

# Bassetlaw Local Plan

## Retford Transport Assessment Addendum

### Highway Mitigation and Sensitivity Tests

Bassetlaw District Council  
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Prepared on Behalf of Tetra Tech Limited. Registered in England number: 01959704

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# 1 INTRODUCTION

## 1.1 INTRODUCTION

1.1.1 Following publication of the Retford Transport Assessment (RTA) in May 2022 Nottinghamshire County Council (NCC) in their capacity as the local highway authority raised a few issues regarding the operation of parts of the local highway network.

1.1.2 This note has been produced as an addendum to the RTA to explore and address the issues raised by NCC. It expands on relevant information from the RTA and provides additional information as required.

## 1.2 ISSUES RAISED

1.2.1 NCC provided highway comments on the RTA in a five page document dated 29<sup>th</sup> June 2022. This addendum note covers the three outstanding areas of concern listed below:

1. **Mitigation Schemes** - There are three junctions within Retford where potential highway improvements had been identified to mitigate Local Plan traffic impacts. However, NCC raised comments regarding design details for the potential improvements.
2. **Town Centre Junctions** - There are three junctions within Retford town centre where traffic impacts are forecast due to Local Plan development, but no physical mitigation can be delivered due to space constraints at the junctions. Demand management has been promoted to help address development traffic impacts at these locations, but NCC remain skeptical that demand management alone will be sufficient to mitigate impacts at these locations.
3. **Highway links to the east of the Ordsall South Allocation** - Additional traffic is forecast to use Main Road, Eaton and High Street / Goosemoor Lane, Ordsall due to Local Plan development (mainly due to the Ordsall South allocation). NCC has commented that these routes are unsuitable to accommodate additional traffic.

## 1.3 BACKGROUND TO THE RTA

1.3.1 The RTA was prepared using robust assumptions reflecting the early stage of the Local Plan process and the absence of details regarding how individual Local Plan allocations may be delivered and what sustainable transport they may provide.

1.3.2 The RTA assessed the operation of 24 junctions within Retford and determined that seven of those junctions are forecast to exceed capacity by the end of the Local Plan period without the addition of any Local Plan development traffic. With the addition of Local Plan development the

operation of those seven junctions is forecast to get worse, to varying degrees, and two further junctions are forecast to exceed capacity. The remaining 15 junctions tested remain within capacity to 2038 with Local Plan development. The locations of all junctions tested are shown in the plan in **Appendix A**.

1.3.3 The junctions forecast in the RTA to exceed capacity by 2038 are listed as follows:

- J2A - A1 Apleyhead Interchange western roundabout
- J6 - A620 Babworth Road / B6420 Mansfield Road / Straight Mile / Sutton Lane
- J7 - A620 Babworth Road / Ordsall Road
- J8 - A620 Amcott Way / Bridlegate / Hospital Road
- J9 - A620 Amcott Way / Moorgate / A638 Arlington Way
- J11 - A638 Arlington Way / Grove Street
- J12 - A638 Arlington Way / A638 London Road / Carolgate
- J14 - A638 London Road / Whitehouses Road
- J15 - A638 London Road / Whinney Moor Lane / Bracken Lane

1.3.4 Possible highway improvements have been identified to mitigate Local Plan traffic impacts at junctions J2A, J6, J7, J9, J14 and J15. The improvements for junctions J6, J7 and J14 involve introducing traffic signal control at these locations. Potential improvements have been sketched and tested to a level of detail commensurate for the Local Plan. NCC's traffic signal engineers have provided detailed feedback (Issue 1 in **Section 1.2**) which has now been reviewed. Revised schemes that take on board the comments received from NCC's traffic signal engineers are presented later in this addendum note.

1.3.5 For junctions J8, J11 and J12 no mitigating highway improvements have been identified, due to space constraints adjacent to these junctions (Issue 2 in **Section 1.2**). Further design feasibility work which allows for land acquisition may result in a design solution at these locations. However the cost to implement such measures may be prohibitive and is likely to require the acquisition and demolition of adjacent properties, which would not be appropriate.

1.3.6 Possible demand management measures and the provision of sustainable modes of transport have therefore been suggested to help reduce Local Plan development traffic impacts at junctions J8, J11 and J12. A review of the robust traffic assumptions applied in the RTA has been undertaken to examine the implications for the operation of these space constrained junctions and a series of 'sensitivity tests' are presented in this addendum note.

## 2 MITIGATION SCHEMES

### 2.1 INTRODUCTION

2.1.1 As described in **Section 1.3** the RTA identified potential highway improvement schemes to mitigate Local Plan development traffic impacts at six junctions. At the three junctions listed below the suggested mitigation involves introducing traffic signal control:

- J6 - A620 / B6420 / Straight Mile / Sutton Lane
- J7 - A620 Babworth Road / Ordsall Road
- J14 - A638 London Road / Whitehouses Road

2.1.2 The existing layouts of these junctions are shown in the following images.

**Image 1 – (J6) A620 / B6420 / Straight Mile / Sutton Lane Junction**



(Image © 2021 Google)

**Image 2 – (J7) A620 Babworth Road / Ordsall Road Mini-Roundabout Junction**



(Image © 2021 TomTom)

Image 3 – (J14) A638 London Road / Whitehouses Road Mini-Roundabout Junction



(Image © 2021 Google)

## 2.2 REVISED SCHEME DRAWINGS

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- 2.2.1 The potential highway improvement schemes presented for these three junctions in the RTA have been reviewed in line with NCC's 29<sup>th</sup> June 2022 comments (and any earlier comments received from NCC).
- 2.2.2 Revised drawings have been prepared and these are included in **Appendix B**. The schemes presented achieve better than 'nil detriment' performance and to do this the layouts shown require some third-party land from outside of the existing highway boundary. If the use of third-party land proves problematic the improvements could be scaled back to just mitigate Local Plan development traffic. These issues will be investigated further as part of the detailed design process.
- 2.2.3 Traffic capacity assessments have been undertaken for the AM / PM peak periods for the new potential highway improvement schemes. The traffic capacity assessment results that were presented in the RTA for the existing junction layouts are presented in **Table 1**. Capacity assessment results for the revised mitigation schemes are presented in **Table 2**. To keep the document file size manageable for this addendum note full LinSIG model output reports have not been included in an appendix. However, the LinSIG junction models will be provided to NCC.
- 2.2.4 Assessment of the existing priority junction and mini-roundabouts has been undertaken using the Junctions 9 computer programme, which is the 'industry standard' traffic modelling computer software package used for assessing the capacity of priority junctions and roundabouts. Assessment of the signal-controlled mitigation schemes has been undertaken using the LinSIG computer programme, which is the 'industry standard' traffic modelling software package used for assessing the capacity of signal controlled junctions.

- 2.2.5 At priority junctions and roundabouts, a Ratio of Flow to Capacity (RFC) value below 0.85 indicates that a junction operates 'within' capacity. An RFC value between 0.85 and 1.00 indicates that there may be occasions during the period modelled when queues will develop, and delays occur. An RFC value greater than 1.00 indicates that a junction operates 'above' capacity.
- 2.2.6 At signal-controlled junctions Practical Reserve Capacity (PRC) is used to indicate whether a junction operates 'within' its theoretical capacity. The PRC is the percentage of all round traffic growth, which a junction can accommodate within its capacity. When there is no PRC, a degree of overload is the percentage by which the traffic flows exceed the capacity of the junction. Experience with PRC calculations at existing junctions indicates that queuing does not become particularly noticeable until the degree of overload reaches 10% (i.e. -11% PRC). For the purposes of comparison with priority junctions and roundabouts, it can be assumed that a PRC of 0% (and a Degree of Saturation of 90%) roughly equates to an RFC of 0.85.



**Table 1 – Capacity Assessment Results - Existing Junctions**

Junction	Arm	2021 Base + Committed				2038 Base + Committed				2038 Base + Committed + Ordsall South Allocation				2038 Base + Committed + All Local Plan Development			
		AM		PM		AM		PM		AM		PM		AM		PM	
		RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
J6 - A620 Babworth Road / Mansfield Road / Straight Mile / Sutton Lane	B - Mansfield Road (Left, Ahead)	1.04	26.7	1.55	290.7	Max	539.9	Max	954	Max	870.3	Max	1216.6	Max	1058.3	Max	1282.8
	B - Mansfield Road (Right Turn)	1.02	1.7	0.14	6.5	Max	9.4	Max	20	Max	12.1	Max	23.5	Max	12.9	Max	24.1
	A - Babworth Road	0.81	4.8	0.62	1.8	0.83	5.1	0.63	1.8	0.83	5.2	0.64	1.9	0.76	3.6	0.64	2
	D - Sutton Lane (Left, Ahead)	1.42	112.5	1.66	188.3	Max	363.8	Max	675.3	Max	661.2	Max	973.3	Max	767.4	Max	1014.4
	D - Sutton Lane (Right Turn)	1.03	1.5	1.3	2.2	Max	3.3	Max	6.2	Max	5.2	Max	7.3	Max	31.2	Max	12.3
	C - Straight Mile	0.95	12.5	0.95	12.8	0.95	12.9	0.95	12	0.95	12.1	0.98	12.1	0.96	11	0.98	12.6
J7 - A620 Babworth Road / Ordsall Road	A - A620 Babworth Rd (East)	0.98	14.6	0.82	4.2	1.14	63	0.97	14.6	1.22	94.1	1.18	75.4	1.44	233.1	1.23	97.3
	B - Ordsall Road	0.94	8.5	0.6	1.5	1.13	34.9	0.76	2.9	1.8	313.7	0.95	10.3	1.87	355.4	1.03	19
	C - A620 Babworth Rd (West)	1.03	28.8	0.79	3.5	1.21	102.6	0.93	9.7	1.29	162	1.2	95.2	1.32	182.5	1.32	170.9
J14 - London Road / Whitehouses Road	A - A638 London Road (South)	0.69	2.2	1.09	51	0.81	4.2	1.3	156.1	0.86	5.4	1.46	249	0.89	6.8	1.51	290.9
	B - Whitehouses Road	0.96	11	0.89	5.9	1.23	59.5	1.01	15.5	1.6	184.7	1.07	28.2	1.64	197.7	1.12	39.7
	C A638 London Road (North)	0.23	0.3	0.57	1.3	0.26	0.4	0.67	2	0.67	2	0.75	2.9	0.7	2.3	0.76	3.2

**Note 1** - in the table above RFC stands for Ratio of Flow to Capacity. The abbreviation 'Max' for maximum has been used where the RFC results reach infinity (i.e. are too large for the software to handle).

**Note 2** - once RFC exceeds 1.0 the level of queuing forecast by Junctions 9 is less accurate and should only be used as an indication of significant queues rather than the actual length of queues.

**Table 2 – Capacity Assessment Results – Revised Mitigation Schemes**

Junction	Arm	2021 Base + Committed				2038 Base + Committed + Local Plan Development			
		AM		PM		AM		PM	
		DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ	DoS (%)	MMQ
6 - A620 Babworth Road / Mansfield Road / Straight Mile / Sutton Lane	A - A620 Babworth Road	65.00	9.60	73.00	10.20	80.70	14.50	81.20	12.50
	B - B6420 Mansfield Road	66.00	6.10	70.90	6.90	76.90	7.40	84.00	9.80
	C - A620 Straight Mile	63.80	12.30	69.90	14.40	67.40	13.50	84.40	20.70
	D - Sutton Lane	17.90	0.70	27.40	1.10	17.90	0.70	27.40	1.10
7 - A620 Babworth Road / Ordsall Road	A- A620 Babworth Rd (East)	60.70	9.00	51.30	6.10	85.30	19.70	59.90	7.30
	B - Ordsall Road	61.40	5.40	49.00	3.90	86.30	13.60	61.80	6.10
	C - A620 Babworth Rd (West)	58.90	7.10	47.00	5.30	83.60	11.40	61.90	7.30
14 - London Road / Whitehouses Road	A - A638 London Road (South)	60.40	9.10	75.60	14.00	68.10	11.30	90.30	23.90
	B - Whitehouses Road	60.80	6.20	75.20	6.00	69.20	8.30	87.40	9.10
	C A638 London Road (North)	61.70	9.40	74.90	5.90	68.80	10.90	89.40	10.30

**Note:** in the table above DoS stands for Degree of Saturation and MMQ stands for Mean Maximum Queue length, with queue lengths in passenger car units (PCU).

- 2.2.7 As demonstrated by the results in **Table 2**, the revised mitigation schemes operate within capacity on all arms in both peaks at all three junctions. Only the London Road (south) arm of junction 14 marginally exceeds 90% degree of saturation at the end of the Local Plan period with Local Plan development traffic in place.
- 2.2.8 Several variations to the modelling of pedestrian movements have been tested at junctions 6, 7 and 14. The results in **Table 2** are based on the standard modelling approach with no pedestrian demand. As could be expected, junction performance deteriorates in terms of traffic capacity as pedestrian crossing demand increases.

## 3 TOWN CENTRE JUNCTIONS

### 3.1 INTRODUCTION

3.1.1 For the three junctions in Retford town centre where meaningful physical mitigation cannot be delivered due to space constraints the RTA indicated that demand management measures should be fully explored to help reduce development traffic impacts at these locations.

3.1.2 Demand management measures covers all measures that aim to limit the consequences of increased traffic congestion. This includes providing complementary development uses that reduce the need to travel (e.g. providing schools and shops etc in residential developments), infrastructure that facilitates home working and home shopping (e.g. high speed broadband), and measures to encourage the use of sustainable modes of travel and encourage modal shift (e.g. new and improved bus services, walking and cycling infrastructure etc).

3.1.3 The three space constrained junctions are listed below, and the existing junction layouts are shown in the following images:

- J8 - A620 / Bridlegate / Hospital Road / North Road / Hallcroft Road
- J11 - A638 Arlington Way / Grove Street
- J12 - A638 Arlington Way / A638 London Road / Carolgate

**Image 4 – Amcott Way / Bridgegate / Hospital Road Roundabout (J8)**



(Image © 2021 Google)

**Image 5 – A638 Arlington Way / Grove Street Junction (J11)**



(Image © 2021 Google)

**Image 6 – A638 Arlington Way / London Road / Carolgate (J12)**



(Image © 2021 Google)

## **3.2 OVERVIEW OF SENSITIVITY TESTS**

- 3.2.1 The RTA was prepared using robust assumptions reflecting the early stage of the Local Plan process and the absence of details regarding how individual Local Plan allocations may be delivered and what sustainable transport they may provide. In terms of off-site highway impacts, the RTA presented a worst-case assessment of junction capacity.

- 3.2.2 Several sensitivity tests have therefore been undertaken to explore the likely traffic outcomes if some of the robust assumptions applied in the RTA are adjusted / removed. Traffic flows associated with the sensitivity tests are included in **Appendix C**.

#### Sensitivity Test 1 – Removal of Covid Uplift Factors applied to Base Flows

- 3.2.3 The RTA included robust assumptions relating to ‘background’ traffic flows on the existing highway network within Retford. Peak period traffic flow data collected at junctions during 2021 was adjusted to reflect traffic flows pre-Covid on the assumption that traffic conditions at the time of the surveys were still suppressed due to Covid. However, changes to working practices, such as the widespread uptake of home working are likely to be more permanent and will contribute to fewer commuter trips in the AM / PM peaks. A sensitivity test has therefore been undertaken to examine the implications of removing the Covid adjustments made to the base traffic flows used in the RTA.

#### Sensitivity Test 2 – Removal of TEMPro Growth Factors

- 3.2.4 The RTA considered the traffic generation of specific committed developments on the highway network within Retford. In addition, ‘global’ background traffic growth calculated using TEMPro was also applied across the network.
- 3.2.5 TEMPro provides traffic growth factors by geographic area derived from Local Plan development data. For the Bassetlaw Transport Study (BTS) an uncertainty log was produced detailing all known committed and potential developments within Bassetlaw and adjacent authority areas. In accordance with DfT WebTAG guidance the BTS appraised a ‘core scenario’ comprising Local Plan development within Bassetlaw plus all uncertainty log development categorised as ‘near certain’ and ‘more than likely’ to occur. The BTS core scenario development assumptions exceeded the development assumptions contained within TEMPro for the district, so no adjustments were required. For the BTS no background traffic growth was therefore applied to base traffic flows because the core scenario being tested already included all planned / potential development.
- 3.2.6 For the RTA the traffic implications of all known committed developments within the town were explicitly included together with the traffic implications of all proposed Local Plan development. In addition, TEMPro traffic growth was also applied to uplift base traffic flows to the end of the Plan Period (2038). The methodology applied in the RTA therefore double counted committed development and Local Plan development flows and because the TEMPro traffic growth is applied as a ‘global uplift’ all traffic flows across the highway network within Retford were inflated by the factors.

- 3.2.7 A sensitivity test has therefore been undertaken to examine the implications of removing TEMPro traffic growth to eliminate the double counting of committed development and Local Plan trips.

#### Sensitivity Test 3 – Tests 1 & 2 combined

- 3.2.8 This test examines the implication of removing the Covid adjustments made to the base traffic flows used in the RTA and removing TEMPro traffic growth. This test is a combination of sensitivity tests one and two.

#### Sensitivity Test 4 – Removal of Trinity Farm Allocation Traffic

- 3.2.9 The RTA considered the transport implications of all Local Plan development, including Trinity Farm (HS7) which is being promoted for a development of 305 dwellings within the Local Plan period. Due to its location, traffic generated by the Trinity Farm allocation site has a significant impact on two of the space constrained town centre junctions. A sensitivity test has therefore been prepared to examine the effects of removing Trinity Farm allocation traffic.

#### Sensitivity Test 5 – Modal Shift and Internalisation of Trips

- 3.2.10 The RTA took no account of the potential for modal shift away from the private car to sustainable modes of travel (i.e. walking, cycling and bus). No reductions were applied to the trip rates used to estimate committed development, or Local Plan development traffic flows on the network. In practice, all significant developments will be required to produce Travel Plans at the planning application stage to encourage sustainable travel. A sensitivity test has therefore been undertaken to provide a rough approximation of the implications of modal shift away from the private car. Vehicle trip generation for committed developments and Local Plan allocation sites has been reduced by 5% in this sensitivity test.
- 3.2.11 Ordsall South (HS13) is the largest proposed allocation within Retford with 1,250 dwellings being promoted for delivery within the Local Plan period. The RTA focused solely on a residential development at HS13 and assumed all residents will travel off-site for daily needs as a worst-case scenario. Details are now emerging from the site promoter that a range of complementary uses will be provided including:
- Primary school (1FE) and nursery
  - Community Park
  - Care home
  - Local shop
  - Public house
  - GP surgery / medical centre

- 3.2.12 The inclusion of complementary uses within a new Local Centre should help to reduce the need for residents to travel off-site thereby helping to reduce traffic flows on the local highway network. The Local Centre includes land uses predominantly aimed at serving the site and the area close to the site and will provide new facilities within walking or cycling range of a wider audience across south Ordsall, thereby also helping to reduce the need to travel by car for existing residents nearby.
- 3.2.13 The proposed care home and public house are both uses that generate very low traffic activity during the AM / PM peak periods and are therefore not expected to undermine the benefits outlined above. The net outcome should be a reduction to the forecast development traffic impacts from HS13 on the wider highway network in the peak periods.
- 3.2.14 To reflect the complementary uses to be provided as part of the proposed Ordsall South allocation, this sensitivity test includes a further 5% reduction to vehicle trip generation from the Ordsall South allocation as a rough approximation of these benefits. The actual internalisation rate achievable in practice will be subject to more detailed analysis and could be higher.

#### Sensitivity Test 6 – Tests 1, 2, 4 & 5 Combined

- 3.2.15 This sensitivity test is a combination of sensitivity tests one, two, four and five.

### 3.3 TRAFFIC FLOW CHANGES

- 3.3.1 Sensitivity tests four, five and six reduce the vehicle trip generation of Local Plan development. **Table 3** summarises the two-way total traffic flows due to Local Plan development at the three space constrained junctions in Retford town centre with and without these sensitivity tests.

**Table 3 – Local Plan Development Traffic Flows (Two-Way Totals)**

No.	Junction	RTA		Sensitivity Test 4		Sensitivity Test 5		Sensitivity Test 6	
		AM	PM	AM	PM	AM	PM	AM	PM
J8	Amcott Way / Hospital Road Roundabout	222	222	130	133	206	205	118	121
J11	A638 Arlington Way / Grove Street	77	66	39	29	72	62	36	27
J12	A638 Arlington Way / London Rd / Carolgate	168	167	130	130	154	153	118	118

RTA – Original flows from RTA

Sensitivity Test 4 – removal of Trinity Farm

Sensitivity Test 5 – modal shift and internalisation of trips

Sensitivity Test 6 – sensitivity tests 1, 2, 4 and 5 combined

- 3.3.2 Sensitivity test four which removes traffic flows associated with the Trinity Farm allocation reduces the total Local Plan development traffic flows passing through junctions 8 and 11 by approximately 50% in both peaks. As mentioned earlier this is due to the location of the Trinity Farm site in relation to these junctions. A smaller reduction at junction 12 is also shown.

