Yarrabilba, Precinct 6 ROL 2

Traffic Impact Assessment

Lendlease Communities (Yarrabilba)

Kingsgate, 2 King Street
Bowen Hills, QLD 4006

Prepared by:

SLR Consulting Australia Pty Ltd

Level 16, 175 Eagle Street, Brisbane QLD 4000, Australia

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Revision Record

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Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Lendlease Communities (Yarrabilba) (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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1.0 Introduction

SLR Consulting Australia Pty Ltd (**SLR**) has been commissioned by Lendlease Communities (**Lendlease**) to provide traffic engineering and transport planning advice for the Yarrabilba master planned development area. The Yarrabilba master planned development is located within the extents of the Yarrabilba Priority Development Area (**PDA**), which is situated approximately 20km south of Logan Central and Springwood. When fully developed, it is anticipated that the ultimate Yarrabilba development will yield approximately 17,000 residential dwellings, and approximately 45,000 residents.

The traffic and transport aspects of the overall Yarrabilba master plan have been extensively documented within several reports which are referenced in Section 1.1. This report specifically addresses the traffic and transport aspects of Precinct 6 ROL 2 (which is a southern sub-precinct of Precinct 6). The proposed layout plan for the Precinct 6 ROL 2 application is included at **Appendix A**.

Regarding an assessment of traffic impacts, this report also includes the findings from the *Precinct 6 ROL1 Traffic Impact Assessment* report prepared by SLR dated 23 August 2023. The latter report provided an assessment of the entire Precinct 6 including key intersections associated with Precinct 6 ROL 2.

1.1 Previous Reporting

The traffic and transport aspects of the entire Yarrabilba master plan development (and other relevant precincts) have been previously addressed within a number of documents including the following:

- *Yarrabilba Master Plan Micro-simulation Modelling - Revised Land Use and Road Network* (Cardno, May 2015).
- *Yarrabilba Movement Infrastructure Master Plan* (Cardno, October 2015) – endorsed by EDQ on 11 November 2015, and on 3 July 2019. **Referred herein as the 'Endorsed MIMP (2019)'.**
- *Yarrabilba Master Plan Development – Movement Infrastructure Master Plan* (SLR, April 2017).
- *Yarrabilba Master Plan Development Traffic Model and Intersection Analysis Data Compendium* (SLR, November 2019) – submitted to and under review by EDQ.
- *Yarrabilba Master Plan Development Movement Infrastructure Master Plan (Version 8)* (SLR, October 2022) – submitted to and under review by EDQ. **Referred herein as the 'Current MIMP (2022)'.**

For clarity, it is acknowledged that:

- The October 2015 IMP (Cardno) has been endorsed by EDQ but uses traffic modelling information that is superseded.
- Updated traffic modelling was undertaken in 2018 and the volumes from this are most representative of current Yarrabilba planning and have been used for all traffic design and assessment since 2018.
- The updated traffic modelling (2018) is included in the Current MIMP (2022) and represents the most recent traffic forecasts and assessment for Yarrabilba.
- The Precinct 6 assessment herein uses volumes from the traffic model update in 2018.

Where relevant, some elements of these reports have been used to inform the traffic assessment herein. In particular, it is intended that the traffic and transport aspects of Precinct 6 (known as Precinct 8 within the 2018 master plan) are generally consistent with both the Endorsed MIMP (2019) and the Current MIMP (2022).

1.2 Traffic Model Update

The overall Yarrabilba road network and demographics were revised in 2018, which included reference to the initial traffic model (2015) and the Endorsed MIMP (2018). Whilst the demographics have been updated in various precincts, the demographics for the total Yarrabilba PDA are largely unchanged.

The Precinct 6 assessment herein has been based upon the most recent traffic model volumes and demographics (2018). This is discussed in **Section 4** herein. The traffic volume results from the 2018 modelling have been considered and incorporated herein. Such results include updated forecasts of traffic volumes and updated intersection capacity analysis. The latter includes key intersections providing access to Precinct 6.

2.0 Proposed Development

The proposed Precinct 6 ROL 2 (**ROL 2**) development is situated towards the south of the broader Precinct 6 area. Primary vehicular access for this precinct will be via the Town Centre North-South Road which provides connectivity to the wider road network, and travels along the western boundary of Precinct 6. Additionally, the Ridge East-West Link road travels along the southern boundary of ROL 2 and will provide access to the sub-precinct from the south.

It is acknowledged that whilst the Ridge East-West Link forms part of the adjacent road network serving Precinct 6 in the ultimate stage, the Ridge East-West Link will not be constructed until after Precinct 6 ROL 2.

The proposed yield of ROL 2 represents 470 residential lots with the overall Precinct 6 consisting of 1,029 lots (including the previous application for ROL 1). These precincts are illustrated on **Figure 1** in context of the precinct staging and overall Yarrabilba Development Area.

Figure 1 ROL 2 Site Context



The proposed development plan for ROL 2 has been prepared by Lendlease and incorporates input from the wider design team (including advice on traffic and transport design matters provided by SLR). The plan is submitted as part of the planning documents for the application and has been used as the basis of the traffic assessment herein.

Based on information provided by Lendlease and as detailed within the precinct layout plan, ROL 2 is proposed to include the following key land uses and yields:

- 470 residential lots,
- Recreational and linear parkland, and
- Open space parkland for stormwater detention.

The lot layout and road network are illustrated on **Figure 2**, with the full-scale plan provided at **Appendix A**.

Figure 2 ROL 2 POD



It is recognised that in the interim, ROL 2 will have vehicle access only via Yarrabilba Drive at Waterford-Tamborine Road through the following two routes:

- Town Centre North-South Road, connecting with the southern end of Yarrabilba Drive.
- the collector street at the south-east corner of ROL2 (along the southern end of Precinct 6a), connecting with Hootman Drive and the south-eastern end of Hootman Drive.

In the ultimate, Town Centre North-South Road will connect to Plunkett Road to the south providing access from the external road network at Waterford-Tamborine Road and Plunkett Road, and Ridge East-West Link will provide additional connections to Waterford-Tamborine Road and Wentland Drive.

