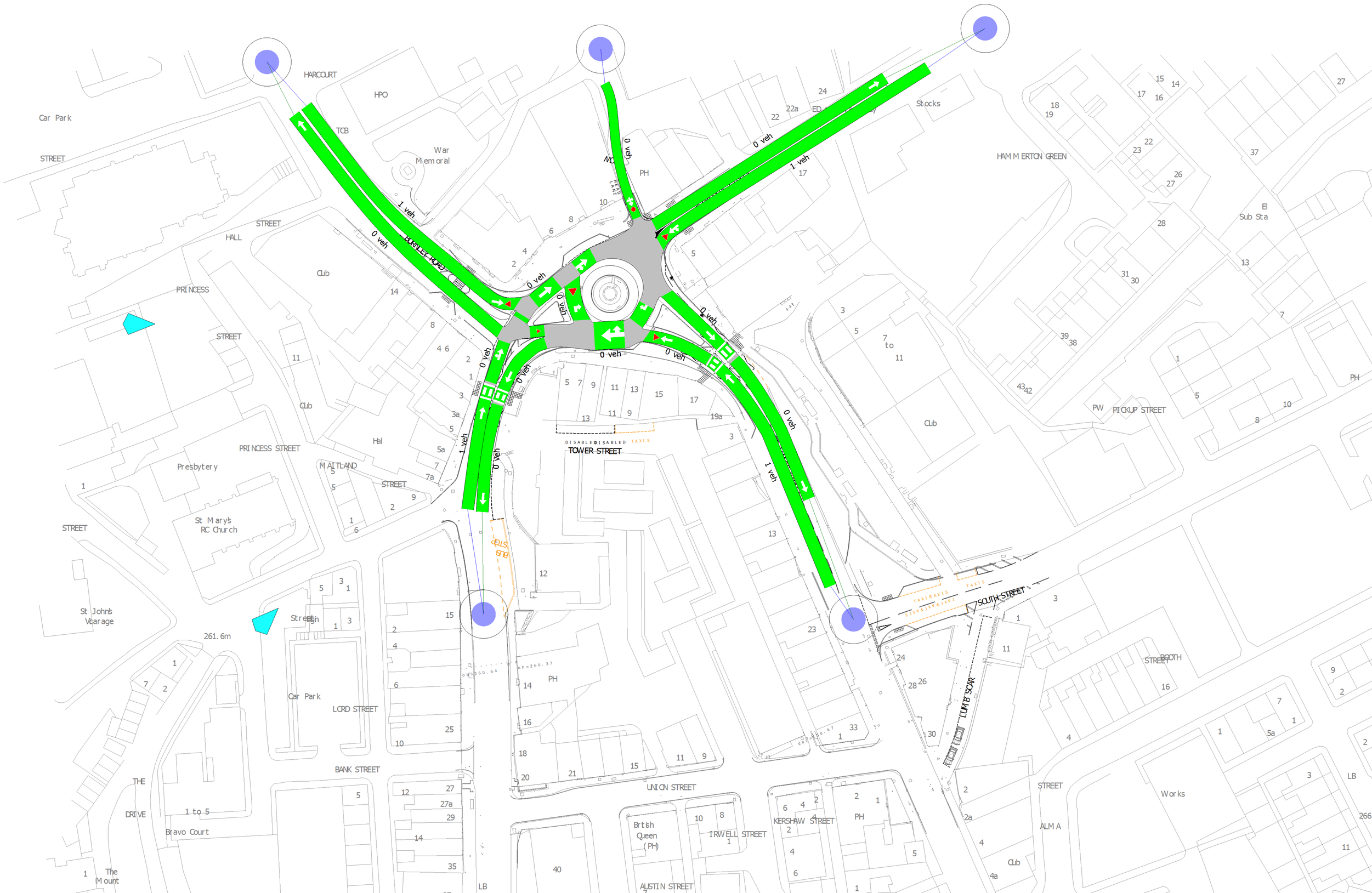
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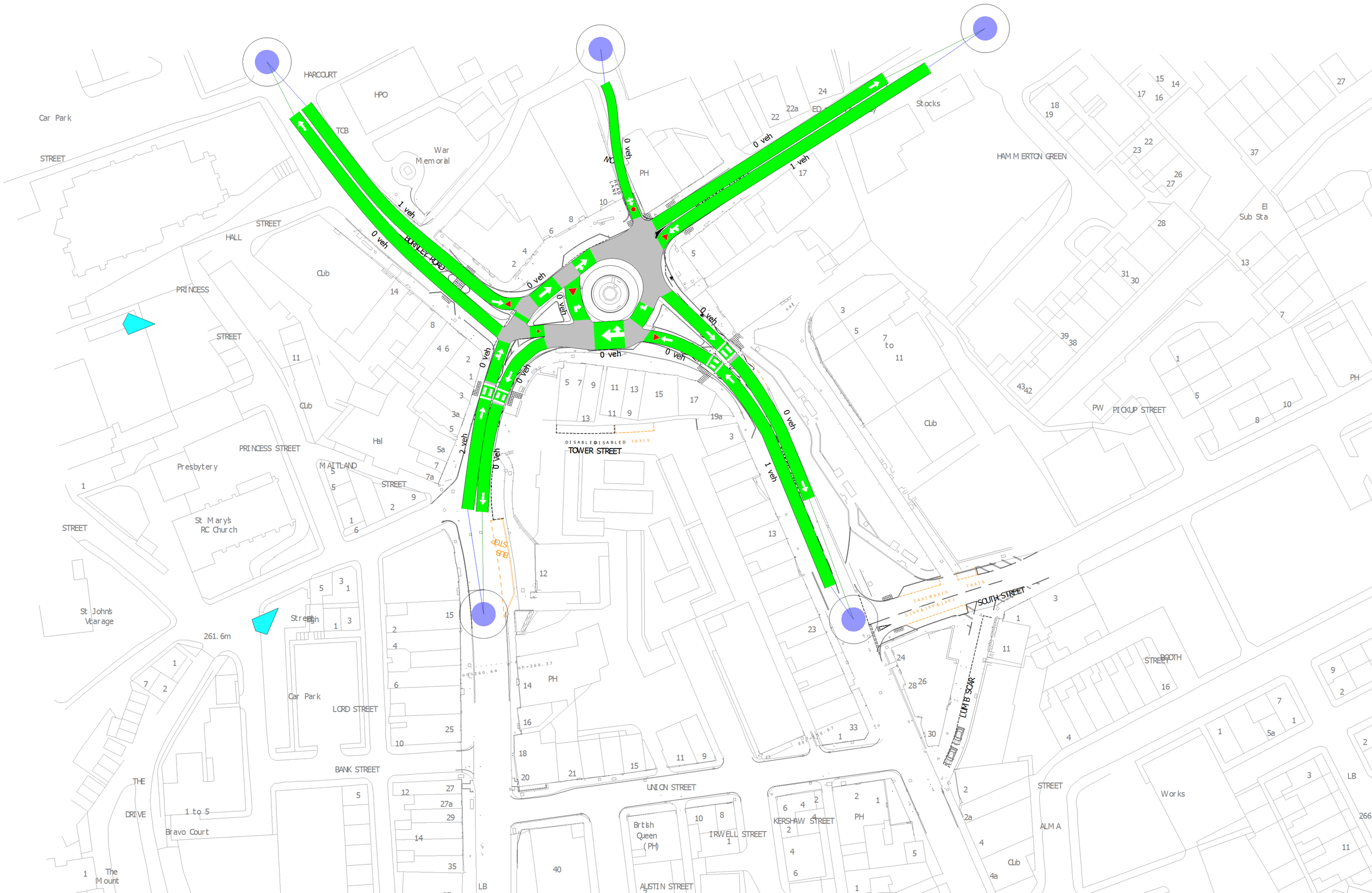
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KERSHAW STREET
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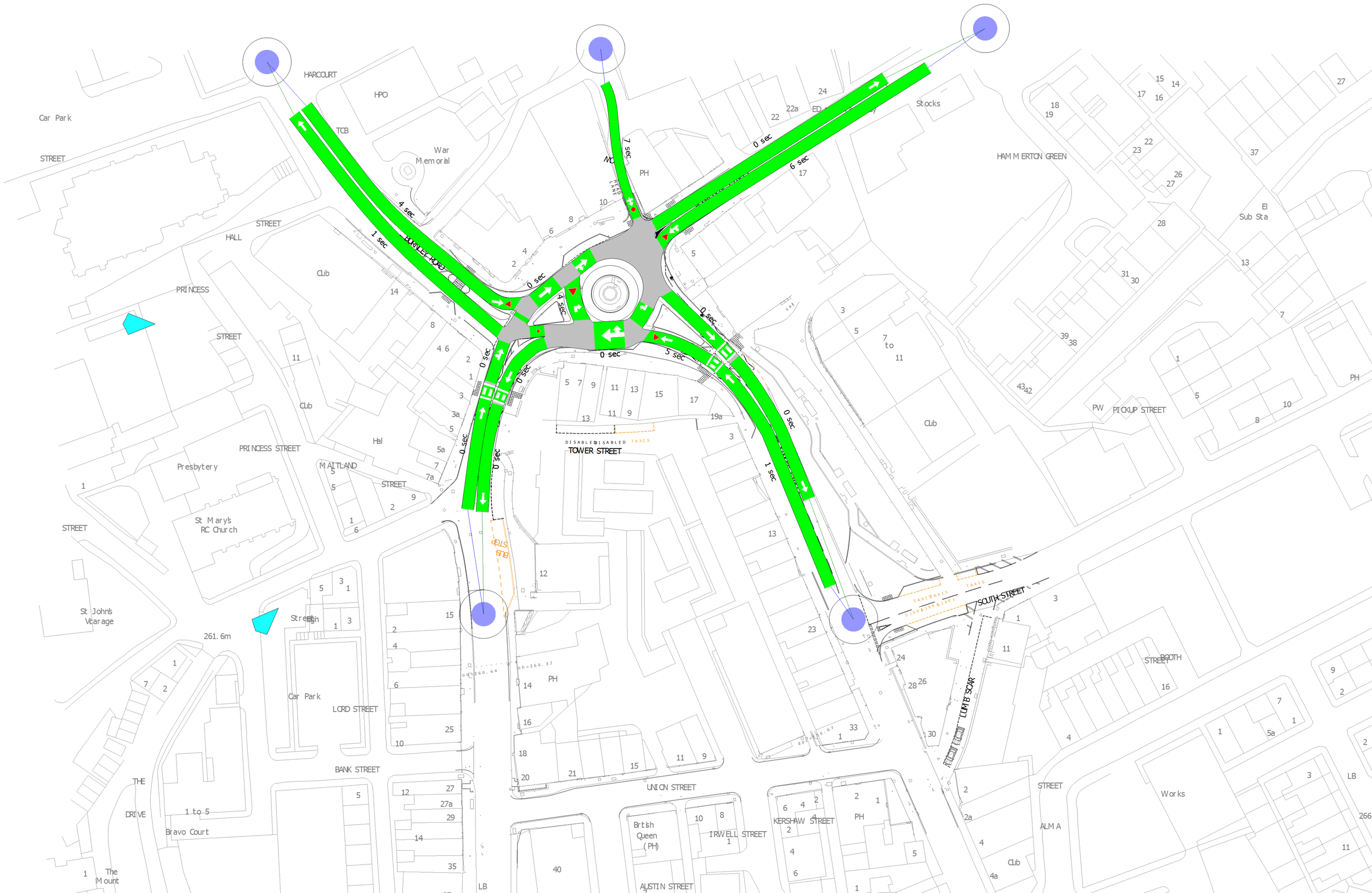
MOTT MACDONALD

2024 Reference Case Delay Time and Max Virtual Queue Plots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DRIVE
1 to 5
Bravo Court
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DISABLED DISABLED TAXIS
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BUS STOP
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UNION STREET
British Queen (PH)
IRWELL STREET
AUSTIN STREET
KERSHAW STREET
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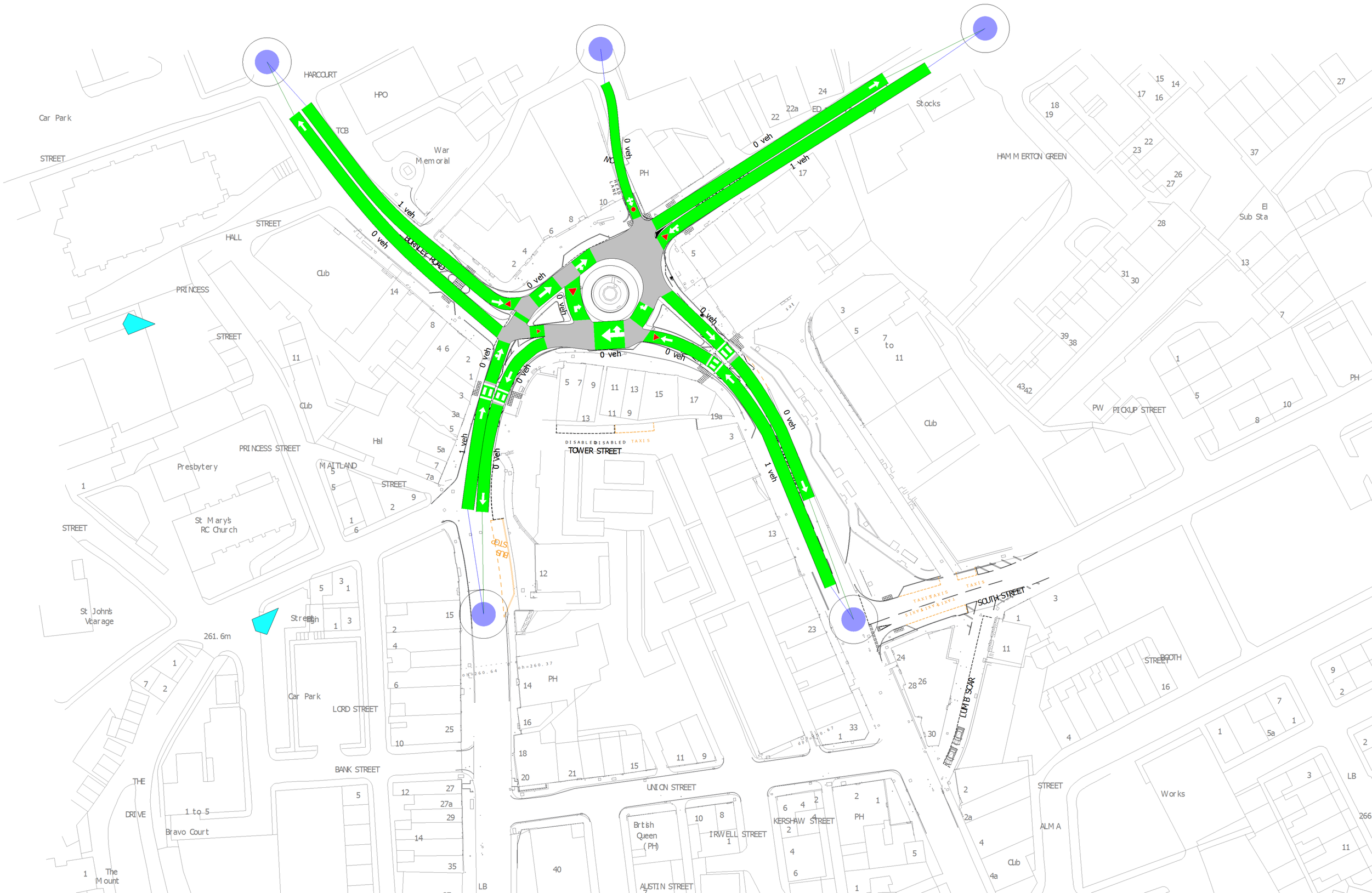
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BUS STOP
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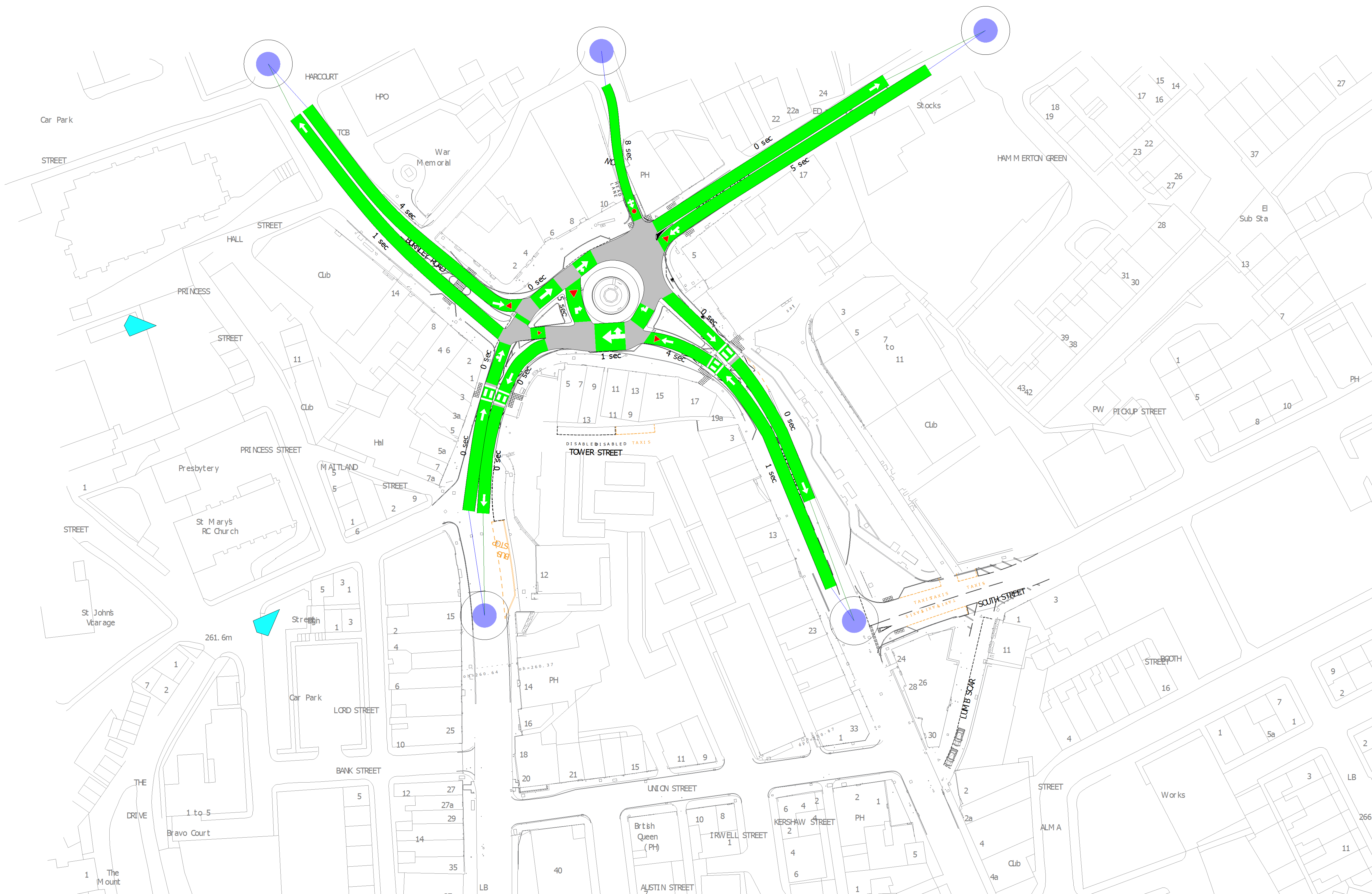

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ALMA STREET
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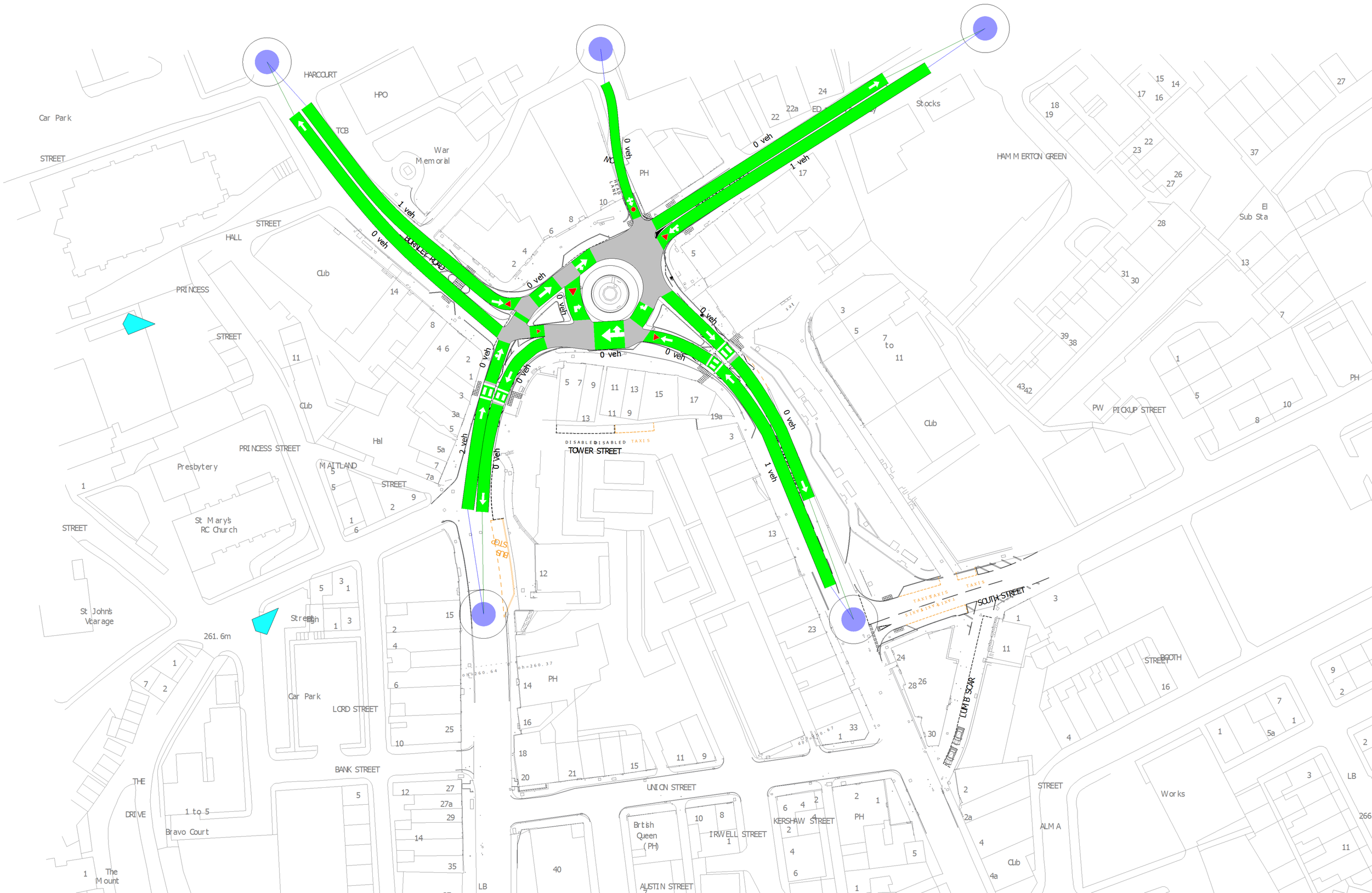
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IRWELL STREET
KERSHAW STREET
AUSTIN STREET
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PICKUP STREET
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El Sub Sta
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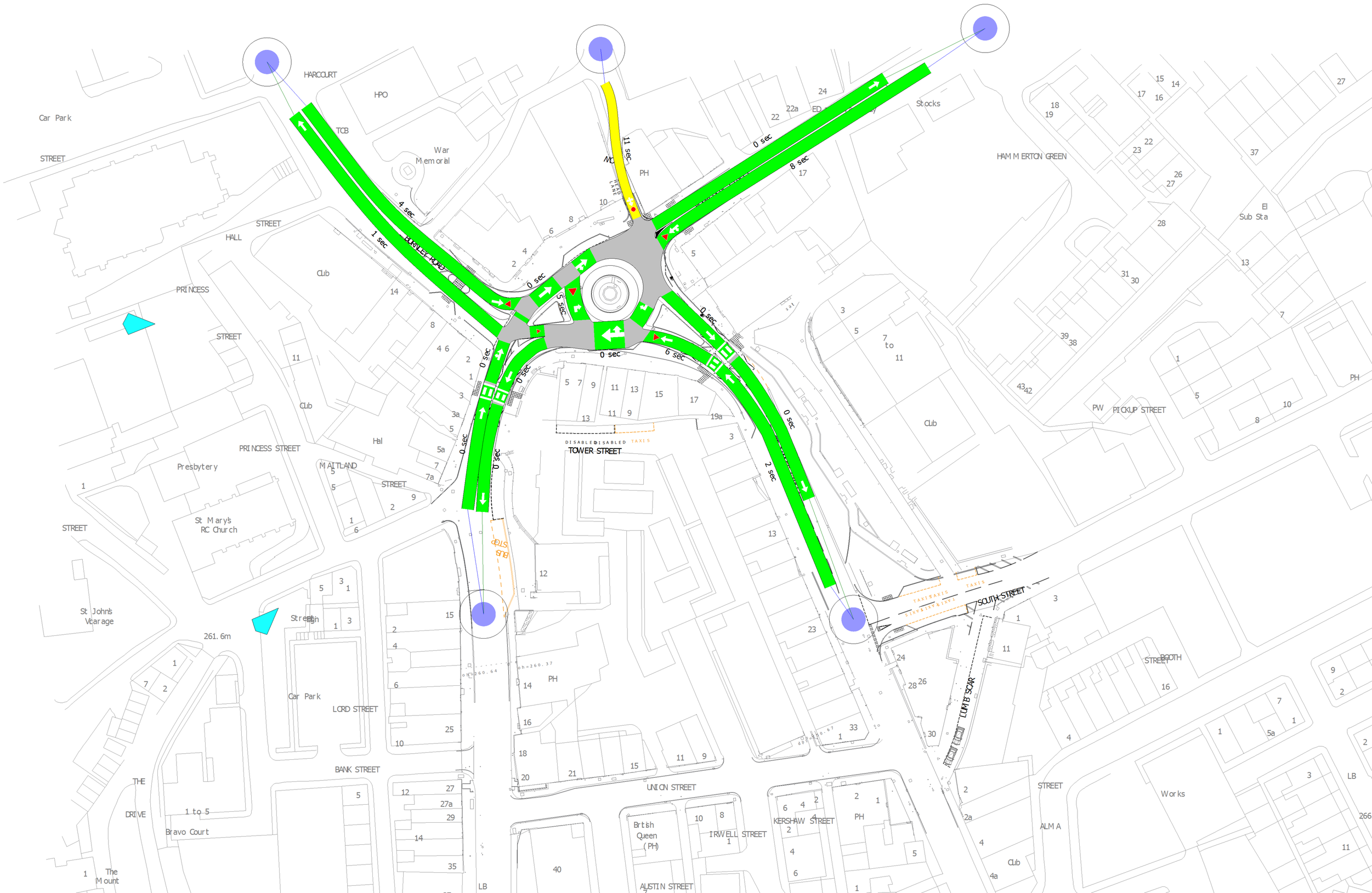
2 veh