## 3.4 CAPACITY ASSESSMENTS

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3.4.1 The capacity assessments undertaken in the RTA for the three space constrained junctions in Retford town centre have been updated with the sensitivity test traffic flows. No other changes have been made to the junction models. In each sensitivity test, the following scenarios have been assessed:

- 2021 Base + Committed Developments
- 2038 Base + Committed Developments
- 2038 Base + Committed Developments + Ordsall South allocation
- 2038 Base + Committed Developments + all Local Plan development

3.4.2 Capacity assessments have been undertaken using the Junctions 9 and LinSIG computer programmes as described in **Chapter 2**. Results are summarised in the tables on the following pages.



**Table 4 – Amcott Way / Bridlegate / Hospital Road Roundabout (J8) - Sensitivity Test Results**

Scenario	Arm	2021 Base + Committed				2038 Base + Committed				2038 Base + Committed + Ordsall South				2038 Base + Committed+ All Local Plan			
		AM		PM		AM		PM		AM		PM		AM		PM	
		RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue	RFC	Queue
Retford Transport Assessment Flows	B - A620 Amcott Way	0.61	1.6	0.69	2.2	0.74	2.8	0.83	4.6	0.75	3	0.86	5.8	0.78	3.7	0.89	7.3
	C - Bridlegate	0.58	1.3	0.67	1.9	0.86	5.1	0.94	9.3	0.9	6.6	1.02	16.7	0.99	11.6	1.1	28.4
	D - A620 Hospital Road	0.89	6.7	0.84	5.0	1.15	64.8	1.07	39.8	1.24	100.8	1.1	51.2	1.27	113.8	1.16	78.3
	E - North Road	0.76	3.1	0.91	8.3	0.88	6.8	1.00	56.8	0.9	7.7	1.09	60.3	0.95	13.8	1.11	70.8
	A - Hallcroft Road	0.66	1.9	0.66	1.9	0.86	5.1	0.84	4.4	0.89	6.3	0.92	8.1	0.96	11.5	0.93	8.5
Sensitivity Test 1 (Covid)	B - A620 Amcott Way	0.56	1.3	0.62	1.6	0.67	2.0	0.75	2.9	0.68	2.1	0.78	3.4	0.70	2.3	0.81	4.0
	C - Bridlegate	0.49	0.9	0.55	1.2	0.69	2.1	0.76	3.0	0.72	2.4	0.82	4.0	0.78	3.3	0.88	5.9
	D - A620 Hospital Road	0.77	3.3	0.74	2.8	1.00	19.7	0.92	9.3	1.09	46.9	0.96	13.2	1.13	60.5	1.03	28.8
	E - North Road	0.70	2.3	0.81	4.0	0.82	4.4	0.98	17.6	0.84	5.0	0.99	20.8	0.90	7.7	1.02	29.8
	A - Hallcroft Road	0.58	1.3	0.55	1.2	0.75	2.9	0.74	2.7	0.79	3.4	0.84	4.4	0.86	5.2	0.85	4.9
Sensitivity Test 2 (TEMPro)	B - A620 Amcott Way	0.61	1.6	0.69	2.2	0.61	1.6	0.69	2.2	0.63	1.7	0.73	2.6	0.65	1.8	0.76	3.0
	C - Bridlegate	0.58	1.3	0.67	1.9	0.58	1.3	0.67	1.9	0.60	1.5	0.72	2.4	0.65	1.8	0.77	3.1
	D - A620 Hospital Road	0.89	6.7	0.84	5.0	0.89	6.7	0.84	5.0	0.98	15.9	0.88	6.4	1.02	23.9	0.95	11.7
	E - North Road	0.76	3.1	0.91	8.3	0.76	3.1	0.91	8.3	0.79	3.6	0.92	9.5	0.85	5.2	0.96	13.9
	A - Hallcroft Road	0.66	1.9	0.66	1.9	0.66	1.9	0.66	1.9	0.71	2.3	0.76	2.9	0.77	3.2	0.79	3.4
Sensitivity Test 3 (1 + 2)	B - A620 Amcott Way	0.56	1.3	0.62	1.6	0.56	1.3	0.62	1.6	0.57	1.3	0.65	1.8	0.59	1.4	0.68	2.1
	C - Bridlegate	0.49	0.9	0.55	1.2	0.49	0.9	0.55	1.2	0.50	1.0	0.59	1.4	0.54	1.2	0.63	1.7
	D - A620 Hospital Road	0.77	3.3	0.74	2.8	0.77	3.3	0.74	2.8	0.86	5.7	0.77	3.3	0.90	7.5	0.84	4.7
	E - North Road	0.70	2.3	0.81	4.0	0.70	2.3	0.81	4.0	0.72	2.6	0.82	4.4	0.79	3.5	0.86	5.6
	A - Hallcroft Road	0.58	1.3	0.55	1.2	0.58	1.3	0.55	1.2	0.62	1.6	0.64	1.7	0.68	2.1	0.67	1.9
Sensitivity Test 4 (Trinity)	B - A620 Amcott Way	0.61	1.6	0.69	2.2	0.74	2.8	0.83	4.6	0.75	3.0	0.86	5.8	0.76	3.0	0.86	5.9
	C - Bridlegate	0.58	1.3	0.67	1.9	0.86	5.1	0.94	9.3	0.90	6.6	1.02	16.7	0.92	7.6	1.05	20.4
	D - A620 Hospital Road	0.89	6.7	0.84	5.0	1.15	64.8	1.07	39.8	1.24	100.8	1.10	51.2	1.24	102.8	1.11	57.9
	E - North Road	0.76	3.1	0.91	8.3	0.88	6.8	1.08	56.8	0.90	7.7	1.09	60.3	0.90	7.8	1.10	63.3
	A - Hallcroft Road	0.66	1.9	0.66	1.9	0.86	5.1	0.84	4.4	0.89	6.3	0.92	8.1	0.92	8.0	0.93	8.7
Sensitivity Test 5 (Mode Shift)	B - A620 Amcott Way	0.61	1.5	0.69	2.2	0.74	2.7	0.83	4.5	0.75	2.9	0.86	5.6	0.77	3.2	0.88	6.8
	C - Bridlegate	0.57	1.3	0.66	1.9	0.85	4.8	0.93	8.7	0.89	5.9	1.00	14.6	0.97	10.1	1.08	24.4
	D - A620 Hospital Road	0.88	6.2	0.84	4.8	1.14	60.7	1.06	37.9	1.22	93.1	1.09	48.4	1.25	105.7	1.15	73.4
	E - North Road	0.75	3.0	0.90	7.8	0.88	6.5	1.08	54.1	0.89	7.2	1.09	57.3	0.94	12.2	1.10	66.8
	A - Hallcroft Road	0.66	1.9	0.66	1.8	0.85	5.0	0.83	4.4	0.88	6.0	0.91	7.5	0.95	10.3	0.92	7.9
Sensitivity Test 6 (1+2+4+5)	B - A620 Amcott Way	0.55	1.2	0.62	1.6	0.55	1.2	0.62	1.6	0.56	1.3	0.65	1.8	0.57	1.3	0.65	1.8
	C - Bridlegate	0.48	0.9	0.55	1.2	0.48	0.9	0.55	1.2	0.49	1.0	0.58	1.4	0.50	1.0	0.60	1.5
	D - A620 Hospital Road	0.76	3.1	0.74	2.7	0.76	3.1	0.74	2.7	0.84	5.0	0.77	3.1	0.85	5.2	0.78	3.4
	E - North Road	0.69	2.2	0.80	3.9	0.69	2.2	0.80	3.9	0.71	2.4	0.81	4.2	0.71	2.5	0.82	4.4
	A - Hallcroft Road	0.57	1.3	0.55	1.2	0.57	1.3	0.55	1.2	0.61	1.5	0.62	1.6	0.63	1.7	0.64	1.7

Sensitivity Test 1 – removal of Covid uplift factors

Sensitivity Test 2 – removal of TEMPro growth

Sensitivity Test 3 – removal of Covid uplift factors and TEMPro growth (1 & 2 combined)

Sensitivity Test 4 – removal of Trinity Farm allocation

Sensitivity Test 5 – modal shift and internalisation of trips

Sensitivity Test 6 – sensitivity tests 1, 2, 4 and 5 combined

**Note:** once RFC exceeds 1.0 the level of queuing forecast by Junctions 9 is less accurate and should only be used as an indication of significant queues rather than the actual length of queues.

**Table 5 – Arlington Way / Grove Street Signals (J11) - Sensitivity Test Results**

Scenario	Arm	2021 Base + Committed				2038 Base + Committed				2038 Base + Committed + Ordsall South				2038 Base + Committed+ All Local Plan			
		AM		PM		AM		PM		AM		PM		AM		PM	
		DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ
Retford Transport Assessment Flows	Arlington Way (N)	76.2	13.7	84.8	17.8	88.7	21.1	98.1	32.3	88.7	21.1	98.1	32.3	92.4	24.6	98.1	29.1
	Grove Street (E)	57.5	3.1	58.3	3.2	67.4	3.9	68.2	4	67.4	3.9	68.2	4	67.4	3.9	68.2	3.8
	Arlington Way(S)	100.1	36.9	111.3	77.9	116.7	105.4	129	157.4	118.8	115.4	129.9	161.7	121	125.5	133	176.3
	Grove Street (W)	85.3	6.2	106.8	24.6	99.7	12.5	125	58.9	99.7	12.5	125	58.9	103.7	16.7	134.2	71.8
	PRC (%)	-11.2		-23.6		-29.7		-43.3		-32		-44.4		-34.4		-49.1	
Sensitivity Test 1 (Covid)	Arlington Way (N)	62.8	13.3	72.1	16.0	73.2	17.1	83.9	21.1	72.4	17.1	83.7	21.1	76.2	19.0	84.5	22.0
	Grove Street (E)	74	4.3	74.9	4.4	86.7	6.3	87.7	6.7	86.7	6.2	87.7	6.6	86.7	6.2	87.7	6.5
	Arlington Way(S)	82.8	21.2	94.9	30.1	96.5	34.4	110	91.1	97.7	37.7	111	95.6	100.6	46.4	113.8	111.5
	Grove Street (W)	79.7	6.0	93.8	12.0	93.2	9.8	109.7	36.9	97.7	12.0	109.7	36.5	97	11.9	114	44.5
	PRC (%)	8.8		-5.4		-7.2		-22.2		-8.6		-23.4		-11.7		-26.6	
Sensitivity Test 2 (TEMPro)	Arlington Way (N)	62.8	13.3	72.1	16.0	62.8	13.3	72.1	16.0	62.2	13.0	72.1	16.0	65.8	14.2	73.2	16.7
	Grove Street (E)	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4
	Arlington Way(S)	82.8	21.2	94.9	30.1	82.8	21.2	94.9	30.1	84.1	22.2	95.9	31.6	86.8	23.9	98.8	38.0
	Grove Street (W)	79.7	6.0	93.8	12.0	79.7	6.0	93.8	12.0	83.5	6.5	93.8	12.0	83.4	6.6	97.7	14.5
	PRC (%)	8.8		-5.4		8.8		-5.4		7		-6.6		3.7		-9.8	
Sensitivity Test 3 (1 + 2)	Arlington Way (N)	62.8	13.3	72.1	16.0	62.8	13.3	72.1	16.0	62.2	13.0	72.1	16.0	65.8	14.2	73.2	16.7
	Grove Street (E)	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4
	Arlington Way(S)	82.8	21.2	94.9	30.1	82.8	21.2	94.9	30.1	84.1	22.2	95.9	31.6	86.8	23.9	98.8	38.0
	Grove Street (W)	79.7	6.0	93.8	12.0	79.7	6.0	93.8	12.0	83.5	6.5	93.8	12.0	83.4	6.6	97.7	14.5
	PRC (%)	8.8		-5.4		8.8		-5.4		7		-6.6		3.7		-9.8	
Sensitivity Test 4 (Trinity)	Arlington Way (N)	62.8	13.3	72.1	16.0	73.2	17.1	83.9	21.1	72.4	17.1	83.7	21.1	73.4	17.6	84.1	21.4
	Grove Street (E)	74	4.3	74.9	4.4	86.7	6.3	87.7	6.7	86.7	6.2	87.7	6.6	86.7	6.2	87.7	6.5
	Arlington Way(S)	82.8	21.2	94.9	30.1	96.5	34.4	110	91.1	97.7	37.7	111	95.6	99.6	42.2	112.3	101.9
	Grove Street (W)	79.7	6.0	93.8	12.0	93.2	9.8	109.7	36.9	97.7	12.0	109.7	36.5	97	11.9	111.1	39.3
	PRC (%)	8.8		-5.4		-7.2		-22.2		-8.6		-23.4		-10.6		-24.8	
Sensitivity Test 5 (Mode Shift)	Arlington Way (N)	62.8	13.3	72.1	16.0	73.1	17.1	83.6	20.8	72.4	17.1	83.3	20.8	75.9	18.7	84.3	22.0
	Grove Street (E)	74	4.3	74.9	4.4	86.7	6.3	88.3	6.8	86.7	6.3	88.3	6.6	86.7	6.2	88.3	6.6
	Arlington Way(S)	82.8	21.2	94.9	30.1	96.4	34.2	109.8	90.0	97.5	37.1	110.7	93.0	100.2	44.2	113.2	108.4
	Grove Street (W)	79.7	6.0	93.8	12.0	93.2	9.8	109.7	36.9	97.7	12.1	109.7	36.2	96.5	11.5	114	44.5
	PRC (%)	8.9		-5.2		-7.1		-22		-8.5		-23		-11.3		-26.6	
Sensitivity Test 6 (1+2+4+5)	Arlington Way (N)	62.7	13.1	71.8	16.0	62.7	13.1	71.8	16.0	62.1	13.0	71.8	16.0	62.9	13.4	72.5	16.2
	Grove Street (E)	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4	74	4.3	74.9	4.4
	Arlington Way(S)	82.6	21.2	94.7	29.8	82.6	21.2	94.7	29.8	83.8	21.8	95.6	31.1	85.3	23.0	96.7	33.0
	Grove Street (W)	79.7	6.0	93.8	12.0	79.7	6.0	93.8	12.0	83.5	6.5	93.8	12.0	83	6.5	95.2	12.7
	PRC (%)	8.9		-5.2		8.9		-5.2		7.4		-6.2		5.5		-7.5	

Sensitivity Test 1 – removal of Covid uplift factors

Sensitivity Test 2 – removal of TEMPro growth

Sensitivity Test 3 – removal of Covid uplift factors and TEMPro growth (1 & 2 combined)

Sensitivity Test 4 – removal of Trinity Farm allocation

Sensitivity Test 5 – modal shift and internalisation of trips

Sensitivity Test 6 – sensitivity tests 1, 2, 4 and 5 combined

**Table 6 – Arlington Way / London Road / Carolgate Signals (J12) - Sensitivity Test Results**

Scenario	Arm	2021 Base + Committed				2038 Base + Committed				2038 Base + Committed + Ordsall South				2038 Base + Committed+ All Local Plan			
		AM		PM		AM		PM		AM		PM		AM		PM	
		DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ	DoS %	MMQ
Retford Transport Assessment Flows	Carolgate	52.9	2.9	95.7	15.4	62.2	4	115.1	58.1	70	4.7	121	78.2	70	4.5	123.7	83.9
	Arlington Way	40.8	6.1	62.6	11.9	47.2	7.5	70.8	15.9	47.7	7.6	73.7	16.6	51	8.5	75.1	17.9
	London Road	86.6	17.6	97.6	23.9	102.2	44.8	113.8	80.3	106.6	63.7	119.7	102.7	109	77.5	124.3	122.4
	Albert Road	86.1	8.6	93.3	10.3	103	19.7	1.13	32.1	103.7	20.4	115.7	34.5	107.7	27.7	119	38.9
	PRC (%)	3.9		-8.4		-14.5		-27.9		-18.5		-34.4		-21.1		-38.1	
Sensitivity Test 1 (Covid)	Carolgate	56.6	3.2	94.4	15.2	66.7	3.9	113.3	55.8	78.2	5.3	120.6	80.6	78.2	5.3	123.1	90.4
	Arlington Way	39.7	6.1	62.1	12.0	46	7.5	70.3	16.3	46.6	7.6	74.3	18.3	49.8	8.5	75.7	16.2
	London Road	83.4	17.3	95.4	22.3	99.3	34.2	112.8	78.5	104.2	56.4	119.1	105.0	106.4	67.5	123.8	123.2
	Albert Road	82.7	8.4	92.8	10.4	95.5	14.0	111.5	31.5	100	17.3	119.4	39.9	103.7	21.8	122.6	42.3
	PRC (%)	7.9		-6		-10.3		-25.9		-15.8		-34		-18.3		-37.5	
Sensitivity Test 2 (TEMPro)	Carolgate	56.6	3.2	94.4	15.2	56.6	3.2	94.4	15.2	68.1	4.1	102.6	28.7	68.1	4.2	104.6	33.6
	Arlington Way	39.7	6.1	62.1	12.0	39.7	6.1	62.1	12.0	40.4	6.3	66	13.6	43.5	7.0	67.5	13.6
	London Road	83.4	17.3	95.4	22.3	83.4	17.3	95.4	22.3	88.5	20.7	101.1	33.7	90.6	23.0	105.8	51.3
	Albert Road	82.7	8.4	92.8	10.4	82.7	8.4	92.8	10.4	87.3	9.4	99.7	13.9	90.5	10.2	102.1	15.9
	PRC (%)	7.9		-6		7.9		-6		1.7		-14		-0.7		-17.6	
Sensitivity Test 3 (1 + 2)	Carolgate	56.6	3.2	94.4	15.2	56.6	3.2	94.4	15.2	68.1	4.1	102.6	28.7	68.1	4.2	104.6	33.6
	Arlington Way	39.7	6.1	62.1	12.0	39.7	6.1	62.1	12.0	40.4	6.3	66	13.6	43.5	7.0	67.5	13.6
	London Road	83.4	17.3	95.4	22.3	83.4	17.3	95.4	22.3	88.5	20.7	101.1	33.7	90.6	23.0	105.8	51.3
	Albert Road	82.7	8.4	92.8	10.4	82.7	8.4	92.8	10.4	87.3	9.4	99.7	13.9	90.5	10.2	102.1	15.9
	PRC (%)	7.9		-6		7.9		-6		1.7		-14		-0.7		-17.6	
Sensitivity Test 4 (Trinity)	Carolgate	56.6	3.2	94.4	15.2	66.7	3.9	113.3	55.8	78.2	5.3	120.6	80.6	78.2	5.3	120.6	87.6
	Arlington Way	39.7	6.1	62.1	12.0	46	7.5	70.3	16.3	46.6	7.6	74.3	18.3	47.5	7.9	75.2	15.6
	London Road	83.4	17.3	95.4	22.3	99.3	34.2	112.8	78.5	104.2	56.4	119.1	105.0	105.1	60.9	121.1	108.1
	Albert Road	82.7	8.4	92.8	10.4	95.5	14.0	111.5	31.5	100	17.3	119.4	39.9	100.9	18.4	120.7	38.9
	PRC (%)	7.9		-6		-10.3		-25.9		-15.8		-34		-16.8		-34.6	
Sensitivity Test 5 (Mode Shift)	Carolgate	56.7	3.2	94.5	15.2	67.2	4.0	113.6	56.4	77.7	5.2	119.4	76.7	77.7	5.2	121.8	85.6
	Arlington Way	39.6	6.0	61.6	11.9	45.8	7.4	69.9	16.2	46.4	7.6	73.7	17.9	49.4	8.3	75	16.5
	London Road	82.8	17.1	94.9	21.7	98.7	32.9	112.3	78.5	103.1	51.1	118.3	100.8	105.2	61.2	122.6	118.4
	Albert Road	82.7	8.4	91.8	10.1	95	13.7	110.8	29.6	99.6	17.0	120.1	40.1	103.1	21.0	121.3	41.2
	PRC (%)	8.7		-5.5		-9.6		-26.2		-14.5		-33.4		-16.9		36.2	
Sensitivity Test 6 (1+2+4+5)	Carolgate	56.7	3.2	94.5	15.2	56.7	3.2	94.5	15.2	67.1	4.0	101.5	26.1	67.1	4.0	101.5	25.9
	Arlington Way	39.6	6.0	61.6	11.9	39.6	6.0	61.6	11.9	40.2	6.1	65.3	13.4	41	6.4	66.2	13.6
	London Road	82.8	17.1	94.9	21.7	82.8	17.1	94.9	21.7	87.3	19.8	100.3	31.0	88	20.4	102.2	37.8
	Albert Road	82.7	8.4	91.8	10.1	82.7	8.4	91.8	10.1	87.1	9.3	98.5	13.2	87.9	9.5	99.6	13.8
	PRC (%)	8.7		-5.5		8.7		-5.5		3.1		-12.8		2.2		-13.6	

Sensitivity Test 1 – removal of Covid uplift factors

Sensitivity Test 2 – removal of TEMPro growth

Sensitivity Test 3 – removal of Covid uplift factors and TEMPro growth (1 & 2 combined)

Sensitivity Test 4 – removal of Trinity Farm allocation

Sensitivity Test 5 – modal shift and internalisation of trips

Sensitivity Test 6 – sensitivity tests 1, 2, 4 and 5 combined

- 3.4.3 The '2038 Base + Committed Developments' results represent the situation that will exist at the end of the Local Plan period without any Local Plan development. This is the 'Reference Case' junction performance against which the impact of Local Plan development traffic should be compared.
- 3.4.4 When tested with the RTA traffic flows all three junctions are forecast to exceed capacity in the Reference Case with no Local Plan development. With the addition of Local Plan development traffic queuing increases to varying degrees, although for Junction 8 (Amcott Way / Bridlegate / Hospital Road roundabout) it should be noted that once RFC values exceed 1.0 the level of queuing forecast by Junctions 9 software is less accurate and should only be used as an indication of significant queues rather than the actual length of queues.
- 3.4.5 The sensitivity test capacity assessments show improved junction performance at all three locations to varying degrees for each test. Sensitivity test two (removal of TEMPro traffic growth) has the greatest impact on improving junction performance and demonstrates the implications of double counting committed development and Local Plan traffic flows in the RTA, which over estimated network traffic flows.
- 3.4.6 The following tables summarise the forecast increase in queue lengths at each junction (rounded to nearest whole number of vehicles) due to Local Plan development<sup>1</sup>. Summaries are provided for the original RTA flows and the Sensitivity Test 2 flows which represent the removal of TEMPro background traffic growth to remove the double counting of committed development and Local Plan flows. The magnitude of queue increases is significantly reduced when TEMPro background traffic growth is removed due to the overall improved junction performance. In most cases the change in queue lengths is reduced to a level that will be difficult to differentiate from typical day-to-day queue length variations.