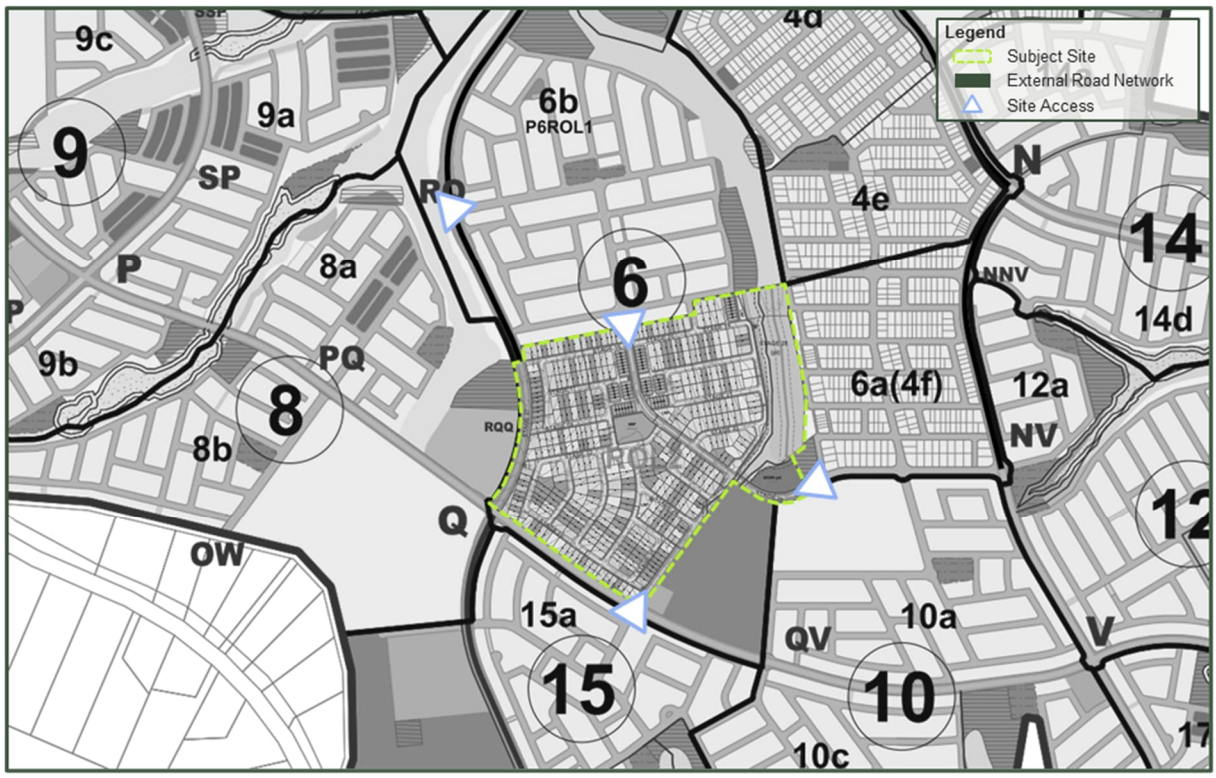
3.0 Design Review

3.1 External Access

ROL 2 does not include any major road connections which differ from what was identified in the Endorsed MIMP (2019) and the Current MIMP (2022), nor does it propose any changes to these roads. As such, the design review undertaken as a part of this traffic assessment focuses on the geometric suitability of the lower order roads and connections specific to the ROL 2 network.

For completeness the location of ROL 2 has been illustrated on **Figure 2** with respect to the wider road alignments, intersection locations and control types. The access location to the major road network can be seen in **Figure 3**.

Figure 3 Precinct 6 ROL2 External Road Connections



3.2 Internal Road Network

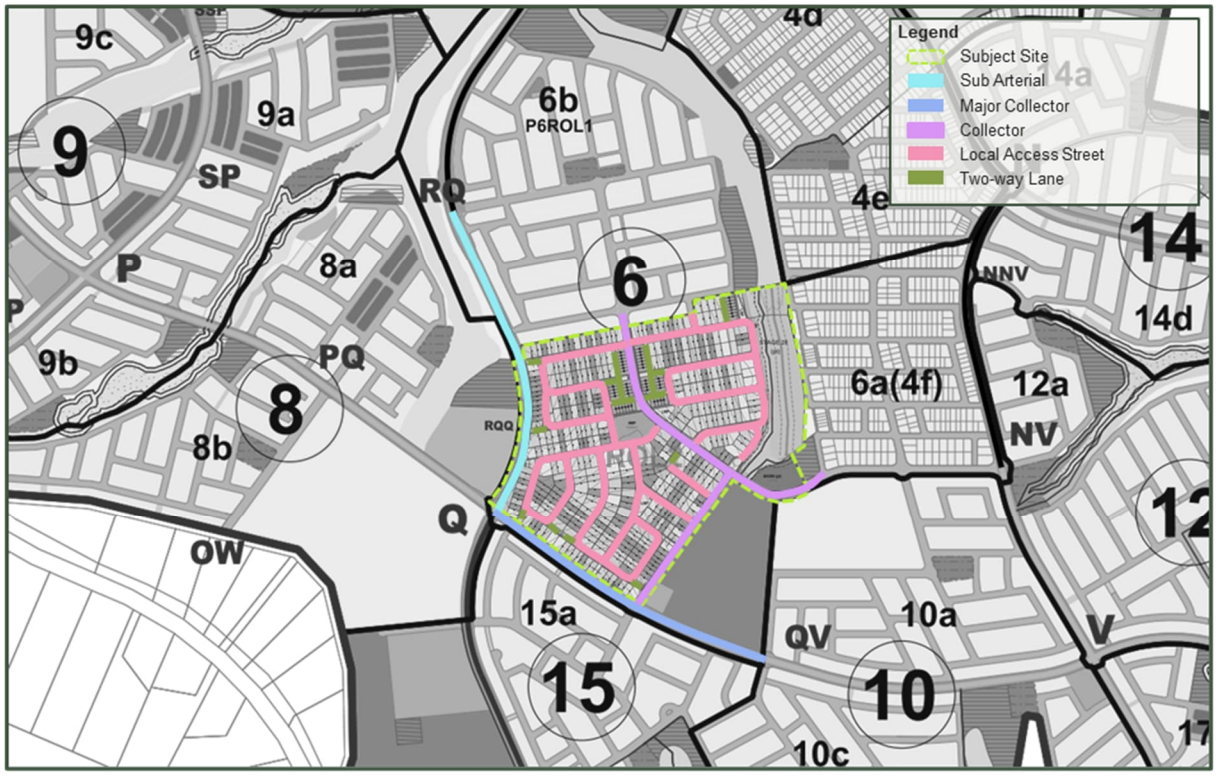
The internal roads (and their respective road reserve widths) proposed as part of the ROL 2 development will comprise the following:

- Sub-Arterial, Trunk Collector with Median (No Bus Bay) (26.5m).
- Major Collector, Trunk Collector with Median (No Bus Bay) (25.6m).
- Collector (21.1m and 17.6m).
- Local Access Street (16.0m, 14.5m and 12m).
- Two-way Lane (12.5m, 8m and 6.5m).

