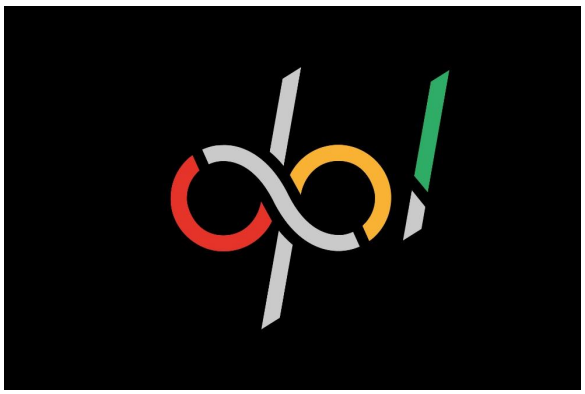

TRANSPORT ASSESSMENT ADDENDUM

DEWSBURY RIVERSIDE

KMBC

DOCUMENT QUALITY CONTROL			
Project Number	2020213	Report Number	006
Report Title	Transport Assessment Addendum		
Issue	Status	Date	Approved
-	First Issue	October 2022	D Sagstad
A	Second Issue	October 2022	D Sagstad

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1. EXECUTIVE SUMMARY

1.1.1 Development Planning Limited have been instructed to provide a Transport Assessment Addendum as part of the Dewsbury Riverside Phase 1 planning application.

1.1.2 The Addendum follows on from the agreed Traffic Distribution Note which considered the traffic impact of Phase 1 across the Dewsbury highway network. The Traffic Distribution Note confirmed the junctions for which a material traffic impact relating to the first 350 dwellings at Dewsbury Riverside is forecast.

1.1.3 Accordingly, this first phase focusses on providing the central gateway access, essential link road infrastructure for access to the full allocation (including this phase), mitigation at the key junctions of the Forge Lane double mini-roundabout and at the Calder Road gyratory and a sustainable travel fund.

1.1.4 The contribution that this application commits to through the on-site infrastructure and financial contributions to off-site highways works and the sustainable travel fund is estimated to be in excess of £50,000 per dwelling, which includes link road infrastructure to unlock the access requirements for the wider site allocation.

1.1.5 The wider allocation will provide a suite of strategic highway works across the wider highway network. Those works are currently being updated and will be informed by an up to date assessment of the impacts of the allocation as a whole.

1.1.6 This Transport Assessment Addendum summarises the key updates with regard to transport relating to the current development proposals. Each of these is summarised by heading below.

1.2 PRELIMINARY SITE ACCESS

1.2.1 Minor updates to the preliminary access have been made since the submission of the planning application. These includes amended and replacement car parking as well as the incorporation of improved bridleway facilities. These changes are included within the submitted layout plans.

1.3 CENTRAL GATEWAY CYCLOPS SITE ACCESS

1.3.1 The central gateway site access is now proposed to be a CYCLOPS junction. A preliminary LINSIG traffic model has been undertaken which demonstrates that the site access proposals are suitable for accommodating Dewsbury Riverside Phase 1 and could accommodate up to 1,000 residential units prior to a second and/ or third access to the wider allocation being required.

1.4 INTERNAL COMPACT ROUNDABOUT

1.4.1 The key internal junction within Phase 1 is now proposed to be a compact-style roundabout (previously a normal-style roundabout). The compact-style provides advantages in terms of active travel accessibility and reduced vehicle speeds.

1.4.2 The junction has been assessed for the full development build-out of 4,000 allocated residential units on the site and demonstrated to have sufficient traffic capacity to accommodate the forecast future traffic demand.

1.5 PUBLIC RIGHTS OF WAY

1.5.1 Public Right of Way (PROW) DEW 94/10 would be crossed by the proposed link road. Discussion have been held with the PROW team within the council and their requirements incorporated in to the layout of the link road, which include widening the route to 4m and surfacing in Textureflex or similar.

1.5.2 Additional claimed PROW cross Phase 1 and details relating to these routes would need to be agreed as the scheme progresses to Reserved Matters.

1.6 PUBLIC TRANSPORT CONTRIBUTION

1.6.1 The Phase 1 planning application incorporated a Travel Plan which can be considered as the framework for more detailed Travel Plans at reserved matters stage. Since submission of the application, highway development management have calculated a suitable contribution from Phase 1 towards sustainable travel of £365,275.

1.6.2 For the avoidance of doubt, the Travel Plan to be submitted at reserved matters stage will incorporate the sustainable travel sum of £365,275 and the method of expenditure would require the prior agreement and approval of highway development management.

1.7 FORGE LANE DOUBLE MINI-ROUNDABOUT

1.7.1 A significant highway intervention has been forecast to be required at the Forge Lane double mini-roundabout junction by around 2033 to accommodate the full Local Plan allocation.

1.7.2 Traffic modelling has been undertaken at the junction to assess Phase 1 in isolation. The traffic modelling forecasts that Phase 1 would contribute towards the requirement for this future scheme and, consequently, financial contribution is considered to be reasonably applicable to Phase 1 of Dewsbury Riverside. A formula for calculating this contribution has been agreed.

1.7.3 In the interim, it has been agreed that yellow box markings on the B6409 to reduce the interaction of queues relating to Vicarage Road would be appropriate. These works would be conditioned to be delivered by the Phase 1 development, in addition to the financial contribution.

1.8 CALDER ROAD TRAFFIC SIGNALS

1.8.1 Traffic impact at the junction Calder Road gyratory was accepted within the submitted Transport Assessment and a package of highway mitigation proposals submitted at that stage. Subsequent discussions have been held with UTMC and a revised package of works has been discussed. The total cost of those works is £80,000 and a flexible approach to their expenditure is proposed to allow either a standalone mitigation package or a larger package or works based upon pooled contributions to be delivered.

1.9 RAVENSTHORPE ROAD REFUGE ISLAND

1.9.1 During a site visit it was observed that the western active travel access could benefit from a new refuge island to be provided on Ravensthorpe Road to the west of the site.

1.9.2 The refuge island would be delivered as part of the Phase 1 development.

1.10 HIGHWAY ASSESSMENT UPDATES

1.10.1 Updated traffic analysis has been undertaken at the residual offsite junctions highlighted within the approved Traffic Distribution Report. The updated traffic analysis forecasts no additional traffic impacts on the wider highway network.

1.11 CONCLUSION

1.11.1 This Transport Assessment Addendum captures all of the transport updates pertinent to the determination of the planning application and matters raised in relation to transport are now agreed. There are considered to be no reasonable residual highway reasons for refusal of the application.