**Table 7 – Amcott Way / Bridlegate / Hospital Road Roundabout (J8)**

Scenario	Arm	AM Queue Increase	PM Queue Increase
Retford Transport Assessment Flows	B - A620 Amcott Way	1	3
	C - Bridgegate	7	19
	D - A620 Hospital Road	49	39
	E - North Road	7	14
	A - Hallcroft Road	6	4
Sensitivity Test 2 (TEMPro)	B - A620 Amcott Way	0	1
	C - Bridgegate	1	1
	D - A620 Hospital Road	17	7
	E - North Road	2	6
	A - Hallcroft Road	1	2

<sup>1</sup> Comparison of '2038 Base + Committed + Local Plan Development' against '2038 Base + Committed' taken from Tables 4, 5 & 6.

**Table 8 – A638 Arlington Way / Grove Street Signal-Controlled Junction (J11)**

Scenario	Arm	AM Queue Increase	PM Queue Increase
Retford Transport Assessment Flows	Arlington Way (N)	4	-3
	Grove Street (E)	0	0
	Arlington Way(S)	20	19
	Grove Street (W)	4	13
Sensitivity Test 2 (TEMPro)	Arlington Way (N)	1	1
	Grove Street (E)	0	0
	Arlington Way(S)	3	8
	Grove Street (W)	1	3

**Table 9 – A638 Arlington Way / London Road / Carolgate Signal-Controlled Junction (J12)**

Scenario	Arm	AM Queue Increase	PM Queue Increase
Retford Transport Assessment Flows	Carolgate	1	26
	Arlington Way	1	2
	London Road	33	42
	Albert Road	8	7
Sensitivity Test 2 (TEMPro)	Carolgate	1	18
	Arlington Way	1	2
	London Road	6	29
	Albert Road	2	6

## 4 LINKS TO THE EAST OF THE ORDSALL SOUTH ALLOCATION

### 4.1 INTRODUCTION

- 4.1.1 The increase in Local Plan development traffic using Main Road, High Street and Goosemoor Lane has been explored further by examining the traffic flows in the sensitivity tests on each of these links.
- 4.1.2 Sensitivity tests four and five result in reductions to the vehicle trip generation of proposed Local Plan development. The following tables summarise Local Plan development traffic flows on the three links to the east of the proposed Ordsall South allocation.

**Table 10 – Local Plan Traffic on Local Roads – AM Peak Hour**

AM Peak Hour						
	RTA		Sensitivity Test 4		Sensitivity Test 5	
	EB	WB	EB	WB	EB	WB
Main Road	53	19	53	19	48	17
High Street	153	55	153	55	137	50
Goosemoor Lane	157	63	157	63	141	57

RTA – Original flows from RTA  
 Sensitivity Test 4 – removal of Trinity Farm allocation  
 Sensitivity Test 5 – modal shift and internalisation of trips

**Table 11 – Local Plan Traffic on Local Roads – PM Peak Hour**

PM Peak Hour						
	RTA		Sensitivity Test 4		Sensitivity Test 5	
	EB	WB	EB	WB	EB	WB
Main Road	22	49	22	49	19	44
High Street	62	141	62	141	56	127
Goosemoor Lane	71	146	71	146	64	131

RTA – Original flows from RTA  
 Sensitivity Test 4 – removal of Trinity Farm allocation  
 Sensitivity Test 5 – modal shift and internalisation of trips

- 4.1.3 Sensitivity test four which is the removal of traffic associated with the Trinity Farm allocation makes no difference to the forecast Local Plan traffic flows on Main Road, High Street and Goosemoor Lane which is to be expected because the Trinity Farm allocation is more remote from these three roads.
- 4.1.4 Sensitivity test five which approximates potential trip reductions due to modal shift and trip internalisation results in a small reduction in Local Plan development trips on Main Road, High Street and Goosemoor Lane. However, the flows in all scenarios are relatively low in any case, ranging between one vehicle every 3.5 minutes to slightly less than one vehicle per minute in each direction on Main Road, and between approximately one and 2.5 vehicles per minute in each direction on High Street / Goosemoor Lane.

## 5 SUMMARY

### 5.1 SUMMARY

- 5.1.1 Following publication of the Retford Transport Assessment (RTA) in July 2022 Nottinghamshire County Council (NCC) in their capacity as the local highway authority raised a few issues regarding the operation of parts of the local highway network.
- 5.1.2 This note has been produced as an addendum to the RTA to explore and address the issues raised by NCC. It expands on relevant information from the RTA and provides additional information as required.
- 5.1.3 As part of their feedback, NCC provided comments on the possible highway improvements identified in the RTA for the following three junctions.
- J6 - A620 / B6420 / Straight Mile / Sutton Lane
  - J7 - A620 Babworth Road / Ordsall Road
  - J14 - A638 London Road / Whitehouses Road
- 5.1.4 The highway improvement schemes presented for these three junctions in the RTA have been reviewed in line with NCC's feedback and revised layout drawings have been prepared. Traffic capacity assessments have been undertaken for the 2038 AM / PM peak periods for the new highway improvement schemes and they are all shown to operate within capacity in both peaks with Local Plan development traffic.
- 5.1.5 The RTA identified three junctions in Retford town centre where meaningful physical mitigation cannot be delivered due to space constraints. The three junctions are listed below.
- J8 – Amcott Way / Bridlegate / Hospital Road roundabout
  - J11 - A638 Arlington Way / Grove Street signals
  - J12 - A638 Arlington Way / A638 London Road / Carolgate signals
- 5.1.6 The RTA indicated that demand management measures should be fully explored to help reduce development traffic impacts at these locations.
- 5.1.7 The RTA was prepared using robust assumptions reflecting the early stage of the Local Plan process and the absence of details regarding how individual Local Plan allocations may be delivered and what sustainable transport they may provide. In terms of off-site highway impacts, the RTA presents a 'worst-case' assessment of junction capacity.
- 5.1.8 This addendum note therefore presents a series of sensitivity tests which examine the implications of adjusting / removing some of the robust assumptions applied in the RTA. The sensitivity tests are summarised as follows.
- Sensitivity Test 1 – Removal of Covid uplift factors applied to base traffic flows

- Sensitivity Test 2 – Removal of TEMPro background traffic growth
- Sensitivity Test 3 – Tests 1 & 2 combined
- Sensitivity Test 4 – Removal of Trinity Farm Allocation traffic
- Sensitivity Test 5 – Modal shift and internalisation of trips
- Sensitivity Test 6 – Tests 1, 2, 4 & 5 combined

5.1.9 When tested with the RTA traffic flows all three of the space constrained junctions are forecast to exceed capacity in the Reference Case with no Local Plan development. With the addition of Local Plan development traffic queuing increases to varying degrees.

5.1.10 The sensitivity test capacity assessments show improved junction performance at all three locations to varying degrees for each test. Sensitivity test two (removal of TEMPro traffic growth) has the greatest impact on improving junction performance and demonstrates the implications of double counting committed development and Local Plan traffic flows in the RTA, which overestimates network traffic flows.

5.1.11 In sensitivity test 2 (removal of TEMPro traffic growth) the magnitude of queue increases forecast at the three space constrained junctions due to Local plan development is significantly reduced. In most cases the change in queue lengths is reduced to a level that would be difficult to differentiate from typical day-to-day queue length variations.

5.1.12 The sensitivity tests presented in this addendum note reflect a range of potential future traffic outcomes in Retford and the traffic assumptions applied in the RTA reflect the 'worst case' end of that range. In practice the likely outcome is expected to be less onerous than presented in the RTA and this exercise demonstrates the variation in junction performance that could be expected depending on whether the worst-case or best-case situation is considered.

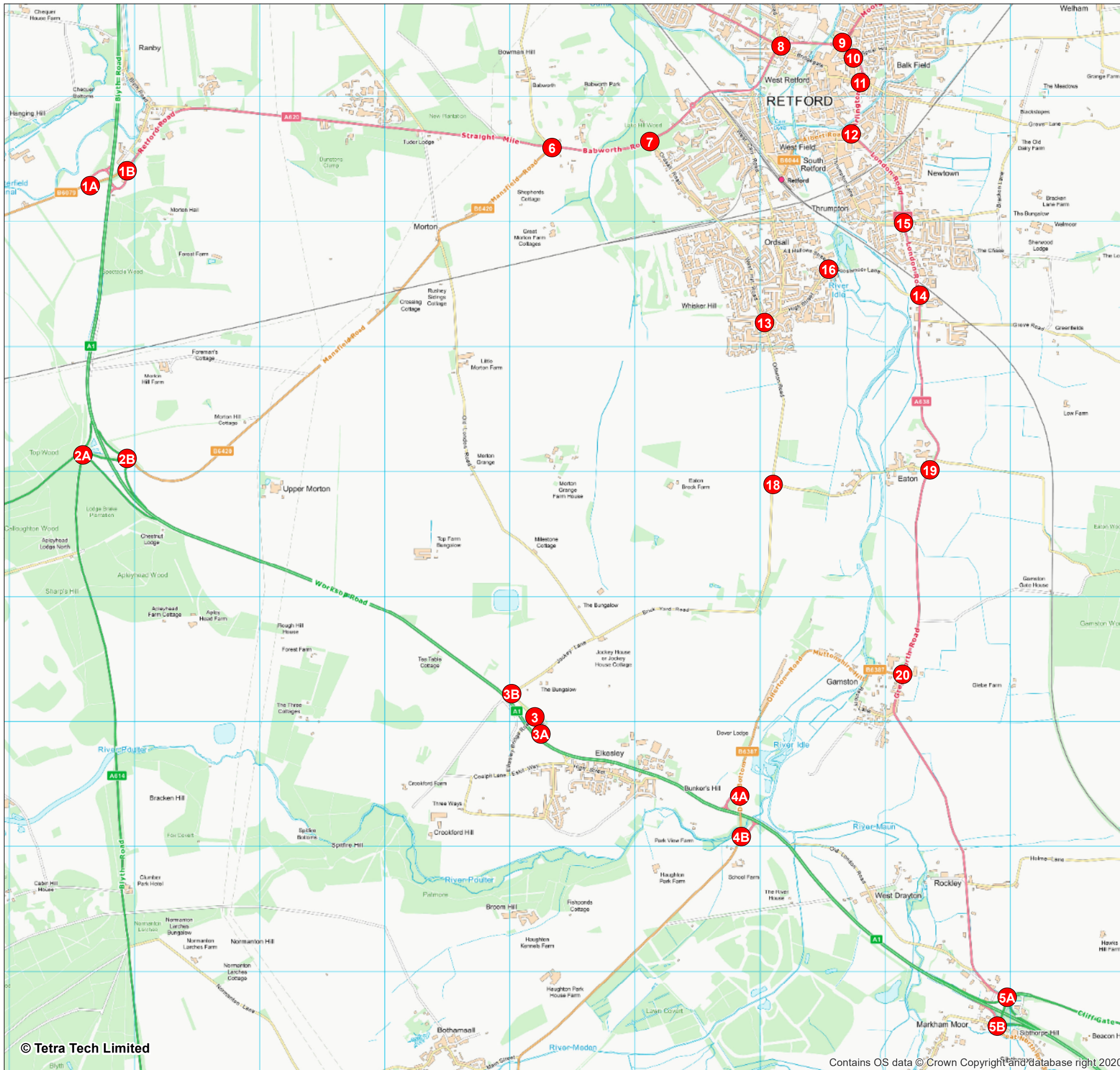


## APPENDICES

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## APPENDIX A – JUNCTION LOCATIONS

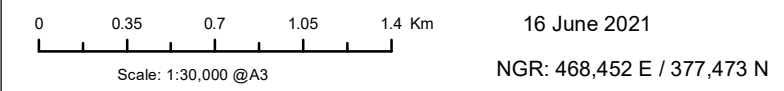
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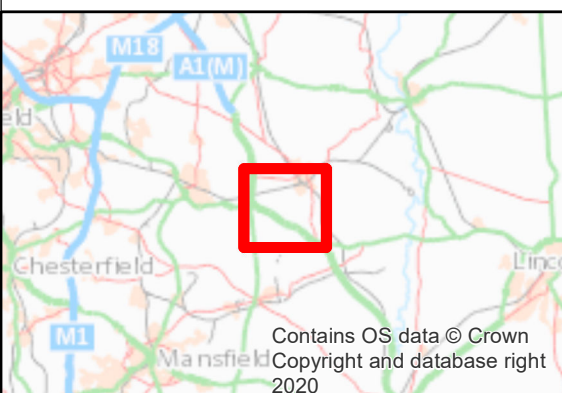
Reference	Description
1A/1B	A1/A620 Retford Road/B6079 Retford Road
2A/2B	A1/B6420 Mansfield Road/A614 Blyth Road/A57
3/3A/3B	A1/Elkesley Bridge Road/Jockey Lane/Esfil Way
4A/4B	A1/B6387 Dover Bottom
5A/5B	A1 Markham Moor Junction
6	A620 Babworth Road/B6420 Mansfield Road/A620 Straight Mile/Sutton Lane
7	A620 Babworth Road/Ordsall Road
8	A620 Amcott Way/Bridlegate/A620 Hospital Road/A638 North Road/Hallcroft Road
9	A620 Amcott Way/A620 Moorgate/A638 Arlington Way
10	A638 Arlington Way/Spital Hill/Chapelgate
11	A638 Arlington Way/Grove Street
12	A638 Arlington Way/A638 London Road/Carolgate
13	Ollerton Road/West Hill Road
14	A638 London Road/Whitehouses Road
15	A638 London Road / Whinney Moor Lane / Bracken Lane
16	All Hollows Street / High Street / Goosemoor Lane
18	Ollerton Road / Brick Yard Lane
19	A638 / Main Road
20	A638 / B6387 Rectory Lane

**Notes:**

Drawn by: \_\_\_\_\_ Drawing No. - \_\_\_\_\_  
 Checked by: \_\_\_\_\_ Revision No. - \_\_\_\_\_  
 Approved by: \_\_\_\_\_



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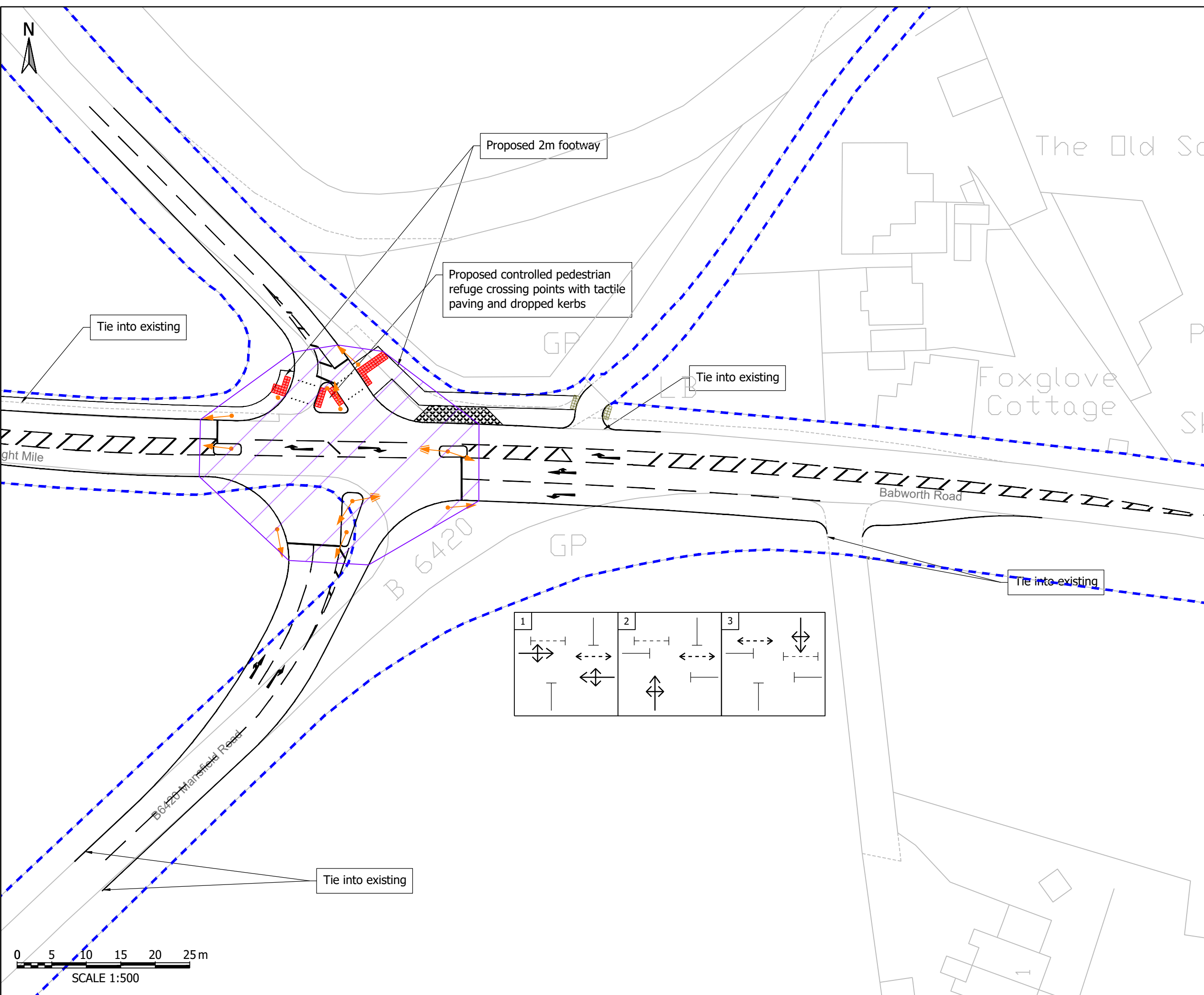
TEL: 0116 234 8000  
 Email: europe@tetratech.com



## APPENDIX B – JUNCTION IMPROVEMENTS

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\\Leicester12\3501Data\Projects\B023665 - Ordsall, Retford\07 - AutoCAD & GIS\01 - DWGs\B023665-SK0001-SK0002\_Junction 6 7 9 & Junction 14 Rev P03.dwg



- Notes:**
- General**
1. Do not scale from drawing.
  2. All dimensions are in metres, unless stated otherwise.
  3. This drawing is to be read & printed in colour.
  4. This drawing is for illustrative purposes only.