The allocation of the above road cross sections to the ROL 2 road network can be seen in **Figure 4**. The cross sections are shown in the Functional Plans prepared by KN Group (at **Appendix B**).

The road hierarchy and road alignments are generally compliant with that identified in both the Endorsed MIMP (2019) and the Current MIMP (2022).

Figure 4 Proposed Road Network Layout and Hierarchy



The cross sections for each road type have been developed by the project team with traffic input from SLR, and were based on the design principles outlined within the Endorsed MIMP (2019) and the Current MIMP (2022). These cross sections are generally consistent with those designed/constructed previously in Yarrabilba and are underpinned by the typical cross sections detailed within the Endorsed MIMP (2019) and the Current MIMP (2022).

It is important to note that the cross sections proposed for ROL 2 (see **Appendix B**) have some differences to those included in the Endorsed MIMP (2019) and the Current MIMP (2022). These differences are not considered to be significant and the relevant/appropriate transport functions for all roads are retained/achieved by the proposed cross sections. Therefore, the variations to the cross sections are acceptable for ROL 2.

3.3 Active Transport Provisions

The key elements of the walk and cycle network proposed in ROL 2 are consistent with the connections and elements within the Endorsed MIMP (2019) and the Current MIMP (2022). It is recognised that some active transport links as proposed in Precinct 6 are additional to that identified in the Endorsed MIMP (2019) and the Current MIMP (2022).

Key elements of the active transport network relative to ROL 2 have been reproduced below for ease of reference, as identified within the Endorsed MIMP (2019) and the Current MIMP (2022):

- Principal Cycle Route along the Town Centre North-South Road (Yarrabilba Drive extension).
- Commuter Cycle Route along the Town Centre North-South Road (Yarrabilba Drive extension).

- Commuter Cycle Route along the Ridge East-West Link (southern edge of Precinct 6).
- Local Active Transport Route along the eastern/northern side of ROL 2.

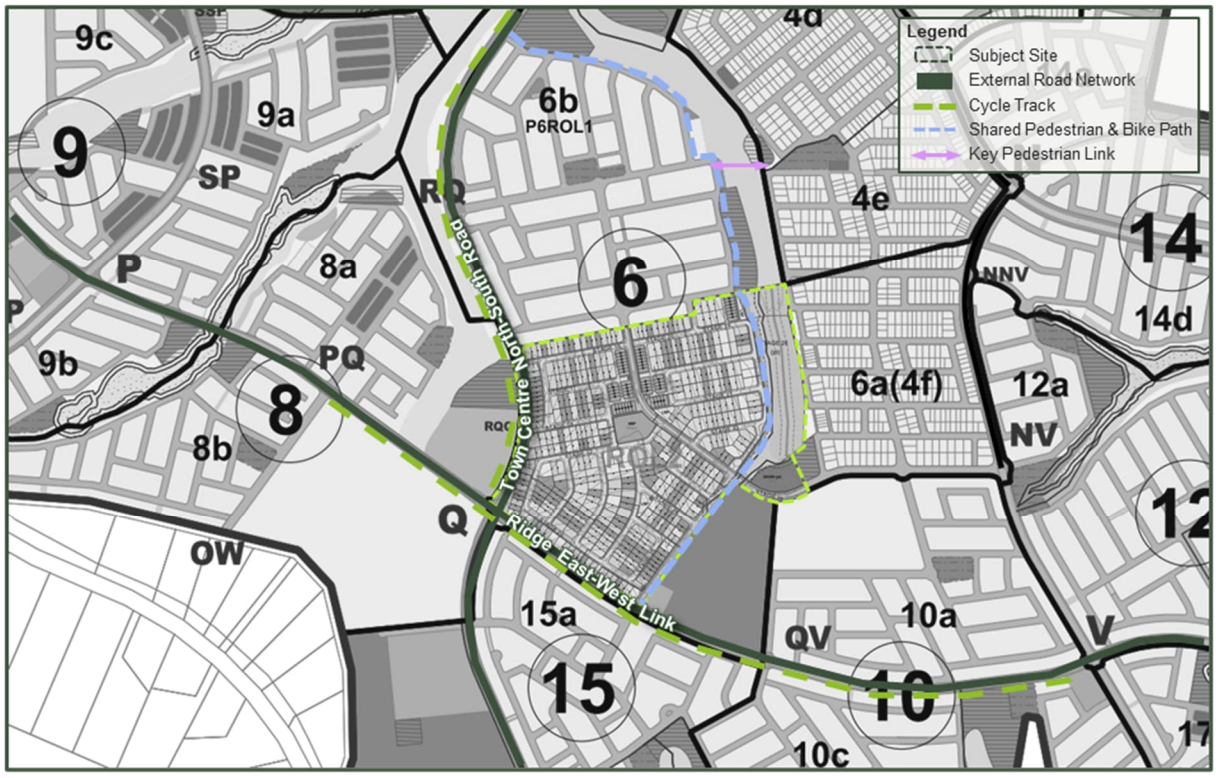
Within ROL 2, the following specific active transport infrastructure is proposed:

- The Town Centre North-South Road (Principal Cycle Route and Commuter Cycle Route) will include a Two-Way Cycle Track + Pedestrian Path along the western side and a Shared Path along the eastern side.
- A Shared Path (Hike & Bike trail) will be provided through the Open Space corridor along the eastern side of ROL 2 (Local Active Transport Route).
- All Collector Streets will provide a pathway (Shared Path or Pedestrian Path) on both sides.
- All Local Streets (excluding Lanes) will include a footpath on at least one side.

The proposed active transport paths are compliant with and exceed that identified in both the Endorsed MIMP (2019) and the Current MIMP (2022).