MOTT MACDONALD

2024 Local Plan Delay Time and Max Virtual Queue Plots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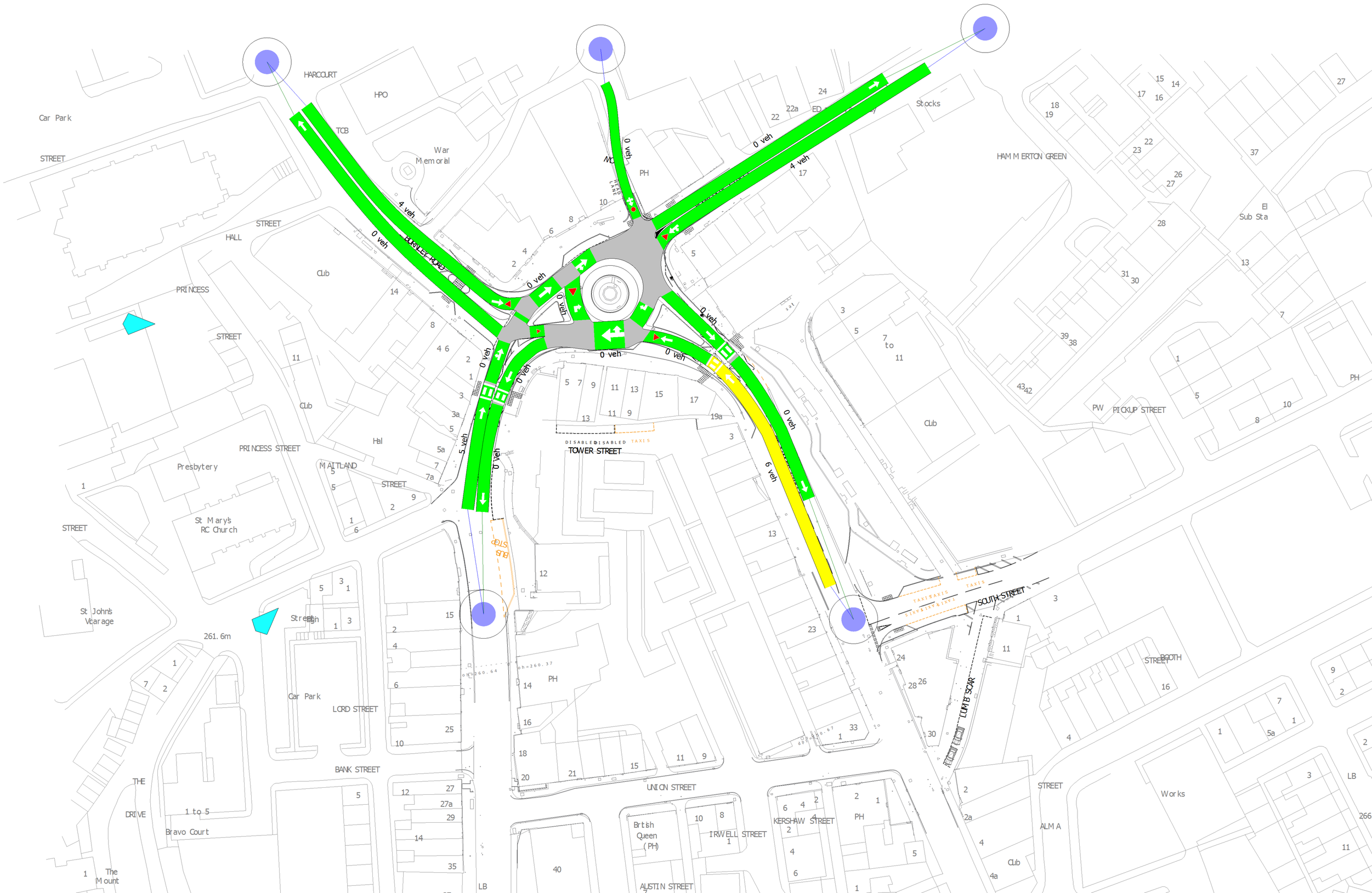
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British Queen (PH)
IRWELL STREET
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TAXIS
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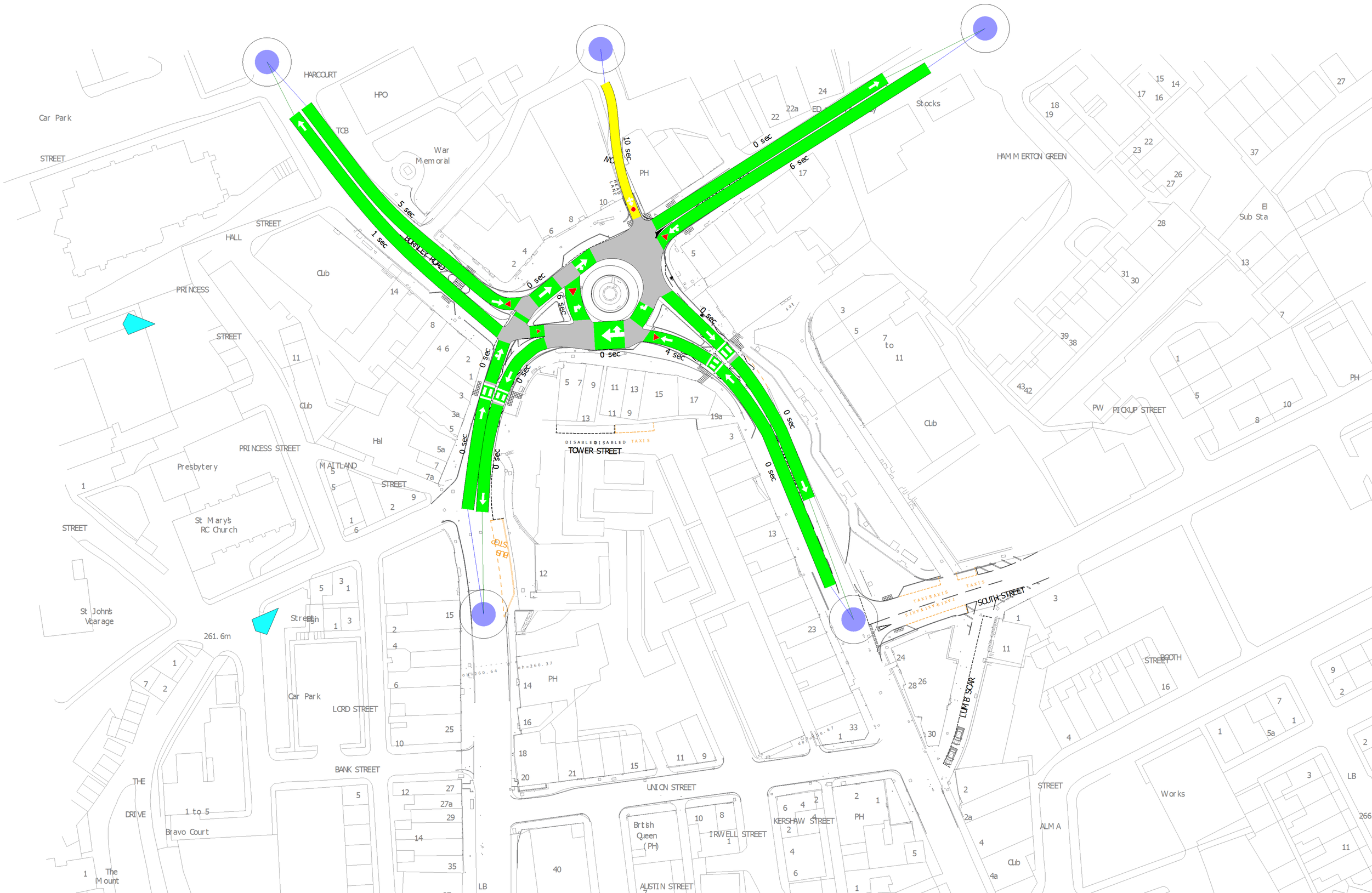
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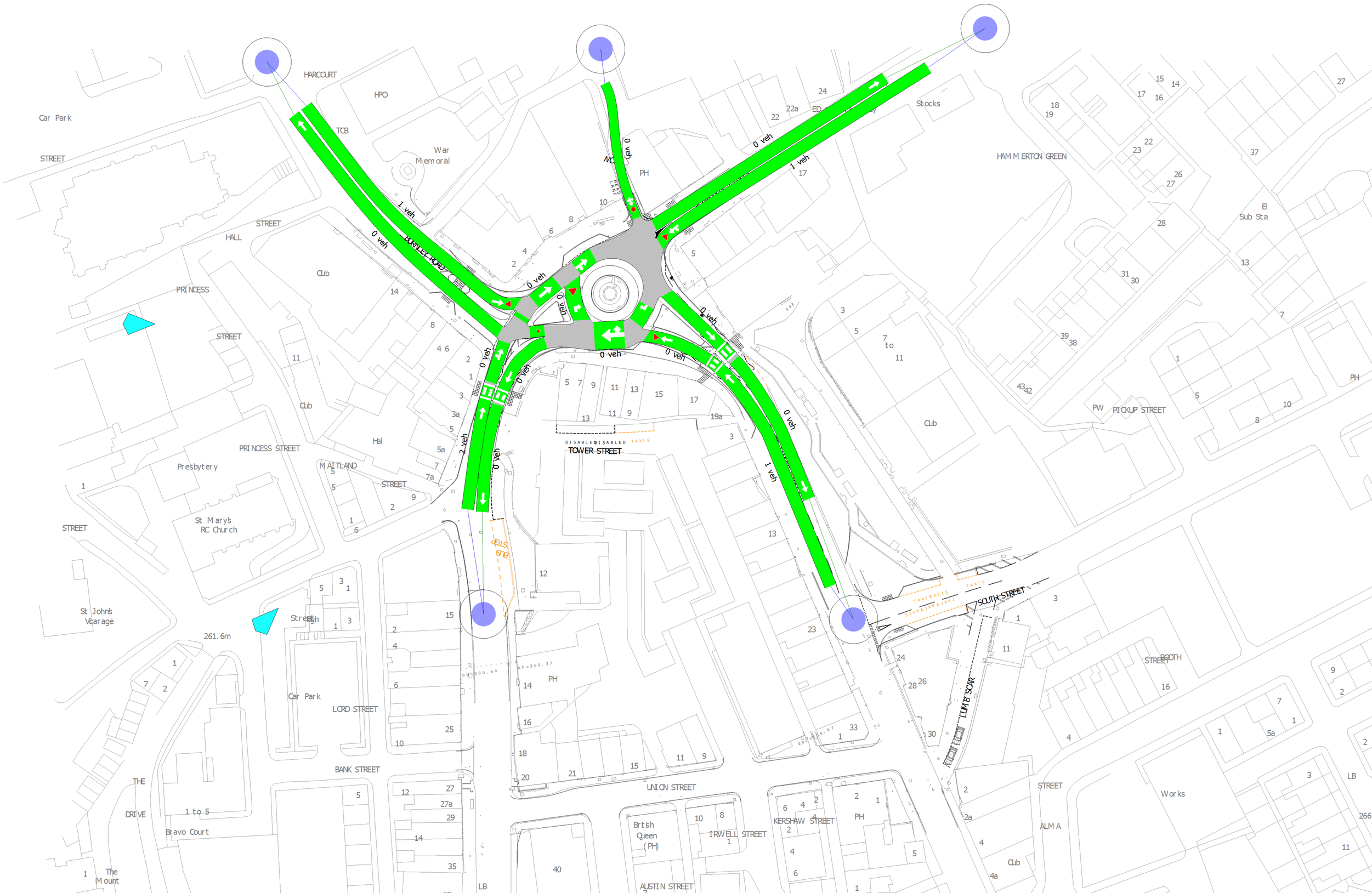
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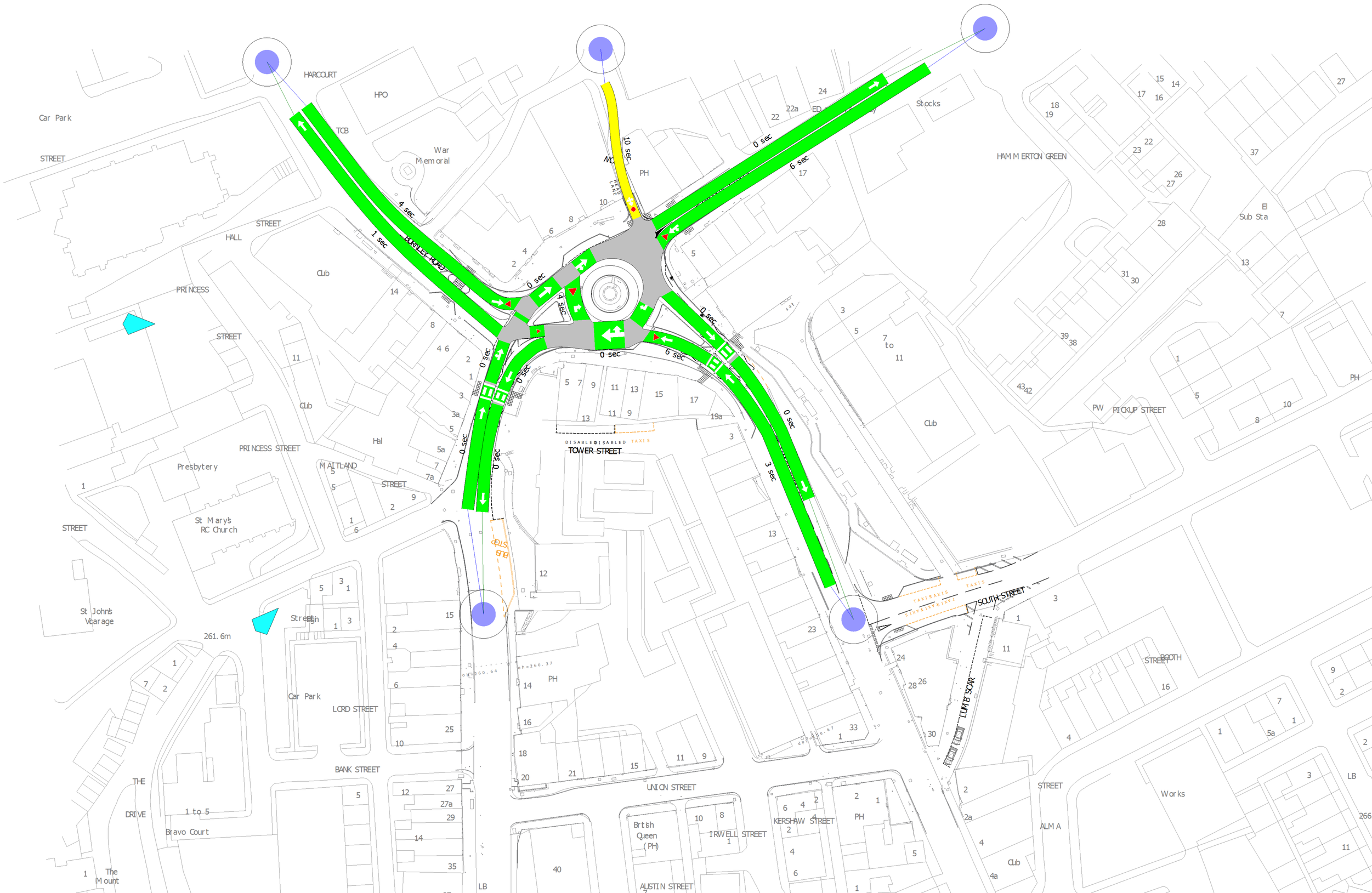
MOTT MACDONALD