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- Key**
- NEW KERB LINE
  - - - ADOPTED HIGHWAY AREA

**PRELIMINARY ISSUE**

Rev	Description	Date	Drawn	Checked	Approved	Scale	Sheet
P03	AMENDED TO ADDRESS NCC JULY 2022 COMMENTS	16.12.2022	NJ	BG	RH		
P02	AMENDED TO ADDRESS NCC COMMENTS	07.02.2022	NJ	BG	RH		
P01	PRELIMINARY FIRST ISSUE	18.08.2021	SJR	BM	RH		

Issuing Office  
**Tetra Tech Leicester**  
 Executive Park, Avalon Way, Anstey, Leicester, United Kingdom, LE7 7GR  
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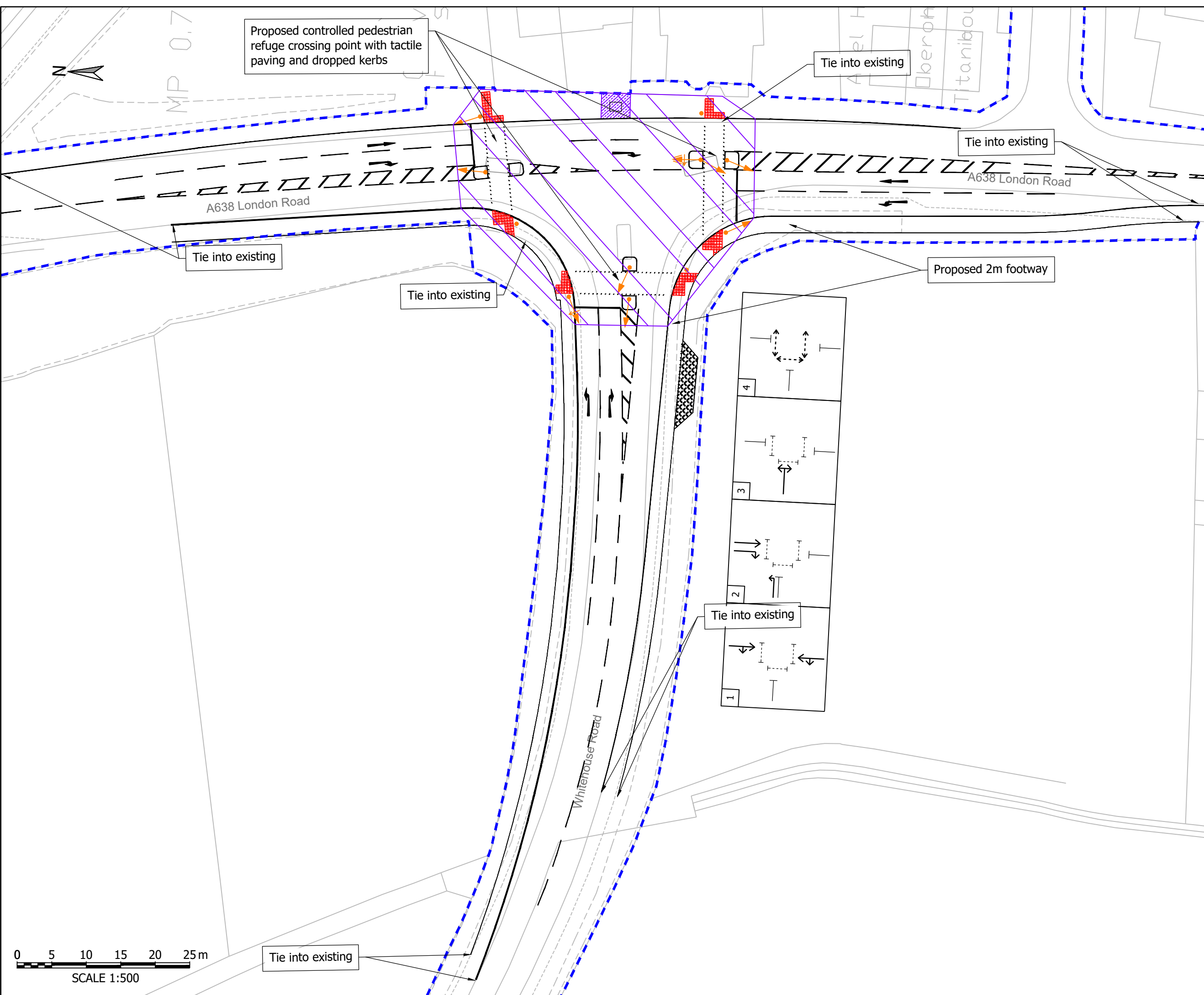
Project Name  
**Ordsall, Retford Proposed Residential Development**

Sheet Title  
**JUNCTION 6  
 A620 Babworth Road / B6420/Straight Mile / Sutton Lane**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale	Sheet	Suitability
B023665	SJR	AUG 21	BM	AUG 21	RH	AUG 21	1:500		S3

Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Rate	Number	Revision
B023665	TTE	- 00	- XX	- SK	- O	- 0001	P03

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- Notes:**
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- Key**
- NEW KERB LINE
  - - - ADOPTED HIGHWAY AREA

**PRELIMINARY ISSUE**

Rev	Description	Date	Drawn / App
P03	AMENDED TO ADDRESS NCC JULY 2022 COMMENTS	16.12.2022	NJ BG RH
P02	AMENDED TO ADDRESS NCC COMMENTS	07.02.2022	NJ BG RH
P01	PRELIMINARY FIRST ISSUE	18.08.2021	SJR BM RH

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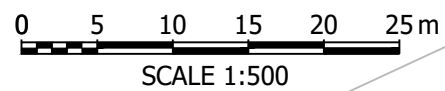


Client  
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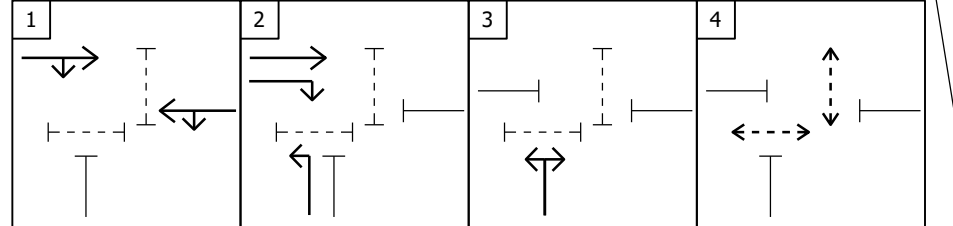
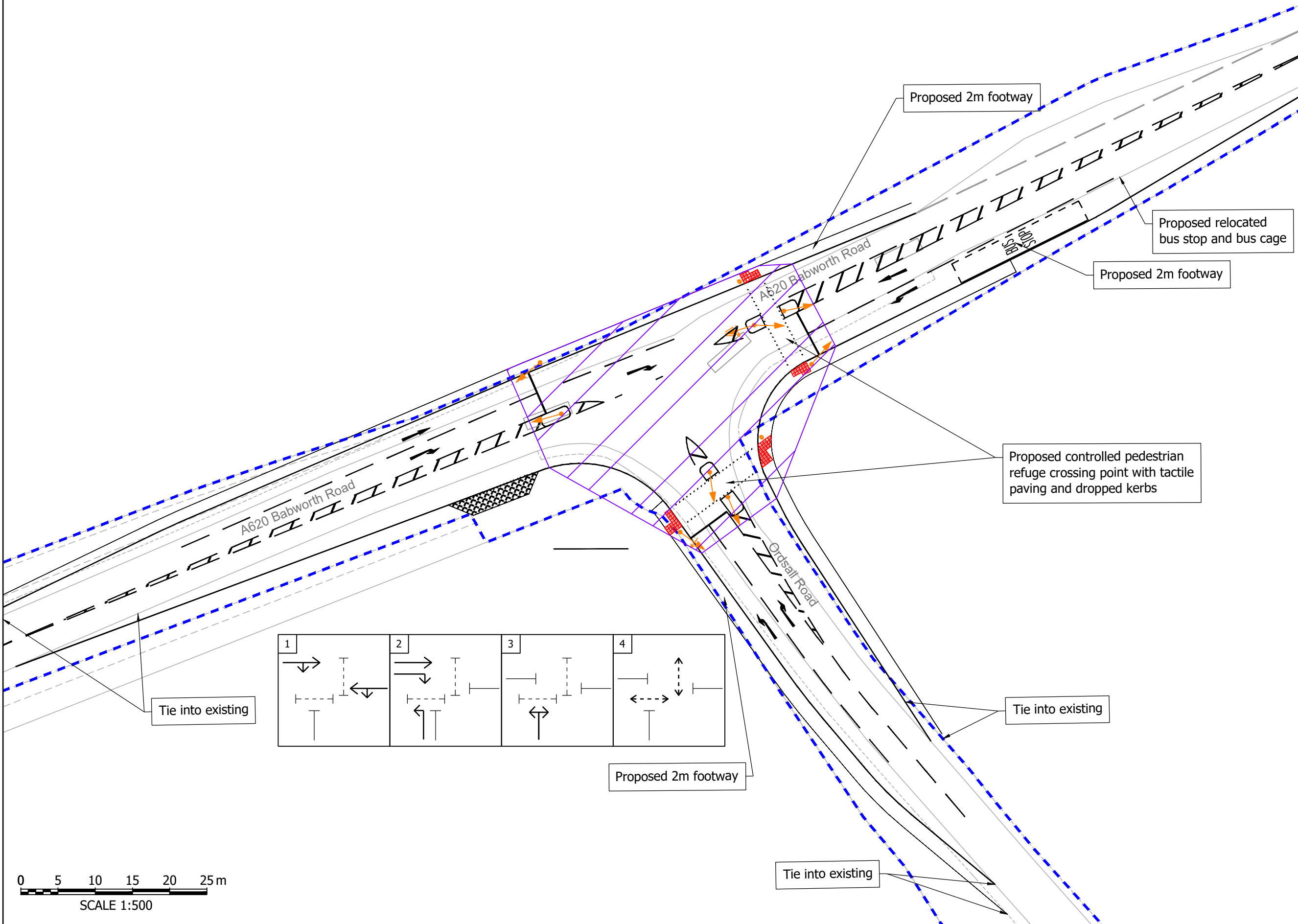
Project Name  
 Ordsall, Retford Proposed Residential Development

Sheet Title  
 JUNCTION 14  
 MINI ROUNDABOUT A638 London Road / Whitehouses Road

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A3	Suitability
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Client Project Number	Originator	Volume/System	Level/Location	Type/Code	Rate	Number	Revision	
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- Notes:**
- General**
1. Do not scale from drawing.
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- Key**
- NEW KERB LINE
  - - - ADOPTED HIGHWAY AREA

**PRELIMINARY ISSUE**

Rev	Description	Date	Drn / Cdw / App
P03	AMENDED TO ADDRESS NCC JULY 2022 COMMENTS	16.12.2022	NJ   BG   R/JH
P02	AMENDED TO ADDRESS NCC COMMENTS	07.02.2022	NJ   BG   R/JH
P01	PRELIMINARY FIRST ISSUE	18.08.2021	SJR   BM   RH

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 Executive Park, Avalon Way, Anstey,  
 Leicester, United Kingdom, LE7 7GR



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Project Name  
 Ordsall, Retford Proposed Residential Development

Sheet Title  
**JUNCTION 7**  
 MINI ROUNDABOUT A620 Babworth / Ordsall Road

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A3	Stability
B023665	SJR	AUG 21	BM	AUG 21	RH	AUG 21	1:500	S3

Client Project Number	Originator	Volume/System Level/Location	Type/Code	Role	Number	Revision
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## APPENDIX C – SENSITIVITY TEST TRAFFIC FLOWS

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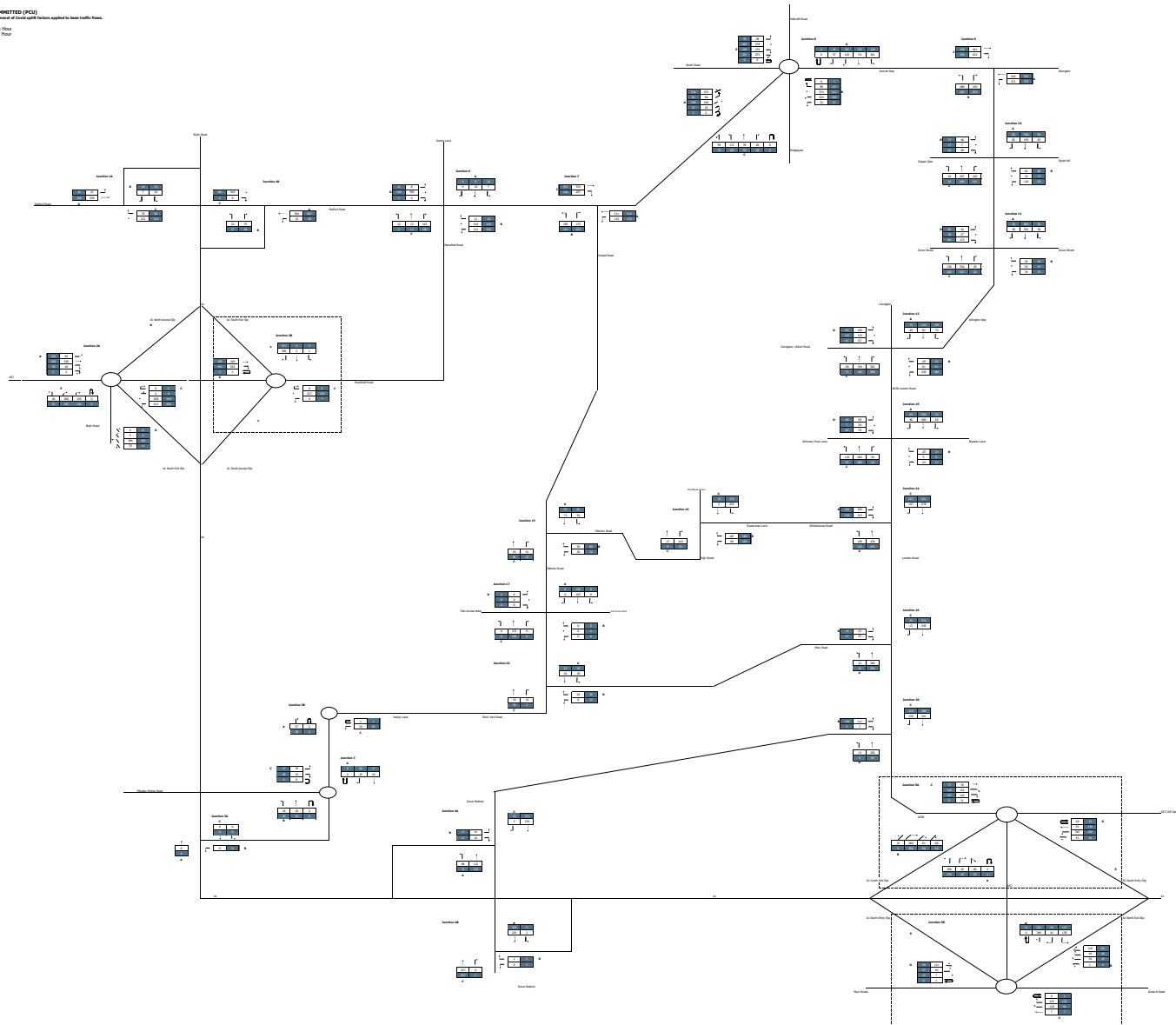


2021 BASE + COMMITTED (FCU)  
Appendix Table 1: Schedule of Event and/or Action applied to Base Traffic Flow

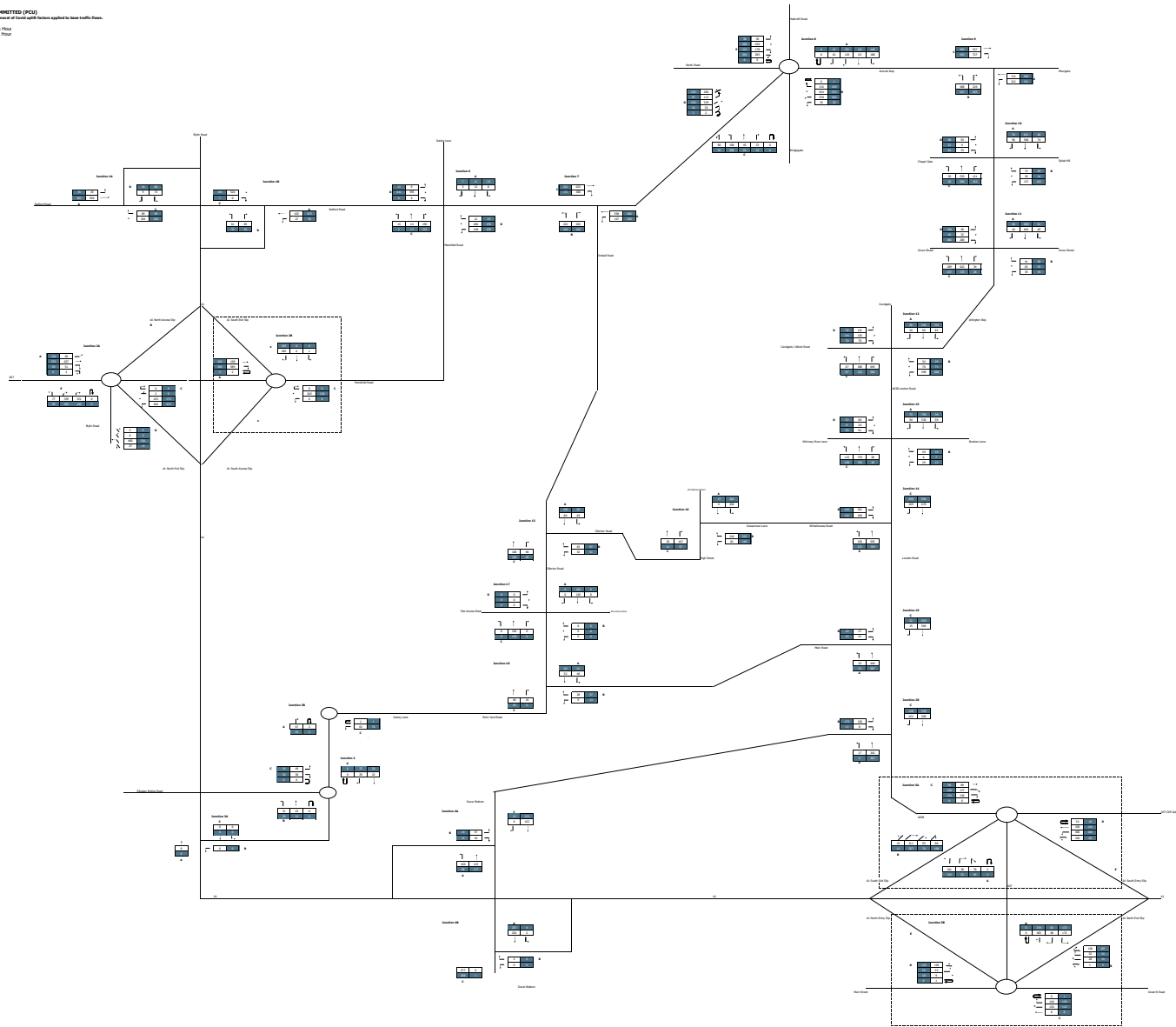
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Training Peak Hour