2. INTRODUCTION

2.1 BACKGROUND

2.1.1 Development Planning Limited have been instructed to provide a Transport Assessment Addendum as part of the Dewsbury Riverside Phase 1 planning application.

2.1.2 This Transport Assessment Addendum summarises the key updates with regard to transport relating to the development proposals.

2.2 HIGHWAY DEVELOPMENT MANAGEMENT CONSULTATION

2.2.1 Since the submission of the planning application, the Highway Development Management team within the council have had the opportunity to review the submitted planning application proposals for the Dewsbury Riverside Phase 1 scheme.

2.2.2 The review has resulted in a number of comments being made between submission and the current time. Consequently, a number of discussions have been held between the applicant and the Highway Development Management team which have resulted in this Transport Assessment Addendum being produced to capture the key updates.

2.3 KEY DRIVERS FOR THE UPDATES

2.3.1 The Dewsbury Riverside site was allocated within the Kirklees Local Plan Allocations and Designations on the 27th February 2019. The site had been a draft allocation for some considerable time prior to its allocation.

2.3.2 Over recent years there has been significant and important changes to the way in which the environment is treated at a national and local level. This includes that on the 1st May 2019 the UK Parliament passed a national declaration of an Environment and Climate Emergency, following independent declarations on the 28th and 29th April by Scotland and Wales, respectively. The UK Parliament was the first to do so in the world.

2.3.3 These changes have been significant drivers in the evolution of sustainable travel, which have included the advent of Local Transport Note 1/20 (Cycle Infrastructure Design) on the 27th July 2020.

2.3.4 The implementation and understanding of Local Transport Note 1/20 guidance has evolved and it has been agreed as appropriate to capture these changes within updated designs for the access routes for the Dewsbury Riverside scheme, which itself is a strategically important residential development to be built out over the Local Plan period and beyond. Planning now for the future is a key aspect of sustainable development.

2.3.5 The design ethos within LTN 1/20 has also been a driver in the advancement of junction layout philosophies, including innovative designs such as the CYCLOPS (Cycle Optimised Protected Signals) junctions which originated in Greater Manchester and are now becoming increasingly considered for implementation across the UK. The first CYCLOPS junction was planned prior to the formal adoption of LTN 1/20 however are based upon the same philosophies.

2.3.6 Alongside the adoption of LTN 1/20 standards within the Dewsbury Riverside scheme, the opportunity to implement a CYCLOPS traffic signal junction at the site access for Phase 1 has now been embraced. This innovative solution significantly benefits cycle access and safety and would be the first of its kind within the district.

2.3.7 Other changes have included the adoption of a compact-style roundabout within the heart of the site, which again is a change from the previously envisaged normal-style roundabout. The adoption of a compact-style roundabout could accommodate innovative

circulatory cycle tracks around the perimeter of the junction, whilst also helping to manage traffic speeds to the benefit of active travellers.

2.3.8 Alongside these changes, material improvements to the original proposals in relation to the Public Rights of Way across the site have also been incorporated, having been discussed in detail with the authority's Public Rights of Way team.

2.3.9 Overall, the key changes embrace the evolving nature of highway design and provide an even greater emphasis on access by sustainable modes, particularly by active travel, whilst also planning for future access within the site for public transport.

2.4 UPDATE SUMMARY

2.4.1 The Addendum follows on from the agreed Traffic Distribution Note which considered the traffic impact of Phase 1 across the Dewsbury highway network. The Traffic Distribution Note confirmed the junctions for which a material traffic impact relating to the first 350 dwellings at Dewsbury Riverside is forecast.

2.4.2 Accordingly, this first phase focusses on providing the central gateway access, essential link road infrastructure for access to the full allocation (including this phase), mitigation at the key junctions of the Forge Lane double mini-roundabout and at the Calder Road gyratory and a sustainable travel fund.

2.4.3 The contribution that this application commits to through the on-site infrastructure and financial contributions to off-site highways works and the sustainable travel fund is estimated to be in excess of £50,000 per dwelling, which includes link road infrastructure to unlock the access requirements for the wider site allocation.

2.4.4 The wider allocation will provide a suite of strategic highway works across the wider highway network. Those works are currently being updated and will be informed by an up to date assessment of the impacts of the allocation as a whole.

2.4.5 This Transport Assessment Addendum summarises the key updates with regard to transport relating to the current development proposals. The following sets out the updates in relation to the proposals which are captured within this Transport Assessment Addendum:

- Chapter 3 – Preliminary Site Access;
- Chapter 4 – Central Gateway CYCLOPS Site Access;
- Chapter 5 – Internal Compact Roundabout;
- Chapter 6 – Public Rights of Way;
- Chapter 7 – Public Transport Contribution – Financial Contribution ;
- Chapter 8 – Forge Lane Double Mini-Roundabout – Financial Contribution;
- Chapter 9 – Calder Road Traffic Signals – Financial Contribution;
- Chapter 10 – Ravensthorpe Road Refuge Island; and
- Chapter 11 – Highway Assessment Updates

2.5 UPDATED ACCESS PLANS

2.5.1 Throughout Chapters 3, 4, 5, 6 and 10 reference will be made to the updated highway access plans. These plans are attached within the Appendices, as follows:

- Appendix A – Preliminary Site Access (Prior to Central Gateway);
- Appendix B – Link Road Proposals (Central Gateway to Compact Roundabout); and
- Appendix C – Swept Path Analysis.

2.5.2 The plans within Appendices A to C are preliminary 2D layouts and engineered 3D plans are being progressed by Bruro Happold. The plans which will be referred to within planning conditions relating to any planning permission for the site will be submitted and registered on the planning portal separately.

3. PRELIMINARY SITE ACCESS

3.1 INTRODUCTION

3.1.1 The preliminary site access is proposed to be along the existing line of the Ravensthorpe Road side road, located adjacent to Number 19 Ravensthorpe Road.

3.1.2 The proposed use of this access has not changed since the original planning submission, however the layout design has evolved. This chapter summarises the current layout.

3.2 ACCESS

3.2.1 The preliminary site access via Ravensthorpe Road (side road) is proposed for the initial phase of development, which is envisaged to include the first 150 dwellings on the site.

3.2.2 The preliminary site access would be utilised until the central gateway to the site (formed at the junction of Ravensthorpe Road/ Forge Lane/ Lees Hall Road) is constructed and operational.