2034 Reference Case Delay Time and Max Virtual Queue Plots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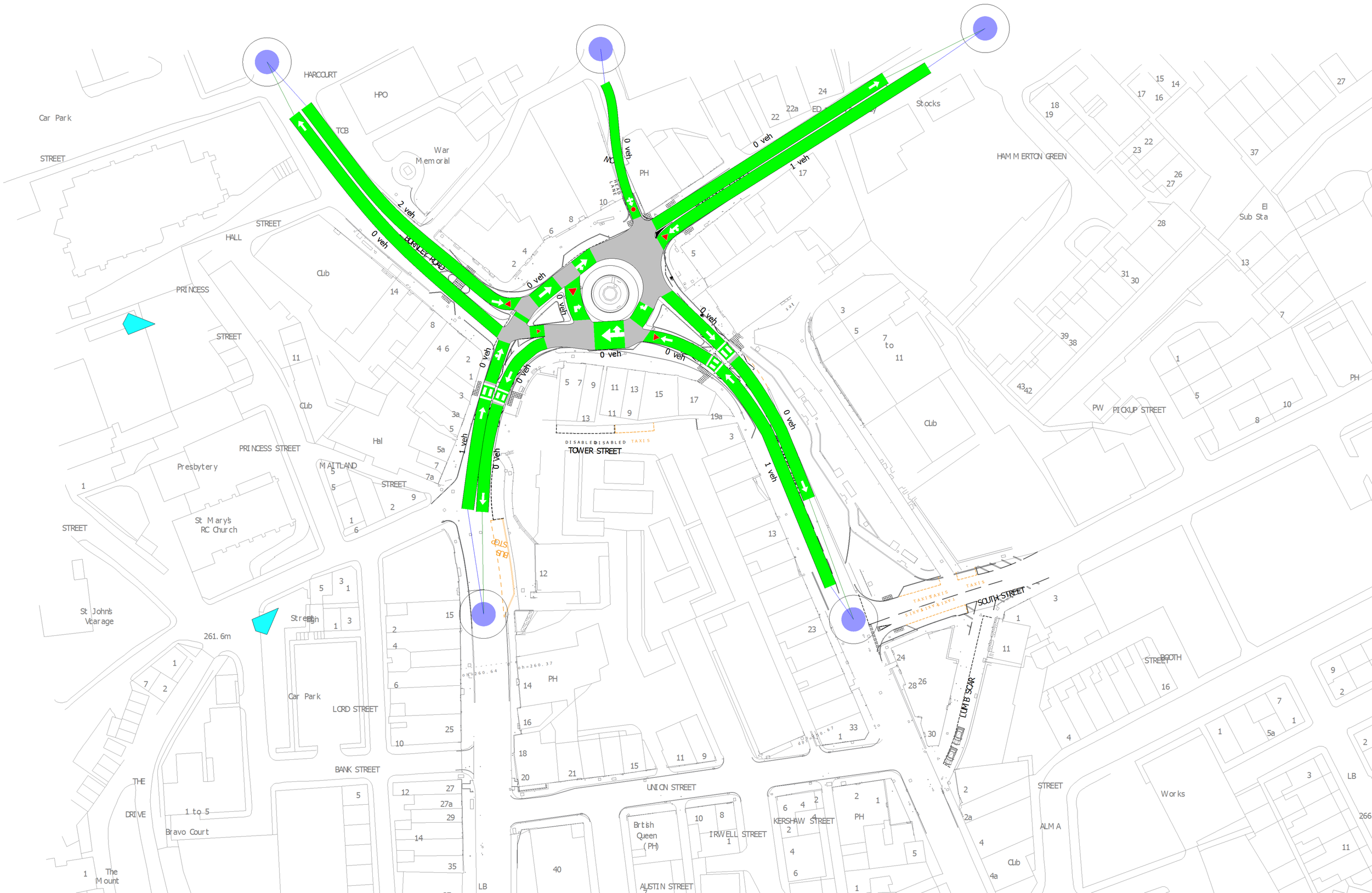
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The Mount
UNION STREET
British Queen (PH)
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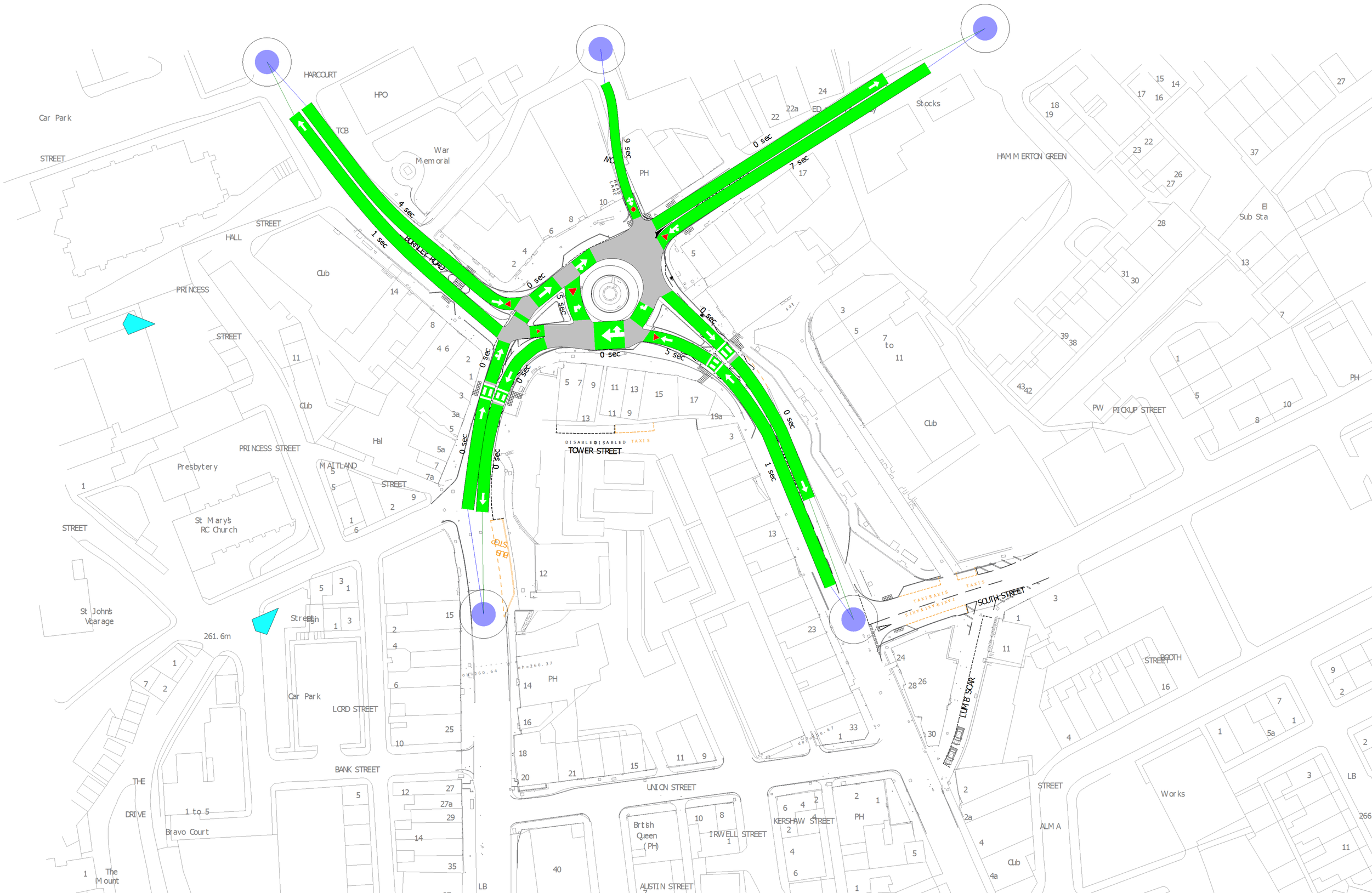
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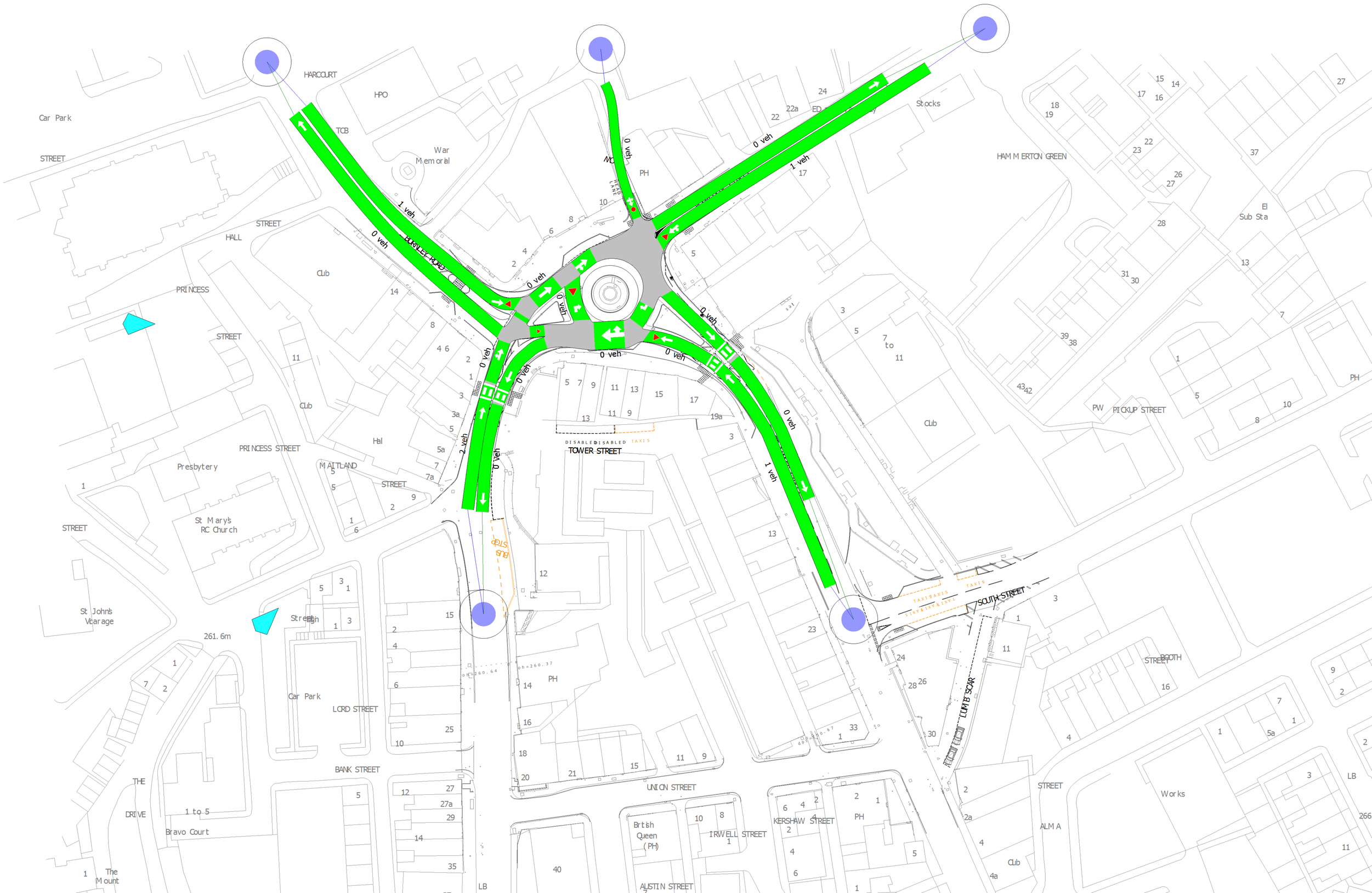
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DRIVE
1 to 5
Bravo Court
The Mount
SOUTH STREET
LUMB SCAR
BOOTH STREET
UNION STREET
British Queen (PH)
IRWELL STREET
KERSHAW STREET
AUSTIN STREET
ALM A
Works
PICKUP STREET
PW
El Sub Sta
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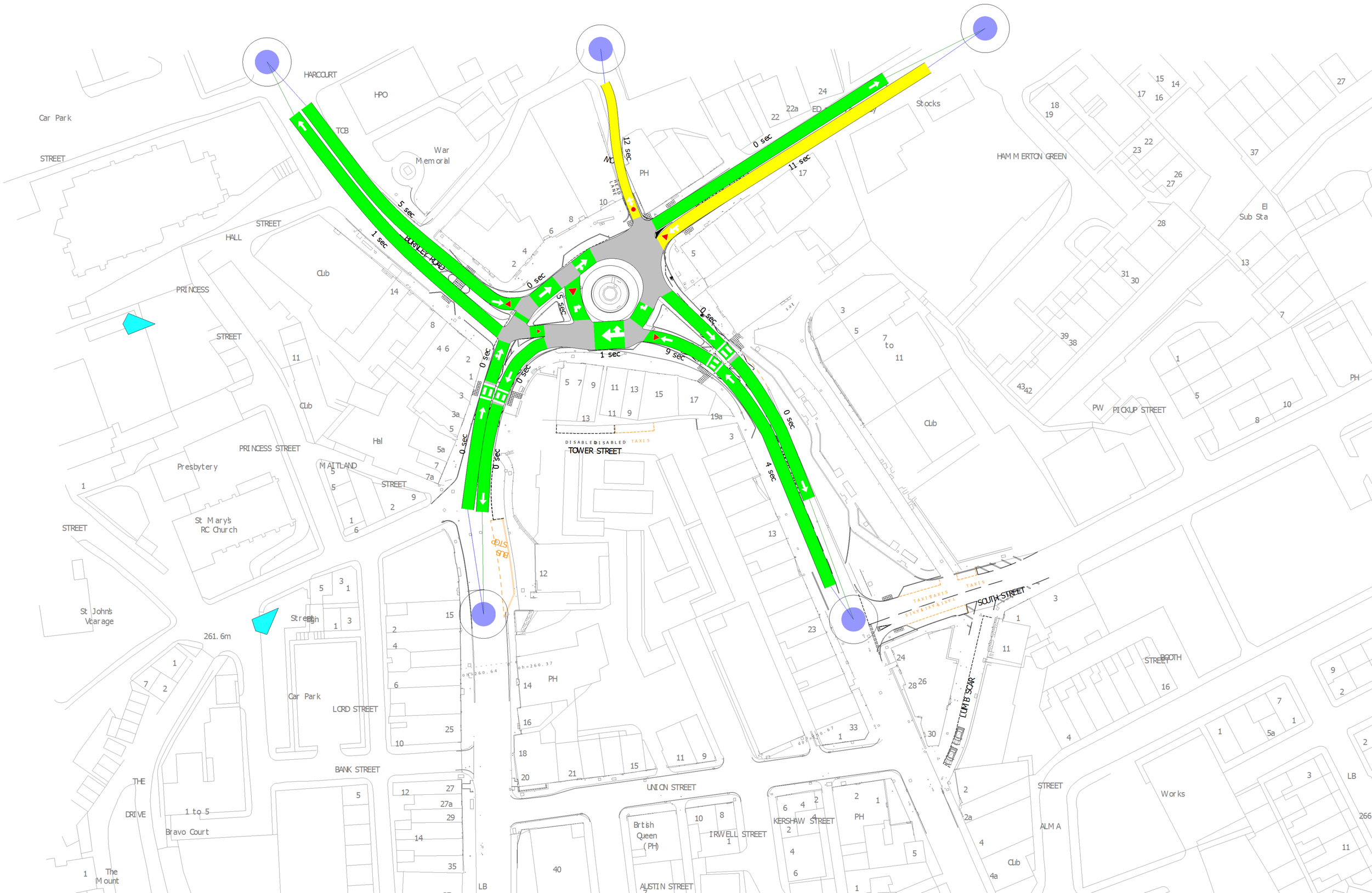
1 veh
2 veh

MOTT MACDONALD

2034 Local Plan Delay Time and Max Virtual Queue Plots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4 sec
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BUS STOP
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PW
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Club
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Presbytery
MAITLAND
STREET
St Mary's RC Church
St John's Vicarage
261.6m
Car Park
LORD STREET
BANK STREET
THE
DRIVE
1 to 5
Bravo Court
The Mount
UNION STREET
British Queen (PH)
IRWELL STREET
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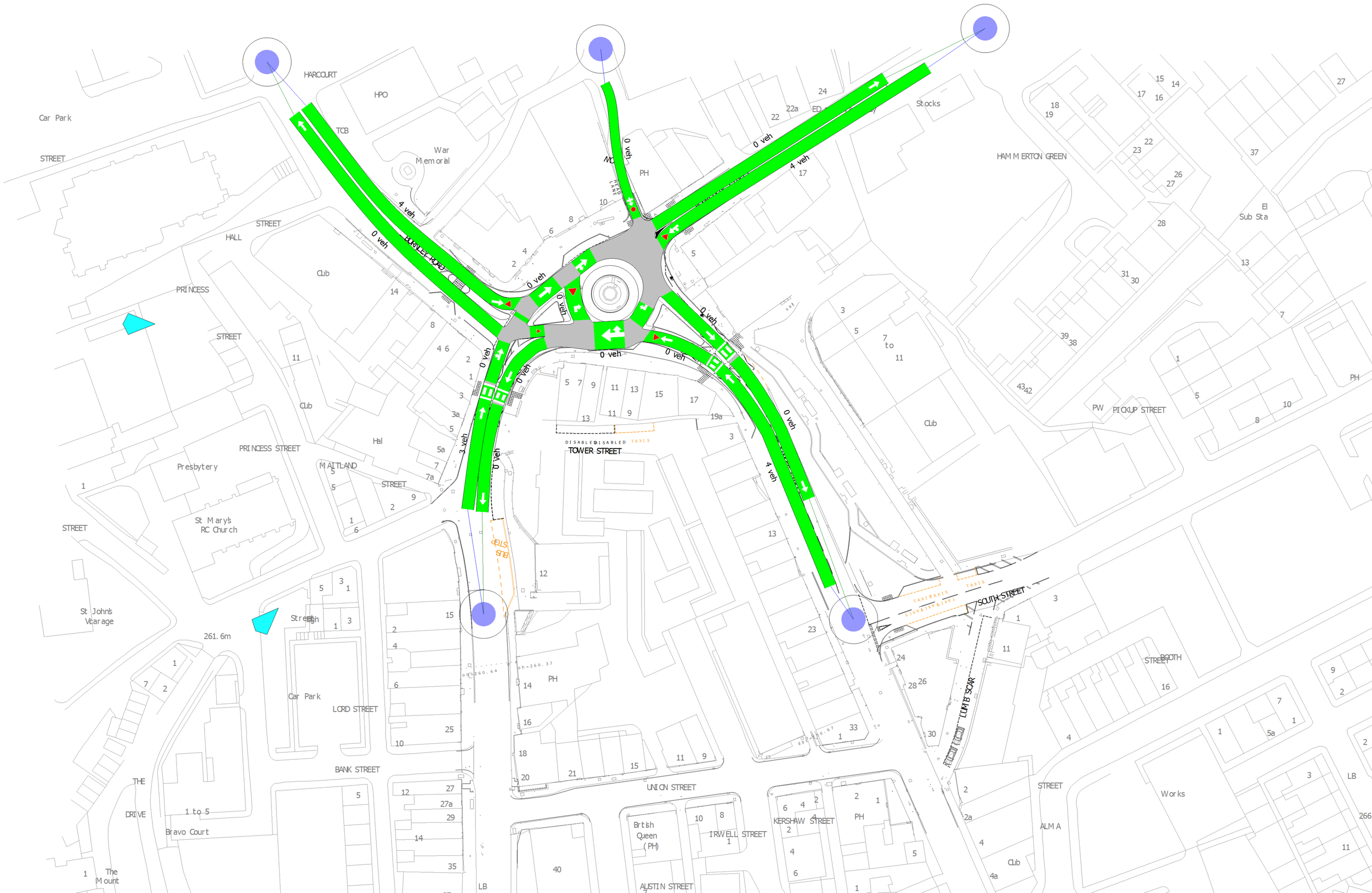
Club
PICKUP STREET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STREET
PRINCESS STREET
Presbytery
MAITLAND
STREET
St Mary's RC Church
St John's Vicarage
261.6m
Car Park
LORD STREET
BANK STREET
THE
DRIVE
1 to 5
Bravo Court
The Mount
TOWER STREET
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IRWELL STREET
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KERSHAW STREET
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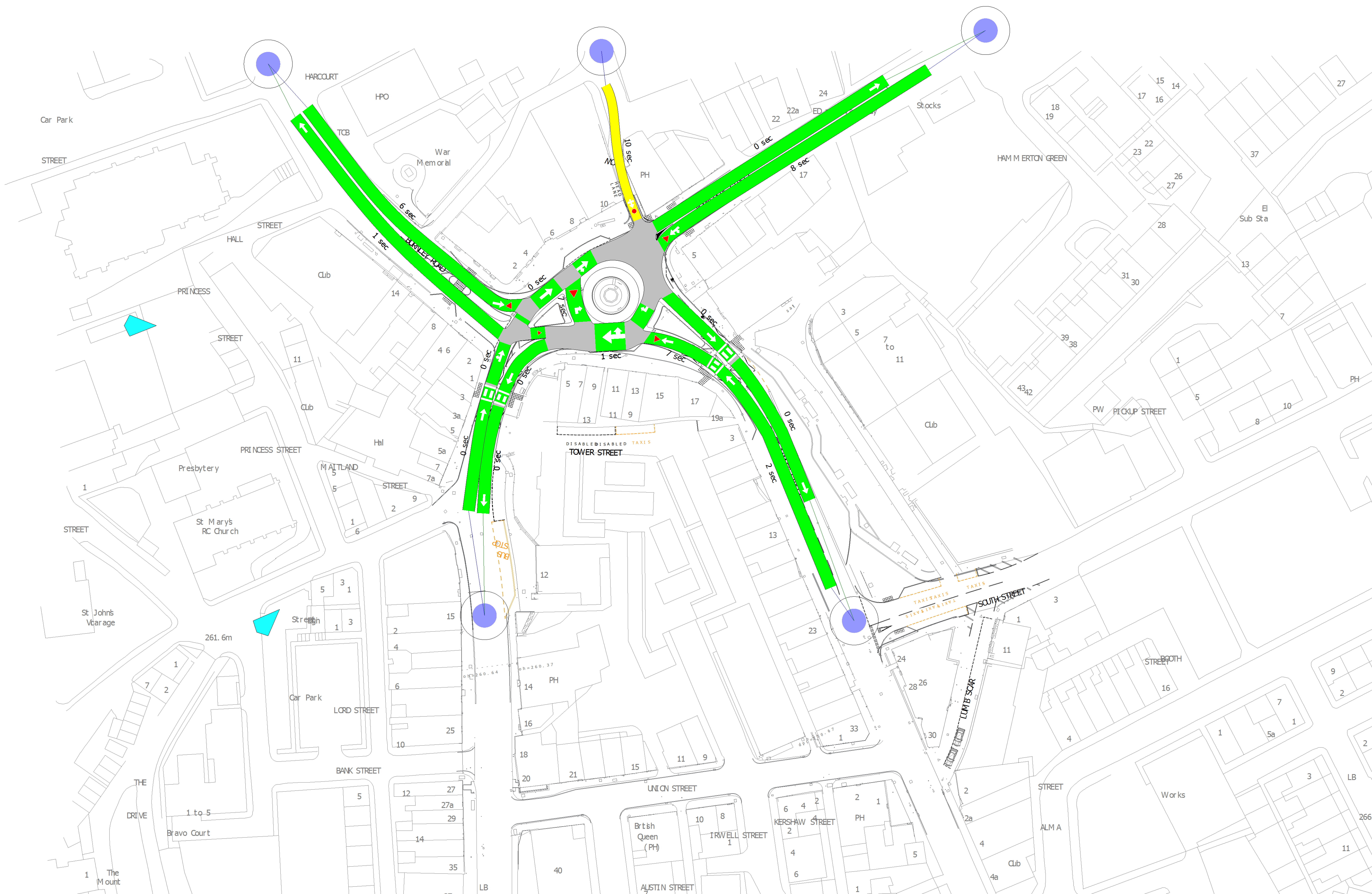
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HAMMERTON GREEN
El Sub Sta
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1 sec
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10 sec
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7 sec
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Presbytery
MAITLAND
STREET
St Marys RC Church
Hall
Club
PW
PICKUP STREET
SOUTH STREET
BUS STOP
St Johns Vicarage
261.6m
Car Park
LORD STREET
BANK STREET
THE
DRIVE
1 to 5
Bravo Court
The Mount
UNION STREET
Britsh Queen (PH)
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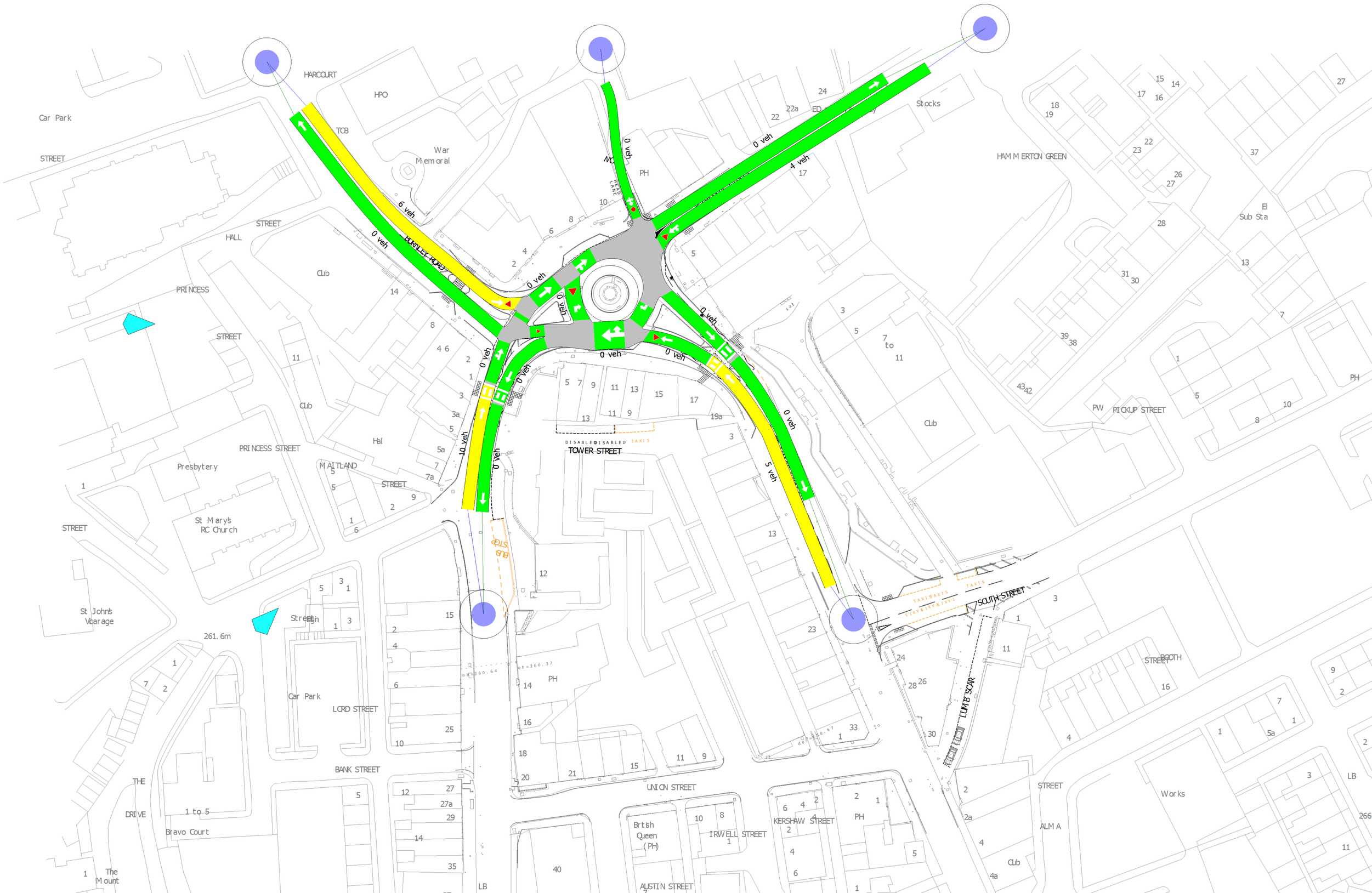
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PH
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Presbytery
MAITLAND
St Mary's RC Church
St John's Vicarage
Car Park
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BANK STREET
THE DRIVE
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Bravo Court
The Mount
261.6m
TOWER STREET
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TAXIS
BUS STOP
UNION STREET
British Queen (PH)
IRWELL STREET
AUSTIN STREET
KERSHAW STREET
SOUTH STREET
LUMB SCAR
BOOTH STREET
ALMA
Works
PW
PICKUP STREET
El Sub Sta
6 veh
0 veh
4 veh
5 veh
10 veh