The location of the Cycle Track, Shared Path and pedestrian link can be seen in **Figure 5.**

Figure 5 Proposed Active Transport Provisions

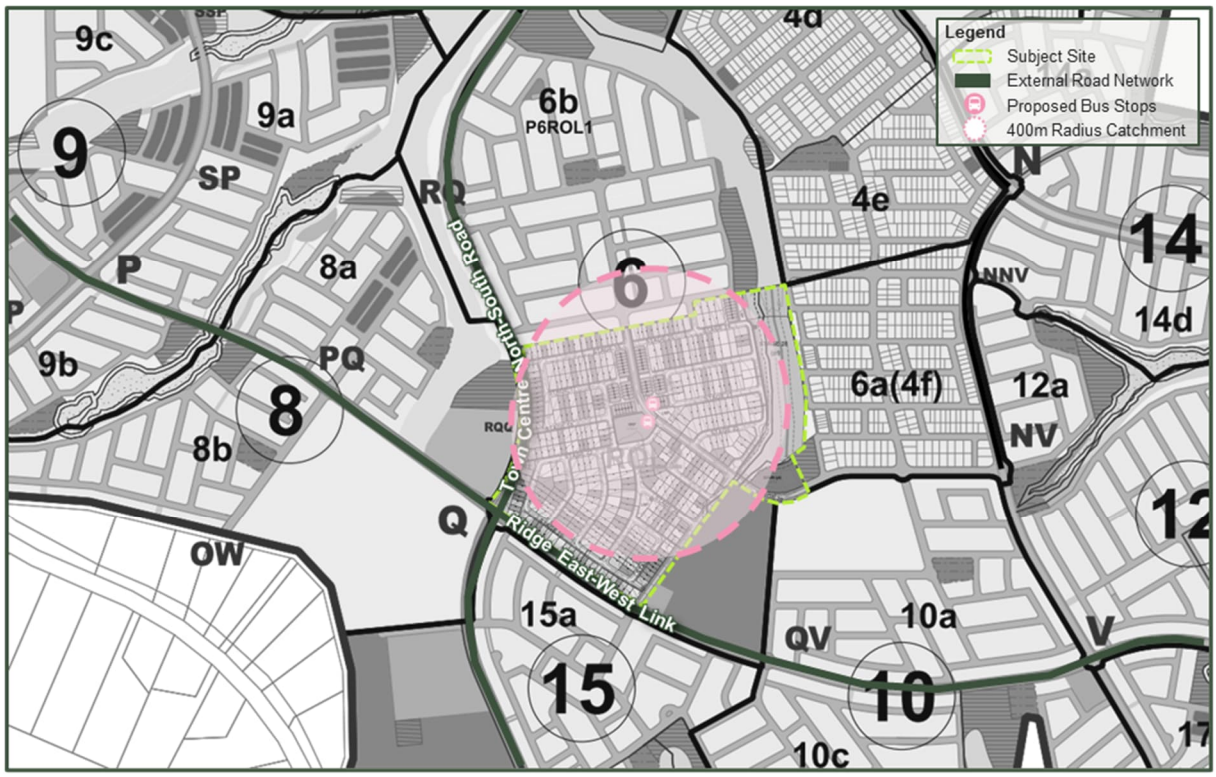


3.4 Public Transport Provisions

In accordance with the provisions outlined in the Movement IMP, the Yarrabilba Master Plan Area aims to provide public transport connections within a 400m walking distance of residents within precinct developments.

As identified in **Figure 6**, several bus routes and bus stops (indicative locations only) are proposed within the subject site. Bus routes and bus stops are proposed along the Sub Arterial (Town Centre North-South Road) and the Collector running through the site. The 400m walking distance catchments (from each bus stop pair) are identified in **Figure 6**. This identifies that approximately 95% of lots in ROL 2 will be within 400m of a proposed bus stop.

Figure 6 Proposed Public Transport Infrastructure



It is recognised that bus services may not be implemented by TransLink on the identified routes (this is to be negotiated by contract with the bus operator, Lendlease and TransLink), however the relevant roads have been designed to enable such bus routes to occur. The bus stops will be constructed in accordance with TransLink's Public Transport Infrastructure Manual (**PTIM**).

On this basis, the public transport stops proposed within ROL 2 and the wider Precinct 6 will adequately service the catchment and are compliant with that identified in both the Endorsed MIMP (2019) and the Current MIMP (2022).

4.0 Traffic Analysis

The analysis presented herein is largely reproduced from the Precinct 6 ROL 1 Traffic Impact Assessment report. The exception to this is the inclusion of the RQQ intersection analysis which will service the future Precinct 8 allotments (to be considered as part of a future application). The analysis results for this intersection are provided within **Section 4.7**.

4.1 Development Scenarios

As identified in **Section 1.2**, since the original traffic modelling completed in 2015, updates to the model were undertaken in 2018. The proposed scenarios assessed within the revised modelling were consistent with that originally assessed. In line with this updated modelling, the analysis herein assesses the same two scenarios, identified as follows:

- Scenario 1: Interim (2031) – assumes partial (approximately 75%) development of the Yarrabilba Masterplan excluding some precincts to the south and east predominantly. This scenario also assumes no external road connections to the south via Plunkett Road are constructed.
    - Used to establish the interim access intersection forms for Precinct 6.
- Scenario 2: Ultimate – which assumes the full development of the wider Yarrabilba Masterplan, with a completed external road network in line with the Movement IMP (including a future connection to the Southern Infrastructure Corridor).
    - Used to establish the ultimate access intersection forms for Precinct 6.

4.2 Trunk Road Background Traffic Volumes

For the purposes of the following analysis, the traffic volumes on Town Centre North-South Road and Ridge East-West Link for both scenarios were obtained from the 2018 modelling volumes (as reported in the *Yarrabilba Master Plan Development Traffic Model and Intersection Analysis Data Compendium* (SLR, November 2019)).

4.3 Precinct 6 Development Traffic Assumptions

4.3.1 Traffic Generation

In line with previous assessments, a traffic generation rate of 0.7vph/lot has been applied to the development yield in Precinct 6.