3.2.3 The access layout is shown in drawing DPL SK161C, attached within Appendix A.

3.2.4 The key features of the layout include:

- Minor reduction to the available parking available on Ravensthorpe Road, by around 9m (two parking spaces) to improve visibility to and from the junction;
- New dropped-kerb tactile paving across the side road to benefit those with impaired vision;
- New bollards at the junction to protect the pedestrian footways from vehicle encroachment;
- Removal of the parking layby to the west of Number 19 Ravensthorpe Road (a loss of around two parking spaces);
- A new car parking area access via turning head, forming six replacement parking spaces (i.e., a net gain in parking);
- A new 4m wide Textureflex (or similar) style of bridleway to the east of the Ravensthorpe Road (side road); and
- Double yellow lines extended along the preliminary access to prevent parking on this stretch and outside the school.

3.3 TRAFFIC CAPACITY

3.3.1 In line with the Traffic Distribution Report, an updated traffic capacity assessment of the preliminary site access has been undertaken.

3.3.2 The modelling has been based upon the maximum peak hour eastbound and westbound traffic flows from an automatic traffic count which was laid in 2022.

3.3.3 The side road flows for the existing scenario have been estimated as 80 two-way peak hour vehicle trips relating to the existing school and terraced properties.

3.3.4 For the purposes of robustness, development-generated traffic relating to the full Phase 1 development of 350 units has been undertaken. The assessment is purely for robustness, and it is expected that the central gateway CYCLOPS junction would be delivered by the 150th property within Phase 1.

3.3.5 Based upon these robust assumptions, the following traffic capacity is forecast:

Table 3.1 Preliminary Site Access (Robust Assessment of 350 dwellings)

	AM			PM		
	Q (PCU)	Delay (s)	RFC	Q (PCU)	Delay (s)	RFC
Side Road	1	22	0.50	1	17	0.34
Main Road	0	6	0.09	1	6	0.15

3.3.6 It can be seen from Table 3.1 that there are forecast to be no operational issues with the preliminary site access for initial phase of development, which would be up to 150 dwellings. The detailed model is attached at Appendix D.

3.4 CONSTRUCTION ACCESS

3.4.1 Swept path analysis of an articulated HGV and rigid HGV along the preliminary site access route are attached in Appendix C. The dimensions of the preliminary access have been demonstrated as suitable for carrying a managed number of these vehicle types.

3.4.2 The full construction access arrangements and details of construction compounds and routing would be dealt with by way of a Construction Management Plan. The Construction Management Plan would need to consider all potential routes for construction access, which may include alternative access locations along Ravensthorpe Road.

3.4.3 In order to reduce the impacts on local residents and the school a Construction Management Plan would be agreed with the planning authority to manage the timing and type of vehicles which can access via this and any other route.

3.5 SUMMARY

3.5.1 Minor updates to the preliminary access have been made since the submission of the planning application. These includes amended and replacement car parking as well as the incorporation of improved bridleway facilities. These changes are included within the submitted layout plans.

4. CENTRAL GATEWAY CYCLOPS SITE ACCESS

4.1 INTRODUCTION

4.1.1 As discussed in Chapter 2, the original proposals for the site access have been updated to incorporate an innovative CYCLOPS junction. This chapter discusses the proposals and provides the traffic analysis which has been undertaken in relation to the design.

4.2 DESIGN PHILOSOPHY

4.2.1 The advancement of CYCLOPS traffic signal junctions has been focussed within the Greater Manchester area and have been promoted through the Greater Manchester Cycling and Walking Network, supported by the Mayor of Greater Manchester, Greater Manchester Combined Authority and Transport for Greater Manchester.

4.2.2 As the largest urban area outside of London (by population), Manchester has a significant network of traffic signal junctions and, also, a significant and dense urban populous. These factors have led Manchester to innovate junction design and technology which combine the traffic capacity benefits of traffic signals with safe and protected space for cyclists. These junctions are CYCLOPS (**CYCL**e **O**ptimised **P**rotected **S**ignals).

4.2.3 The key features are:

- Orbital cycle route;
- Safety enhancement for all junction users with delays minimised;
- Cycling and walking conflicts with vehicular traffic are safety managed; and
- Signal controlled junction design technique.

4.3 LAYOUT

4.3.1 The layout of the CYCLOPS junction is attached within Appendix B as drawing DPL SK165C. The layout incorporates the following:

- Single lane approaches east and west;
- Single lane with flared right turn approaches north and south;
- Pedestrians cross within the central area of the junction;
- Cyclists have priority within the circulatory elements of the junction;
- Pedestrians and cyclists benefit from signalised crossing points parallel to each other; and
- Seamless connection to the cycle tracks on the new link road (southern arm).

4.3.2 The layout has been kept to minimal urban dimensions, whilst also ensuring that heavy vehicles (such as articulated HGVS) and buses can safely travel through the junction. The swept path associated with the heavy vehicle movements through the junction are attached within Appendix C.

4.3.3 The layout makes provision to retain access to the rear of the industrial unit which sits at the corner of Ravensthorpe Road/ Forge Lane. The access has been assessed for a large rigid HGV, which is the largest vehicle type which it is considered could reasonably access the industrial unit.

4.4 TRAFFIC ANALYSIS METHODOLOGY

4.4.1 The overall layout and proposals of the wider Dewsbury Riverside Local Plan allocation are evolving and are to be the subject of future outline and reserved matters planning applications.

4.4.2 In conjunction with the evolving masterplan, updated traffic analysis relating to the wider traffic impact for the allocation is currently being programmed. The updated traffic analysis is understood to incorporate:

- New traffic counts across the local highway network;
- Reassessment of the wide area traffic model;
- Revalidation of the wide area traffic model; and
- Updated traffic modelling assumptions.

4.4.3 The updates are proposed due to the period of time over which the future planning applications are likely to be forthcoming and to ensure that changes to local travel patterns (particularly following the Covid-19 pandemic) are captured for future applications.

4.4.4 Even so, for this first phase of development a number of assumptions can be made to allow the traffic modelling of the CYCLOPS traffic signal site access to be progressed. These assumptions have been discussed and agreed with Highway Development Management as appropriate for this initial phase.

4.4.5 The assumptions are based upon the use of traffic counts from 2018 (i.e. pre-pandemic) which were undertaken on behalf of KMBC relating to the traffic model testing of the Local Plan. The 2018 traffic counts have been assessed for the AM and PM peak hour periods.