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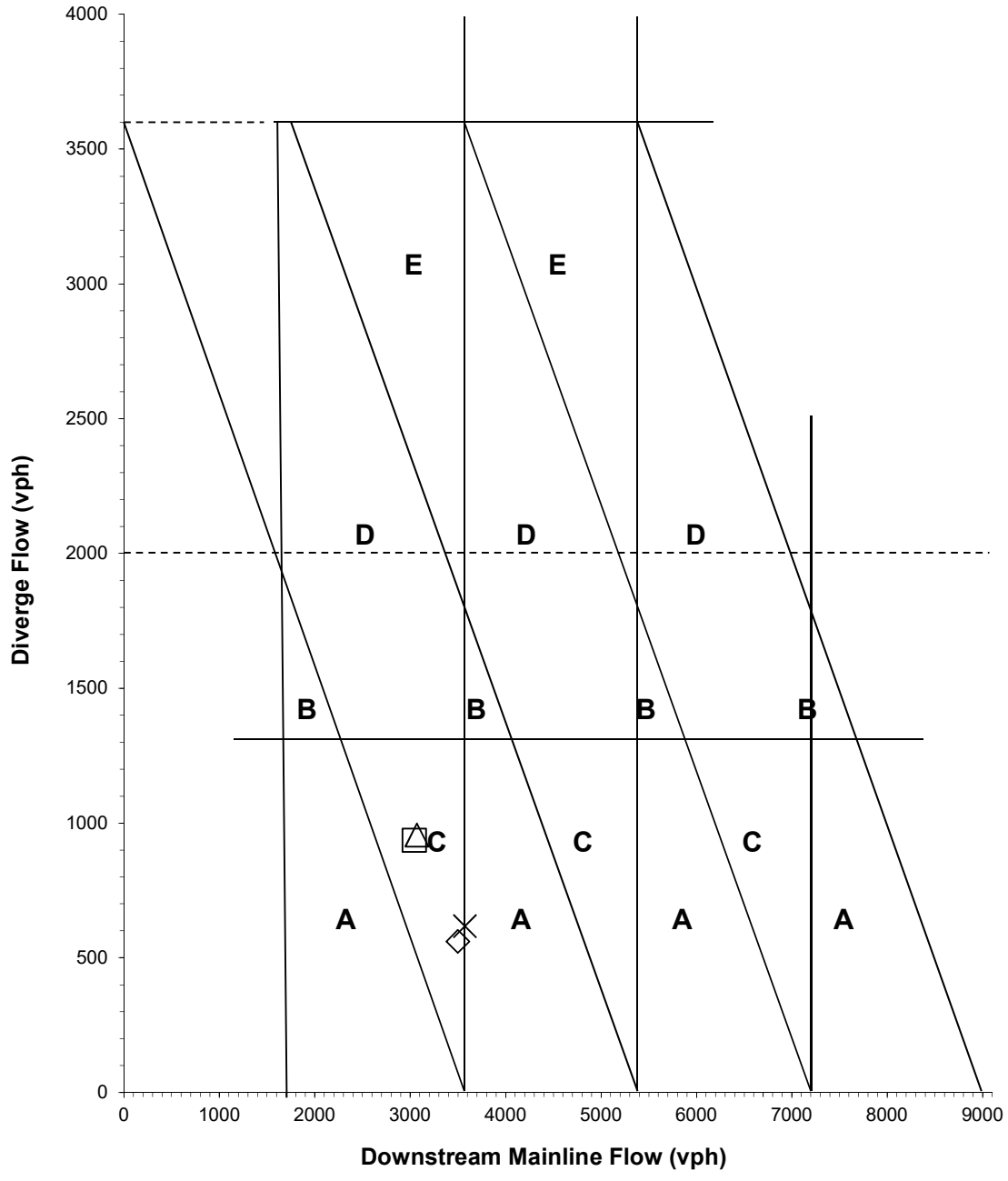
APPENDIX G

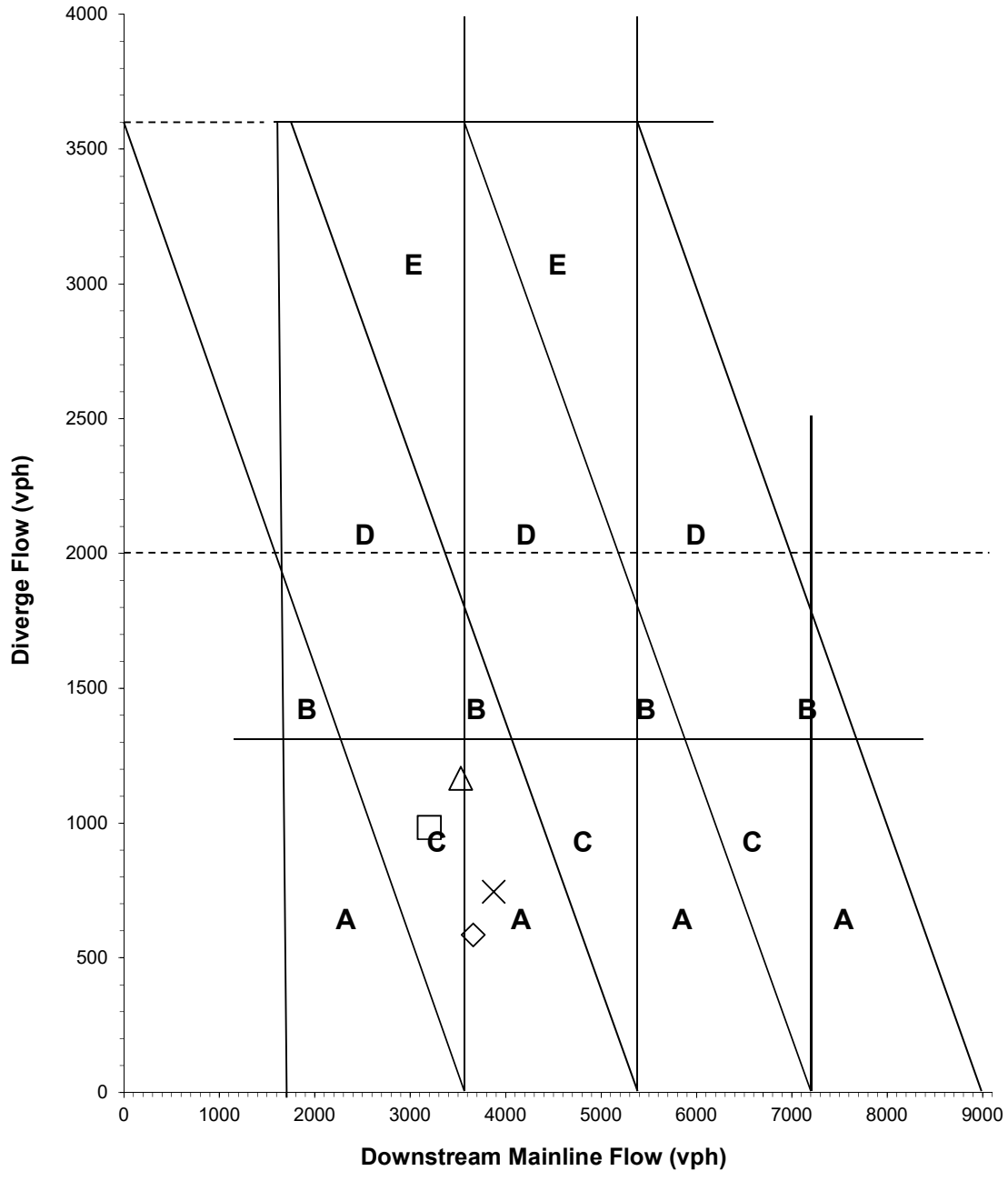
MERGE / DIVERGE PLOTS

Scenario	Downstream Mainline	Diverge Flow	Symbol
2024 AM (Reference Case)	3043	936	□
2024 PM (Reference Case)	3498	561	◊
2024 AM (Local Plan)	3069	956	Δ
2024 PM (Local Plan)	3572	618	X



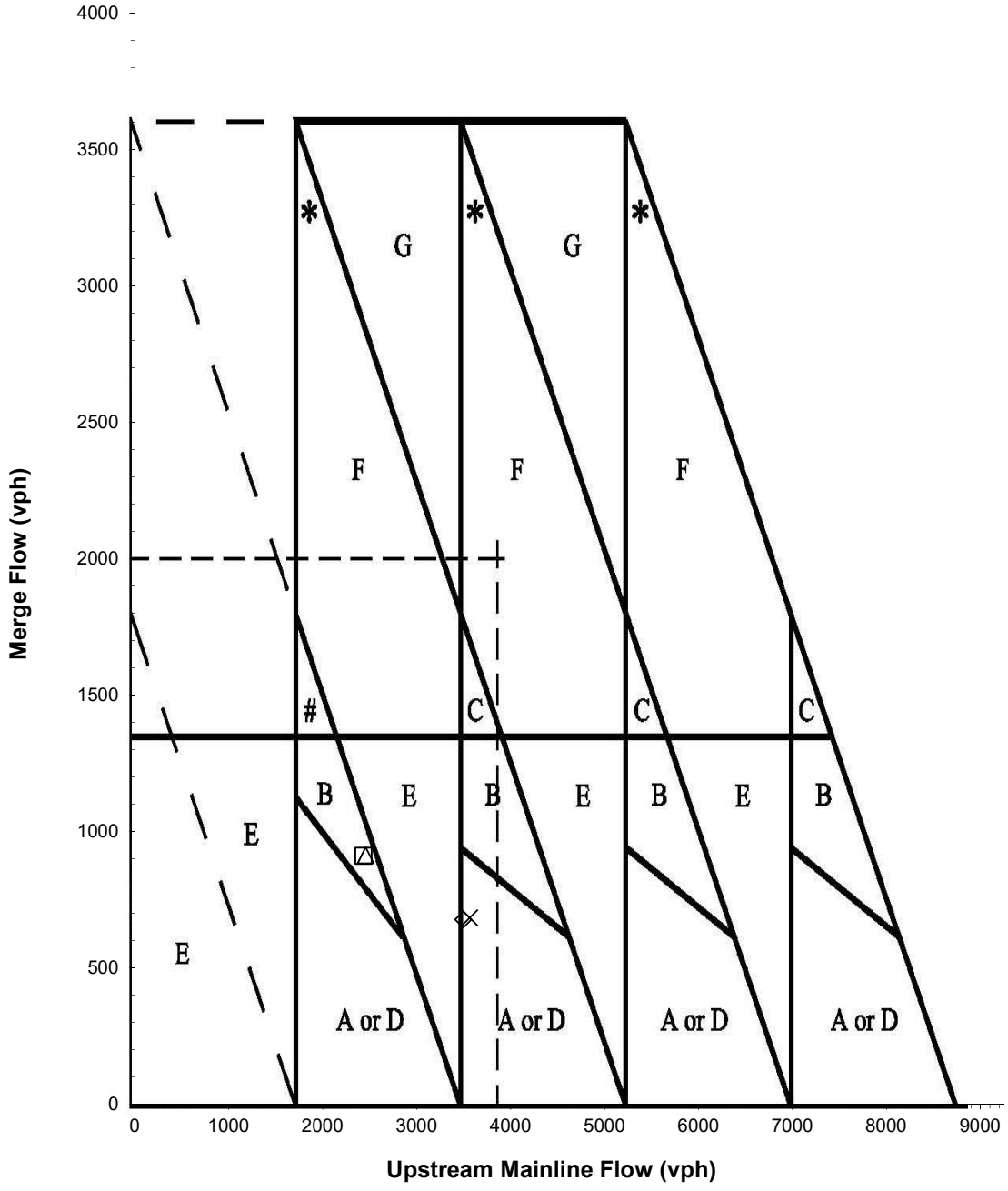
A56 / A682 NB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2034 AM (Reference Case)	3201	983	□
2034 PM (Reference Case)	3658	585	◊
2034 AM (Local Plan)	3529	1167	Δ
2034 PM (Local Plan)	3873	745	X



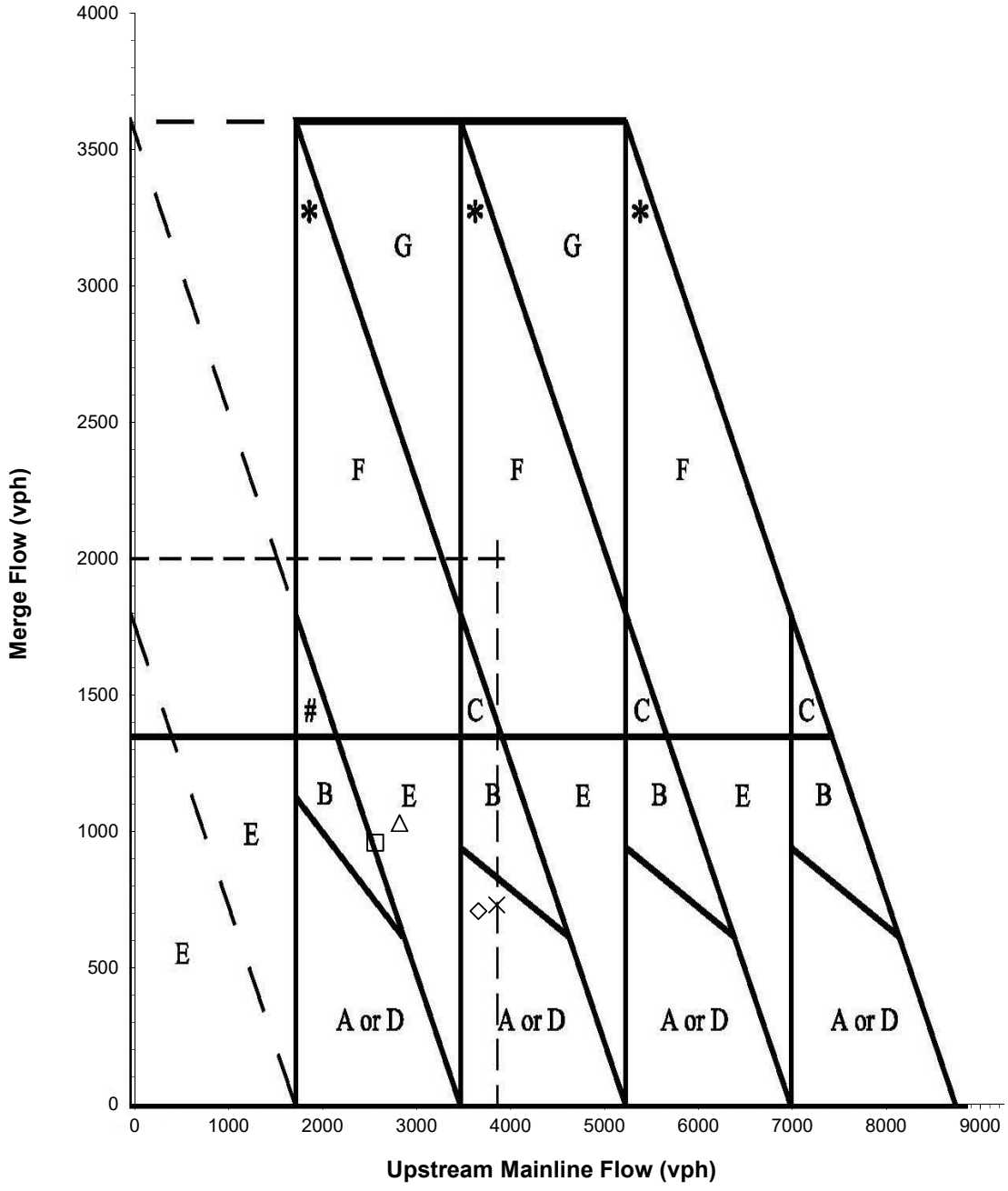
A56 / A682 NB Diverge

Scenario	Upstream Mainline	Merge Flow	Symbol
2024 AM (Reference Case)	2435	911	□
2024 PM (Reference Case)	3498	677	◊
2024 AM (Local Plan)	2459	913	Δ
2024 PM (Local Plan)	3566	683	X



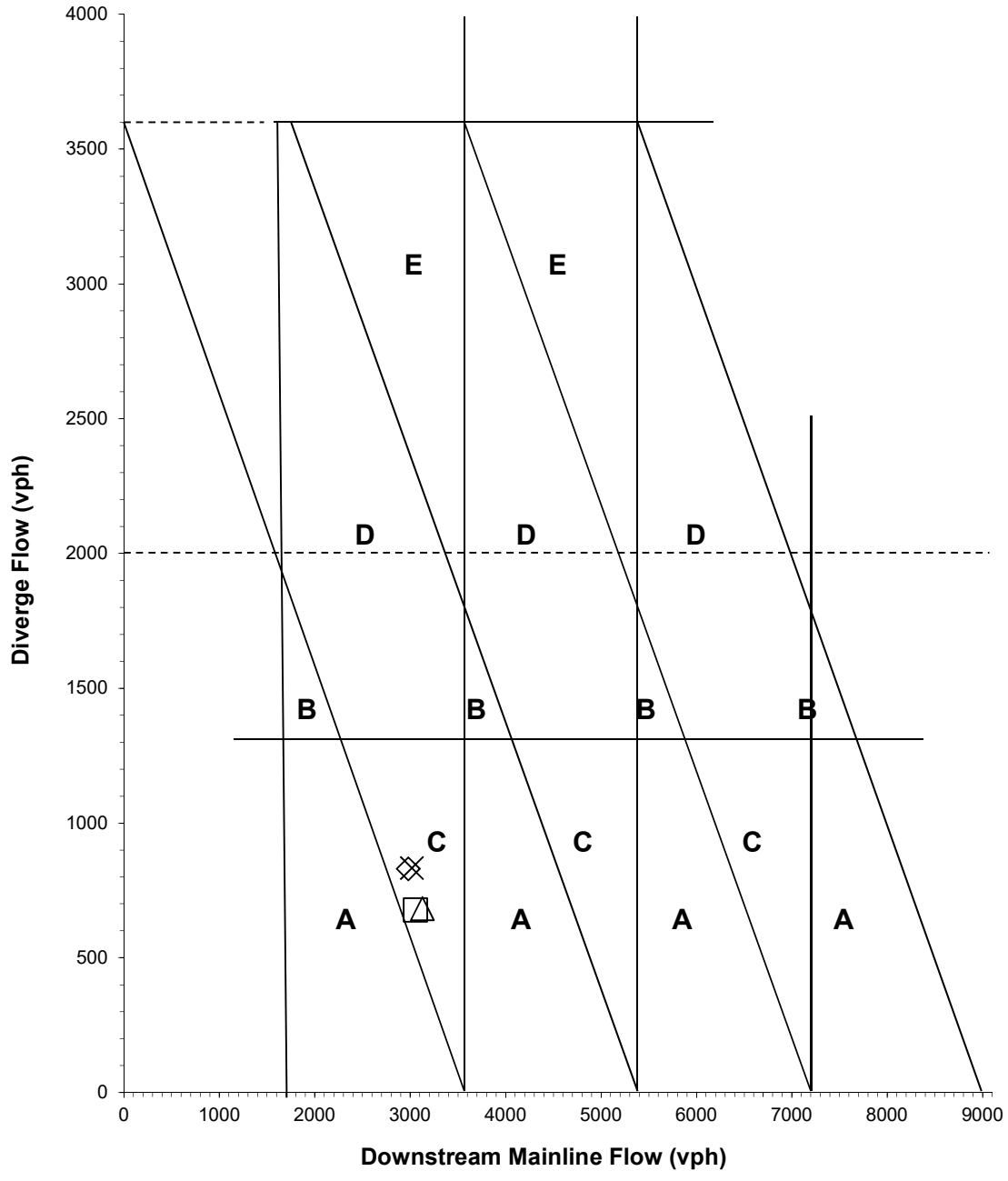
A56 / Edenfield NB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2034 AM (Reference Case)	2561	959	□
2034 PM (Reference Case)	3658	708	◊
2034 AM (Local Plan)	2818	1030	Δ
2034 PM (Local Plan)	3852	730	X



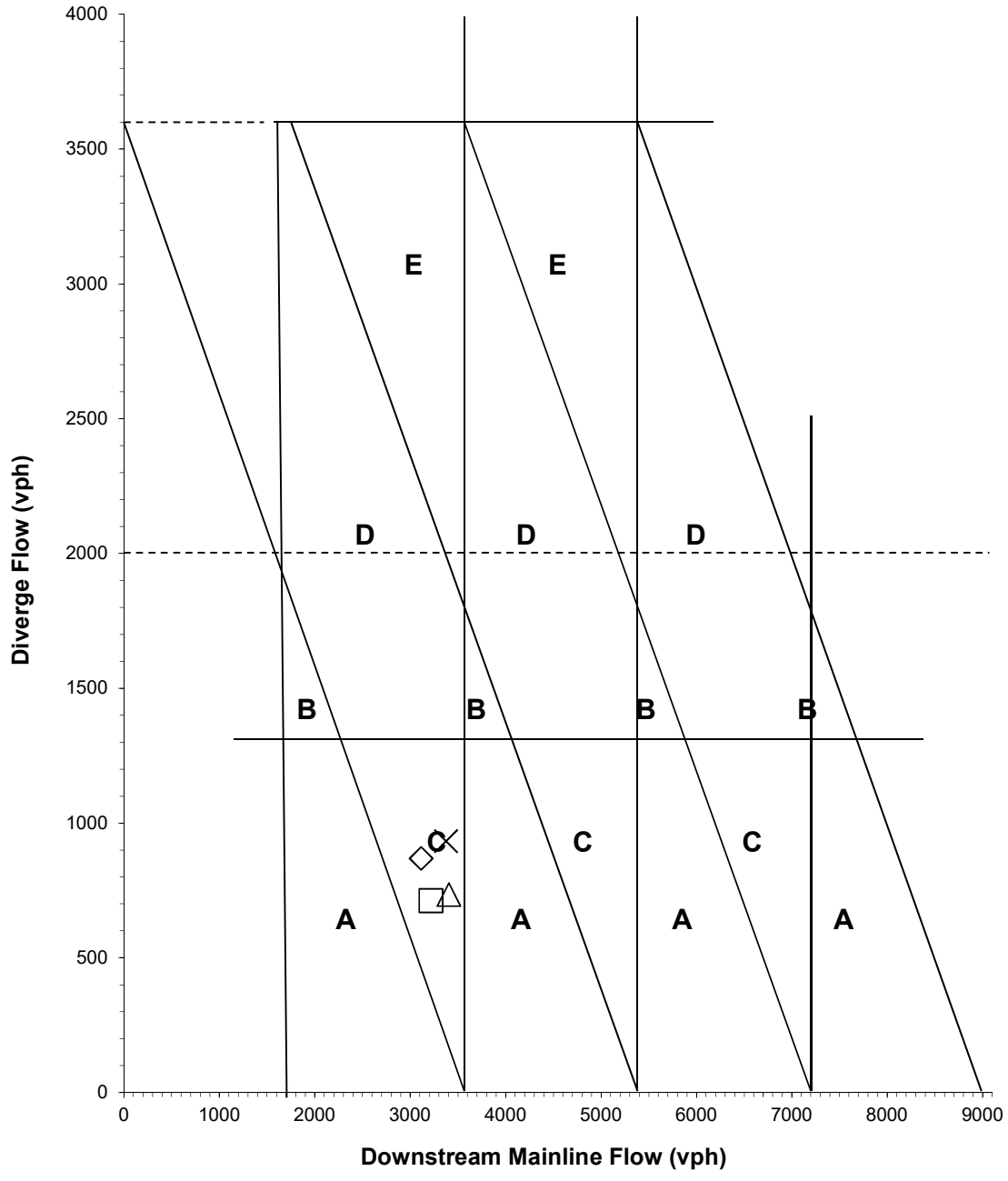
A56 / Edenfield NB Merge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2024 AM (Reference Case)	3055	677	□
2024 PM (Reference Case)	2979	830	◊
2024 AM (Local Plan)	3126	683	Δ
2024 PM (Local Plan)	3016	834	X