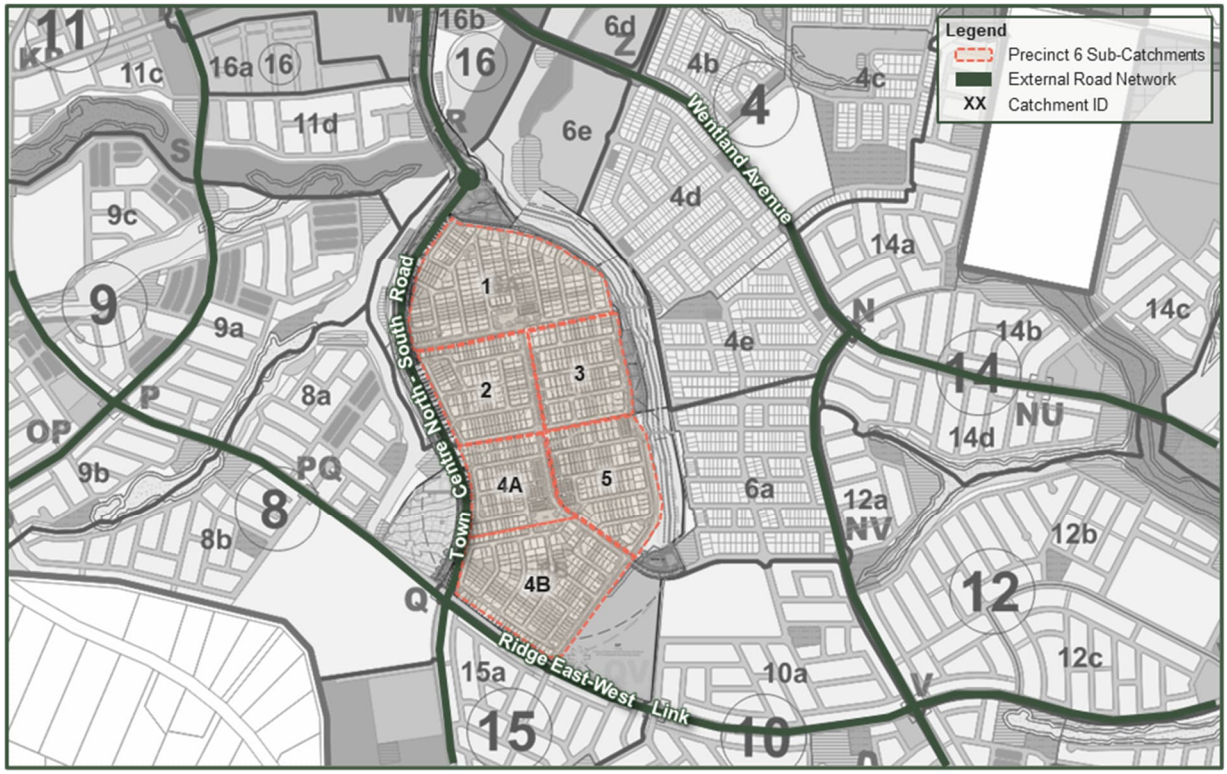
Table 1 Precinct 6 Trip Generation – Residential

Sub-Precinct	Number of Lots	AM Trip Rate	PM Trip Rate	AM Trips	PM Trips
A	559	0.7 per lot	0.7 per lot	392	392
B	470			329	329
Total	**1029**	**-**	**-**	**721**	**721**

4.3.2 Trip Distribution

To quantify the traffic movements at the two site access points, Precinct 6 has been divided into smaller sub-catchments for the purposes of distribution. The identified sub-catchments can be seen in **Figure 7**.

Figure 7 Precinct 6 Sub-Catchments



The distribution of traffic generated by Precinct 6 has been assigned to the external road network consistent with the distribution assumptions adopted in the previously approved trigger analysis, with additional consideration given to the routing of traffic via the Ridge East-West Link. These distribution assumptions have been reproduced in **Table 2** for the interim scenarios, and **Table 3** for the ultimate scenario.

To ensure conservative (worst case) analysis of the intersection capacity on Town Centre North-South Road, traffic assignment to/from the south-east via the collector street along the southern edge of Precinct 6a (see **Figure 7**) has been ignored.

Table 2 Distribution of Precinct 6 Traffic – Interim (2031)

Sub-Catchment Number	To / From Town Centre North-South Road	To / From Ridge East-West Road
1	100%	0%
2	100%	0%
3	100%	0%
4A	100%	0%
4B	10%	90%
5	100%	0%

Table 3 Distribution of Precinct 6 Traffic – Ultimate

Sub-Catchment Number	To / From Town Centre North-South Road	To / From Ridge East-West Road
1	100%	0%
2	100%	0%
3	100%	0%
4A	70%	30%
4B	10%	90%
5	70%	30%

4.3.3 In / Out Split

Typical industry adopted in / out splits have been adopted for the residential component within the Precinct 6 development, summarised in **Table 4**.

Table 4 In / Out Split

Peak Period	Residential Trips	
	IN	OUT
AM	20%	80%
PM	70%	30%

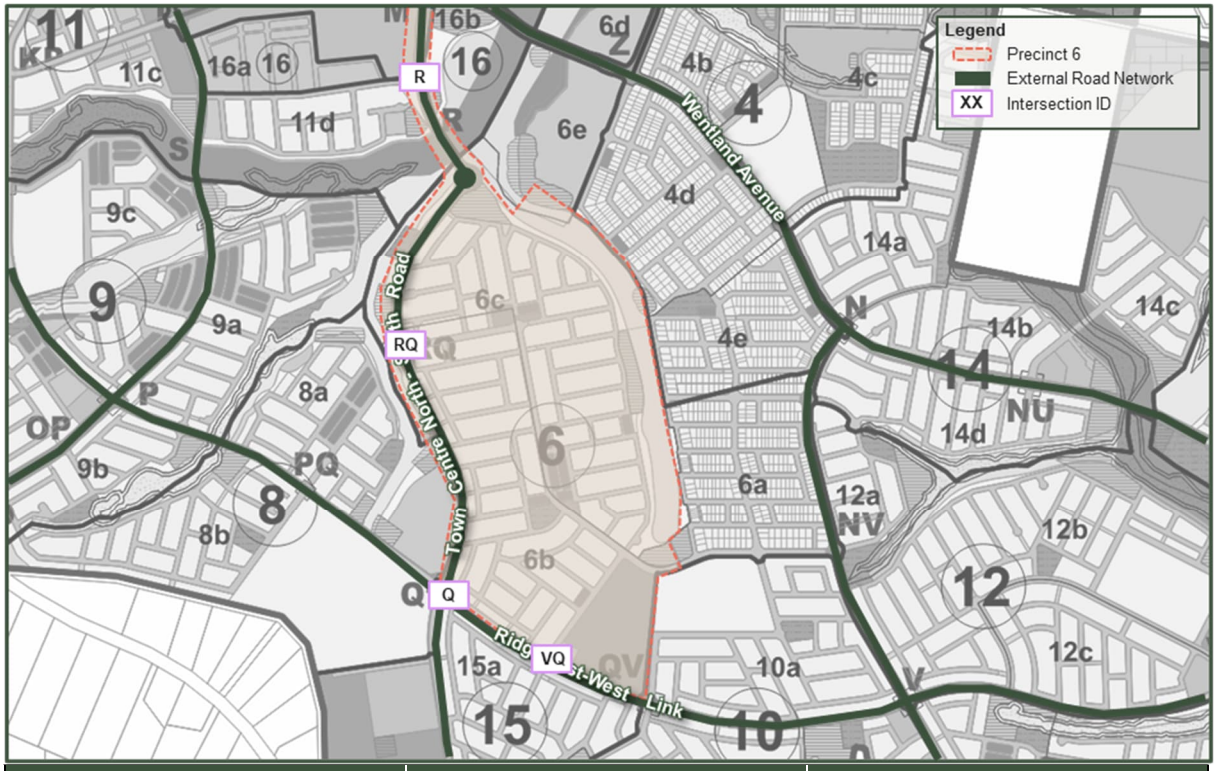
The resultant traffic volume diagrams have been included in **Appendix C**.