4.4.6 In addition to the 2018 traffic flows, the agreed residential traffic generation rates for Phase 1 have been applied to 500 and 1,000 units using the central gateway access. These assumptions are higher than the currently proposed 350 residential units within Phase 1 and allow consideration of the potential capacity of the traffic signals prior to a second and/ or third access being opened up in to Dewsbury Riverside.

4.4.7 The traffic distribution assumptions are those which have been agreed with Highways Development Control within the Traffic Distribution Report (Dated March 2022 by Development Planning Limited). The Traffic Distribution Report has been agreed with Highway Development Management for application to Phase 1 of Dewsbury Riverside, prior to the wider area traffic modelling updates taking place for the wider scheme.

4.4.8 The traffic flow forecasts are attached at Appendix E.

4.4.9 Once a second and/ or third access is opened up, the distribution of traffic would be dependent upon the layout of the new access points and the new routing options that they would present. The traffic assessments for central gateway should be updated once the wider traffic model updates have been undertaken for the wider allocation. Even so, assessing the access for up to 1,000 dwellings in isolation provides a suitable indication of potential future traffic capacity.

4.5 LINSIG TRAFFIC MODEL

4.5.1 The traffic modelling has been undertaken within the LINSIG traffic signal package and been reviewed by Highways Development Control as a suitable preliminary traffic model of the junction. The LINSIG traffic model is attached at Appendix F.

4.5.2 The traffic model includes pedestrian traffic signal stages to represent the pedestrian crossings shown within the layout. Specific cyclist traffic signal stages have not been incorporated within this preliminary model as cyclists travel quicker than pedestrians and can reasonably be assumed to be able to cross at the same time as cyclists.

4.5.3 As the design progresses, further discussion and progression of the traffic model would be required with UTMC officers within the council to incorporate cycle stages. As the first CYCLOPS junction within the authority the way in which the cyclists could operate would require specific consideration and agreement with UTMC.

4.5.4 It should be noted that the traffic models have been run based upon a fixed-time of 120 seconds, i.e. the maximum likely to be acceptable in the future. The traffic signals would operate utilising MOVA (Microprocessor Optimised Vehicle Actuation) or similar optimisation process which would alter traffic signal timings based upon measured traffic and pedestrian flow conditions. As such, the 120 seconds cycle time is presented for information purposes only, to give an indication of potential traffic capacity, and not likely to represent the optimal cycle time or operation on street.

4.6 JUNCTION MODELLING RESULTS

4.6.1 The traffic model has been run for the following scenarios:

- Base traffic flows with 500 residential units (single access, AM and PM); and
- Base traffic flows with 1,000 residential units (single access, AM and PM).

4.6.2 The key junction model results are summarised below:

Table 4.1 LINSIG Modelling Results – CYCLOPS Site Access

	Base Plus 500 Units				Base Plus 1,000 Units			
	AM		PM		AM		PM	
	DOS	Q	DOS	Q	DOS	Q	DOS	Q
Site Access	26.3%	3	16.1%	2	52.8%	9	30.6%	4
Ravensthorpe Road	76.5%	13	70.7%	13	81.8%	14	81.5%	16
Forge Lane	76.3%	16	71.5%	15	92.8%	23	79.9%	18
Lees Hall Road	64.7%	5	45.8%	3	82.5%	6	76.7%	6
DOS	11.7%		25.8%		-3.1%		10.5%	

4.6.3 It can be seen from the LINSIG traffic model results that the CYCLOPS site access junction is forecast to operate at or within capacity up to 1,000 units as a single site access. This is significantly in excess of the 350 units proposed within Phase 1.

4.6.4 It is likely that future phases of Dewsbury Riverside would need to deliver a second and/ or third access at around 1,000 units. The exact trigger level would need to be agreed during the determination of planning applications for the future phases.

4.6.5 Prior to the 1,000 units being implemented, there could be emergency access options available to the Dewsbury Riverside site which include the active travel access shown in Appendix B (DPL SK170C) and/ or the stopped-up route of Ravensthorpe Road side road, (shown in DPL SK166C).

4.7 SUMMARY

4.7.1 A preliminary LINSIG traffic model has been undertaken for the proposed central gateway CYCLOPS junction. The LINSIG model demonstrates that the site access proposals are suitable for accommodating the Dewsbury Riverside Phase 1 and could accommodate up to 1,000 residential units prior to a second and/ or third access to the wider allocation being required.

5. INTERNAL COMPACT ROUNDABOUT

5.1 INTRODUCTION

5.1.1 The key internal junction within the site in Phase 1 was in the form of a normal-style roundabout within the initial submission. This layout has now been updated to a compact-style roundabout.

5.2 COMPACT ROUNDABOUTS

5.2.1 Compact roundabouts are promoted within LTN 1/20 and differ from normal-style roundabouts. Compact roundabouts are described within LTN 1/20 as having the following key features:

Compact roundabouts have arms that are aligned in a radial pattern, with unflared single lane entries and exits, and a single lane circulatory carriageway... It may be necessary to have short sections of 're-entrant curves' on the outside of the circulatory carriageway where the outside kerbline is concentric with the central island.

Deflection is therefore greater than with normal roundabouts and the design can be used as an effective speed reducing feature. Cycle symbols to TSRGD diagram 1057 may be placed on the entries, exits and circulatory carriageway in the primary position.

5.2.2 LTN 1/20 goes on to state that:

Compact roundabouts will tend to have a lower traffic capacity than conventional roundabouts, and can be assessed using traffic modelling software.

5.2.3 Consequently, the forecast traffic capacity of the proposed compact roundabout has been assessed using the Junctions 10 traffic modelling package.

5.3 LAYOUT

5.3.1 The compact roundabout is shown in drawing DPL SK168C, Appendix B. The key features include:

- One-way circulatory cycle tracks (external to the carriageway);
- Raised zebra/ parallel crossings on all approach arms (subject to DfT approval); and
- Compact geometry (confirmed by the swept path analysis in Appendix C).

5.4 TRAFFIC MODELLING

5.4.1 The future traffic flows through the internal roundabout would be dependent upon the final layout and routing provided by the second and third access points in to the site, as well as the layout of any internal link roads and residential plots.

5.4.2 Consequently, traffic analysis of the internal roundabout has required assumptions to be made in terms of future traffic flows, which have been provided by the client. The client has been informed by discussions which are ongoing in relation to the programmed traffic modelling for the evolving wider Dewsbury Riverside allocation.