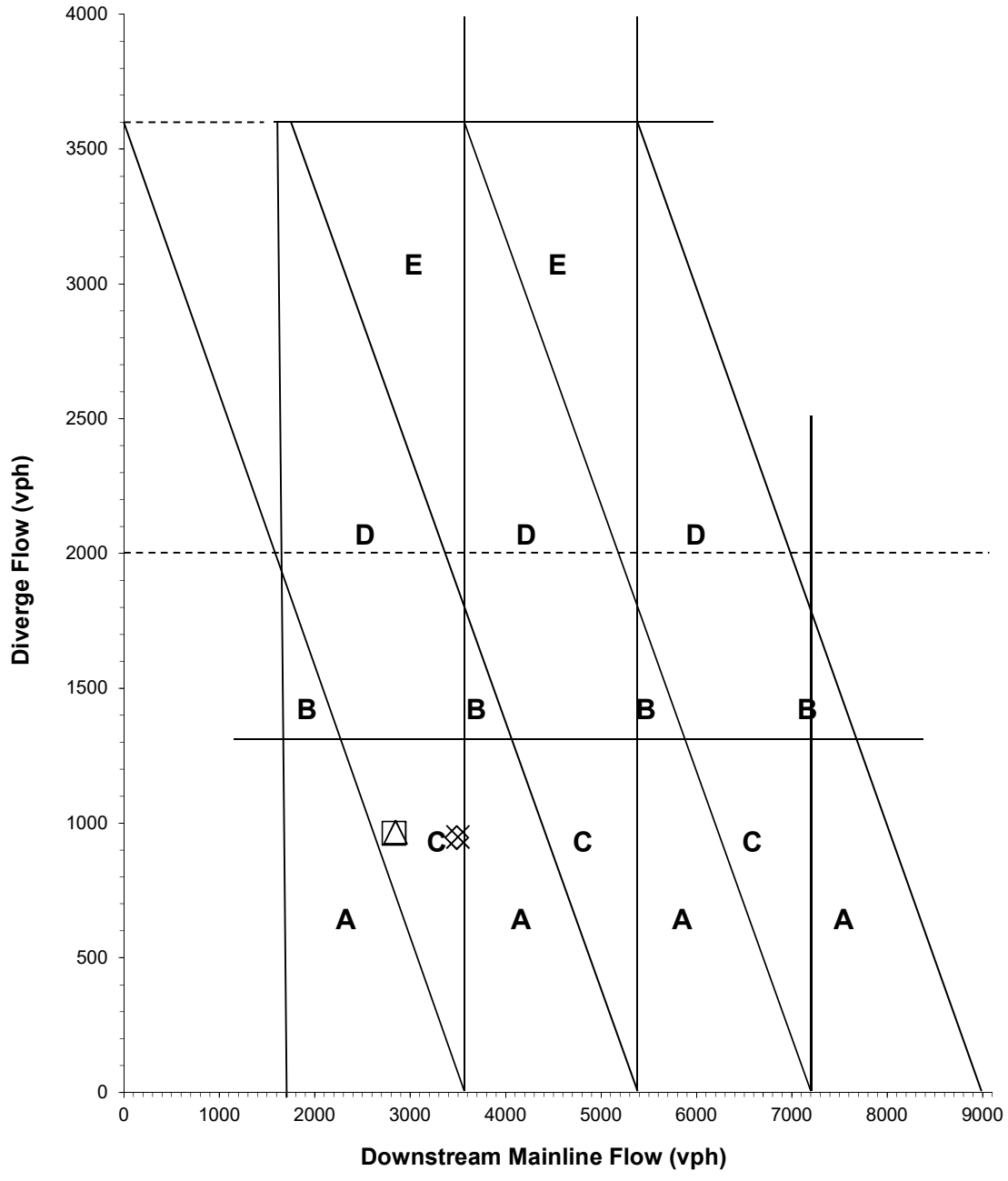
A56 / Edenfield SB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2034 AM (Reference Case)	3216	712	□
2034 PM (Reference Case)	3114	869	◊
2034 AM (Local Plan)	3405	735	Δ
2034 PM (Local Plan)	3373	933	X



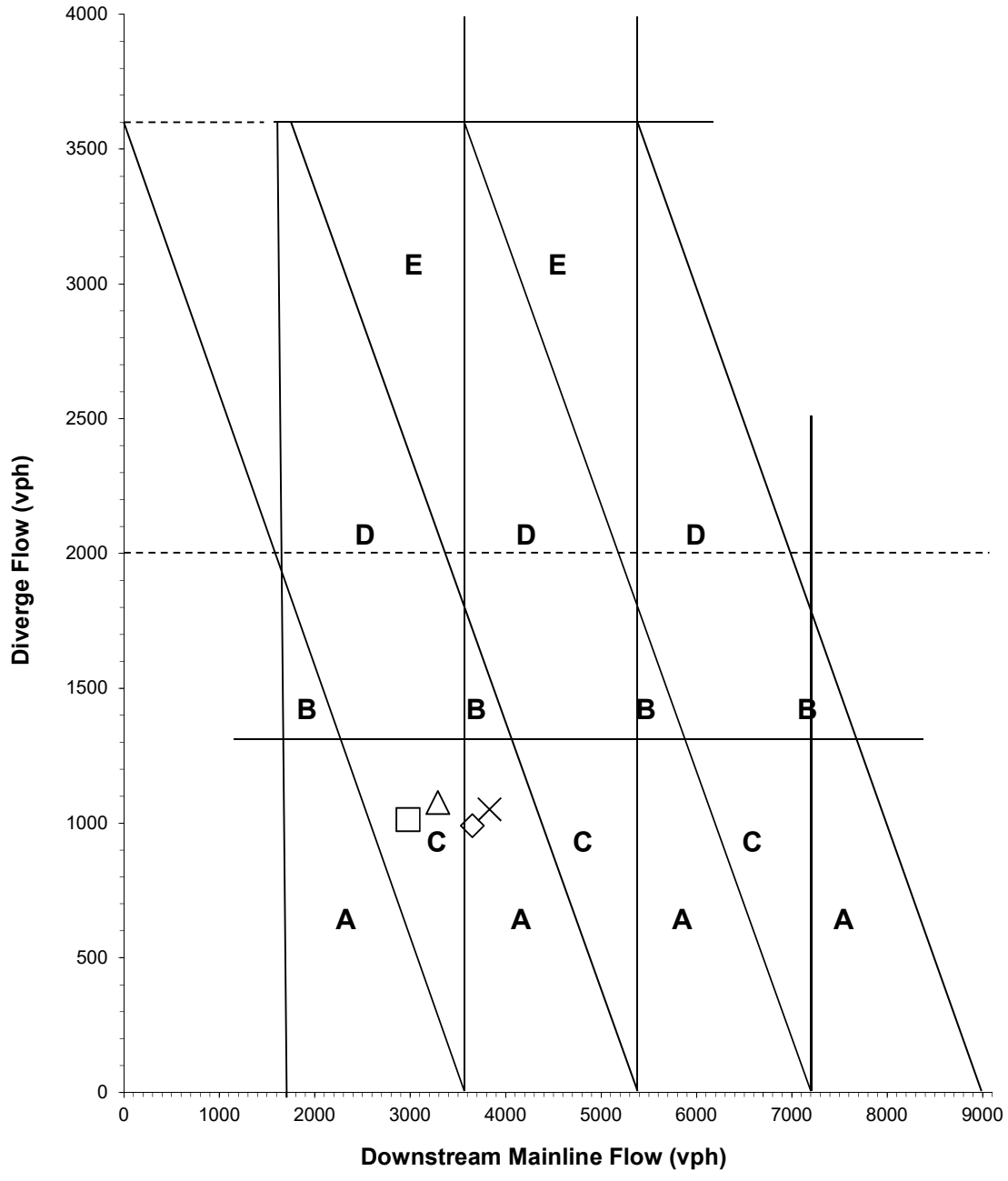
A56 / Edenfield SB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2024 AM (Reference Case)	2830	962	□
2024 PM (Reference Case)	3488	947	◊
2024 AM (Local Plan)	2846	966	Δ
2024 PM (Local Plan)	3497	949	X



A56 / Grane Rd NB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2034 AM (Reference Case)	2979	1013	□
2034 PM (Reference Case)	3649	991	◊
2034 AM (Local Plan)	3289	1076	Δ
2034 PM (Local Plan)	3829	1051	X



A56 / Grane Rd NB Diverge

Link	AM 2017			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	26	4%	60	2479
4	26	5%	60	2514
6	32	7%	51	2527
47	35	2%	41	2331
48	37	3%	42	2532

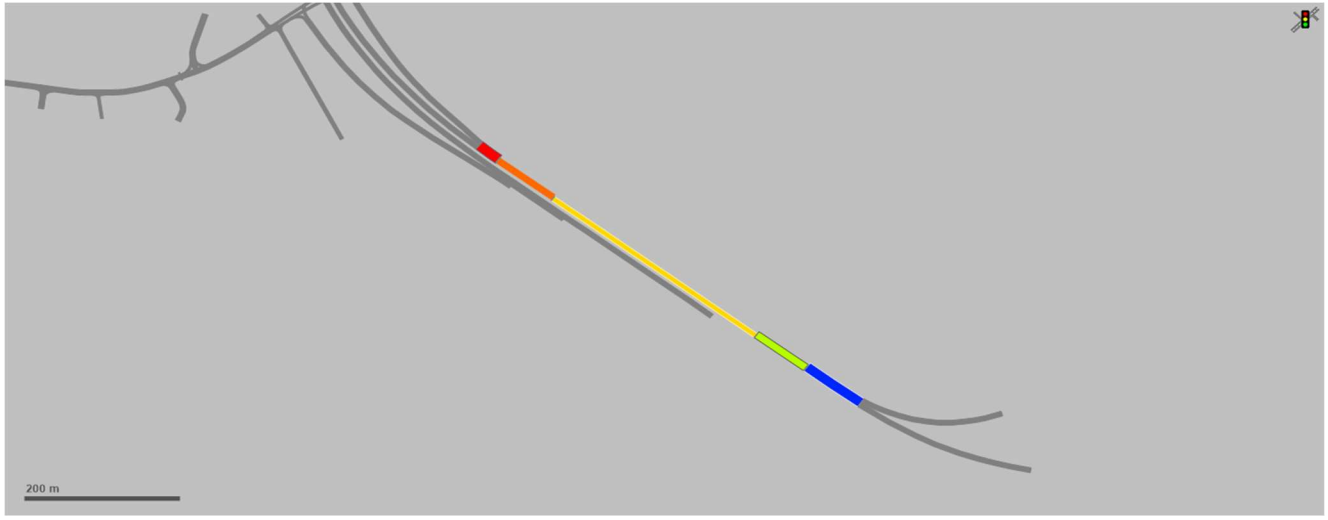
Link	PM 2017			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	30	6%	59	2805
4	30	8%	58	2844
6	36	9%	50	2859
47	42	3%	42	2860
48	43	5%	42	2859

Link	AM 2034 Ref Case			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	28	5%	59	2703
4	29	6%	59	2741
6	35	8%	50	2754
47	38	3%	41	2538
48	41	4%	42	2755

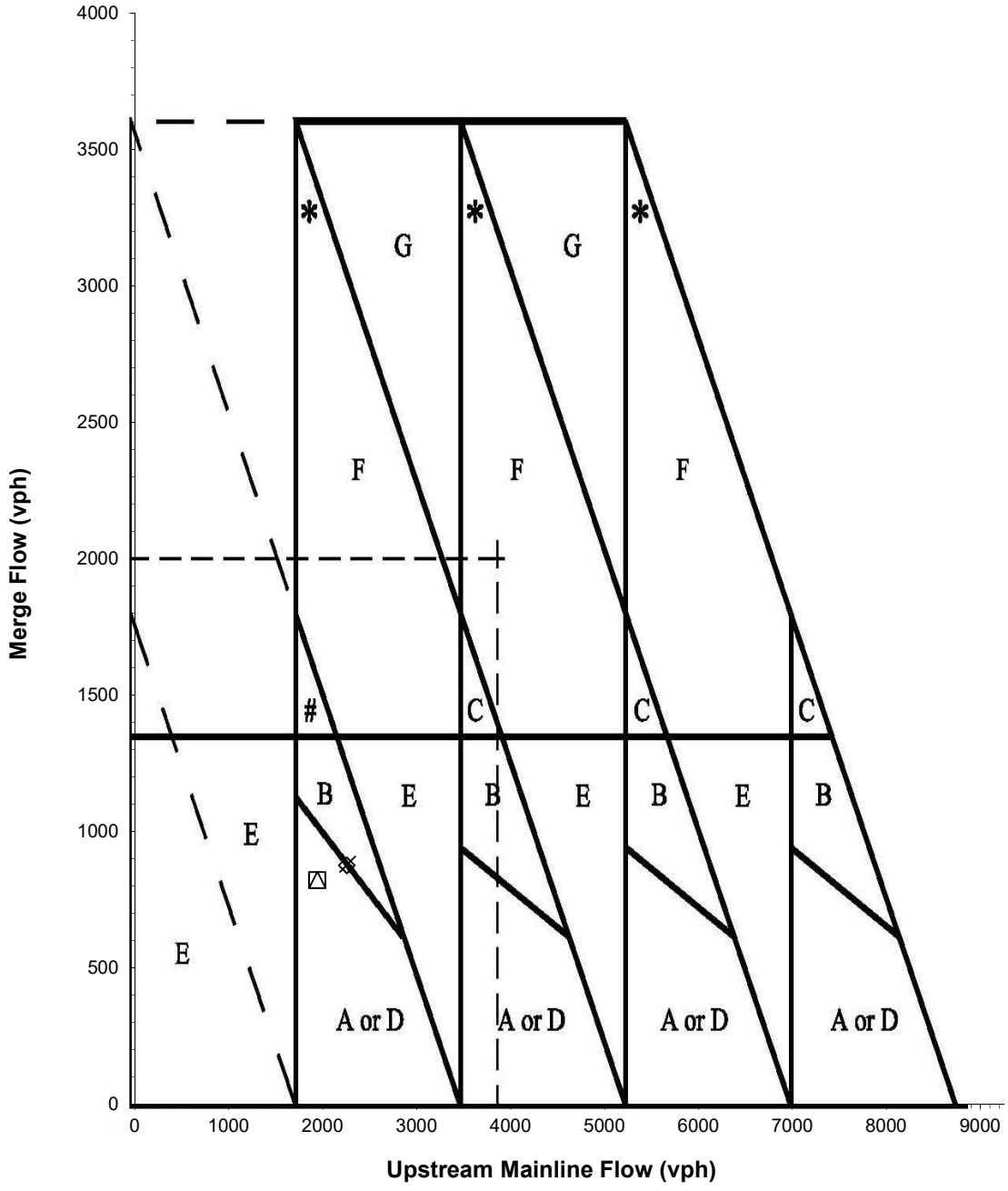
Link	PM 2034 Ref Case			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	32	6%	58	3028
4	33	9%	57	3070
6	40	11%	49	3088
47	46	4%	42	3090
48	46	5%	42	3090

Link	AM 2034 Local Plan			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	29	5%	59	2737
4	30	7%	59	2881
6	37	9%	50	2894
47	40	3%	41	2667
48	43	4%	42	2896

Link	PM 2034 Local Plan			
	DENSITY(ALL)	DELAYREL(ALL)	SPEED(ALL)	VOLUME(ALL)
3	33	7%	58	3085
4	36	10%	57	3302
6	43	12%	48	3319
47	49	4%	42	3321
48	50	6%	41	3321

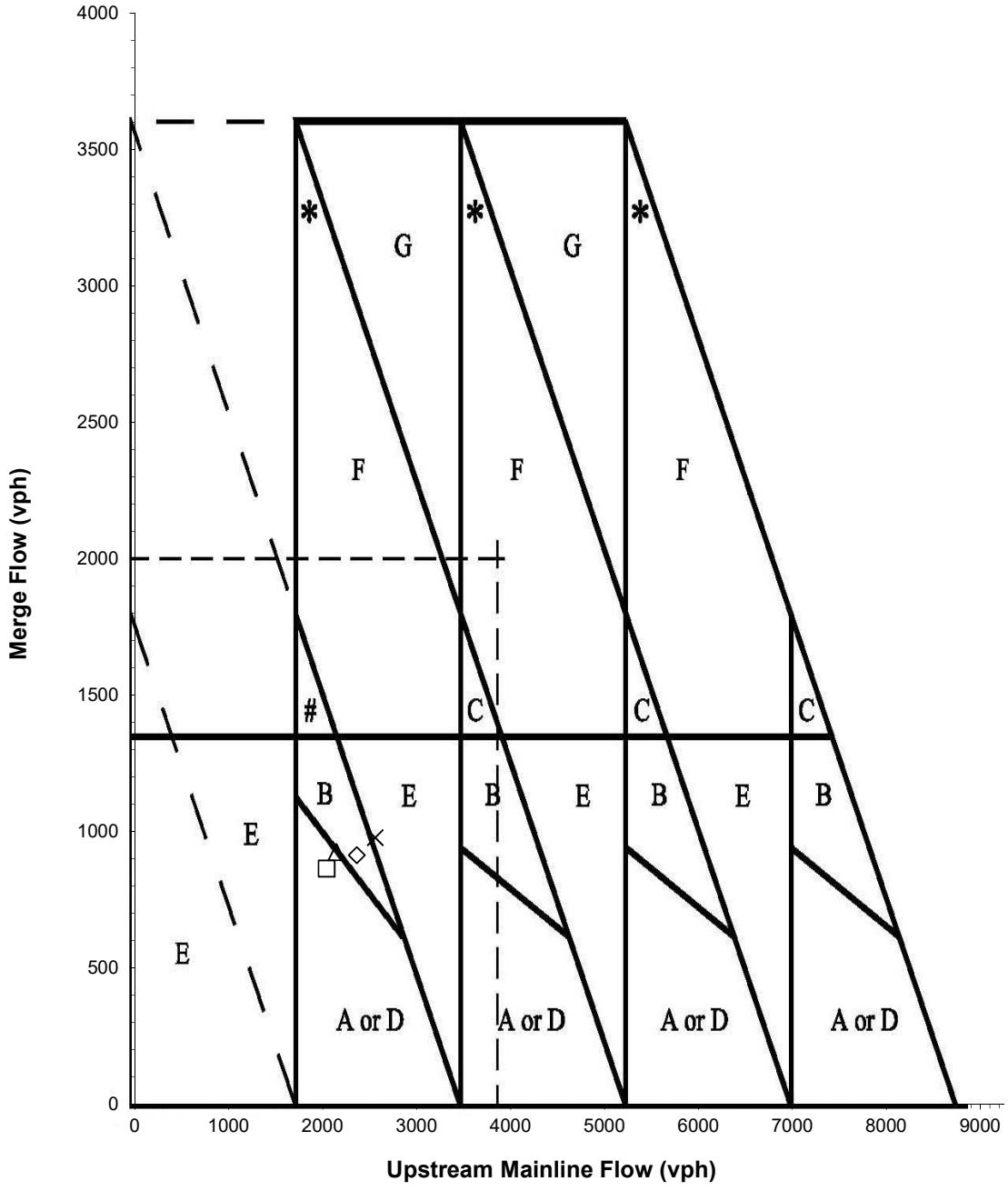


Scenario	Upstream Mainline	Merge Flow	Symbol
2024 AM (Reference Case)	1942	822	□
2024 PM (Reference Case)	2258	876	◊
2024 AM (Local Plan)	1944	823	Δ
2024 PM (Local Plan)	2266	880	X



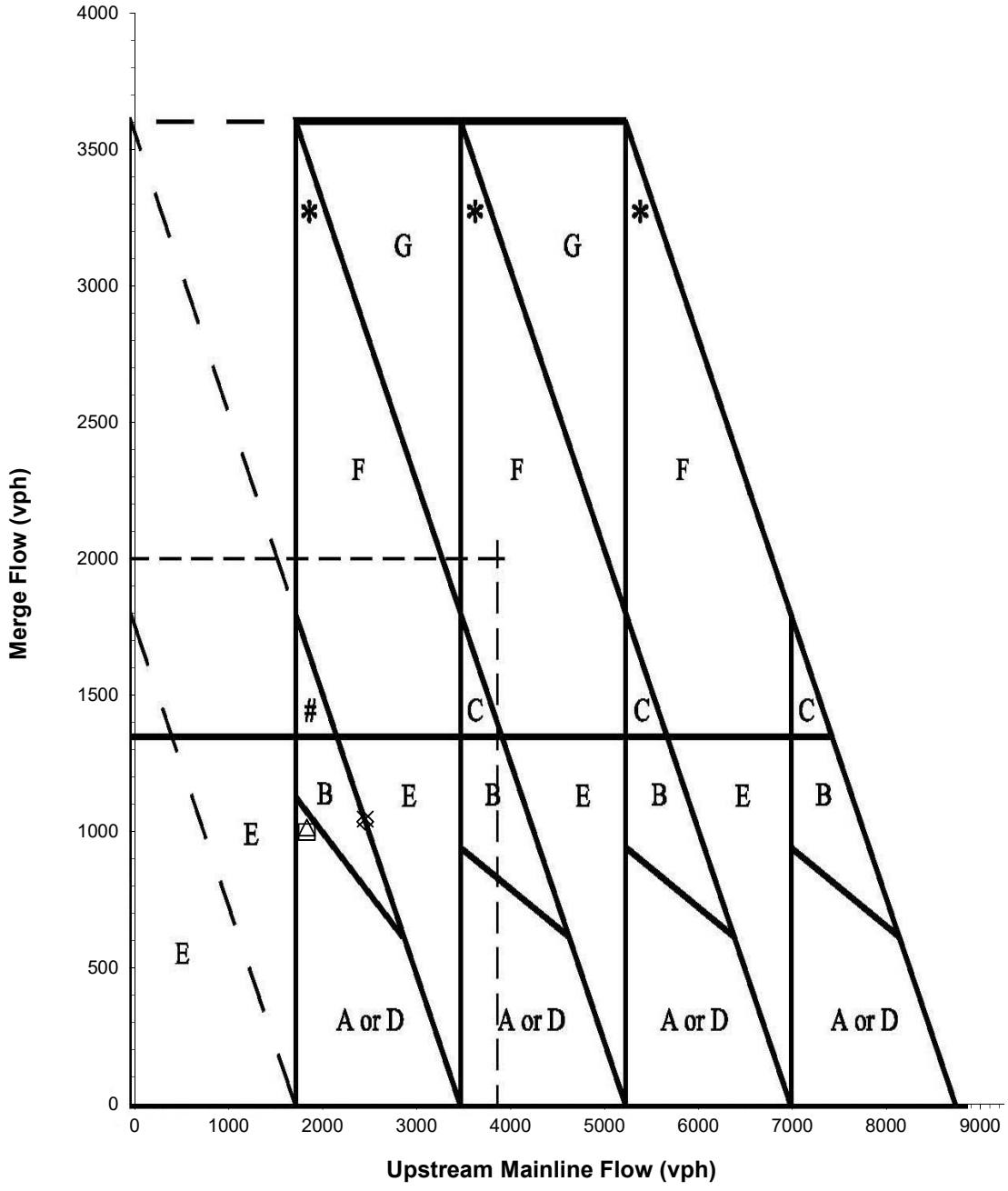
A56 / Grane Rd SB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2034 AM (Reference Case)	2043	863	□
2034 PM (Reference Case)	2363	913	◊
2034 AM (Local Plan)	2148	924	Δ
2034 PM (Local Plan)	2560	977	X