4.4 Study Intersections

The following analysis considers the four (4) intersections identified providing access for, and adjacent to, Precinct 6. The intersection locations, along with their interim and ultimate form allocation are identified in **Figure 8**.

It is noted that, subject to planning design of Precinct 15, intersection VQ may become a 4-way intersection (i.e., a southern leg may be added). The assessment herein ignores that southern leg, which would be considered as part of Precinct 15.

Figure 8 Study Intersections



ID	Interim Form	Ultimate Form
R*		
RQ		
Q		 (4 way)
VQ**		

* subject to development and road connection immediately west of Town Centre North-South Road.

** potential for this intersection to ultimately become a 4-way, subject to Precinct 15 design.

4.5 Scenario 1 – Interim

The general interim intersection forms of key intersections within Precinct 6 have adopted the ultimate road hierarchy and cross-sectional requirements of the major roads identified in the Movement IMP. The key roads and the lane capacity requirements have been summarised in **Table 5**.

Table 5 Ultimate Lane Capacity Requirements

Road Name	Link Location	Proposed Traffic Lanes
Town Centre North-South Road	North of R	4 Lanes
	R – RQ	4 Lanes
	RQ – Q	2 Lanes
	South of Q	2 Lanes
Ridge East-West Road	West of Q	2 Lanes
	Q – V	2 Lanes
	East of V	2 Lanes

The performance of all key intersections has been assessed in SIDRA Intersection 9.1 to establish the operational performance of the proposed layout. Detailed outputs for Scenario 1 (Interim), including intersection layout plans and movement summaries, have been provided in **Appendix D**. A summary of the results is provided in **Table 6**.

Table 6 Summary of Interim Intersection Results

Intersection Location	Control Type	Operational Element	AM Peak	PM Peak
Node R	Signals	DoS	0.45	0.35
		Average Delay (s)	30	27
		95th%ile queue (m)	82	59
Node RQ	Priority Controlled	DoS	0.75	0.35
		Critical Delay (s)	16	12
		95th%ile queue (m)	66	13
Node Q	Priority Controlled (T-junction)	DoS	0.18	0.15
		Critical Delay (s)	10	8
		95th%ile queue (m)	6	4
Node VQ	Priority Controlled	DoS	0.15	0.06
		Critical Delay (s)	8	8
		95th%ile queue (m)	4	2

The performance of all key intersections within Precinct 6 in the interim scenario (Scenario 1) is within the maximum operating parameters for signalised (maximum DoS 0.90) and unsignalised (maximum DoS 0.80) intersections.

4.6 Scenario 2 – Ultimate

The performance of all intersections for the ultimate scenario has been assessed in SIDRA 9.1. The analysis results are summarised in **Table 7**, with the detailed outputs (including intersection layout plans) provided in **Appendix E**.

Table 7 Summary of Ultimate Intersection Results

Intersection Location	Control Type	Operational Element	AM Peak	PM Peak
Node R	Signals	DoS	0.58	0.58
		Average Delay (s)	26	23
		95th%ile queue (m)	79	56
Node RQ	Signals	DoS	0.75	0.68
		Average Delay (s)	27	25
		95th%ile queue (m)	71	62
Node Q	Signals (4 way)	DoS	0.81	0.79
		Average Delay (s)	34	33
		95th%ile queue (m)	93	59
Node VQ	Priority Controlled	DoS	0.16	0.12
		Critical Delay (s)	9	9
		95th%ile queue (m)	4	3

The results reported in **Table 7** confirm that the performance of all intersections within Precinct 6 in the ultimate scenario (Scenario 2) are within the adopted maximum operating parameters.

The functional drawings for Precinct 6 have been prepared by KN Group to provide sufficient road reserve allocation to accommodate the necessary road and intersection configurations.

4.7 Intersection RQQ SIDRA Analysis

Intersection Node RQQ sits along Town Centre North-South Road and is adjacent to the Precinct 6 ROL 2 development. In the future, it will likely service a small residential catchment from within sub-precinct 8A. This intersection will be considered in more detail as part of a future application associated with Precinct 8, however, it is pertinent to assess its operational performance now, to understand the footprint required for this intersection in its ultimate state, while the design of Town Centre North-South Road is currently underway. The location of Node RQQ is depicted within **Figure 9**.

Figure 9 Node RQQ Intersection Location



4.7.1 Traffic Generation

In line with previous assessments, a traffic generation rate of 0.7vph/lot has been applied to the development yield for the subject sub-precinct. Lendlease has informed SLR that the sub-precinct served by Node RQQ will likely consist of 40 to 45 residential allotments. For the purposes of this assessment, a development yield of 45 lots has been adopted. The resultant traffic generation for this sub-precinct is provided in **Table 8**.

Table 8 Precinct 8 Trip Generation – Residential

Sub-Precinct	Number of Lots	AM Trip Rate	PM Trip Rate	AM Trips	PM Trips
8	45	0.7 per lot	0.7 per lot	32	32
Total	**45**	**-**	**-**	**32**	**32**

4.7.2 Trip Distribution

To ensure the design of Town Centre North-South Road accounts for the ultimate intersection footprint, only the Ultimate development scenario has been assessed herein. The trip distribution to/from the subject sub-precinct during the Ultimate scenario is provided in **Table 9**.

Table 9 Distribution of Sub-Precinct 8 Traffic – Ultimate

Sub-Catchment	To / From Town Centre North-South Road	To / From Ridge East-West Road
8A	70%	30%

4.7.3 In / Out Split

Typical industry adopted in / out splits have been adopted for the residential component within the Precinct 8 development, summarised in **Table 10**.