5.4.3 The forecast traffic flows within the site have been assessed for the AM and PM peak hours for up to the allocated 4,000 residential units. The traffic flows are attached at Appendix G.

5.4.4 By way of a simple summary, the results for the full 4,000 residential unit scenario are shown below and the full Junctions 10 model results attached at Appendix H. For ease of reference, the arm naming convention is that Arm 1 is the northern arm and the

ascending arm numbers are clockwise, such that Arm 2 is the eastern arm, Arm 3 the southern arm and Arm 4 the western arm.

5.4.5 The design of the compact roundabout is that it is dimensionally symmetric, therefore the same parameters have been used for all arms.

Table 5.1 Junctions 10 Model Result – Full 4,000 Units

	AM			PM		
	Q (PCU)	Delay (s)	RFC	Q (PCU)	Delay (s)	RFC
Arm 1	0	5	0.23	1	9	0.59
Arm 2	0	5	0.37	1	9	0.52
Arm 3	4	18	0.79	1	6	0.42
Arm 4	1	9	0.52	1	7	0.44

5.4.6 It can be seen from Table 5.1 that the internal roundabout is forecast to operate with spare traffic capacity with 4,000 units built-out. The traffic model should be updated as the future forecasts evolve.

5.5 SUMMARY

5.5.1 The key internal junction within Phase 1 is now proposed to be a compact-style roundabout (previously a normal-style roundabout). The compact-style provides advantages in terms of active travel accessibility and reduced vehicle speeds.

5.5.2 The junction has been assessed for the full development build-out of 4,000 allocated residential units on the site and demonstrated to have sufficient traffic capacity to accommodate the forecast future traffic demand.

6. PUBLIC RIGHTS OF WAY

6.1 INTRODUCTION

6.1.1 A number of Public Rights of Way (PROW) and claimed Public Rights of Way cross the proposed development site.

6.1.2 The PROW plan is attached at Appendix I.

6.2 DEW/94/10

6.2.1 Within this first phase of Dewsbury Riverside, the dedicated PROW which would be affected by the access works is DEW/94/10. DEW/94/10 runs north/ south towards the east of the Phase 1 boundary and would be crossed by the proposed link road.

6.2.2 Discussion have been held with the Public Rights of Way team and their requirements for PROW DEW/94/10 have now been incorporated within the updated layouts.

6.2.3 Drawing 167C and 166C, Appendix B, show the proposed treatment of the PROW where it would meet with the link road and its connection to Ravensthorpe Road. The proposed treatment is as follows:

- South of the link road - widen existing route to 4m and provide in Textureflex or similar surfacing;
- Separate pedestrian/ cycle movements from equestrians for the crossing of the link road, with the equestrian crossing being a dropped-kerb informal arrangement with 10mx5m pens provided each side of the link road;
- North of the link road – widen existing route to 4m and provide in Textureflex or similar surfacing to the connection with Ravensthorpe Road (side road);
- Provide new 4m wide Textureflex or similar surfacing route to the east of the Ravensthorpe Road (side road) carriageway for the residual length of the route (up to the rear of the terraced properties fronting Ravensthorpe Road);
- Close Ravensthorpe Road (side road) to traffic at its northern end and provide a 4m wide Textureflex or similar surfacing along this northern length; and
- Provide bollard protection to the route along Ravensthorpe Road side road.

6.2.4 Prior to the delivery of the central gateway CYCLOPS junction, all of the above elements with the exception of the northern end treatment (which requires the closure of that length to traffic) could be delivered.

6.3 CLAIMED PROW

6.3.1 At the northwest corner of Phase 1 is a claimed PROW (DEW/dmmo app69/40). This route is not currently proposed to be affected by the works within Phase 1, however it does sit adjacent to the proposed works for the western active travel access, as shown in drawing DPL SK170C, Appendix B. The active travel access has been shown at a total of 6m wide, to potentially accommodate the requirements of this claimed PROW, should it be required.

6.3.2 A second claimed PROW meets with Ravensthorpe Road at the allotment access. The access proposals for the allotments are understood to account for the claimed PROW (DEW/dmmo app69/20) and the route passes through Phase 1 of the development.

6.3.3 Further claimed PROW sit within Phase 1, including DEW/dmmo app69/80, DEW/dmmo app69/90 and Dew/dmmo app69/100. The requirements for these claimed PROW would need to be agreed as part of future reserved matters planning submissions as Phase 1 progresses.

6.4 SUMMARY

6.4.1 Public Right of Way (PROW) DEW 94/10 would be crossed by the proposed link road. Discussion have been held with the PROW team within the council and their requirements incorporated in to the layout of the link road, which include widening the route to 4m and surfacing in Textureflex or similar.

6.4.2 Additional claimed PROW cross Phase 1 and the detail of these sites would need to be agreed as the scheme progresses to Reserved Matters.

7. PUBLIC TRANSPORT CONTRIBUTION

7.1 INTRODUCTION

7.1.1 This chapter sets out the proposed public transport contribution and mechanism for the Phase 1 development.

7.1.2 The contribution has been discussed in detail since the application has been submitted and has been committed to by the applicant.

7.2 CONTRIBUTION

7.2.1 The agreed scale and form of sustainable travel contributions have been provided by Highway Development Management and agreed with the West Yorkshire Combined Authority and are summarised below:

- Sustainable Travel Fund (350 units x £511.50) - £179,025.00
- Bus Shelter/Realtime Infrastructure Contribution (2 No. Stops) - £46,000.00
- Bus Service Contribution (18.7% of £750,000) - £140,250.00
- **Total** **- £365,275.00**

7.2.2 This sum should be taken to represent the scale of contribution and it is expected that flexibility in the approach to the application of the sum would be required to take account of the phased way in which the overall Dewsbury Riverside allocation is to be brought forward.

7.2.3 It is agreed that the sum of £365,275 is to be applied to the site and would be detailed within an updated Travel Plan at reserved matters planning stage. This process would allow any progress towards future development phases to also be taken into account.

7.3 TRAVEL PLAN

7.3.1 The Phase 1 planning application incorporated a Travel Plan which can be considered as the framework for a more detailed Travel Plan at reserved matters stage. For the avoidance of doubt, the Travel Plan to be submitted at reserved matters stage will incorporate the sustainable travel sum of £365,275, as set out above and confirm that the method of expenditure would require the prior agreement and approval of highway development management.