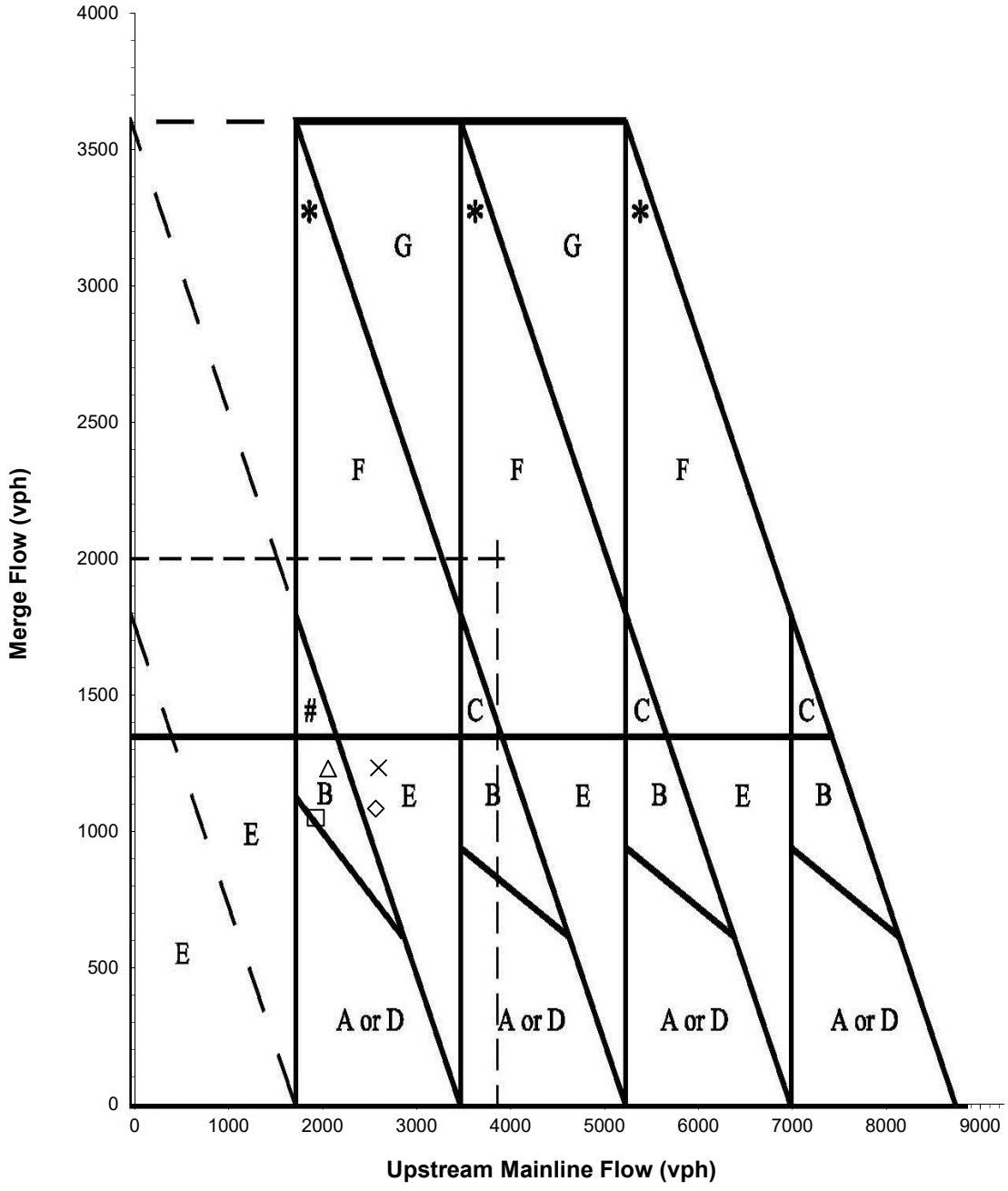
A56 / Grane Rd SB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2024 AM (Reference Case)	1832	998	□
2024 PM (Reference Case)	2452	1036	◊
2024 AM (Local Plan)	1832	1014	Δ
2024 PM (Local Plan)	2452	1045	X



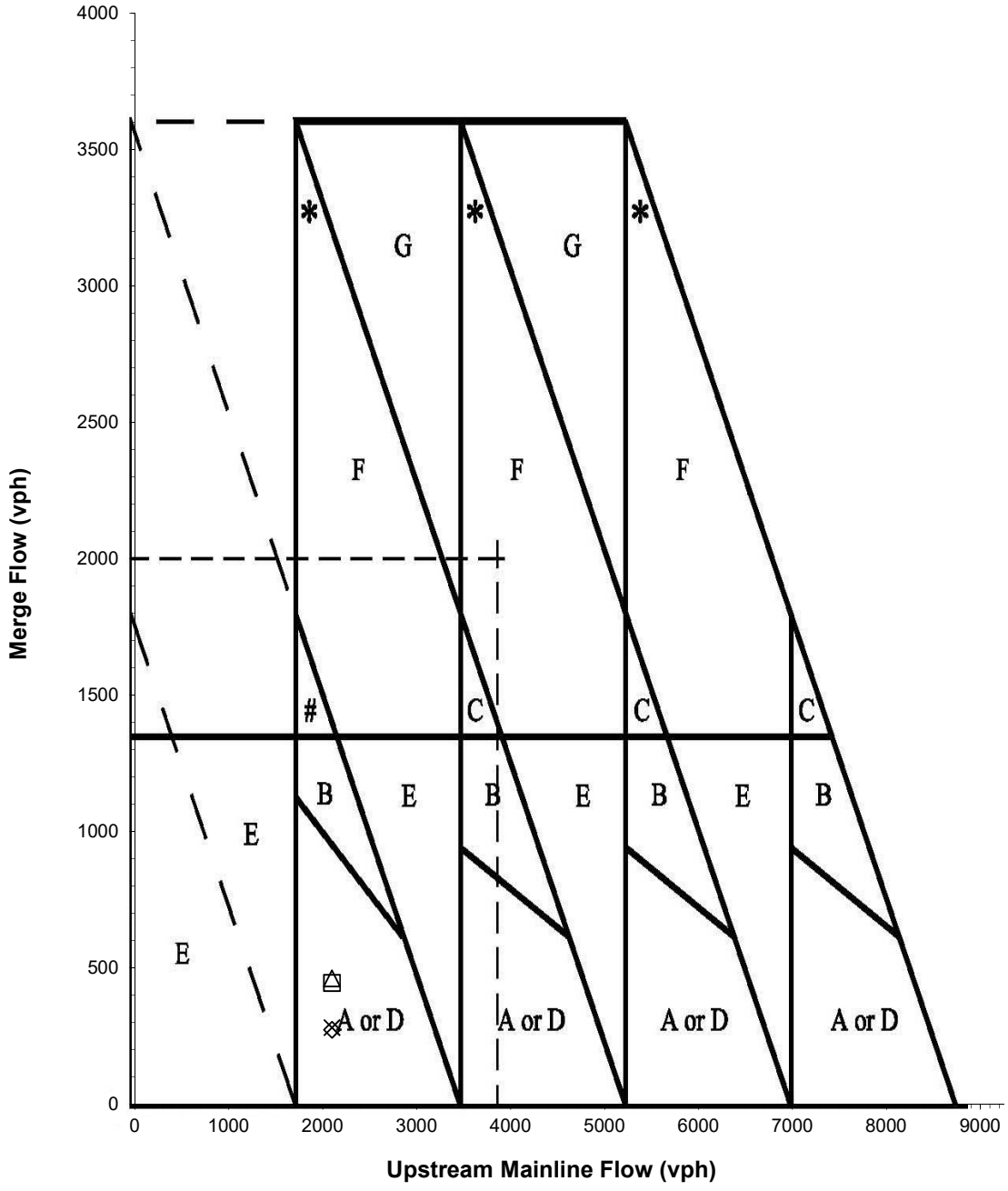
A56 / Haslingden Roundabout NB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2034 AM (Reference Case)	1928	1050	□
2034 PM (Reference Case)	2565	1084	◊
2034 AM (Local Plan)	2059	1230	Δ
2034 PM (Local Plan)	2596	1233	X



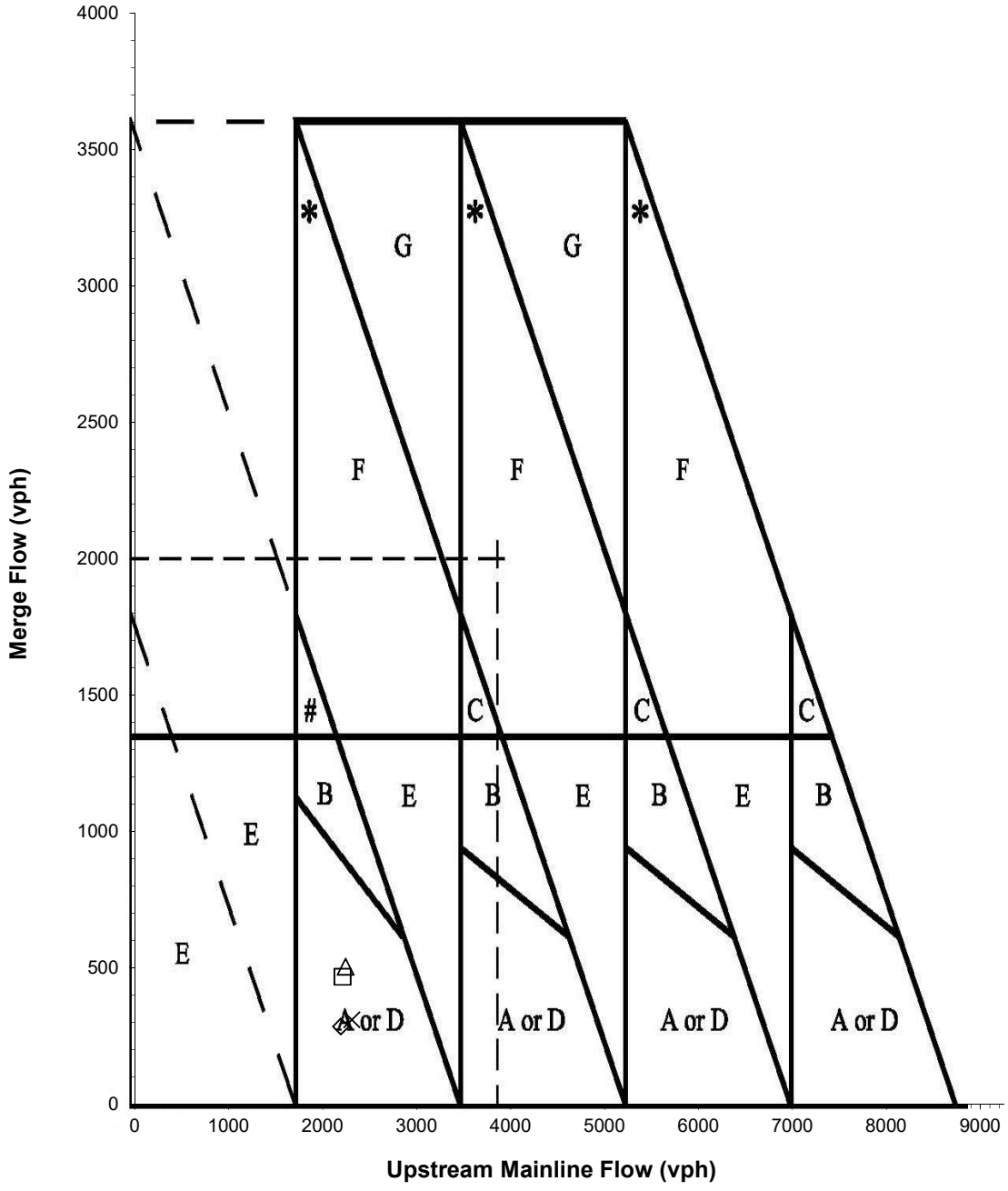
A56 / Haslingden Roundabout NB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2024 AM (Reference Case)	2100	444	□
2024 PM (Reference Case)	2098	272	◊
2024 AM (Local Plan)	2100	461	Δ
2024 PM (Local Plan)	2098	281	X



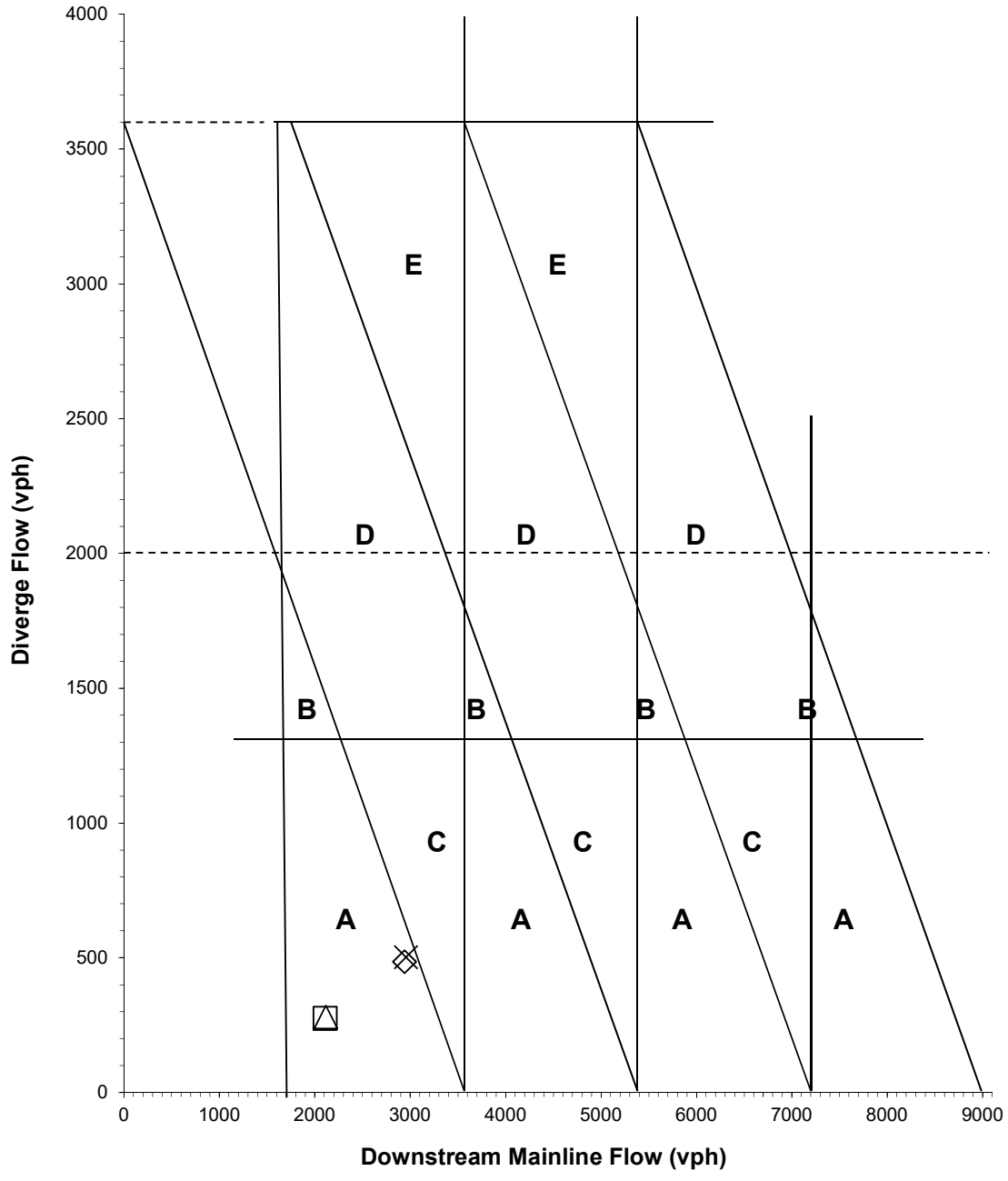
A56 / Haslingden Roundabout SB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2034 AM (Reference Case)	2211	467	□
2034 PM (Reference Case)	2195	285	◊
2034 AM (Local Plan)	2244	504	Δ
2034 PM (Local Plan)	2310	309	X



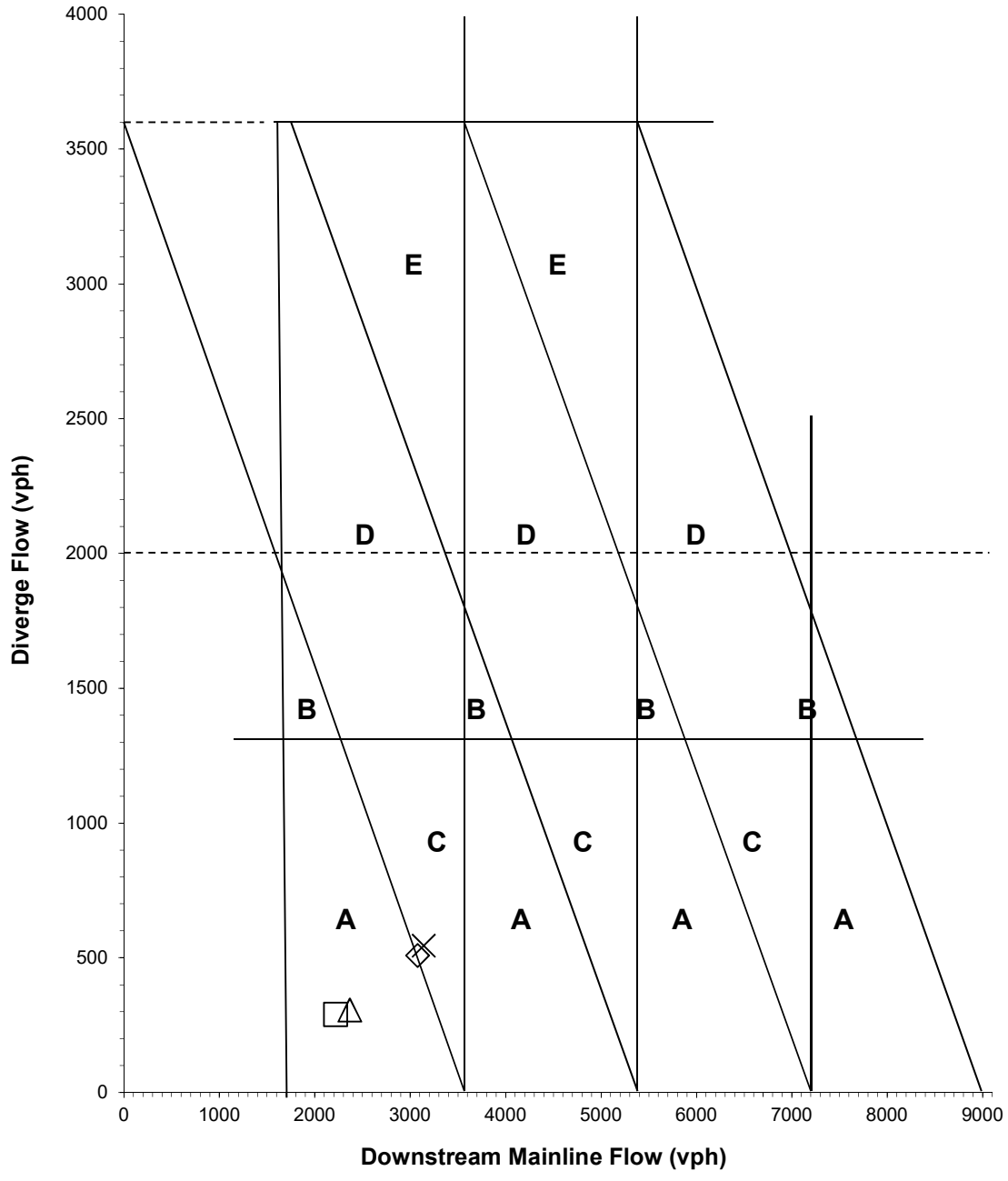
A56 / Haslingden Roundabout SB Merge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2024 AM (Reference Case)	2107	275	□
2024 PM (Reference Case)	2938	486	◊
2024 AM (Local Plan)	2113	281	Δ
2024 PM (Local Plan)	2954	503	X



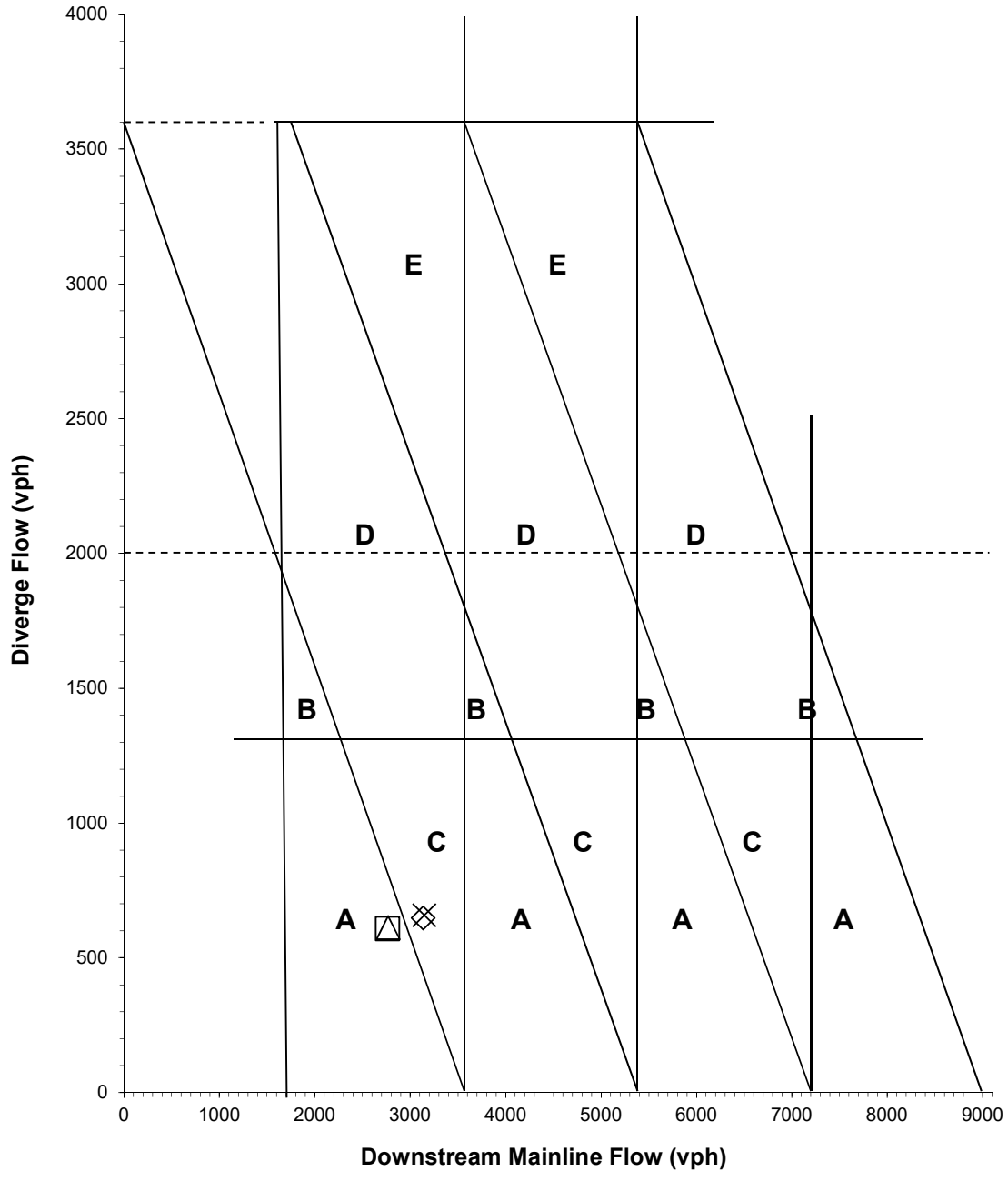
A56 / Tesco Haslingden NB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2034 AM (Reference Case)	2218	290	□
2034 PM (Reference Case)	3074	509	◊
2034 AM (Local Plan)	2366	307	Δ
2034 PM (Local Plan)	3141	545	X