Opening Peak Hour

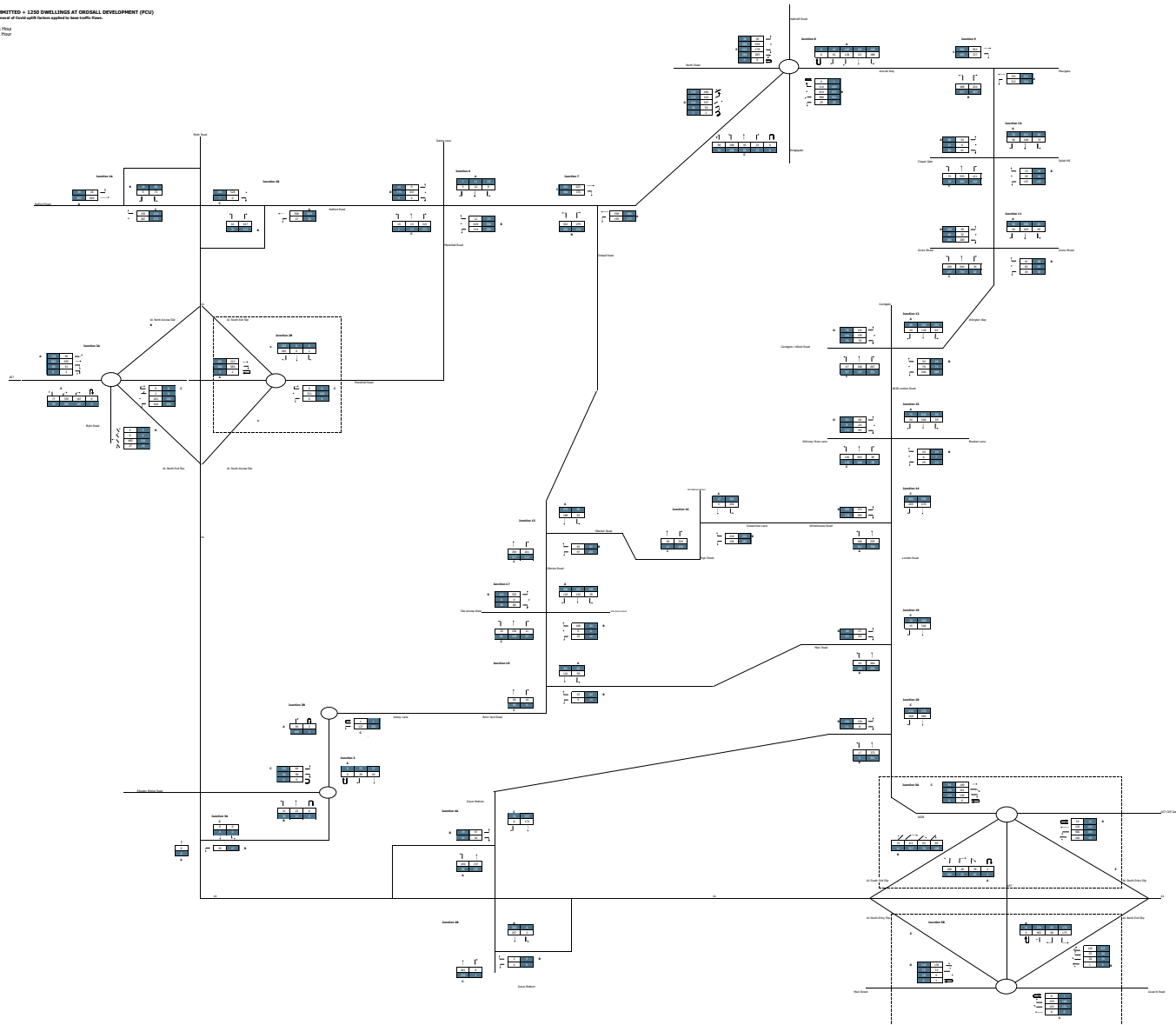


2034 BASE - COMMITTED (FCU)  
Availability Table 1: Minimum of 6000 sqft Perfor applied to base traffic flow.  
FCU  
Training Peak Hour  
Training Peak Hour



2038 Bona - COMMITTED - 1250 DWELLINGS AT ORSALL DEVELOPMENT (PCU)  
Appendix Table 1: Schedule of Commitment Factors applied to Base Lot(s) Plans

PCU  
Peak Hour  
Peak Hour

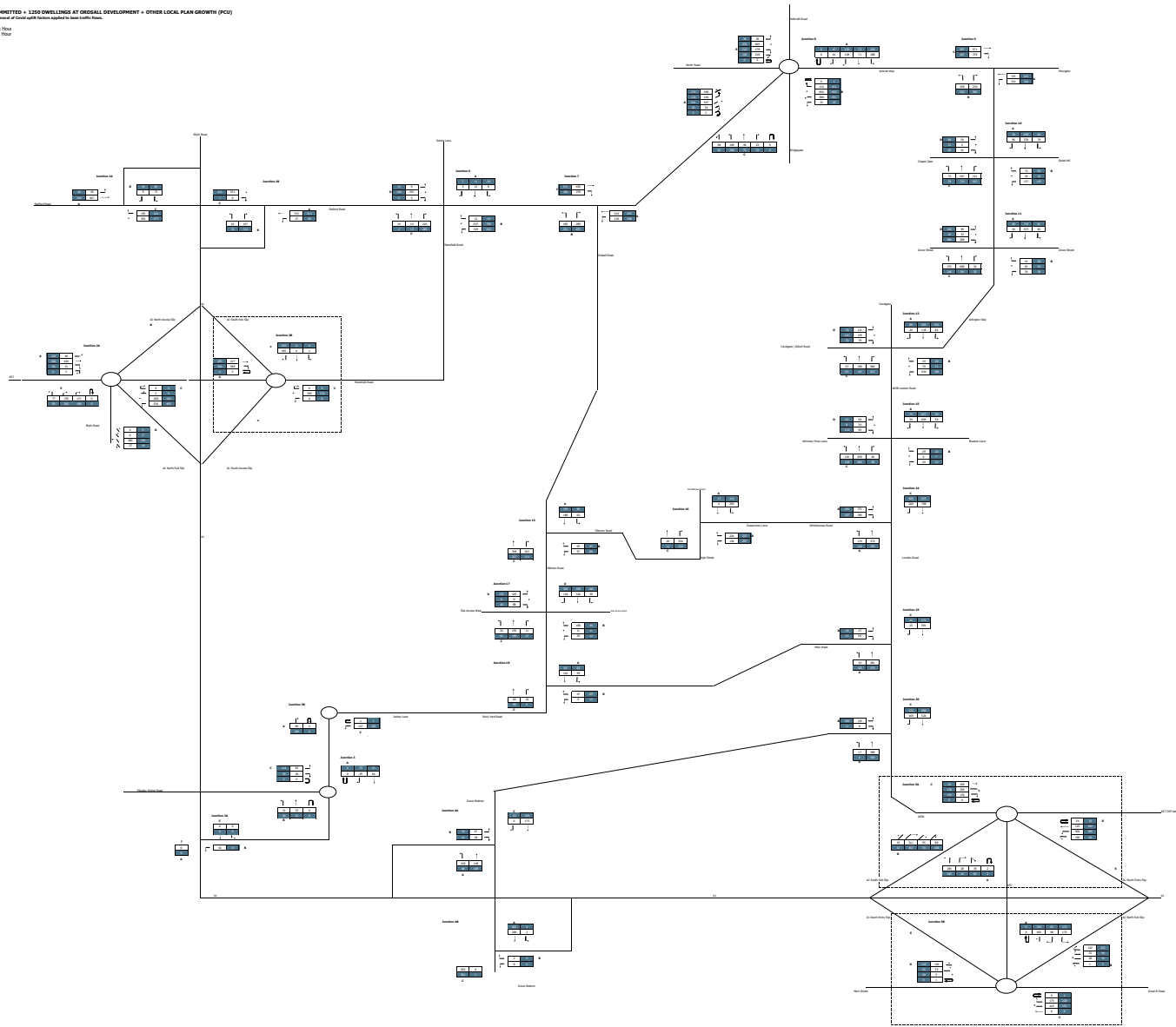


2038 BASE - COMMITTED + 1250 DWELLINGS AT ORSALL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix Table 1: Network of Local Growth Potential Applied to Area Study Sites

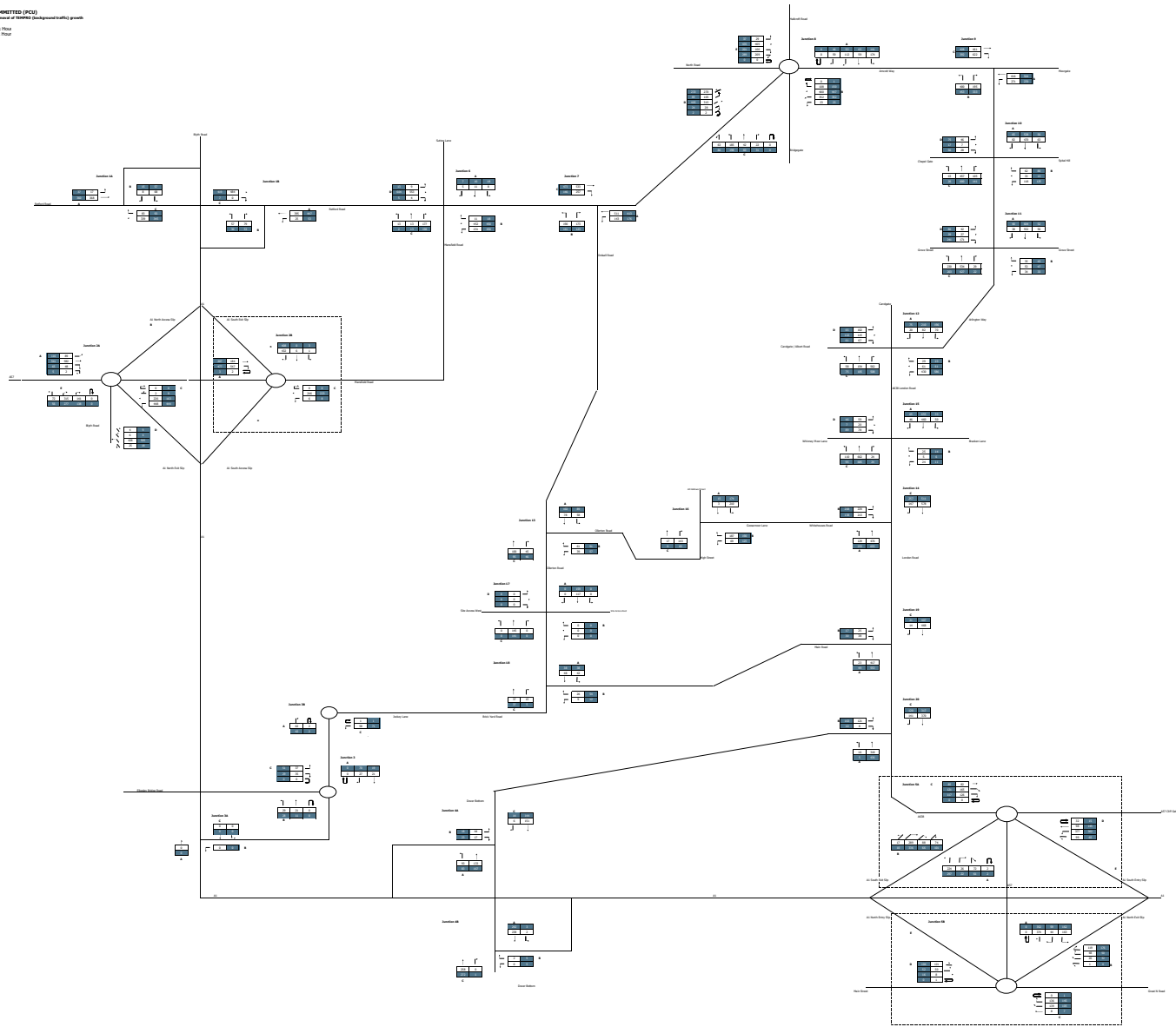
Legend

Existing Peak Hour

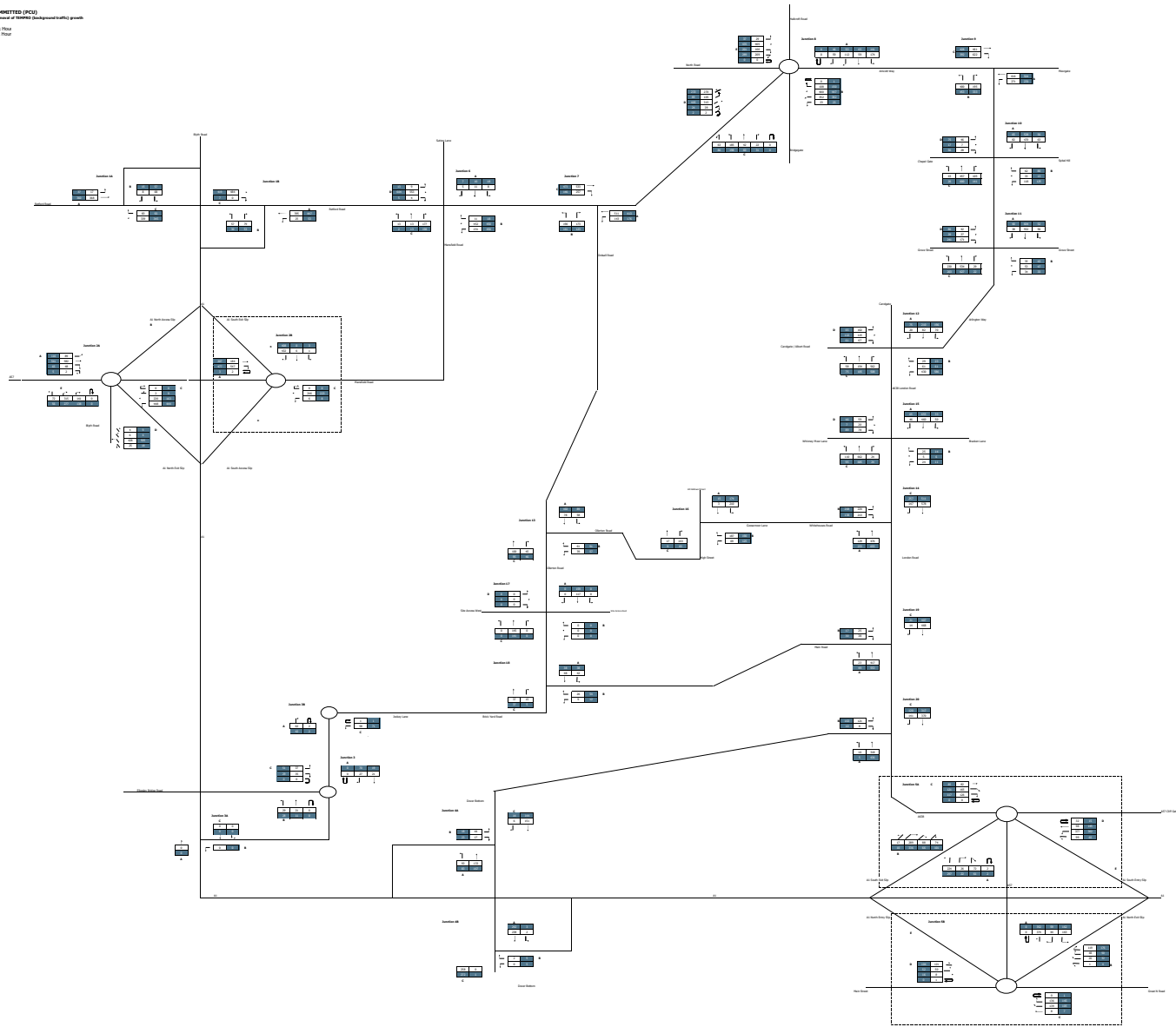
Proposed Peak Hour



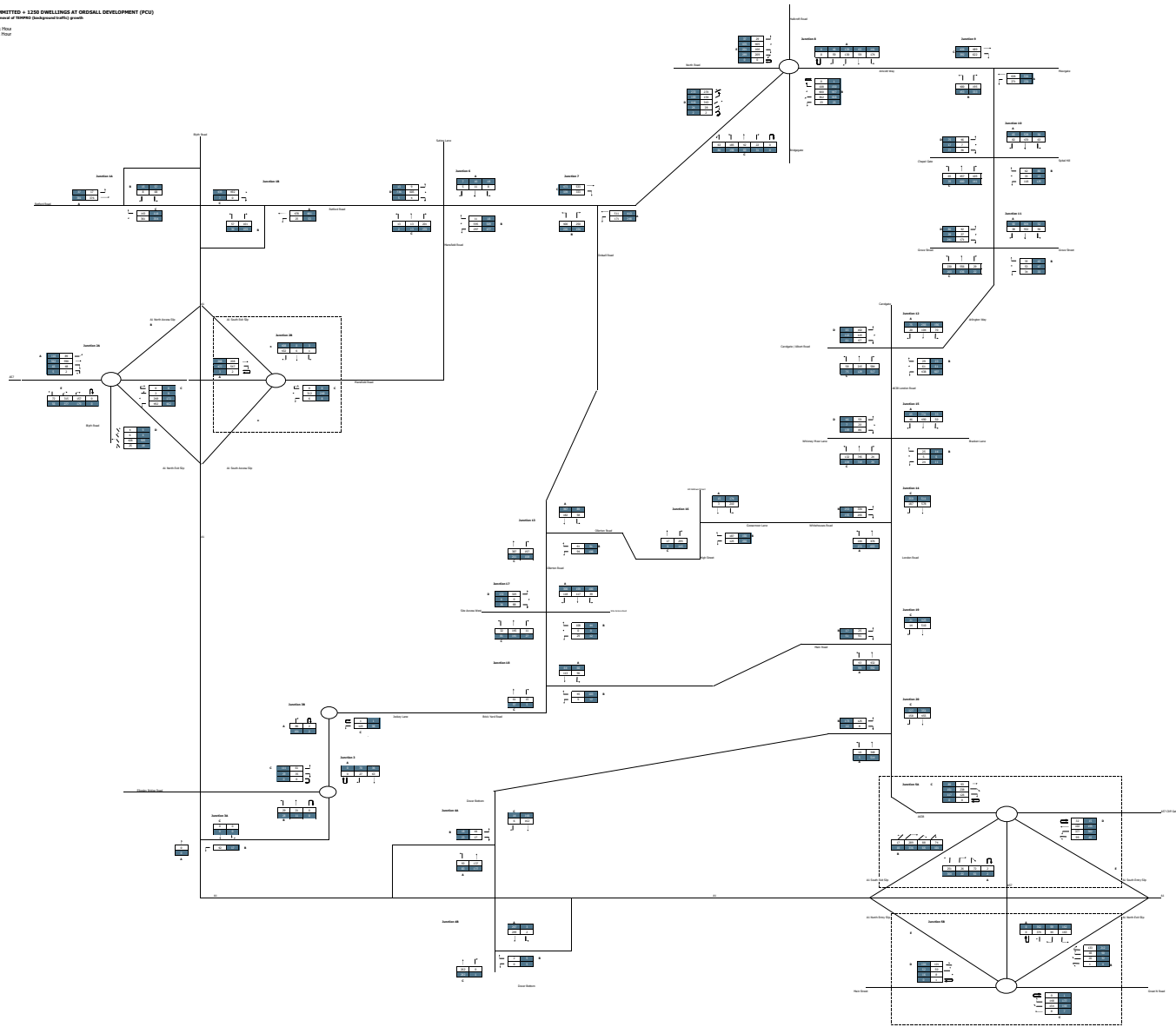
2021 BASE + COMMITTED (FCU)  
Appendix Table 1: Network of Limited-Access-Expressway (LAE) project  
Legend  
■ Existing Peak Hour  
■ Existing Peak Hour



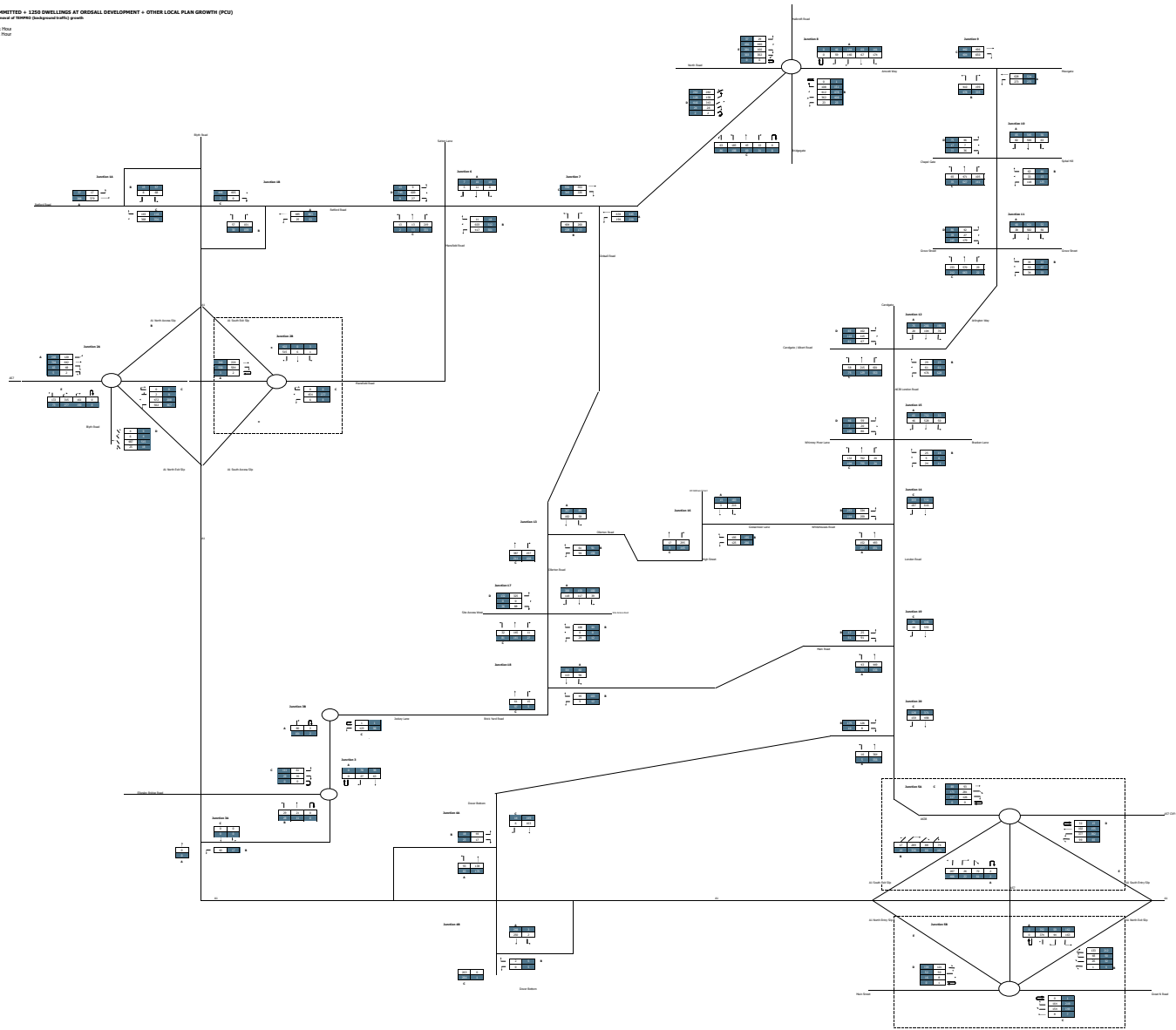
2038 BASE + COMMITTED (FCU)  
Appendix Table 1: Network of Limited (Background traffic) growth  
Legend:  
Peak Hour  
Off-Peak Hour