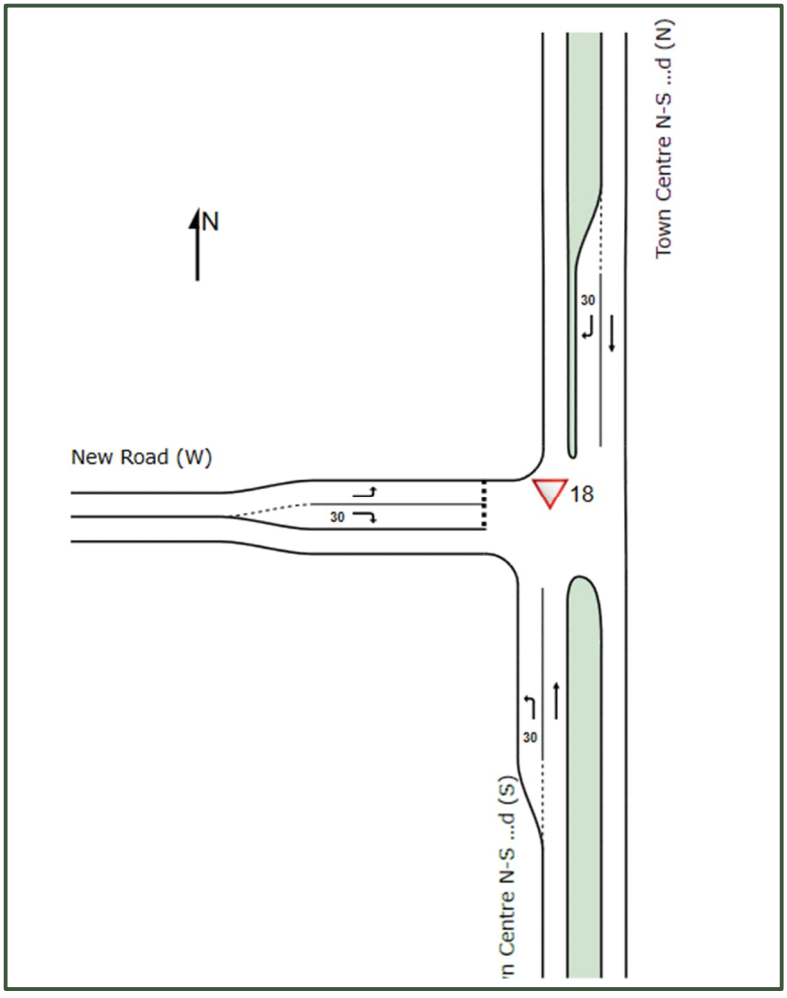
Table 10 In / Out Split

Peak Period	Residential Trips	
	IN	OUT
AM	20%	80%
PM	70%	30%

4.7.4 Intersection Layout

A priority-controlled intersection layout has been adopted for this assessment. Further detail is presented within **Figure 10**.

Figure 10 Node RQQ (Town Centre North-South Rd / Sub-Precinct 8 Access Road)



4.7.5 SIDRA Analysis Results

The performance of intersection RQQ for the ultimate scenario has been assessed in SIDRA 9.1. The analysis results are summarised in **Table 11**, with the detailed outputs provided in **Appendix F**.

Table 11 Node RQQ SIDRA Results

Intersection Location	Control Type	Operational Element	AM Peak	PM Peak
Node RQQ	Priority Controlled	DoS	0.26	0.19
		Critical Delay (s)	15	12
		95th%ile queue (m)	1	1

The results contained within **Table 11** demonstrate that Node RQQ is expected to operate within typically adopted performance thresholds as a priority-controlled intersection, for the Ultimate design horizon.

5.0 Summary

The following summarises the key conclusions in respect of the traffic and transport aspects of Precinct 6 ROL 2 (including the assessment of Node RQQ) and consider the need for consistency with the Movement Infrastructure Master Plan (MIMP):

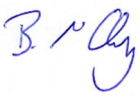
- Road Hierarchy – The network of roads within and adjacent to Precinct 6 is consistent with the road hierarchy identified in both the Endorsed MIMP (2019) and the Current MIMP (2022). The proposed network of roads is appropriate for the proposed ROL 2 development, the future Precinct 6 development, and the overall Yarrabilba development.
- Key Intersections – The design form of key intersections within Precinct 6 and the sub-precinct of 8A, providing connections to/from each sub-precinct, is appropriate to accommodate the anticipated traffic volumes. Adequate allowance has been made in these intersection forms to facilitate the needs of the ultimate Yarrabilba development.
- Local Street Network – The local street network has been designed to achieve good street design principles, particularly related to local traffic speeds and active transport needs.
- Cross Sections – The proposed cross sections in ROL 2, whilst differing in some aspects, are generally consistent with the Endorsed MIMP (2019) and the Current MIMP (2022). The transport functions of these MIMP's are achieved by the proposed cross sections.
- Active Transport – The active transport provisions are consistent with, and better than, that identified in both the Endorsed MIMP (2019) and the Current MIMP (2022) and these are appropriate to satisfy the needs of ROL 2 in conjunction with the surrounding development of Yarrabilba.
- Public Transport – The layout and design of streets within ROL 2 makes the appropriate provision for public transport (bus services) and potential bus stops. This is consistent with that identified in both the Endorsed MIMP (2019) and the Current MIMP (2022).

6.0 RPEQ Certification

This traffic assessment and report has been prepared under the direction of Registered Professional Engineers of Queensland (**RPEQ**) and Road Safety Auditors (as accredited by TMR) who are experienced in traffic engineering, transport planning and road safety. The report is endorsed by these RPEQ's accordingly.