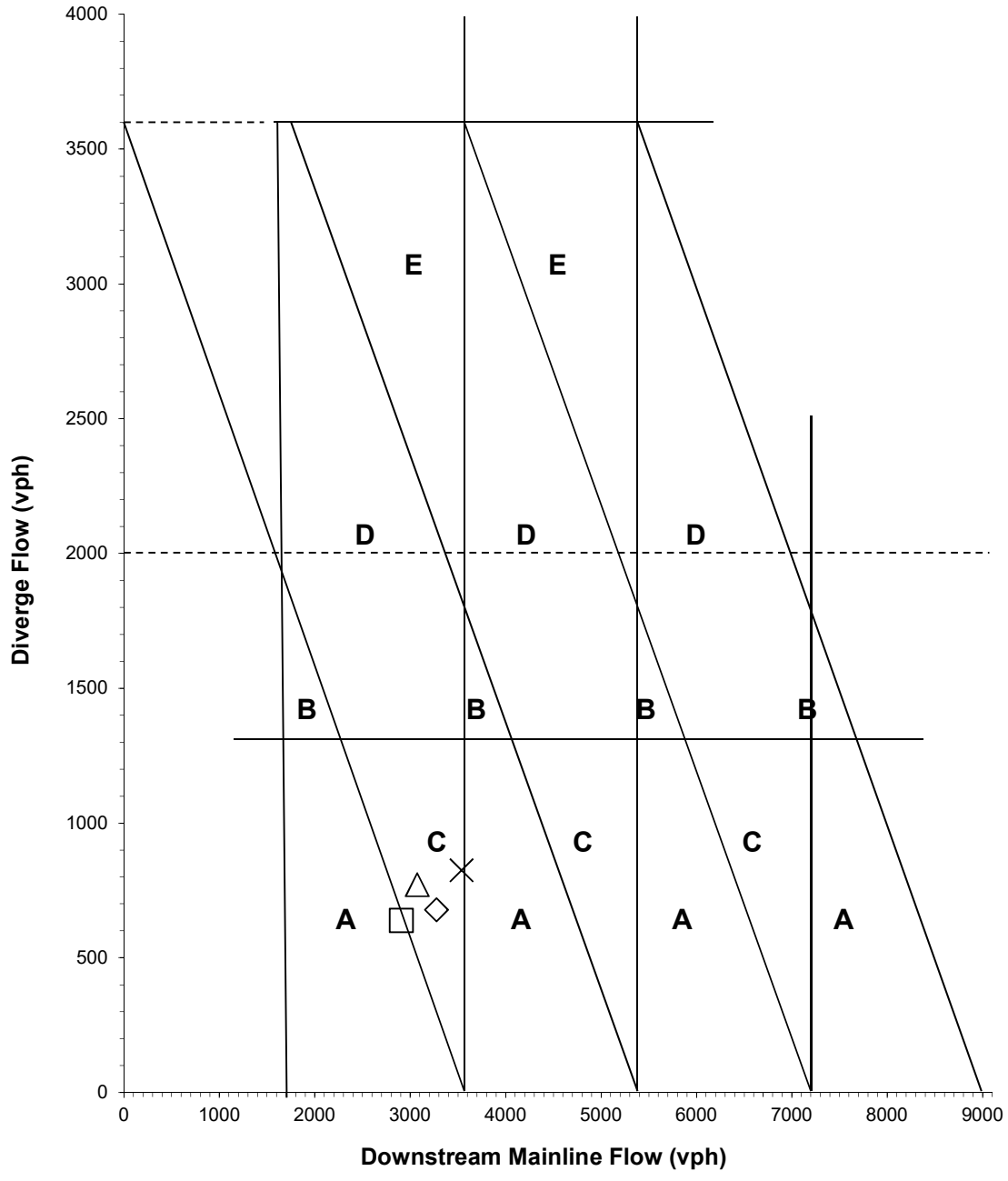
A56 / Tesco Haslingden NB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2024 AM (Reference Case)	2763	608	□
2024 PM (Reference Case)	3134	648	◊
2024 AM (Local Plan)	2767	612	Δ
2024 PM (Local Plan)	3146	659	X



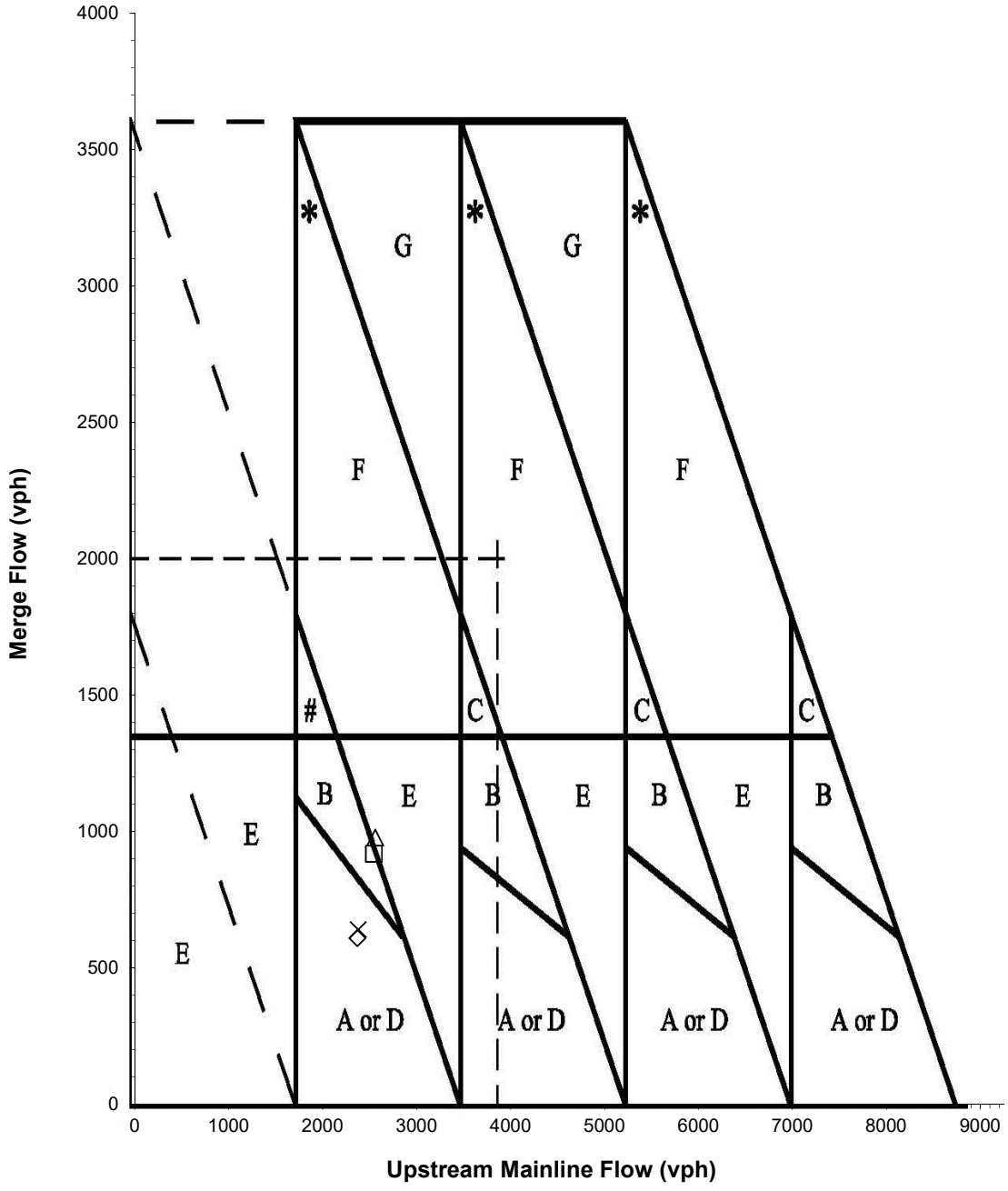
A56 / Tesco Haslingden SB Diverge

Scenario	Downstream Mainline	Diverge Flow	Symbol
2034 AM (Reference Case)	2907	639	□
2034 PM (Reference Case)	3275	678	◊
2034 AM (Local Plan)	3072	772	Δ
2034 PM (Local Plan)	3537	825	X



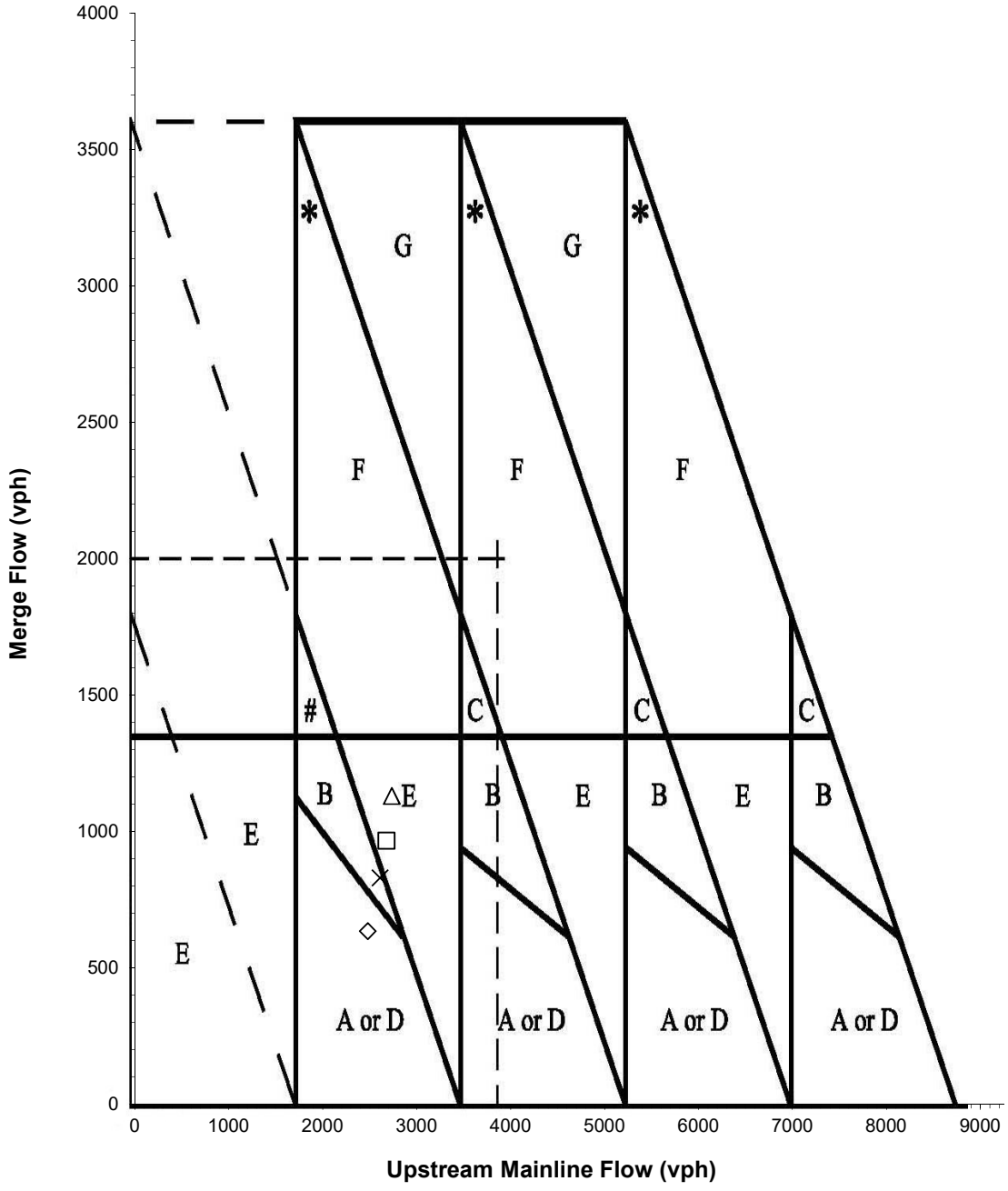
A56 / Tesco Haslingden SB Diverge

Scenario	Upstream Mainline	Merge Flow	Symbol
2024 AM (Reference Case)	2544	918	□
2024 PM (Reference Case)	2370	608	◊
2024 AM (Local Plan)	2561	977	Δ
2024 PM (Local Plan)	2379	640	X



A682 / A56 SB Merge

Scenario	Upstream Mainline	Merge Flow	Symbol
2034 AM (Reference Case)	2678	966	□
2034 PM (Reference Case)	2480	634	◊
2034 AM (Local Plan)	2735	1130	Δ
2034 PM (Local Plan)	2612	830	X



A682 / A56 SB Merge

MOTT MACDONALD

APPENDIX H

RAWTENSTALL GYRATORY OPTIONS

Notes

Key to symbols

Highway boundary

616m² Land required which is outside the Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0001

Notes

Key to symbols

Highway boundary

616m² Land required which is outside the Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 2

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0002

A681 Haslingden Road

A682

A682

Bury Road

A681 Bocholt Way

Notes

Key to symbols

Highway boundary

472m² Land required which is outside the Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 3a

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
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Drawing Number

391034-MMD-00-XX-DR-C-0003a

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Notes

Key to symbols

Highway boundary

616m² Land required which is outside the Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
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United Kingdom
T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

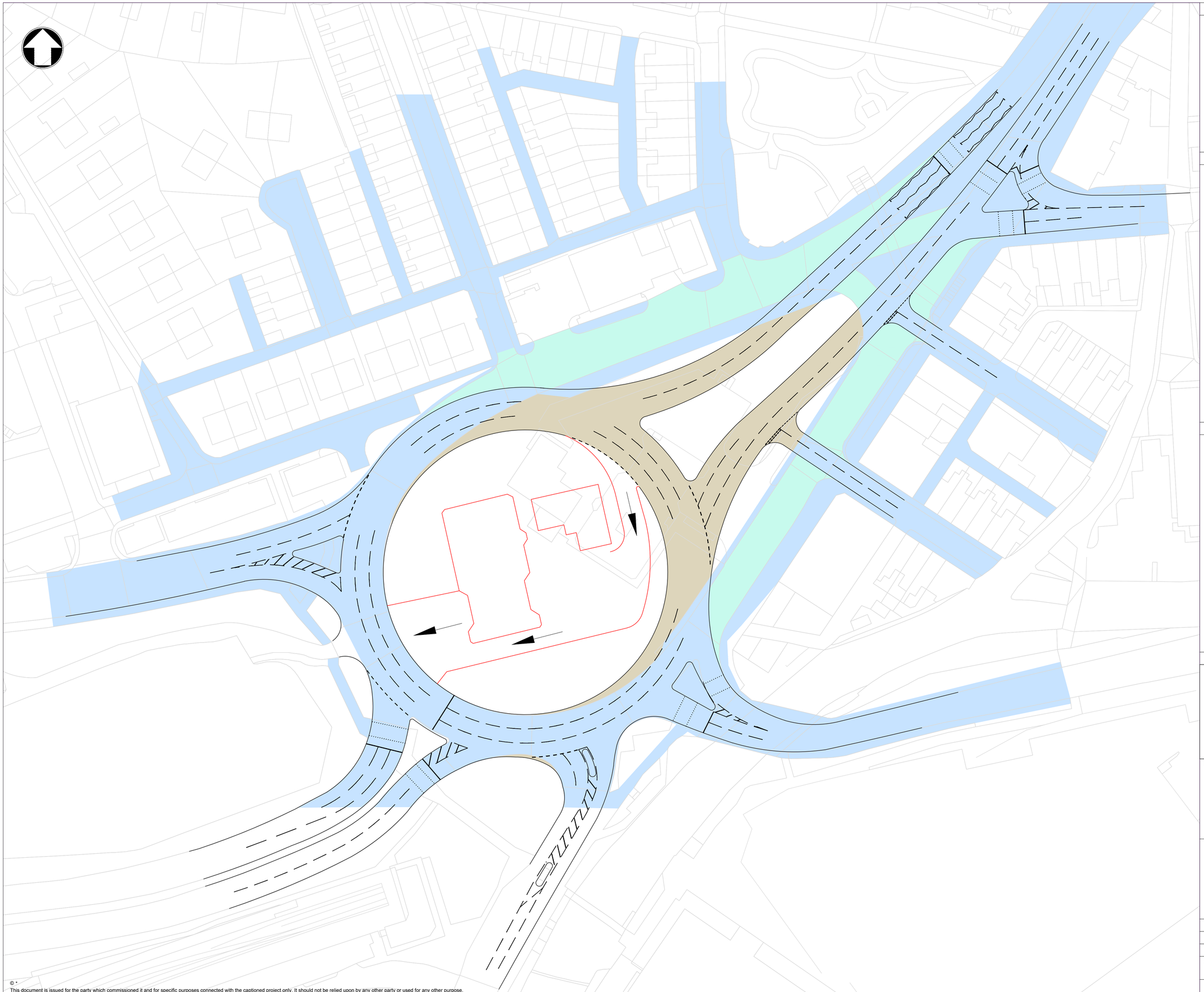
Rossendale Local Plan
Rawtenstall Gyratory
Option 4

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0004



Notes

Key to symbols

Highway boundary

2465m² Land required which is outside the Highway Boundary

2578m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
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W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 5

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0005

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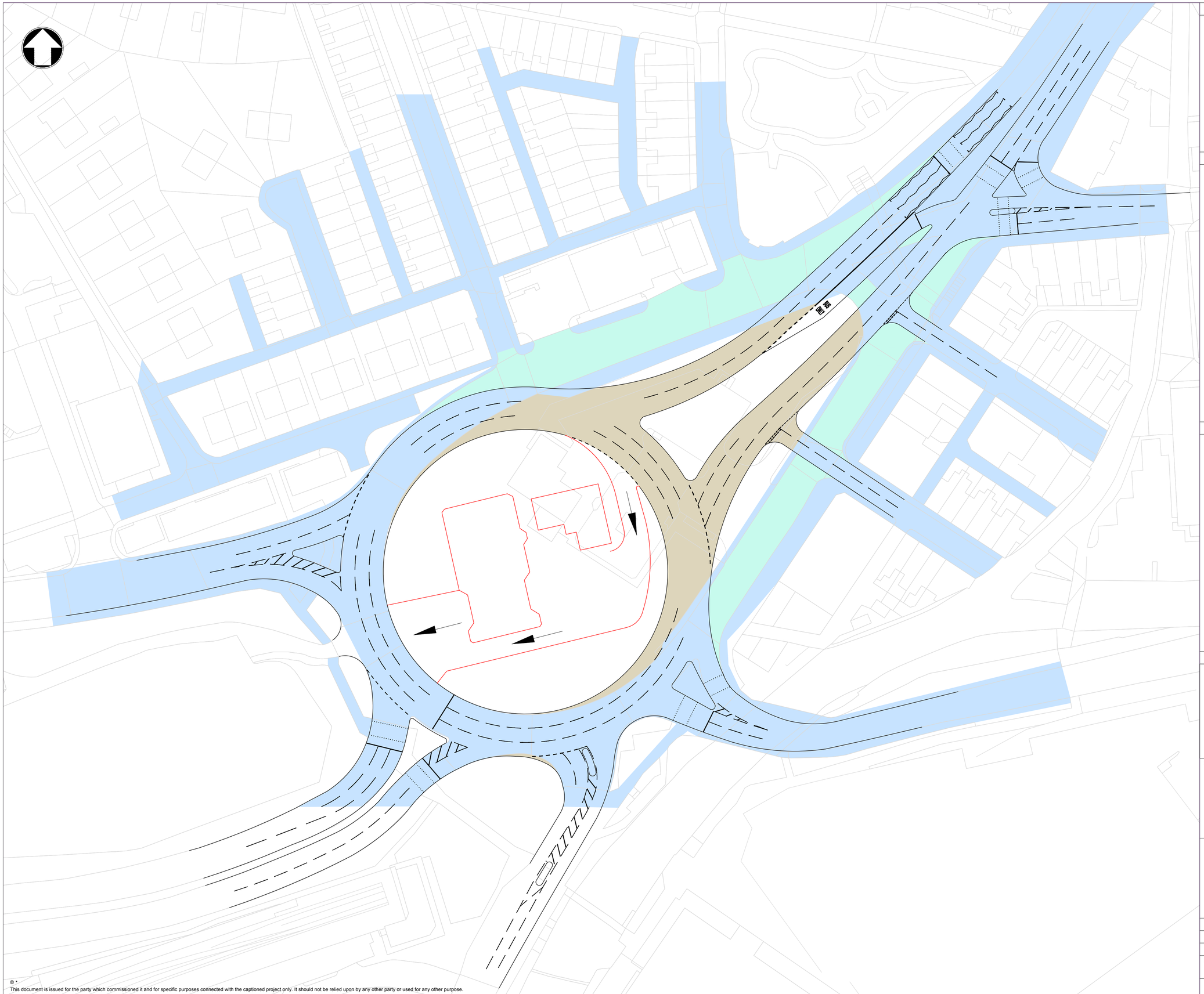

Notes

Key to symbols

Highway boundary

2465m² Land required which is outside the Highway Boundary

2463m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
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T +44 (0)151 482 9910
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 6

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0006

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Notes

Key to symbols

Highway boundary

1293m² Land required which is outside the Highway Boundary

407m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
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United Kingdom
T +44 (0)151 482 9910
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 7

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0007

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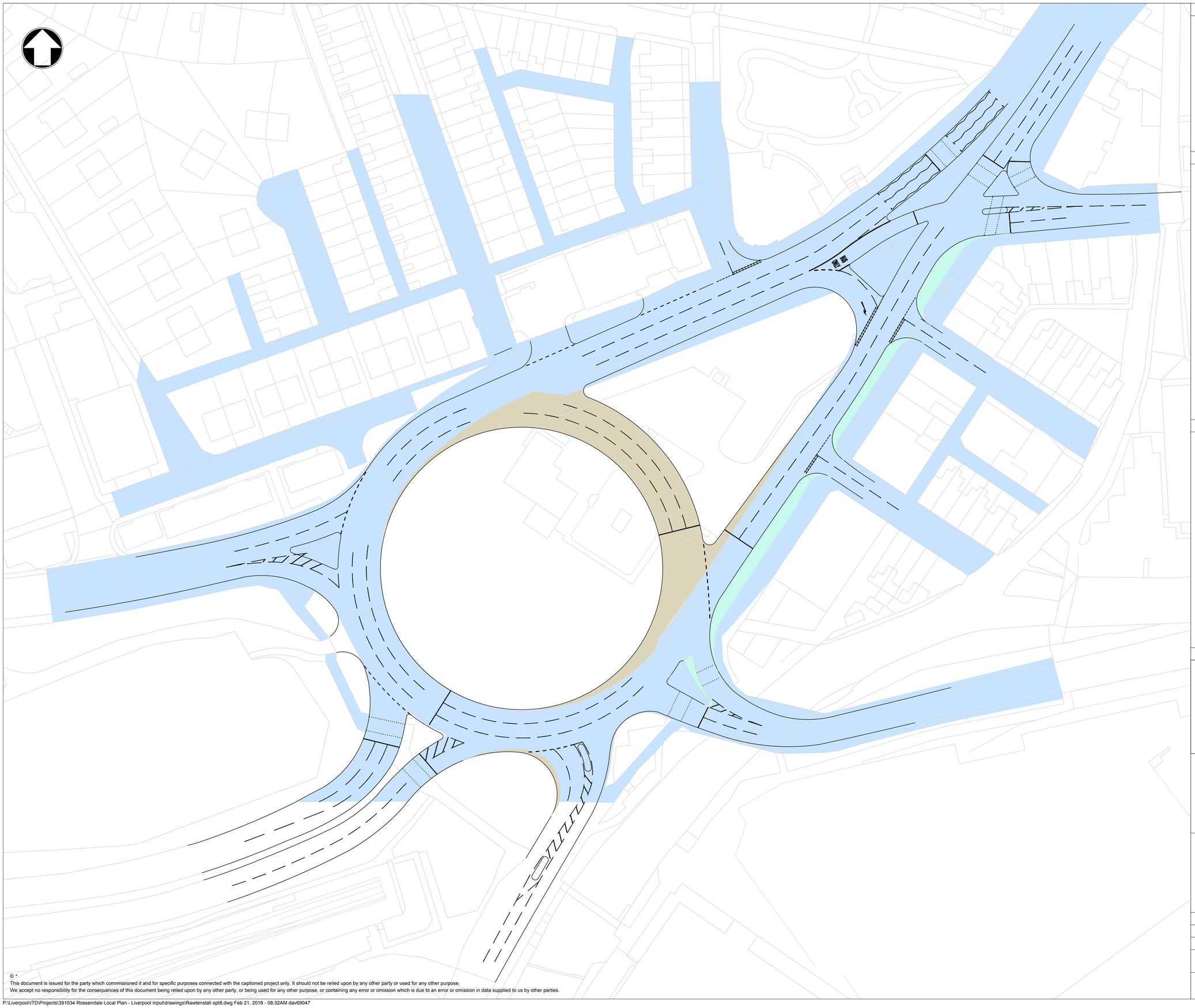

Notes

Key to symbols

Highway boundary

1293m² Land required which is outside the Highway Boundary

383m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 8

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0008

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Notes

Key to symbols

Highway boundary

3478m² Land required which is outside the Highway Boundary

4048m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
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T +44 (0)151 482 9910
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 9