7.4 SUMMARY

7.4.1 The Phase 1 planning application incorporated a Travel Plan which can be considered as the framework for more detailed Travel Plan at reserved matters stage. Since submission of the application, highway development management have calculated a suitable contribution from Phase 1 towards sustainable travel of £365,275.

7.4.2 For the avoidance of doubt, the Travel Plan to be submitted at reserved matters stage will incorporate the sustainable travel sum of £365,275 and will confirm that the method of expenditure would require the prior agreement and approval of highway development management.

8. FORGE LANE DOUBLE MINI-ROUNDABOUT

8.1 INTRODUCTION

8.1.1 The Forge Lane double mini-roundabout is the first key junction on the road network to the north of the central gateway CYCLOPS traffic signal junction.

8.1.2 Since the submission of the Phase 1 planning application a planning application for a new LIDL supermarket at the southern corner of the junction has been submitted.

8.1.3 This chapter discusses the forecast operation of the junction with and without the proposed supermarket to allow the cumulative impact of development to be considered.

8.2 ROUNDABOUT GEOMETRY

8.2.1 The traffic analysis of mini-roundabouts requires consideration of specific geometric parameters which are different to those for a standard roundabout. The geometric parameters are subject to engineering judgement.

8.2.2 Both the Phase 1 Transport Assessment and the LIDL Transport Assessment included interpretations of the geometric parameters for the junction. These parameters were similar, however did vary.

8.2.3 Discussions have been held with highway development management who have used their engineering judgement to appraise the two submitted models and agree a final set of parameters for input to the model. The agreed parameters are set out within Appendix J.

8.3 MODEL METHODOLOGY

8.3.1 A number of traffic modelling scenarios have been assessed to arrive at the overall results. These are based upon:

- 2022 Traffic Count (for Dewsbury Riverside), AM and PM;
- 2022 Traffic Count (for LIDL), PM only;
- 2023 Wide Area Traffic Model (by Systra), AM and PM;
- 2030 Wide Area Traffic Model (by Systra), AM and PM.

8.3.2 Each of these based scenarios has been assessed within the traffic model, with a flat traffic flow profile applied to the future year assessments and the LIDL traffic count.

8.3.3 The future year traffic models (2023 and 2030) are forecast to produce results which appear to be reasonable when compared to the 2022 traffic counts. Consequently, the 'with development' assessment scenarios have been based upon the 2023 and 2030 future year traffic flow scenarios (by Systra and include Local Plan growth).

8.3.4 The forecast traffic flows for Dewsbury Riverside have been based upon the approved Traffic Distribution Report and the forecast traffic flows for LIDL are taken from the Transport Assessment for that site. Notably, the LIDL Transport Assessment did not forecasts AM peak hour flows and these have been estimated on the proportion of two-AM peak hour traffic generation vs the forecast two-way PM peak hour traffic generation.

8.3.5 The overall traffic flow forecast is attached at Appendix I.

8.4 RESULTS

8.4.1 The traffic modelling results have been considered on the basis of the maximum forecast Ratio of Flow to Capacity (RFC) and the Network Residual Capacity (measured in percent). The full traffic models are attached at Appendix L.

8.4.2 The results are summarised below. For ease of reference, the shorthand DR has been used for Dewsbury Riverside.

Table 8.1 Forge Lane Double Mini-Roundabout Summary Results

	AM		PM	
	Max RFC	Network Residual Capacity	Max RFC	Network Residual Capacity
2022 Count (DR)	1.50	-27%	1.32	-19%
2022 Count (LIDL)	N/A	N/A	1.08	-13%
2023 Base Model	1.34	-27%	1.15	-16%
2030 Base Model	1.35	-29%	1.28	-21%
2023 Base + DR	1.36	-31%	1.20	-18%
2023 Base + DR + LIDL	1.38	-33%	1.20	-22%
2030 Base + DR	1.37	-33%	1.32	-24%
2030 Base + DR + LIDL	1.39	-35%	1.40	-27%

8.4.3 It can be seen from Table 8.1 that the junction is forecast to operate without spare network capacity in both the AM and PM peak hours through all scenarios.

8.4.4 The addition of the Dewsbury Riverside traffic is forecast to result in an adverse operational impact on the junction, increasing the RFC by around 5% (PM peak model) and a maximum reduction in Network Residual Capacity of 4%.

8.4.5 In order to consider the results, a review of observed and modelled queue lengths for the 2022 Dewsbury Riverside traffic count scenario has been undertaken. This is the only scenario for which there are both traffic and queue counts available.

Table 8.2 Observed Vs Modelled Maximum Queue Lengths (2022 Count DR)

	AM		PM	
Junction 1	Model	Observed	Model	Observed
Arm 1	3	20	2	26
Arm 2	4	N/A	3	N/A
Arm 3	26	22	93	26
Junction 2	Model	Observed	Model	Observed
Arm 1	26	22	10	8

Arm 2	69	25	13	10
Arm 3	2	N/A	2	N/A

8.4.6 It can be seen from Table 8.2 that the queues on Junction 1 Arm 1 (Station Road/ B6409) were observed to be higher than are forecast within the model. On-site observations suggest that this could be a result of the proximity of Vicarage Road to the junction, particularly in the AM peak hour where cars are observed to be dropping-off at the Headfield C of E Junior School.

8.4.7 It can also be seen that, particularly in the PM peak hour, the queues on Junction 1 Arm 3 (Thornhill Road) are observed to be less than are forecast in the model.

8.4.8 Similarly, the queue length on Junction 2 Arm 2 (Forge Lane) is forecast to be significantly longer in the AM peak hour than was observed.

8.4.9 It is clear that both the observed and modelled junction operation results in queuing on key arms, however the traffic models do not fully reflect the on-site operation of the junction. Even so, it is reasonable to conclude from the models that the development-generated traffic is forecast to result in an adverse impact on the operation of the junction.

8.5 JUNCTION MITIGATION

8.5.1 A significant highway intervention has been forecast as being required by Systra's wide area modelling associated with the Local Plan by around 2033. That highway intervention has yet to be designed in detail, however would be required to deliver the wider Dewsbury Riverside allocation and forthcoming major development schemes local to the junction.

8.5.2 The initial appraisal of the likely timescale for such works is around 2033, which falls outside of the timescales for this first phase of development. Even so, the analysis of the junction demonstrates that this first phase does contribute towards the future requirements for improved traffic capacity.

8.5.3 For this reason, a financial contribution is considered to be reasonably applicable to Phase 1 of Dewsbury Riverside. The financial contribution would be towards a potentially significant junction improvement scheme which would be forthcoming in later stages of the Dewsbury Riverside scheme.