2038 Baku - COMMITTED - 1350 DWELLINGS AT ORIGINAL DEVELOPMENT (PCU)  
Availability: 100% (Minimum of 1000000kg per annum)  
100% Training Peak Hour  
100% Training Peak Hour

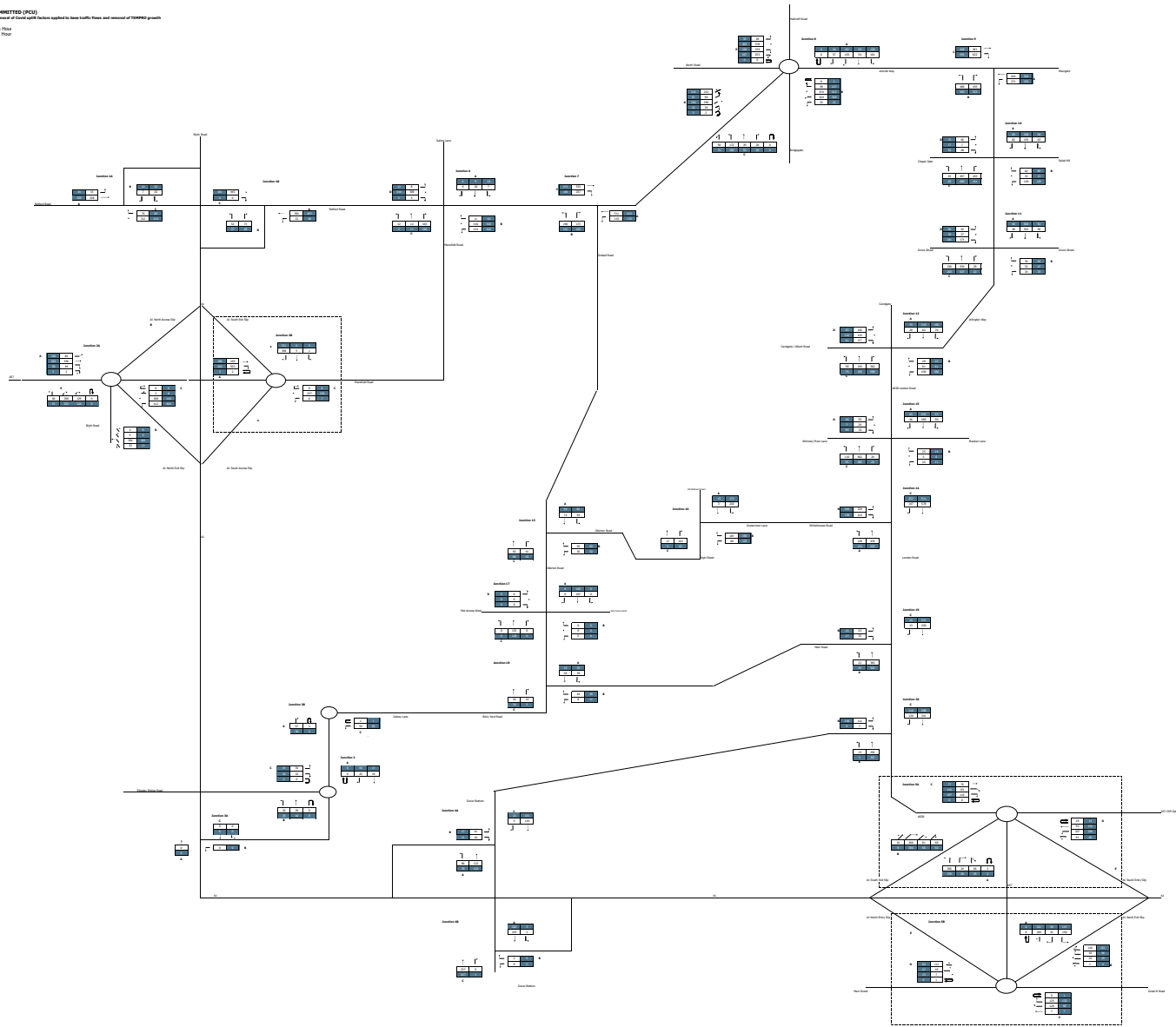


2038 BASE + COMMITTED + 1250 DWELLINGS AT ORISGALL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix 10.1 - Network of Routes (Darkgreen traffic) plan  
Legend:  
Dark Green: Training Peak Hour  
Light Green: Morning Peak Hour

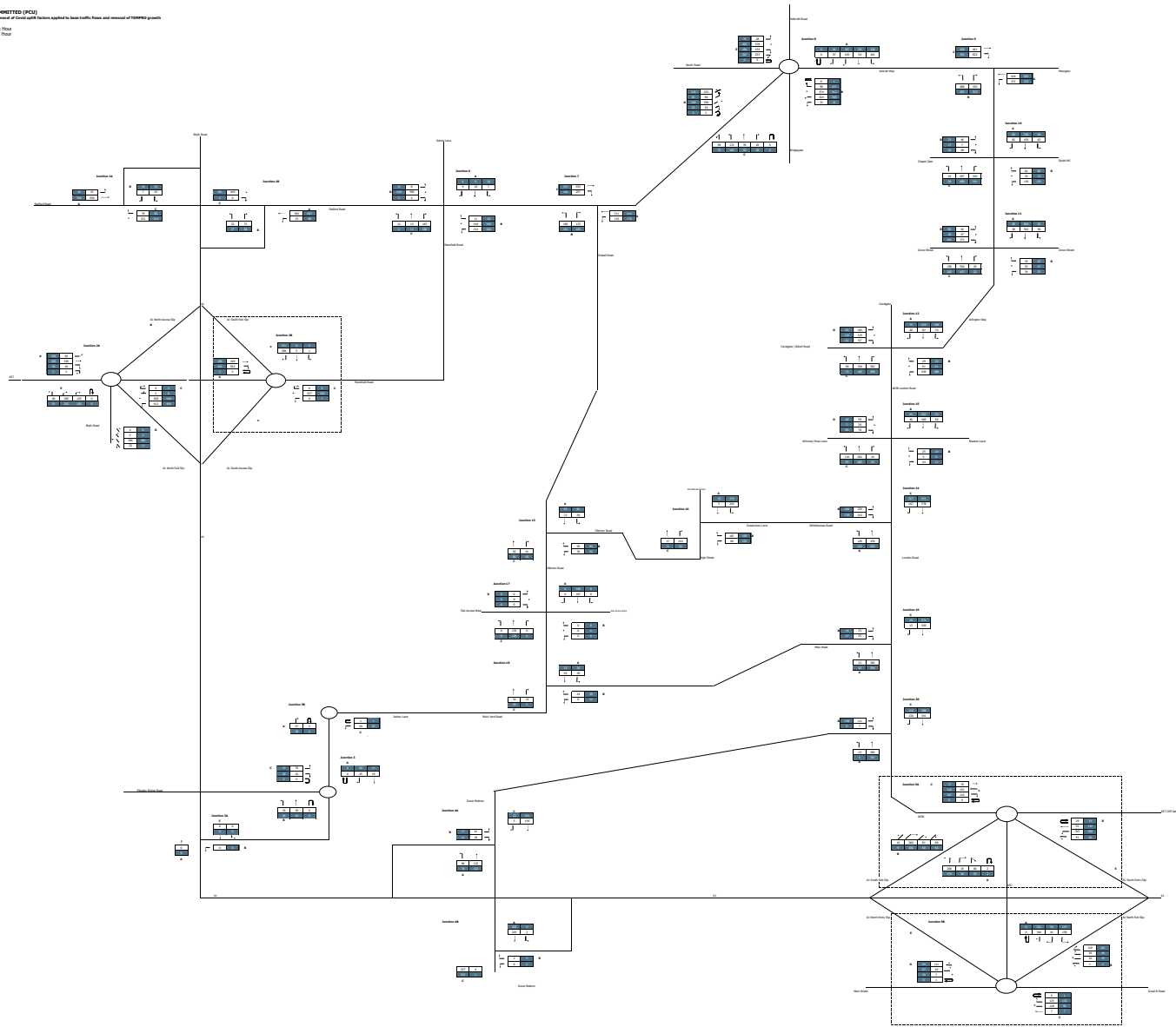




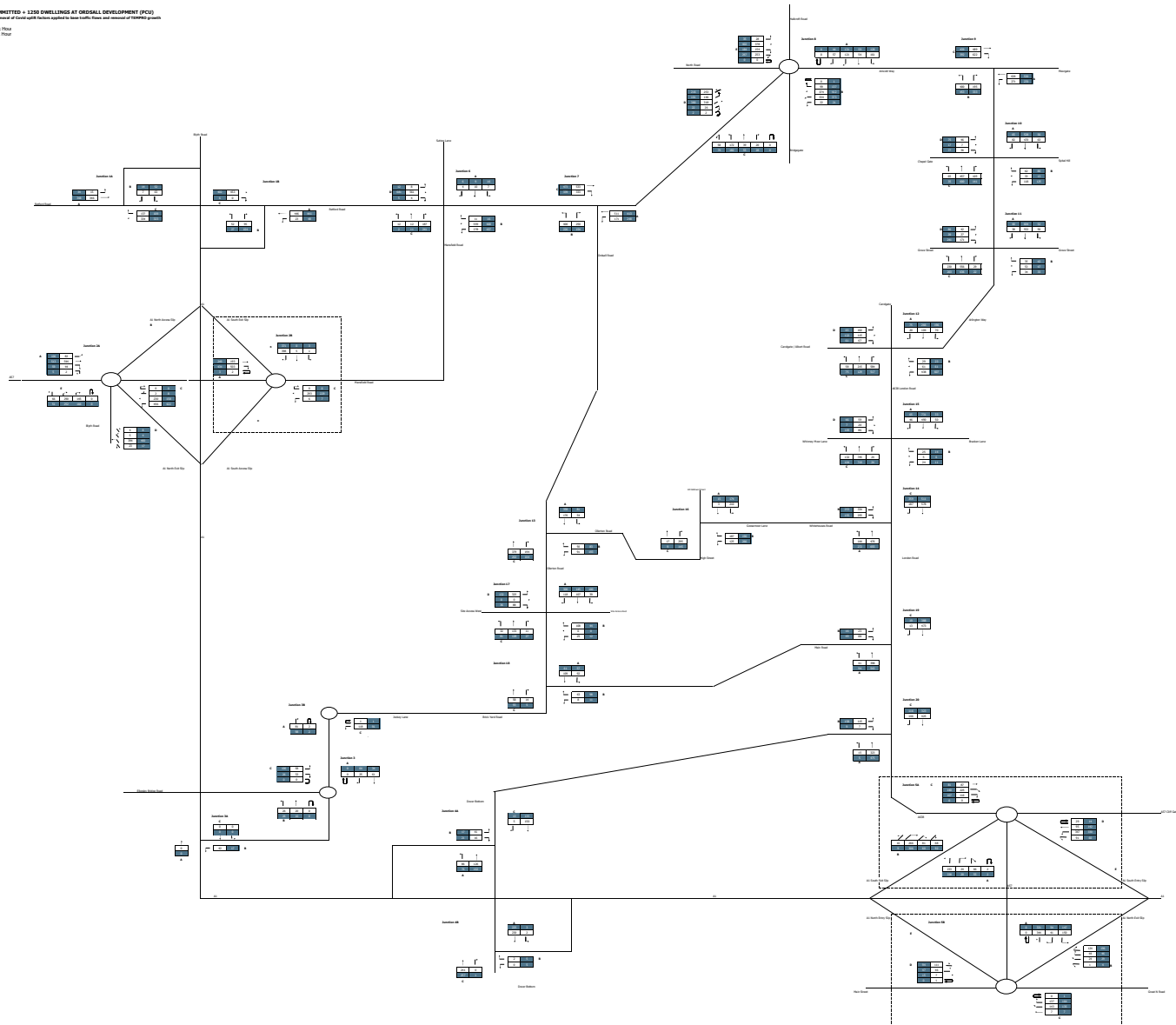
2021 BASE + COMMITTED (FCU)  
 Applying Table 1 - Removal of Excess Signal Phases applied to base traffic flows and removal of 1500PH green  
 1500PH Green Phase  
 1500PH Green Phase  
 1500PH Green Phase



2034 BASE - COMMITTED (FCU)  
Applying Table 1 - Minimum of Local and/or Region applied to base traffic flows and amount of 10000 growth  
FCU  
Peak Hour  
Peak Hour

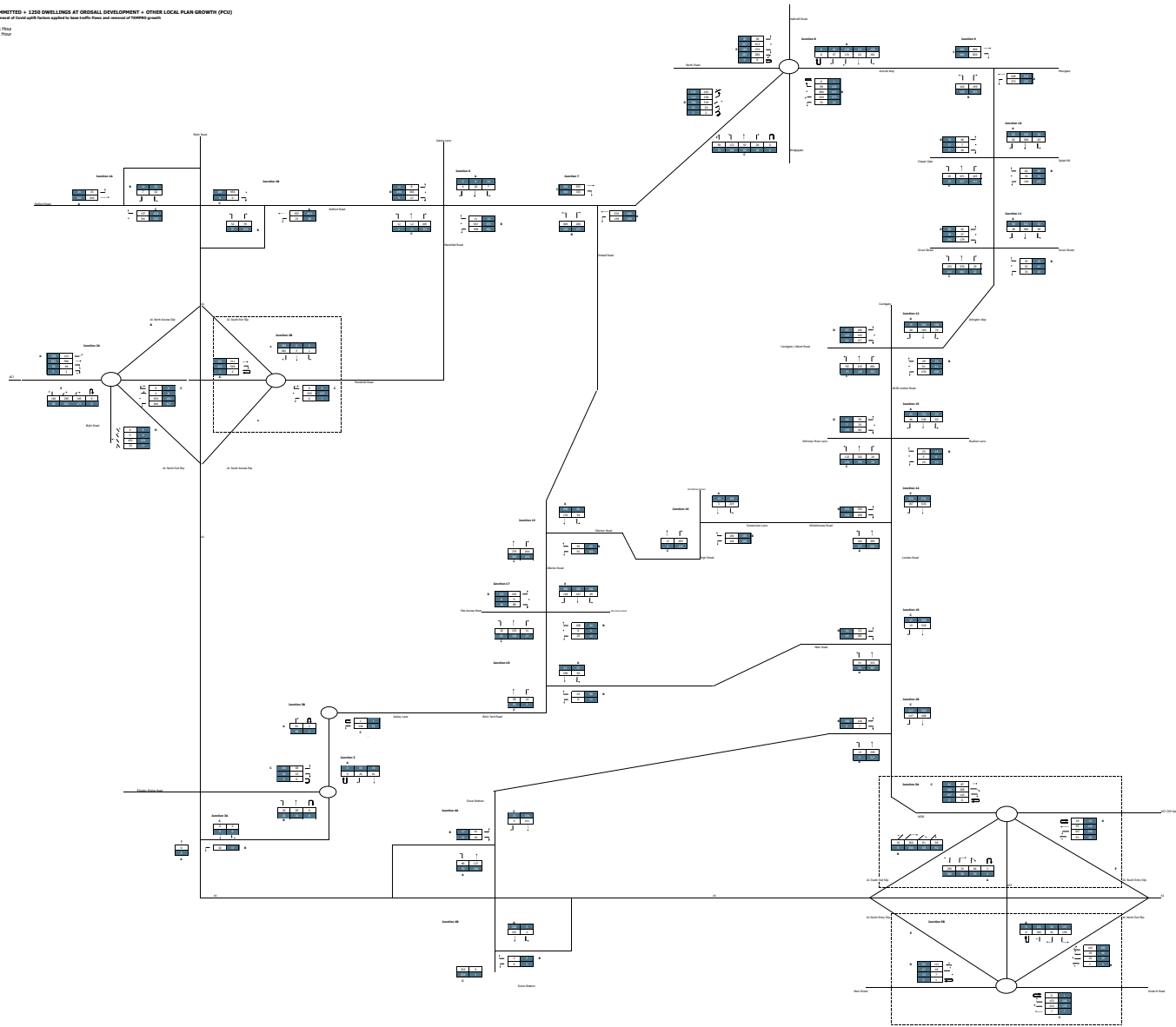


2038 Base + COMMITTED + 1250 DWELLINGS AT ORSALL DEVELOPMENT (PCU)  
Appendix 10.1: Removal of Greenfield Factor applied to base traffic flows and removal of 'Peak' growth  
A10  
Legend  
Peak Hour  
Morning Peak Hour

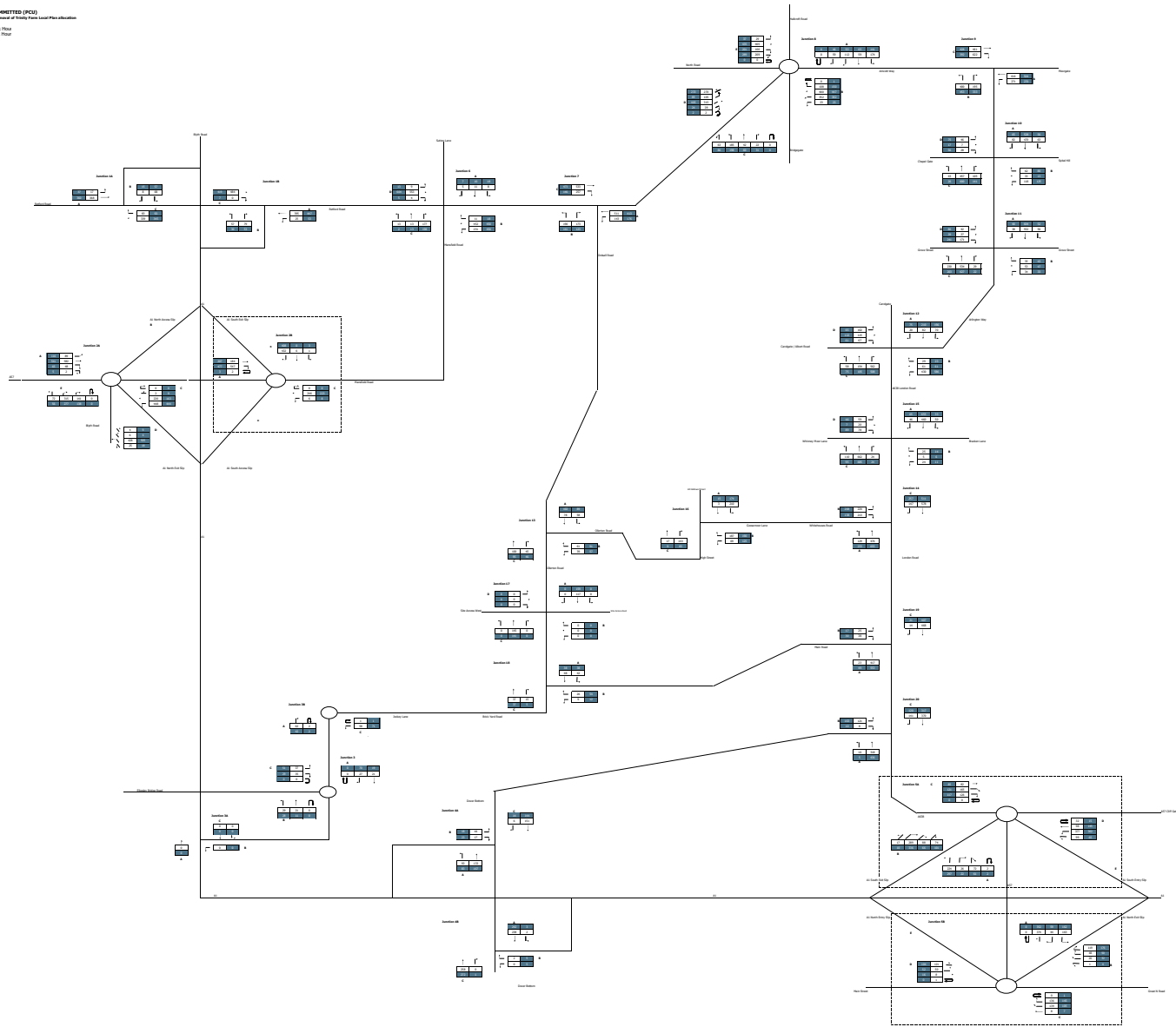


2038 BASE - COMMITTED + 1250 DWELLINGS AT ORISSAL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix Table 1: Network of Local public transport routes to meet traffic flows and demand at 2038 base growth