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0009

Notes

Key to symbols

Highway boundary

3613m² Land required which is outside the Highway Boundary

4048m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
Royal Liver Building
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 10

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0010

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Notes

Key to symbols

Highway boundary

3504m² Land required which is outside the Highway Boundary

3403m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
Royal Liver Building
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 11

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0011

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Notes

Key to symbols

Highway boundary

4489m² Land required which is outside the Highway Boundary

3205m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
Royal Liver Building
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Client

Rossendale Alive
BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 12

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number
391034-MMD-00-XX-DR-C-0012

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Notes

Key to symbols

Highway boundary

3800m² Land required which is outside the Highway Boundary

4118m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 13

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
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Drawing Number

391034-MMD-00-XX-DR-C-0013

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Notes

Key to symbols

Highway boundary

3994m² Land required which is outside the Highway Boundary

3976m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
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Client

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 14

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number
391034-MMD-00-XX-DR-C-0014

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Notes

Key to symbols

Highway boundary

2950m² Land required which is outside the Highway Boundary

3127m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
Royal Liver Building
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United Kingdom
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 15

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number
391034-MMD-00-XX-DR-C-0015

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Notes

Key to symbols

Highway boundary

2654m² Land required which is outside the Highway Boundary

2116m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
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Client

Rossendale alive
BOROUGH COUNCIL

Title

Rossendale Local Plan
Rawtenstall Gyratory
Option 16

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0016

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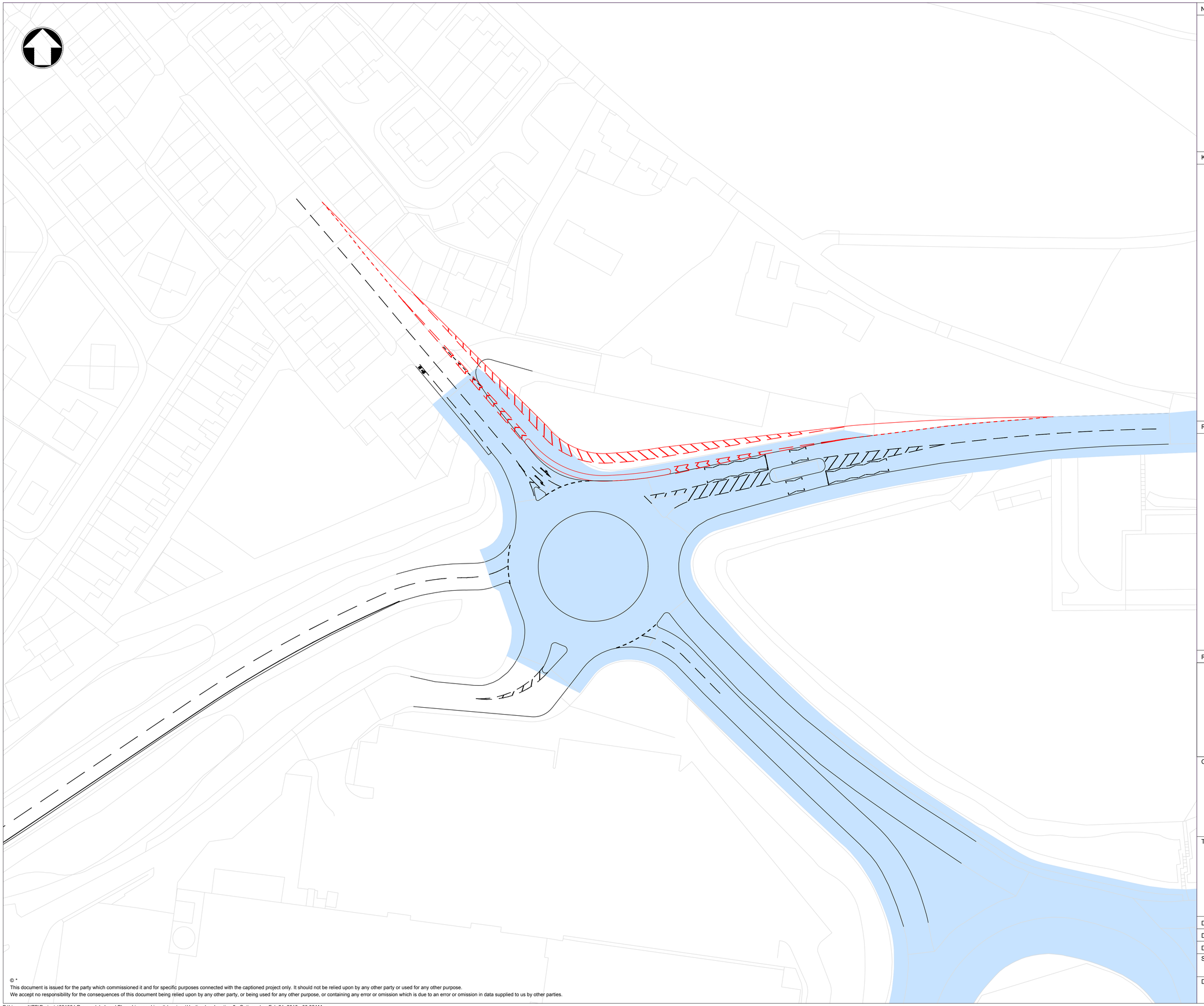
MOTT MACDONALD

APPENDIX I

FURTHER MITIGATION SOLUTIONS



Notes

Key to symbols

Highway boundary

2950m² Land required which is outside the Highway Boundary

3329m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
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United Kingdom
T +44 (0)151 482 9910
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W mottmac.com

Client

Example Client Line 1
Example Client Line 2
Example Client Line 3
Example Client Line 4

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-****

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dav69047

Notes

Key to symbols

Highway boundary

2950m² Land required which is outside the Highway Boundary

3329m² Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
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W mottmac.com

Client

Example Client Line 1
Example Client Line 2
Example Client Line 3
Example Client Line 4

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 3

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
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Drawing Number

391034-MMD-00-XX-DR-C-****

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dav69047

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
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T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 5A A56 Haslingden
Option 3

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0022

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dav69047

Notes

Key to symbols

- Highway boundary
- Land required which is outside the Highway Boundary
- Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
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T +44 (0)151 482 9910
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W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 4

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0023

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dav69047

Notes

Key to symbols

- Highway boundary
- Land required which is outside the Highway Boundary
- Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
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United Kingdom
T +44 (0)151 482 9910
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W mottmac.com

Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 5

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0024

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dav69047

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
Royal Liver Building
Liverpool
L3 1JH
United Kingdom
T +44 (0)151 482 9910
F +44 (0)151 236 2985
W mottmac.com

Client

Rossendale alive
BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 6

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
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Drawing Number

391034-MMD-00-XX-DR-C-0025

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dav69047

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 5A Tesco Haslingden
Option 6

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0025

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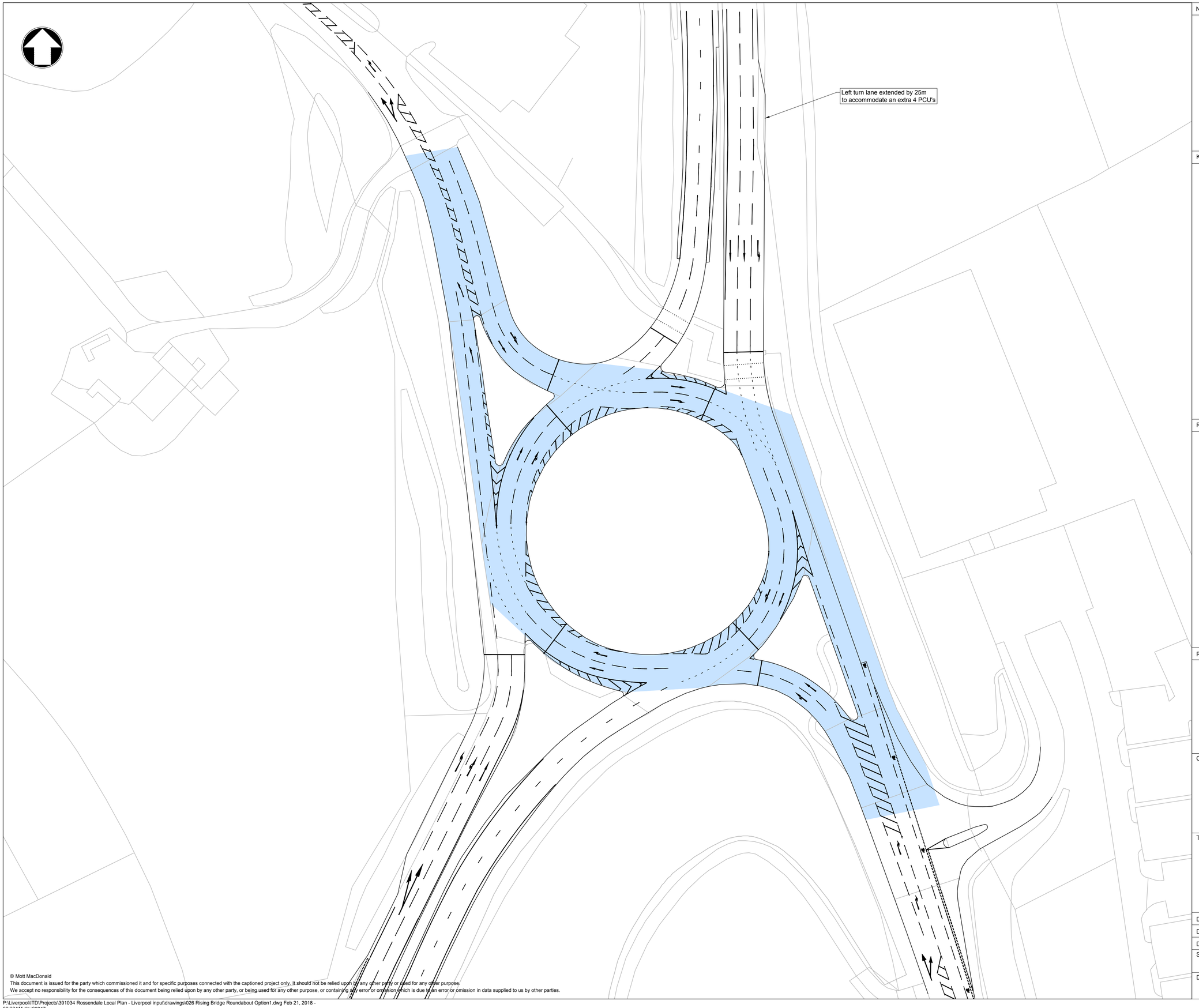
dav69047



Notes

Key to symbols

- Highway boundary
- Land required which is outside the Highway Boundary
- Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
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T +44 (0)151 482 9910
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Rising Bridge Roundabout
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0026

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Notes

Key to symbols

- Highway boundary
- Land required which is outside the Highway Boundary
- Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

MOTT MACDONALD

Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Grane Road/Holcombe Road Junction
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0027

Notes

Key to symbols

- Highway boundary
- Land required which is outside the Highway Boundary
- Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

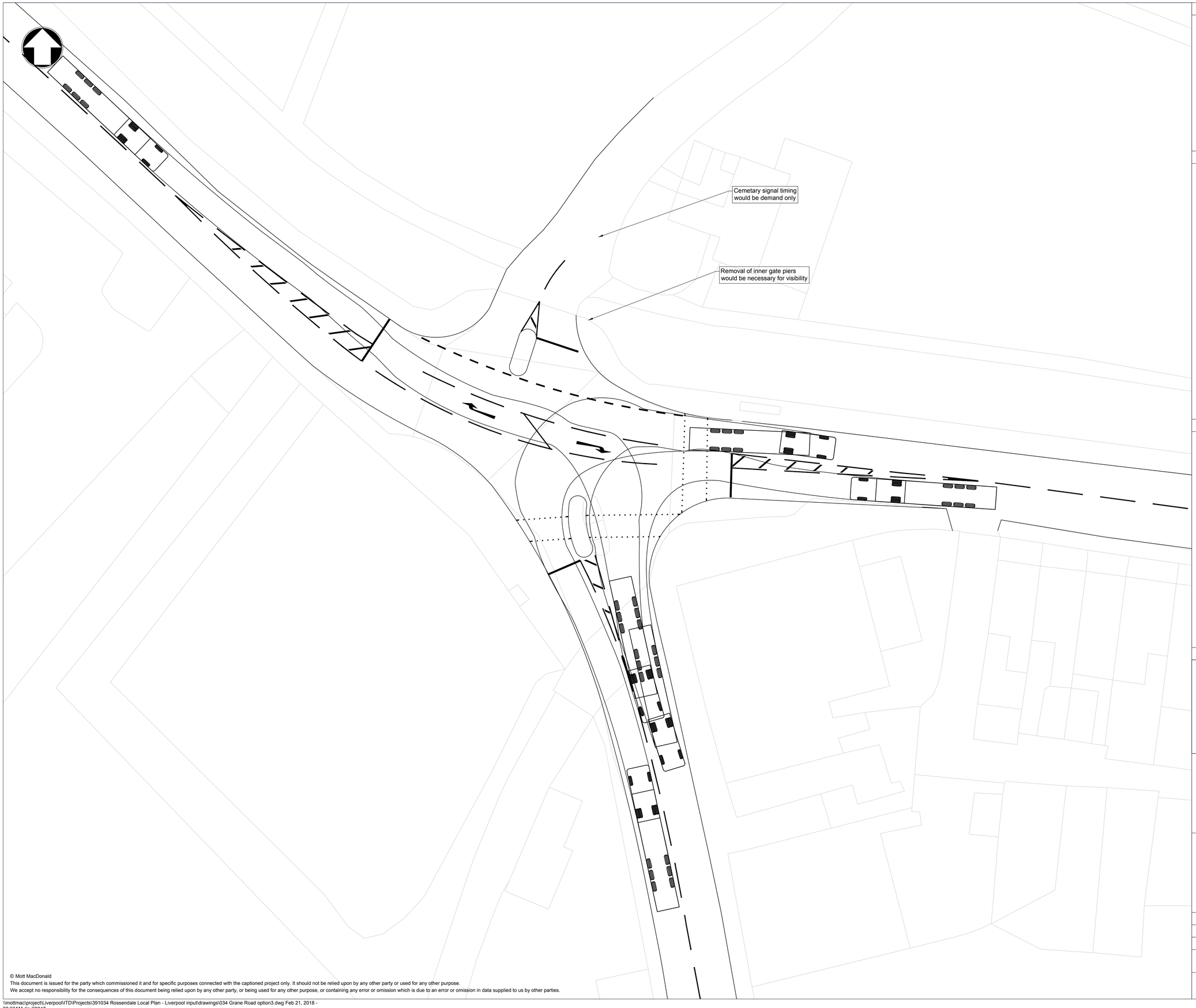
Rossendale Local Plan
Grane Road/Holcombe Road Junction
Option 2

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0028



Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Ground floor
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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Grane Road/Holcombe Road Junction
Option 3

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
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Drawing Number

391034-MMD-00-XX-DR-C-0034

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Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
Grane Road/A56 On-slip
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0029

P:\Liverpool\ITD\Projects\391034 Rossendale Local Plan - Liverpool input\drawings\Grane Road_A56 Option1.dwg Feb 21, 2018 - 08:32AM dav69047

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Rossendale alive
BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 13 Waterfoot Roundabout
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:500	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0020

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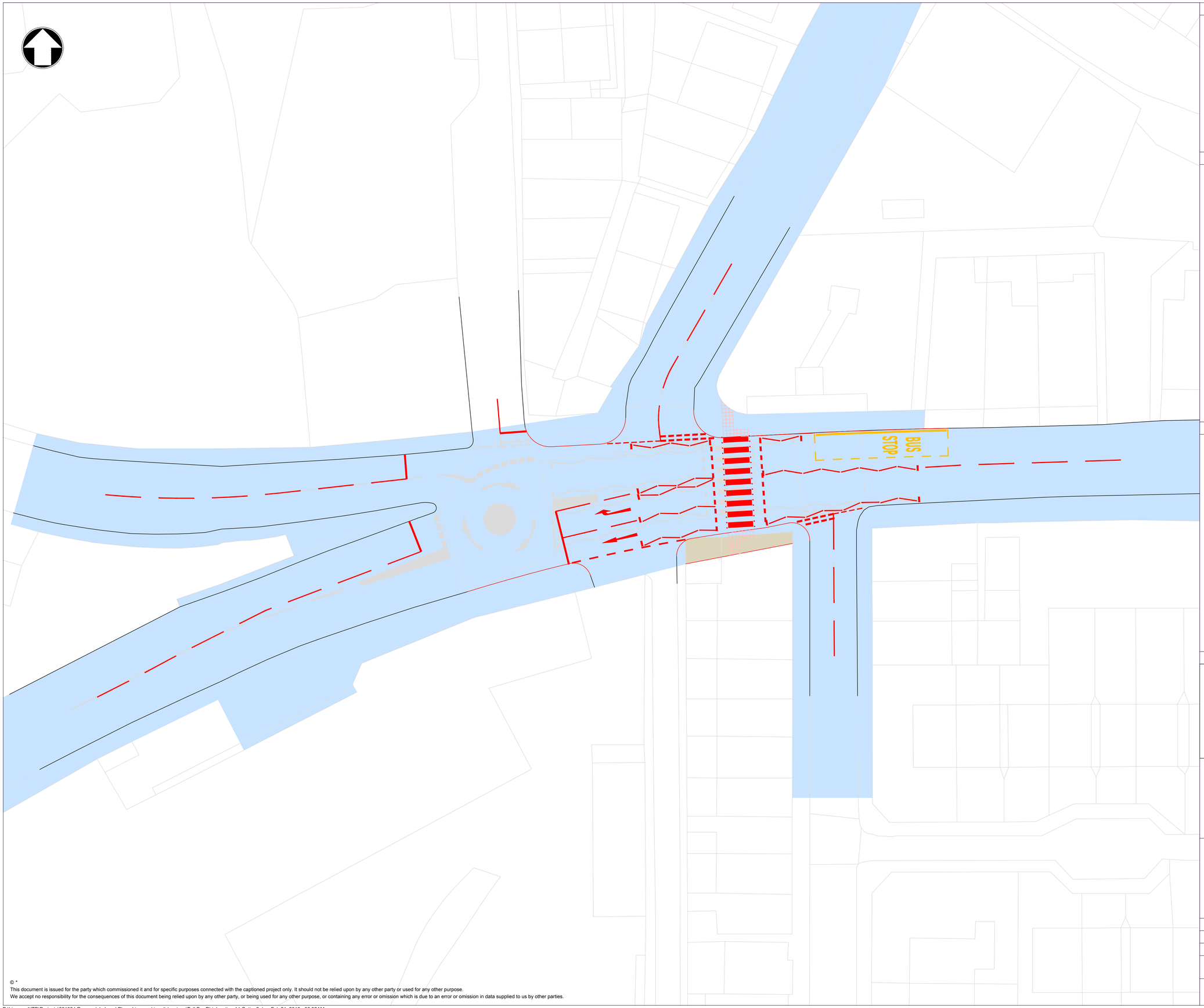

Notes

Key to symbols

Highway boundary

25m² Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Rossendale alive BOROUGH COUNCIL

Title

Rossendale Local Plan
Junction 14 Toll Bar Roundabout
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:200	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0021

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Widening of Railway Bridge would be required to accommodate lane gain

Lane gain to next junction

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
A56 Haslingden Bypass
Southbound
Proposed Type G Merge
Option 1

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:2000	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0031

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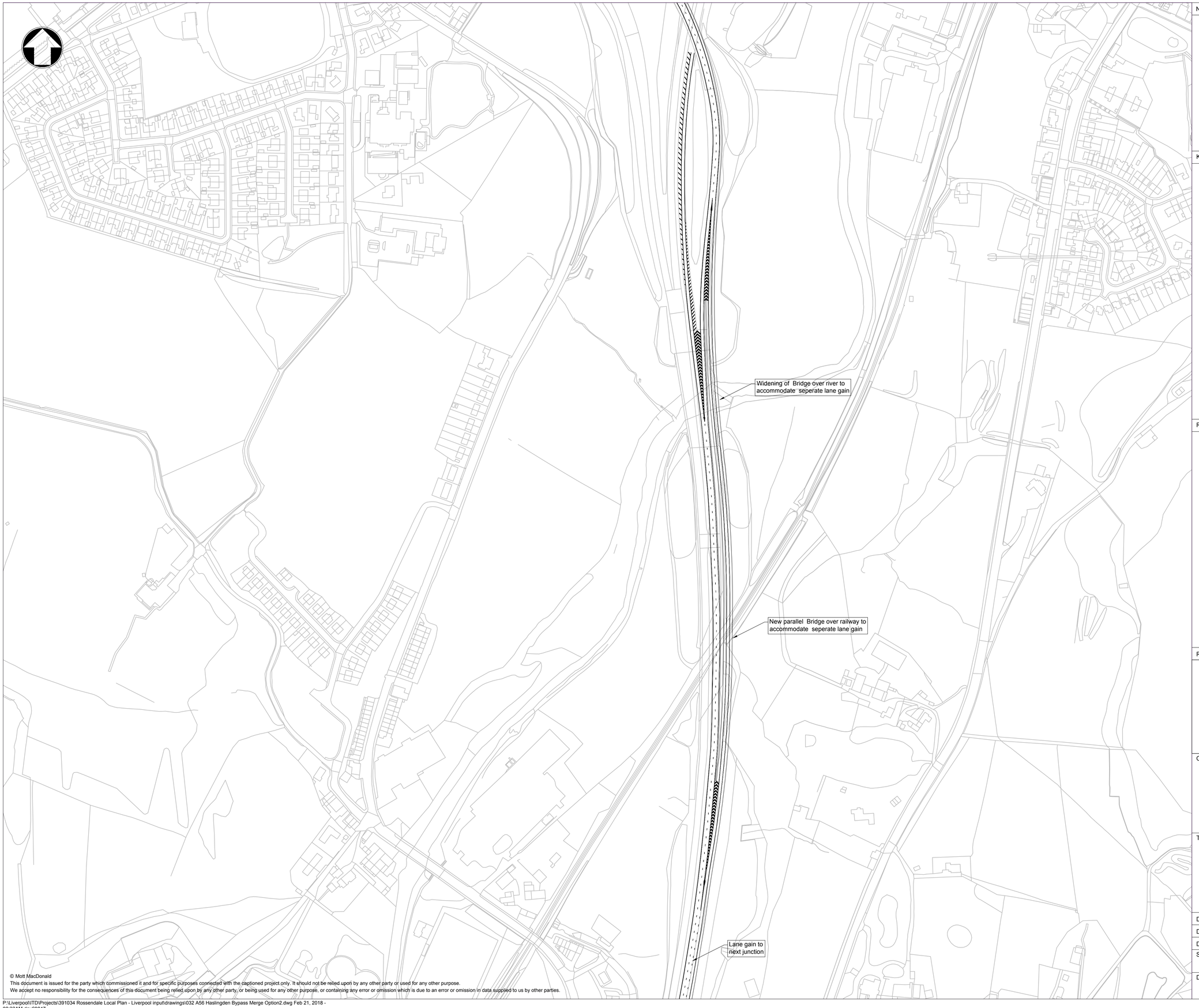

Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
A56 Haslingden Bypass Southbound
Proposed Type G Merge Option 2

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:2000	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0032

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Notes

Key to symbols

Highway boundary

Land required which is outside the Highway Boundary

Land released from the existing Highway Boundary

Reference drawings

Rev	Date	Drawn	Description	Ch'k'd	App'd

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Client

Rossendalealive BOROUGH COUNCIL

Title

Rossendale Local Plan
A56 Haslingden Bypass Southbound
Proposed Type G Merge Option 3

Designed	MS Davies		Eng check	A Engcheck	
Drawn	MS Davies		Coordination	A Coordinator	
Dwg check	A Checker		Approved	A N Approved	

Scale at A1	Status	Rev	Security
1:2000	PRE	P1	STD

Drawing Number

391034-MMD-00-XX-DR-C-0033

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