8.5.4 The formula for assessing the scale of this contribution is set out below:

$$\left(\frac{\text{X (cost of highway improvement scheme)}}{\text{Y (4,000 dwellings in HS61 site allocation)}} \right) \text{X} \text{ Z (number of dwellings proposed in each development (e.g., 350 dwellings))}$$

8.5.5 In the interim, discussions have also been held with highway development management to consider the observed queue lengths on the B6409. Given the interaction of vehicles accessing/ egressing Vicarage Road it has been agreed that yellow box markings on the

B6409 to reduce the interaction of queues could be appropriate. These proposals are shown within drawing DPL SK009A, attached at Appendix M. These works would be conditioned to be delivered by the Phase 1 development in addition to the financial contribution.

8.5.6 It should be noted that drawing DPL SK009A, Appendix M, also shows the swept path analysis of articulated HGVs entering and exiting Thornhill Road. Whilst consideration has been given to providing a physical island on Thornhill Road, the swept path analysis demonstrate that this option is not feasible.

8.6 SUMMARY

8.6.1 A significant highway intervention has been forecast to be required at the Forge Lane double mini-roundabout junction by around 2033 to accommodate the full Local Plan allocation.

8.6.2 Traffic modelling has been undertaken at the junction to assess Phase 1 in isolation. The traffic modelling forecasts that Phase 1 would contribute towards the requirement for this future scheme and, consequently, financial contribution is considered to be reasonably applicable to Phase 1 of Dewsbury Riverside. A formula for calculating this contribution has been agreed.

8.6.3 In the interim, discussions have also been held with highway development management to consider the observed queue lengths on the B6409. Given the interaction of vehicles accessing/ egressing Vicarage Road it has been agreed that yellow box markings on the B6409 to reduce the interaction of queues could be appropriate. These works would be conditioned to be delivered by the Phase 1 development in addition to the financial contribution.

9. CALDER ROAD TRAFFIC SIGNALS

9.1 INTRODUCTION

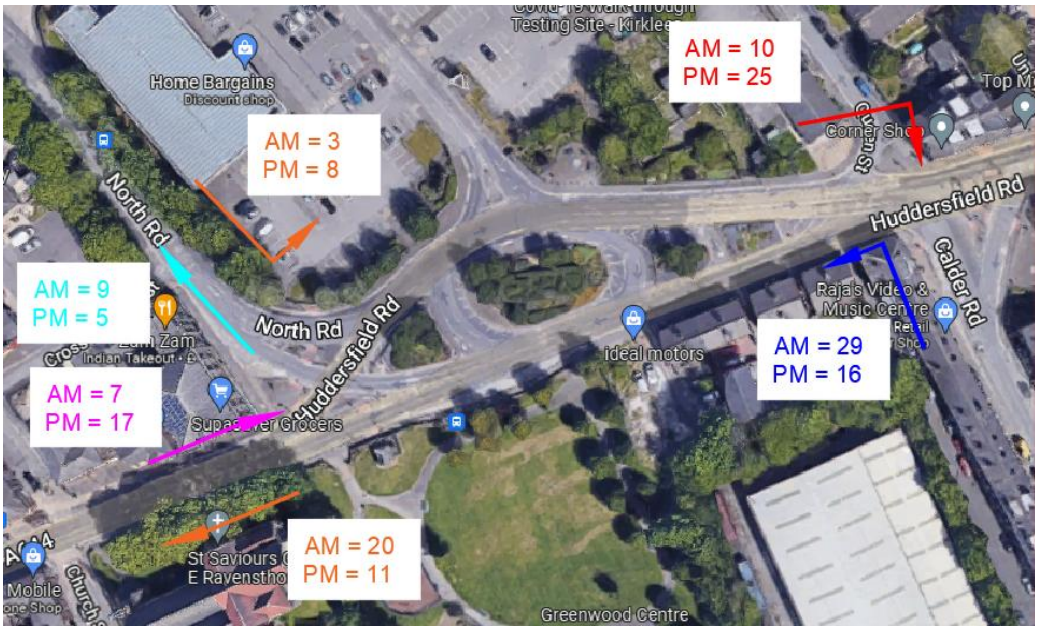
9.1.1 This chapter sets out the assessment and proposals relating to the Phase 1 development at the Calder Road traffic signals, which form part of the larger Calder Road gyratory.

9.2 FORECAST TRAFFIC IMPACT

9.2.1 A forecast traffic generation and distribution exercise was undertaken and presented within the approved Traffic Distribution Report (March 2022).

9.2.2 The forecast development generated traffic at the Calder Road traffic signals is set out below:

Extract 9.1 Huddersfield Road/ Calder Road/ North Road Gyratory – Traffic Flow Forecast AM and PM Peak Hours



9.2.3 The forecast traffic impact on the Calder Road traffic signals is 29 outbound and 10 inbound vehicle movements in the AM peak hour had 16 outbound and 25 inbound in the PM peak hour.

9.2.4 This quantum of forecast impact relating to the development proposals could occur at the full development build-out, i.e. at the end of the construction period.

9.3 TRAFFIC CAPACITY

9.3.1 As part of the M2D2L Transport Study an assessment was undertaken of the Ravensthorpe Gyratory. The Ravensthorpe Gyratory Assessment was undertaken based upon survey data from October 2018 and presented in a report in February2020. The study was also informed by on-site observations.

9.3.2 With regard to the overall study, the conclusions state that:

Onsite observations have confirmed that the A644 experiences large queues on each approach in the vicinity of the Ravensthorpe Gyratory, especially during the AM and PM peak periods.

The results of the modelling exercise suggest that the network operates well within capacity for the given demand. Therefore, it follows that queues approaching the gyratory are as a result of external factors, other than the available capacity at each junction.

Initial onsite observations suggest that additional queueing occurs on approaches to the junction as a result of:

• The proximity of the pedestrian crossings which are not synchronised to the main junction controller timings;

• Presence of bus stop facilities located within the main traffic streams; and

• General friction of traffic flow based on frontage activity.

9.3.3 Notably, the assessment also notes the following with regard to Calder Road:

• Observed green time of 20 seconds with a maximum of 10 vehicles passing the stop line.

• No discernible queuing observed at the stop line.

• The left turn onto the A644 was difficult for large vehicles which encroached onto the right turn lane to Calder Road.