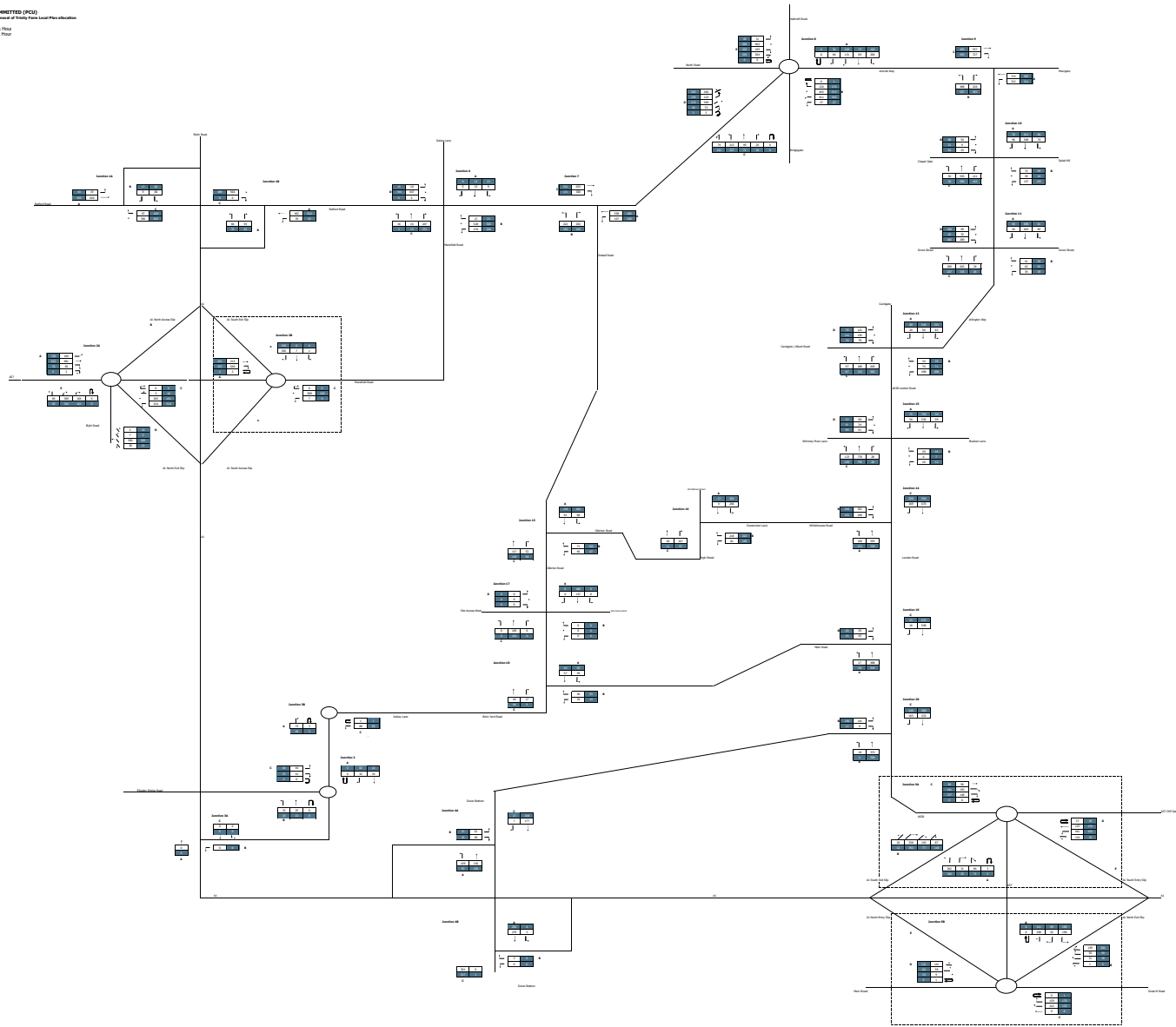
Legend:  
[Blue line] Existing Public Route  
[Red line] Proposed Public Route

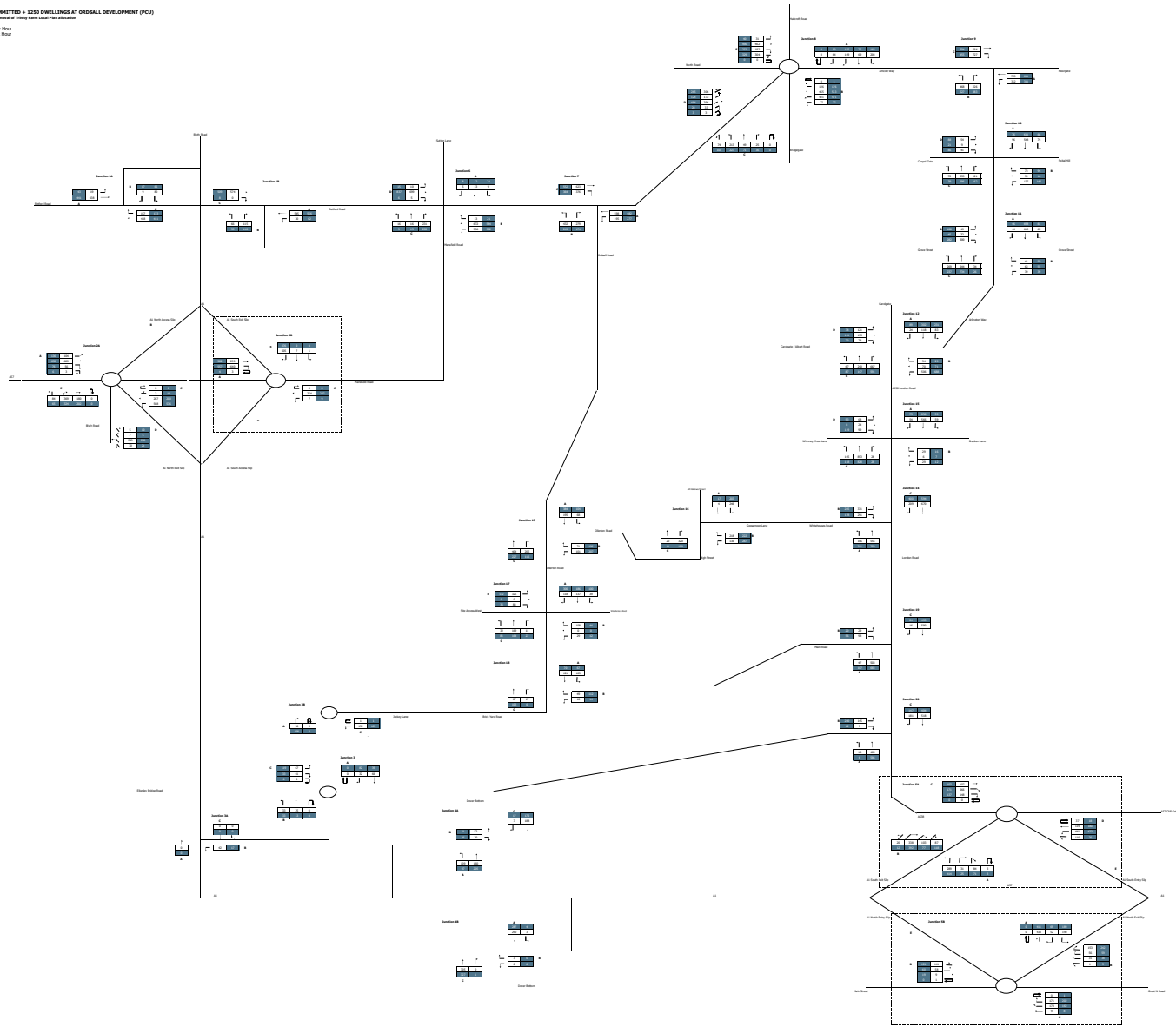


2021 BASE + COMMITTED (FCU)  
Appendix Table 6 - Network of Transit Park Local Plan Allocation  
Legend  
■ Training Peak Hour  
■ Evening Peak Hour

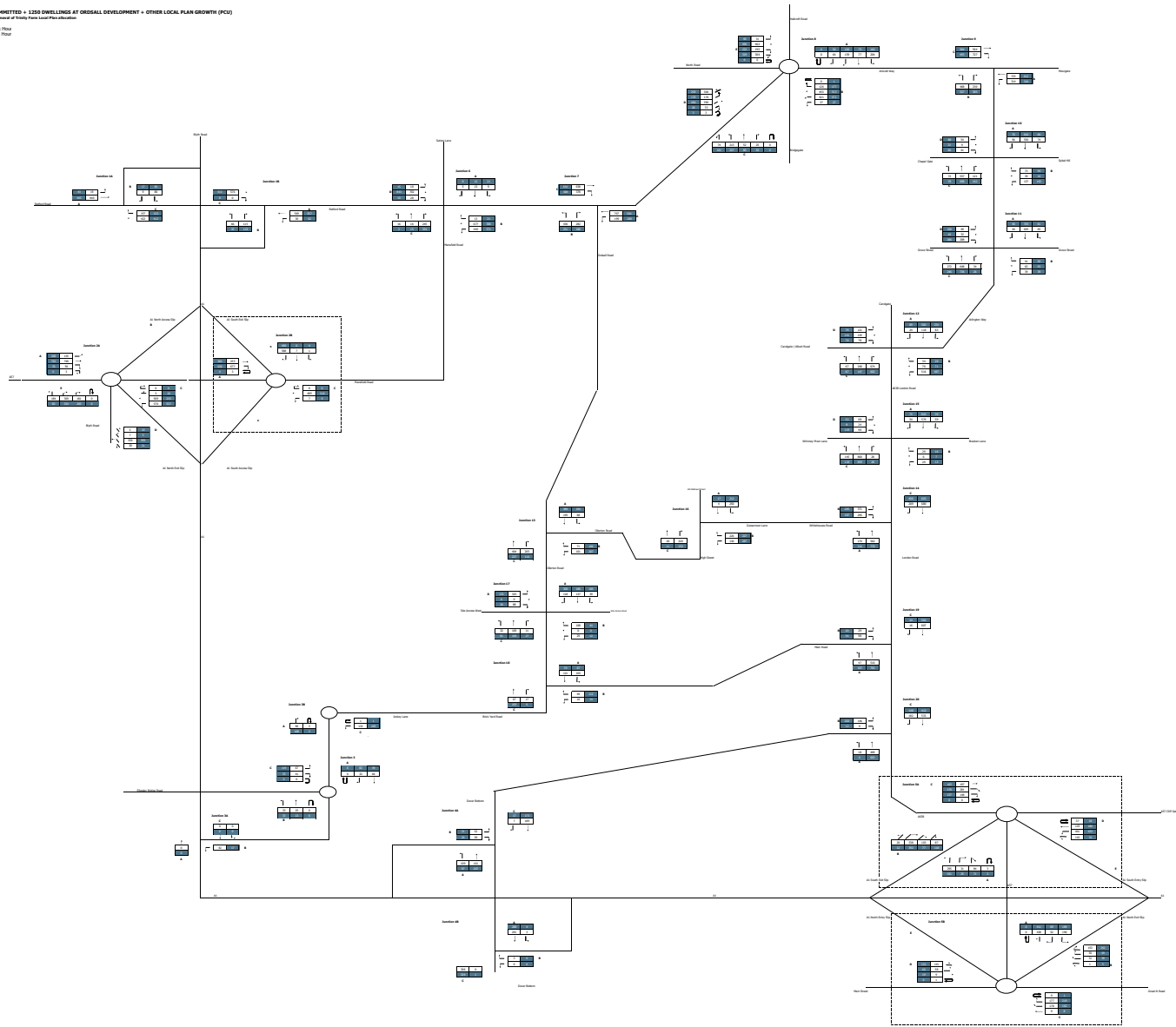


2034 BASE + COMMITTED (FCU)  
Appendix Table 6: Network of Transit Park Local Plan Allocation  
Legend:  
■ Training Peak Hour  
■ Evening Peak Hour



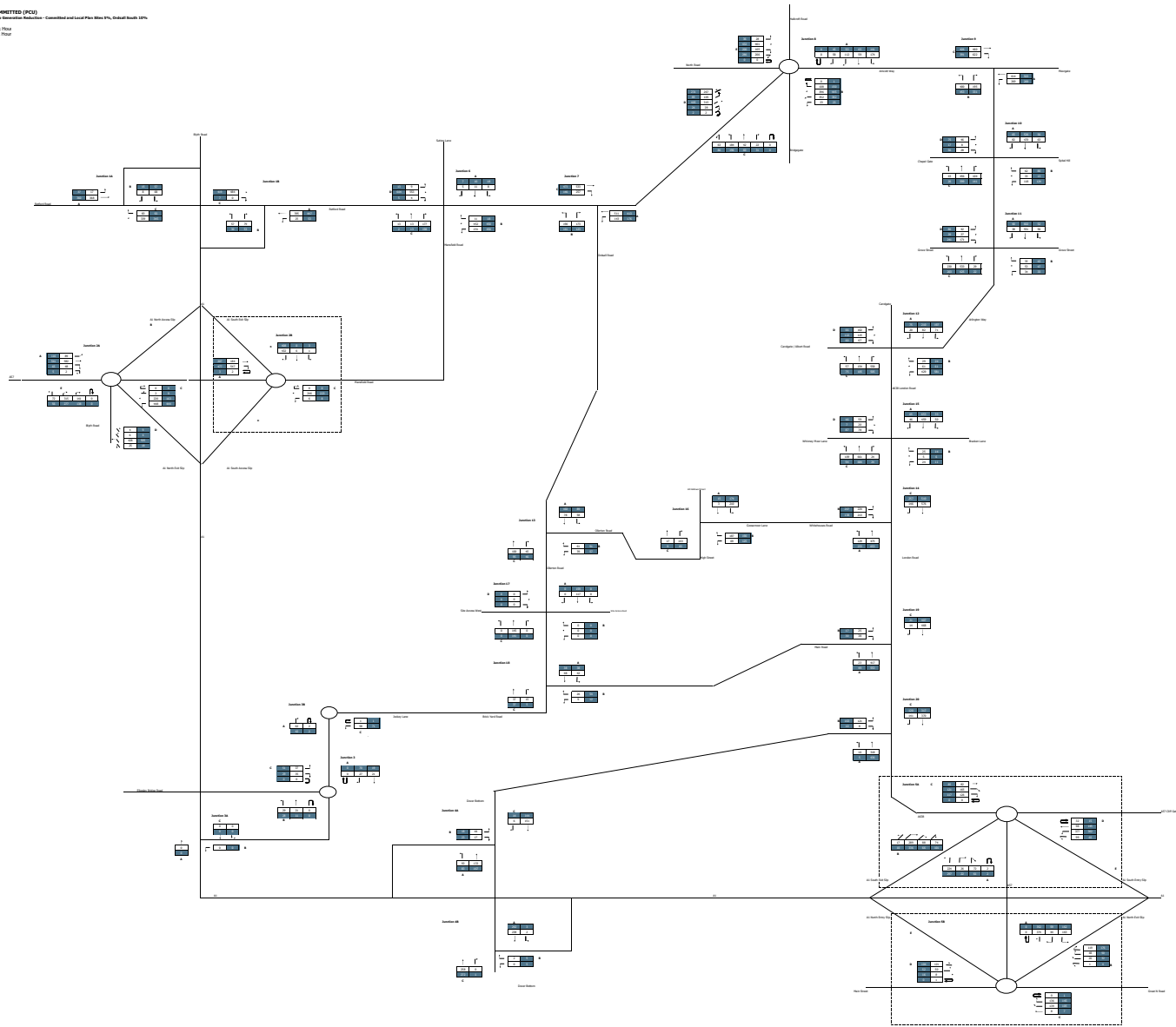


2038 BASE + COMMITTED + 1350 DWELLINGS AT ORDSALL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix Table 6: Network of Trunk, Feeder Local Plan Allocation  
FCU  
FCU  
FCU  
FCU

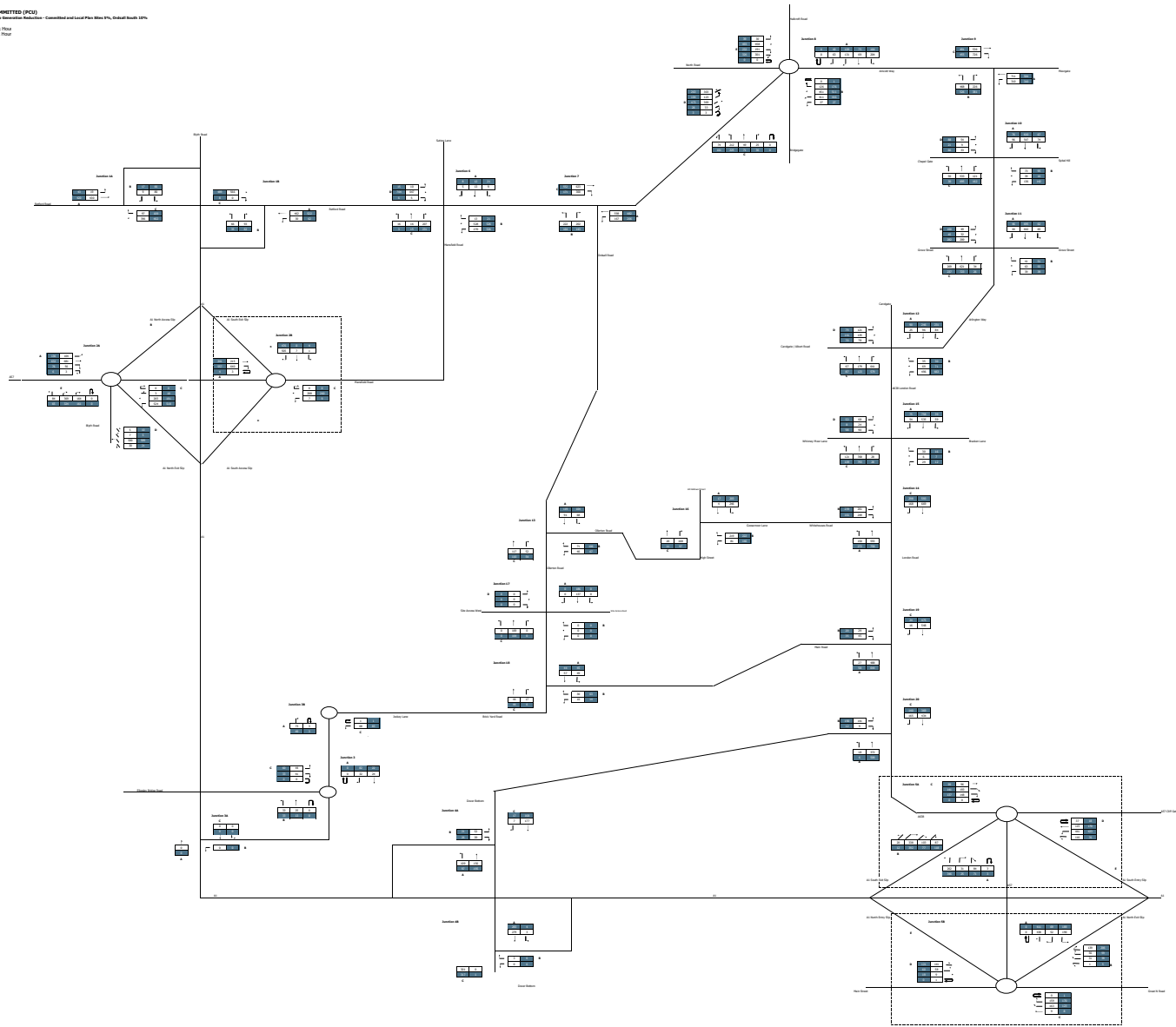




2021 BASE + COMMITTED (FCU)  
Appendix Table 1 - 2021 Base+Committed - Committed and Local Peak Share (PS), Overall South (PS)  
PS  
Peak Hour  
Committed Peak Hour