9.3.4 There are existing waiting restrictions on Calder Road (consisting of double yellow lines and time restrictions) for around 35m from the stopline, which is around 6 to 7 vehicle lengths.

9.3.5 Whilst the queuing overall across the junction was observed, the queues on Calder Road were observed to dissipate, i.e. that arm was shown to be within capacity.

9.3.6 The report sets out the following queue length observations on Calder Road:

- AM mean maximum queue – 4 vehicles;
- AM maximum queue – 9 vehicles;
- PM mean maximum queue – 4 vehicles; and
- PM maximum queue 13 vehicles.

9.3.7 These observed queue lengths have been used in Section 9.4 to consider the scale of impact of the Phase 1 development-generated traffic.

9.4 JUNCTION IMPACT

9.4.1 The M2D2L junction assessment utilises a traffic signal cycle time of 88 seconds, which equates to roughly 40 traffic signal cycles per hour. The forecast increase in traffic on Calder Road (outbound) in the AM peak hour is 29 vehicles, which is slightly less than 1 vehicle per traffic signal cycle. Consequently, the forecast junction impact is an increase in the mean maximum queue of 4 vehicles to 5 vehicles and a potential increase in the maximum queue from 9 vehicle to 10 vehicles in the AM peak hour.

9.4.2 The forecast increase in outbound traffic in the PM peak hour is 16 vehicles, which is less than half a vehicle every traffic signal cycle. Consequently, the forecast impact in the PM peak hour is considered to be negligible.

9.4.3 Based upon the forecast junction impact mitigation measures were originally proposed within the Transport Assessment forming part of the planning application package. Since that time, additional discussions have been held with the UTMC team and they have requested the following measures as an alternative to those previously proposed:

- Revalidation and optimisation of SCOOT at Gyratory, including necessary surveys/assessment;
- Upgrading of zebra crossing to east of gyratory (adjacent to Spen Valley Road junction) to puffin crossing and linking to the gyratory signals;
- TRO alterations and associated relining/signing works to further restrict parking on Calder Road.

9.4.4 The estimated sum of these works is a total of £80,000 which would be payable by Phase 1 of Dewsbury Riverside in relation to works at this junction.

9.4.5 Given that there will be other schemes which could impact the junction, including later phases of Dewsbury Riverside, a flexible approach to the expenditure of this contribution is required and could provide input to one of the following options:

- Revalidation and optimisation of SCOOT at Ravensthorpe Gyratory including necessary surveys/assessment, upgrading/linking of the Zebra crossing immediately east of the Spen Valley Road junction to a linked puffin crossing, and extended waiting restrictions on the Calder Road approach;
- or, an alternative standalone scheme to improve the efficiency of the Ravensthorpe Gyratory traffic signals;
- or, to contribute towards a wider package of improvement measures at Ravensthorpe Gyratory traffic signals.

9.5 SUMMARY

9.5.1 Traffic impact at the junction Calder Road gyratory was accepted within the submitted Transport Assessment and a package of highway mitigation proposals submitted at that stage. Subsequent discussions have been held with UTMC and a revised package of works has been discussed. The total cost of those works is £80,000 and a flexible approach to their expenditure is proposed to allow either a standalone mitigation package or a larger package or works based upon pooled contributions to be delivered.

10. RAVENSTHORPE ROAD REFUGE ISLAND

10.1 INTRODUCTION

10.1.1 This chapter confirms the proposed works to deliver the Ravensthorpe Road refuge island.

10.2 LAYOUT

10.2.1 During discussions on the overall highway proposals for the Phase 1 scheme, a joint site visit was undertaken by the applicant and highway development management.

10.2.2 During the site visit it was observed that the western active travel access could benefit from a new refuge island to be provided on Ravensthorpe Road to the west of the site. The refuge island's location was considered and has been shown in drawing DPL SK170C, Appendix B.

10.2.3 The refuge island would be delivered as part of the Phase 1 development.

10.3 SUMMARY

10.3.1 During a site visit it was observed that the western active travel access could benefit from a new refuge island to be provided on Ravensthorpe Road to the west of the site.

10.3.2 The refuge island would be delivered as part of the Phase 1 development.

11. HIGHWAY ASSESSMENT UPDATES

11.1 INTRODUCTION

11.1.1 The approved Traffic Distribution Report set out the additional junction modelling which would be undertaken as a result of the updated traffic distribution parameters. The key traffic model updates are already included within the previous chapters of this report. There are two further offsite junctions for which updated junction model updates were stated as being required. This chapter summarises the updated assessments.

11.2 LEES HALL ROAD/ BREWERY LANE

11.2.1 The Traffic Distribution Report set out that the junction was previously forecast to benefit from significant spare traffic capacity. Even so, due to the manual redistribution of development-generated traffic flows updated junction models were recommended.

11.2.2 The model was previously run with the 2023 and 2030 base and 'with development' scenarios from the Systra wide-area traffic model. In order to update the models, the base scenarios have been kept, with the manually distributed development-generated traffic added on to form new 'with development' scenarios. The results are summarised below.

Table 11.1 Lees Hall Road/ Brewery Lane 2030 With Development (Manual Distribution)

	AM			PM		
	Q (PCU)	Delay (s)	RFC	Q (PCU)	Delay (s)	RFC
Brewery lane	0	5	0.23	0	5	0.27
Lees Hall Road E	1	8	0.52	1	6	0.35
Lees Hall Road W	0	6	0.24	1	7	0.43

11.2.3 It can be seen from Table 11.1 that the junction is forecast to operate with significant spare traffic capacity in 2030 with the full phase 1 development in place. The detailed model is attached at Appendix N.

11.3 LEES HALL ROAD/ INGHAM ROAD

11.3.1 The same methodology as has been used in Section 11.2 has been used for this junction. The results are summarised below.

Table 11.2 Lees Hall Road/ Ingham 2030 With Development (Manual Distribution)

	AM			PM		
	Q (PCU)	Delay (s)	RFC	Q (PCU)	Delay (s)	RFC
Ingham Road	1	14	0.50	1	13	0.49
Lees Hall Road	0	0	0	0	0	0

11.3.2 It can be seen from Table 11.2 that the junction is forecast to operate with significant spare traffic capacity in 2030 with the full phase 1 development in place. The detailed model is attached at Appendix O.

11.4 SUMMARY

11.4.1 Updated traffic analysis has been undertaken at the residual offsite junctions highlighted within the approved Traffic Distribution Report. The updated traffic analysis forecasts no additional traffic impacts on the wider highway network.

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