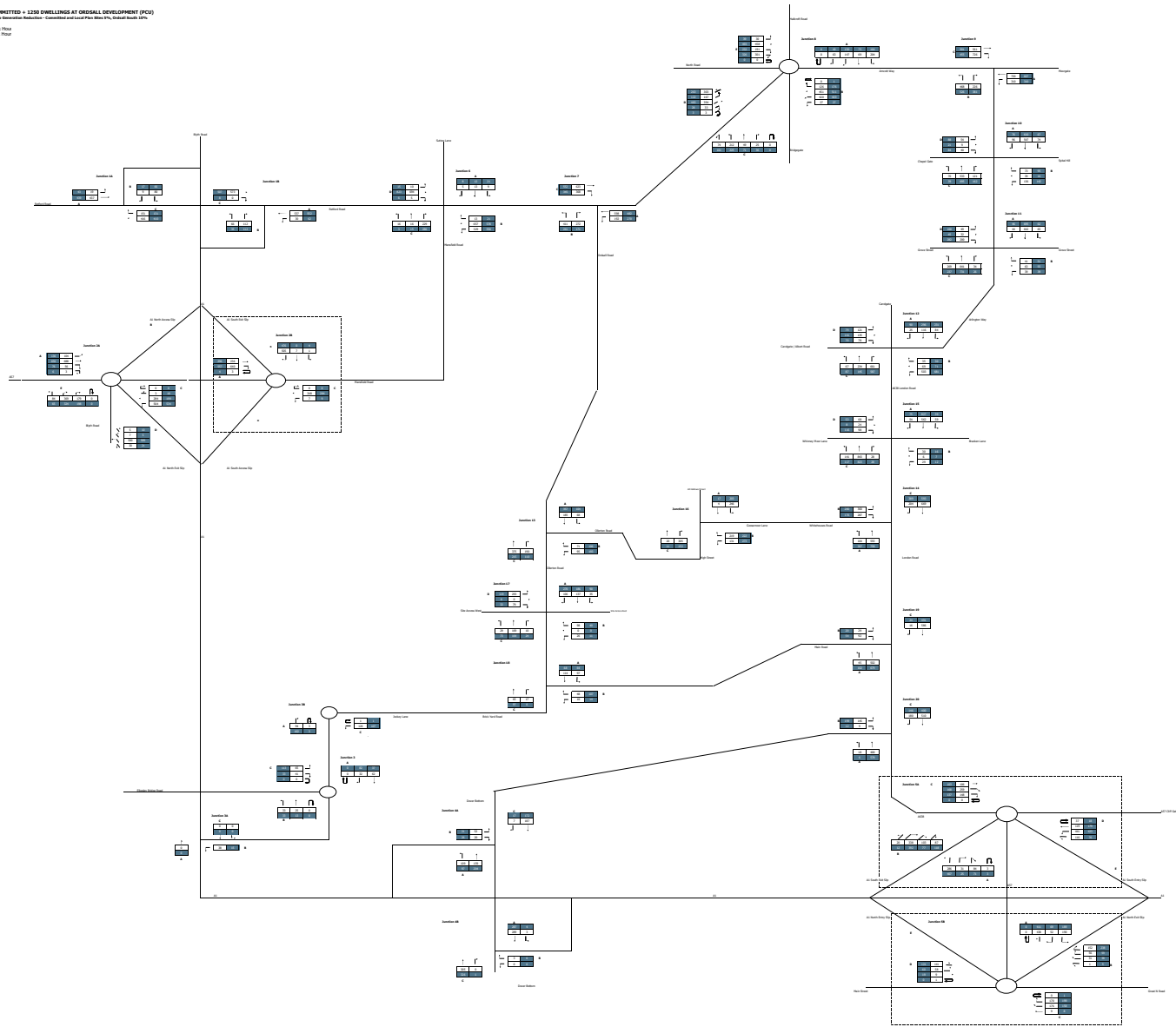


2034 BASE - COMMITTED (FCU)  
Worksheet: Sheet 1 - 100% Maximum Reduction - Committed and Local Peak Share (PL, Overall South 100%)  
Legend:  
■ Training Peak Hour  
■ Training Peak Hour

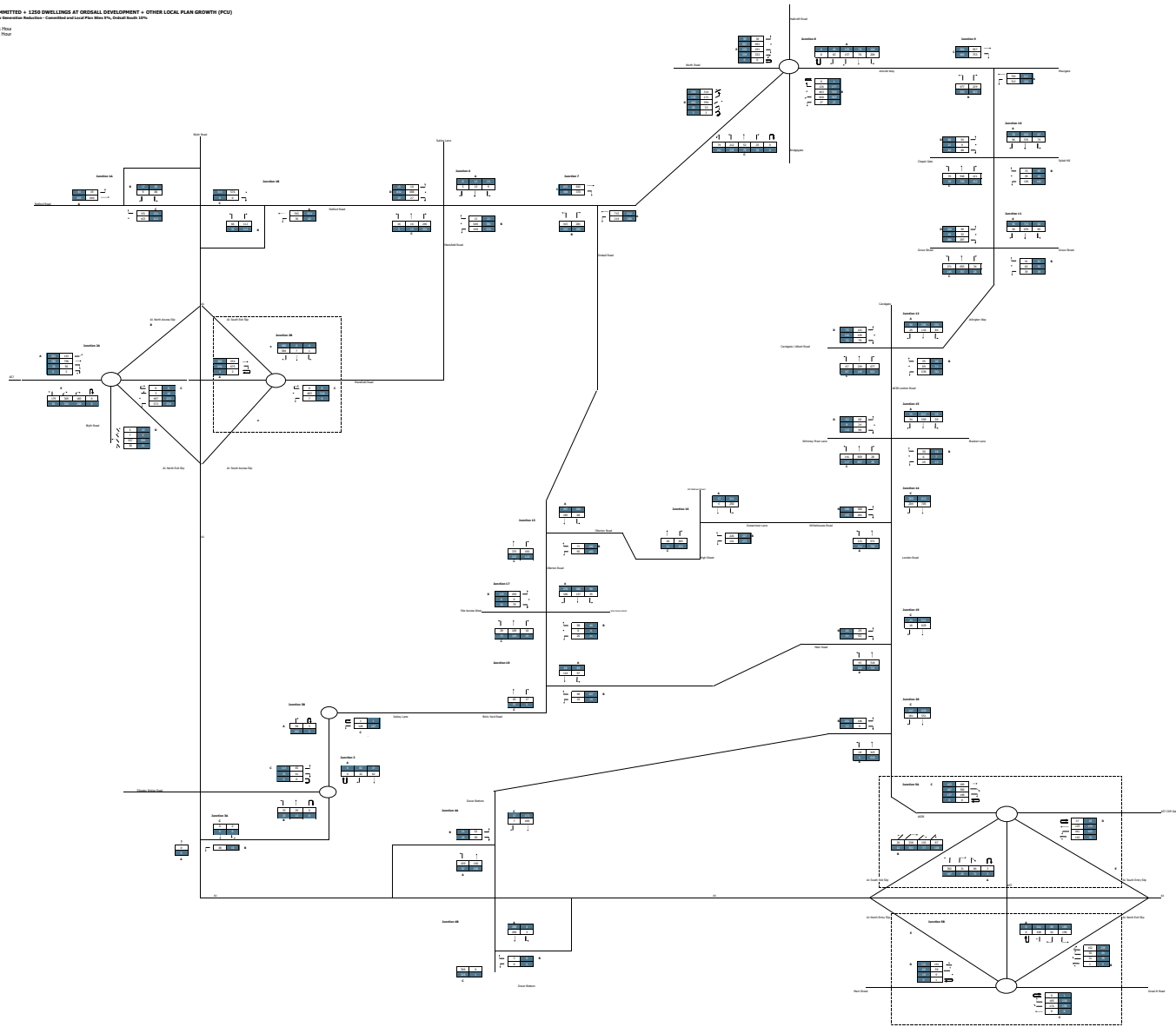


2038 Base + COMMITTED + 1250 DWELLINGS AT ORSALL DEVELOPMENT (PCU)  
Planning Unit 1 - 700 Maximum Reduction - Committed and Local Plan Base PH, Overall South LPH

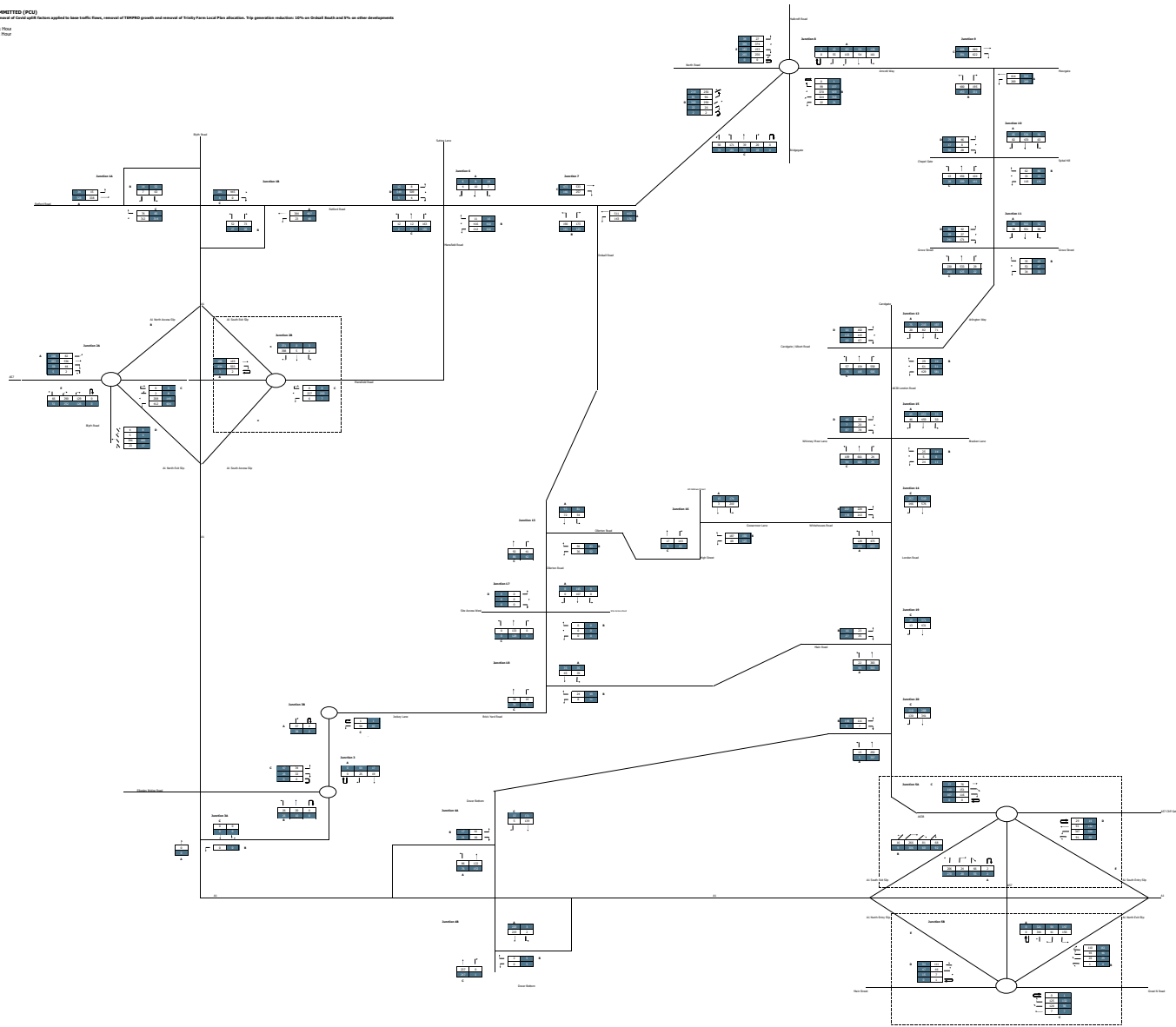
PCU  
Peak Hour  
Peak Hour



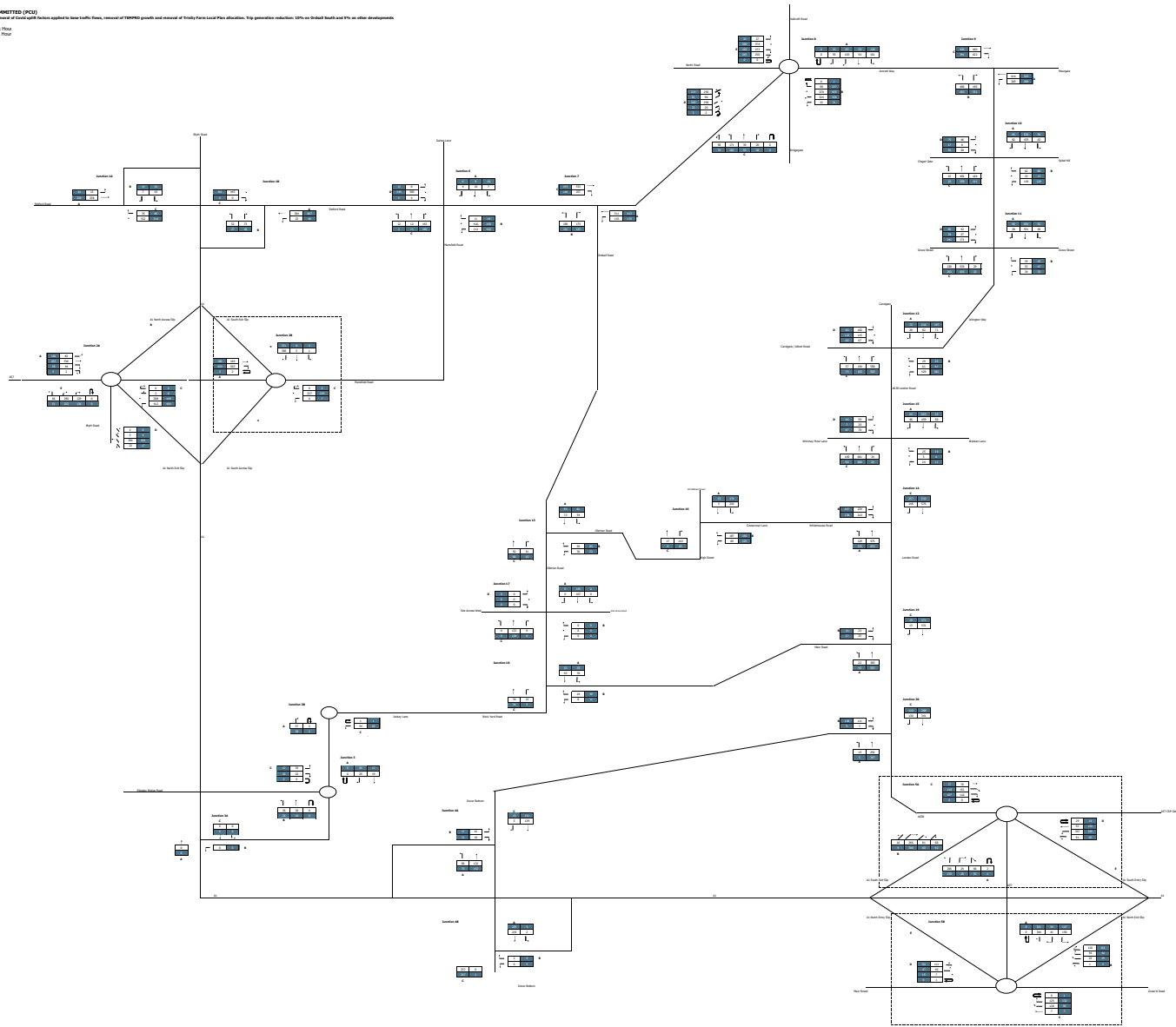
2038 BASE + COMMITTED + 1510 DWELLINGS AT ORSALL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix Table 1: 1510 Maximum Dwelling - Committed and Local Plan Sites (FCU, Overall South LPA)  
Legend:  
FCU Committed Peak Hour  
FCU Committed Peak Hour



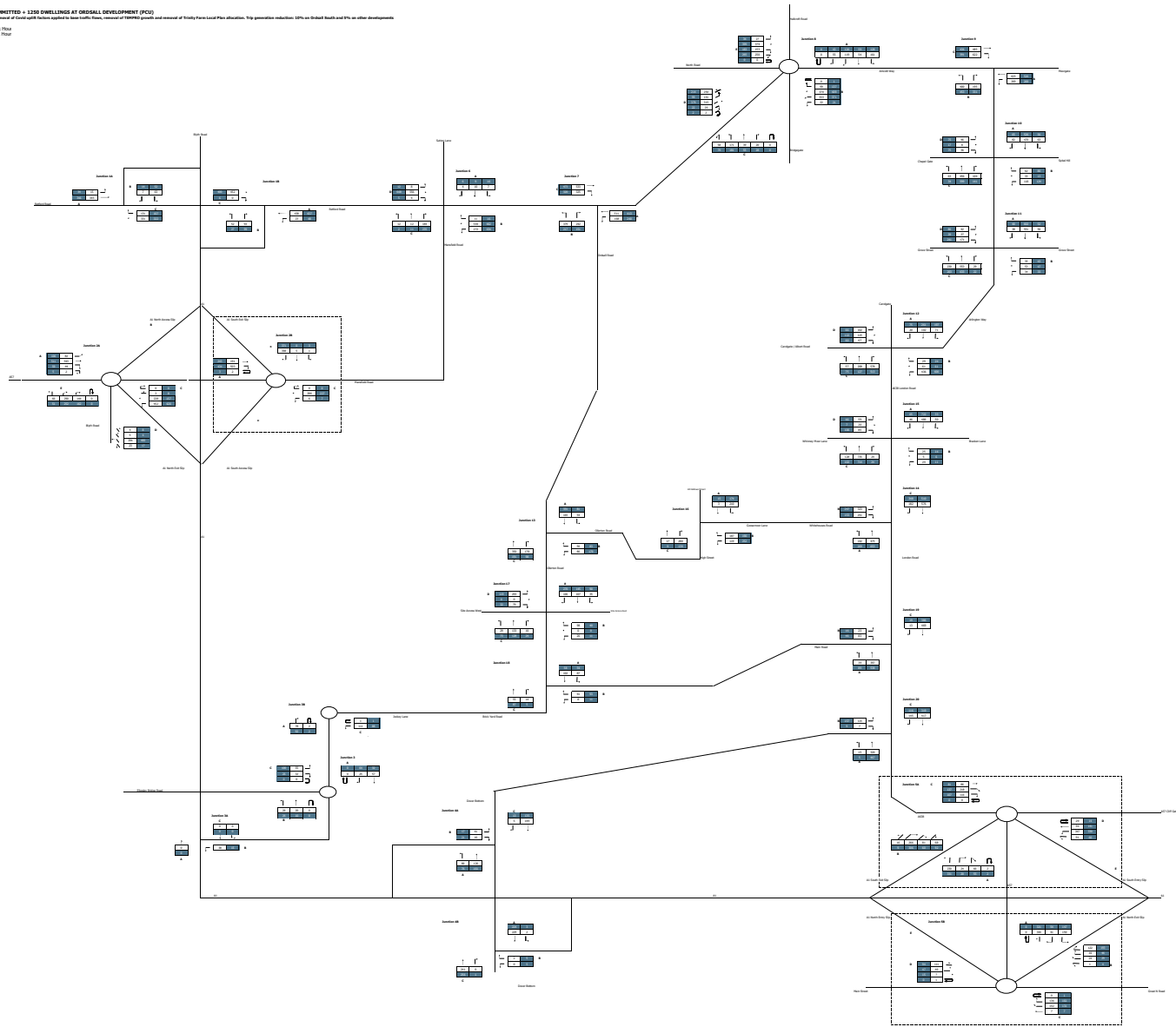
2021 BASE + COMMITTED (FCU)  
Availability Table 6: Removal of Local Peak Factors applied to base traffic flows, removal of 100% peak and removal of 100% peak local flow allocation. It is guaranteed reduction 10% on signal length and 10% on other developments.  
Legend:  
Peak Traffic Flow  
Committed Peak Flow



**2034 BASE + COMMITTED (FCU)**  
Availability: 100% + Removal of Local Peak Factors applied to base traffic flows, removal of 100% growth and removal of Family Parc Local Plan allocation. It is guaranteed reduction: 10% on Shared South and P10 on other developments.  
FCU  
FCU  
FCU



2038 B&S - COMMITTED - 1250 DWELLINGS AT ORSALL DEVELOPMENT (PCU)  
 Appendix 10.1 - Schedule of Unit Mix Factor applied to base Unit Mix, colour of (F)PMU groups and colour of Family Part Local Plan allocation. It is guaranteed inclusion 100% on Orsall South and P10 on other developments.  
 FPMU  
 Family Part Local Plan  
 Family Part Local Plan



2038 BASE + COMMITTED + 1250 DWELLINGS AT ORISSAL DEVELOPMENT + OTHER LOCAL PLAN GROWTH (FCU)  
Appendix Table 6: Summary of Local Plan Policies applied to Area Traffic Flow, Volume of Traffic (TVM) growth and volume of Traffic Flow (TF) allocation. It is guaranteed reduction 10% on traffic flow and 10% on other development.  
Legend:  
[Green Box] Existing Peak Hour  
[Blue Box] Existing Peak Hour