Sincerely,

SLR Consulting Australia Pty Ltd



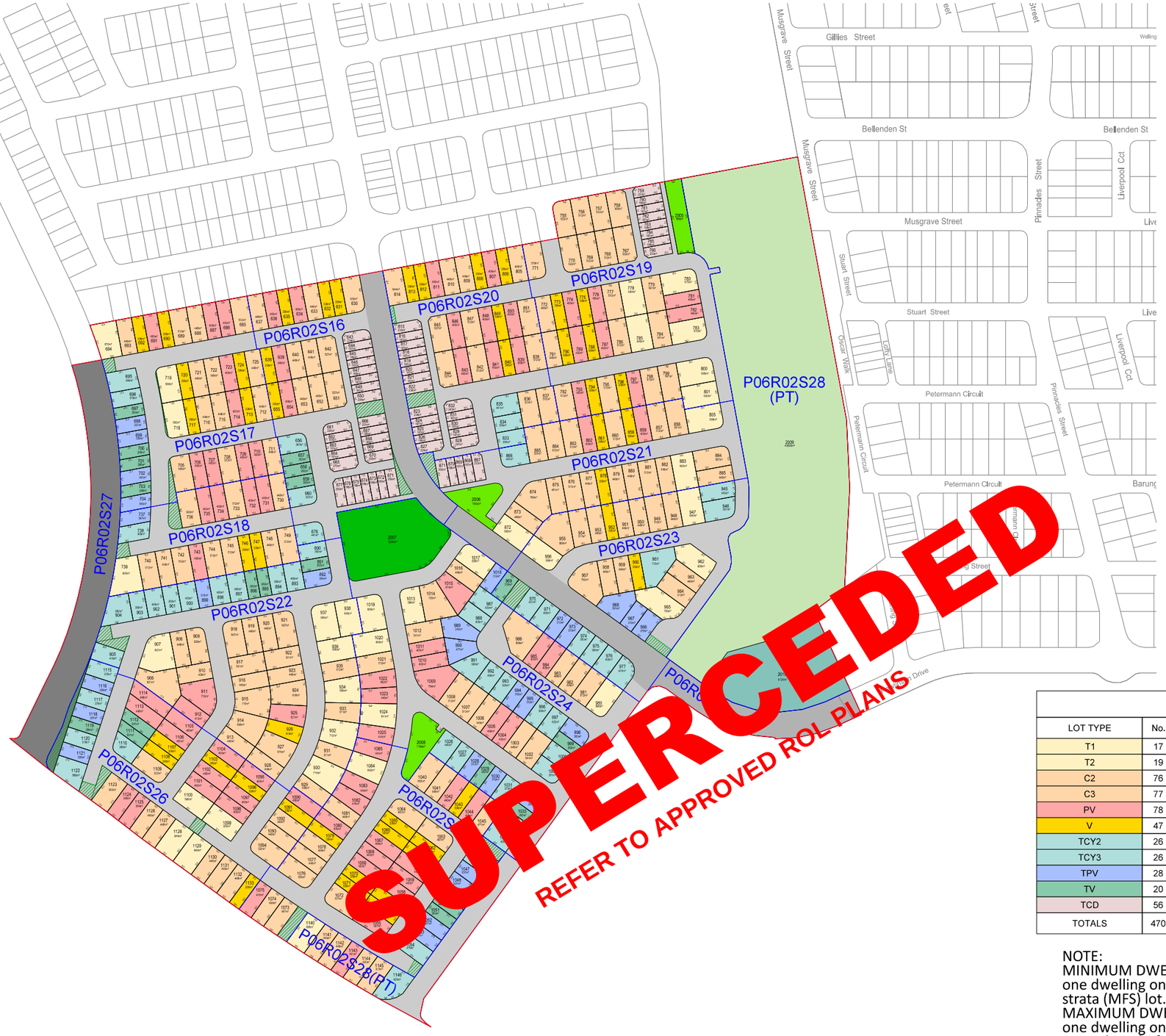


Brett McClurg, RPEQ #7628
Technical Director

Brendyn Rheinberger, RPEQ #17962
Principal Consultant

Appendix A Development Plans (RPS)

YARRABILBA



- PRECINCT SIX- APPLICATION TWO BOUNDARY
- STAGE BOUNDARY
- OPEN SPACE - LINEAR AND STORMWATER QUALITY BASIN
- OPEN SPACE - NEIGHBOURHOOD RECREATION PARK
- OPEN SPACE - LOCAL RECREATION PARK
- LOCAL STAGE ROAD
- PATHWAY CONNECTION
- VILLAGE ROAD
- MAJOR ROAD

LAND USE	AREA (ha)
Residential	19.833 ha
Open Space - Local	0.315 ha
Open Space - Neighbourhood	0.529 ha
Open Space - Linear	4.982 ha
Road - Major Road	1.035 ha
Road - Village Road	1.447 ha
Road - Local Road	7.968 ha
TOTAL	36.109 ha

MINIMUM RESIDENTIAL DENSITY - 30.09 ha
470 dw
15.62 dw/ha

MAXIMUM RESIDENTIAL DENSITY - 30.09 ha
470 dw
15.62 dw/ha

LOT YIELD BY LOT TYPE

LOT TYPE	No.	No.%	AREA	AREA%	MINIMUM	MAXIMUM	AVERAGE
T1	17	3.62%	11487.33m²	5.79%	640.00m²	826.58m²	675.73m²
T2	19	4.04%	11965.06m²	6.03%	586.20m²	804.92m²	629.74m²
C2	76	16.17%	35261.82m²	17.78%	437.93m²	850.59m²	463.97m²
C3	77	16.38%	42251.37m²	21.30%	512.00m²	899.37m²	548.72m²
PV	78	16.60%	32775.37m²	16.53%	389.13m²	754.39m²	420.20m²
V	47	10.00%	15873.82m²	8.00%	336.00m²	417.82m²	337.74m²
TCY2	26	5.53%	9934.03m²	5.01%	350.00m²	508.48m²	382.08m²
TCY3	26	5.53%	11836.38m²	5.97%	398.88m²	769.87m²	455.25m²
TPV	28	5.96%	9936.89m²	5.01%	312.50m²	591.02m²	354.89m²
TV	20	4.26%	5588.46m²	2.82%	262.50m²	336.81m²	279.42m²
TCD	56	11.91%	11421.99m²	5.76%	186.49m²	271.50m²	203.96m²
TOTALS	470	100%	198332.51m²	100%	186.49m²	899.37m²	421.98m²

NOTE:
MINIMUM DWELLINGS is based on the development of one dwelling on each single family and multi-family strata (MFS) lot.
MAXIMUM DWELLINGS is based on the development of one dwelling on each single family lot, and three dwellings on each multi family strata (MFS).

DENSITY calculations include the area of residential lots, local roads and credited park. The boundaries, roads and pathways shown hereon are subject to detailed engineering design, final survey and approval of subsequent development applications by the relevant authorities.

PRECINCT 06 - APPLICATION TWO
RECONFIRGUATION OF A LOT

NOTE: This plan is indicative only, and specific uses, road alignment, boundaries, setbacks, and building layout shown may vary due to detailed design consideration. ©2023 Lendlease Communities (Australia).
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0 40 80 120 160 200m

Scale 1:4,000 at A3

North

lendlease

File No. YAR-P06 Dgn No. YAR-P06-ROL2-POD-230825 SHT 1 OF 3 Date 25 SEPT 2023

Appendix B Functional Plans (KN Group)

Appendix B Removed. Refer to approved functional design plans

Appendix C Traffic Volume Diagrams

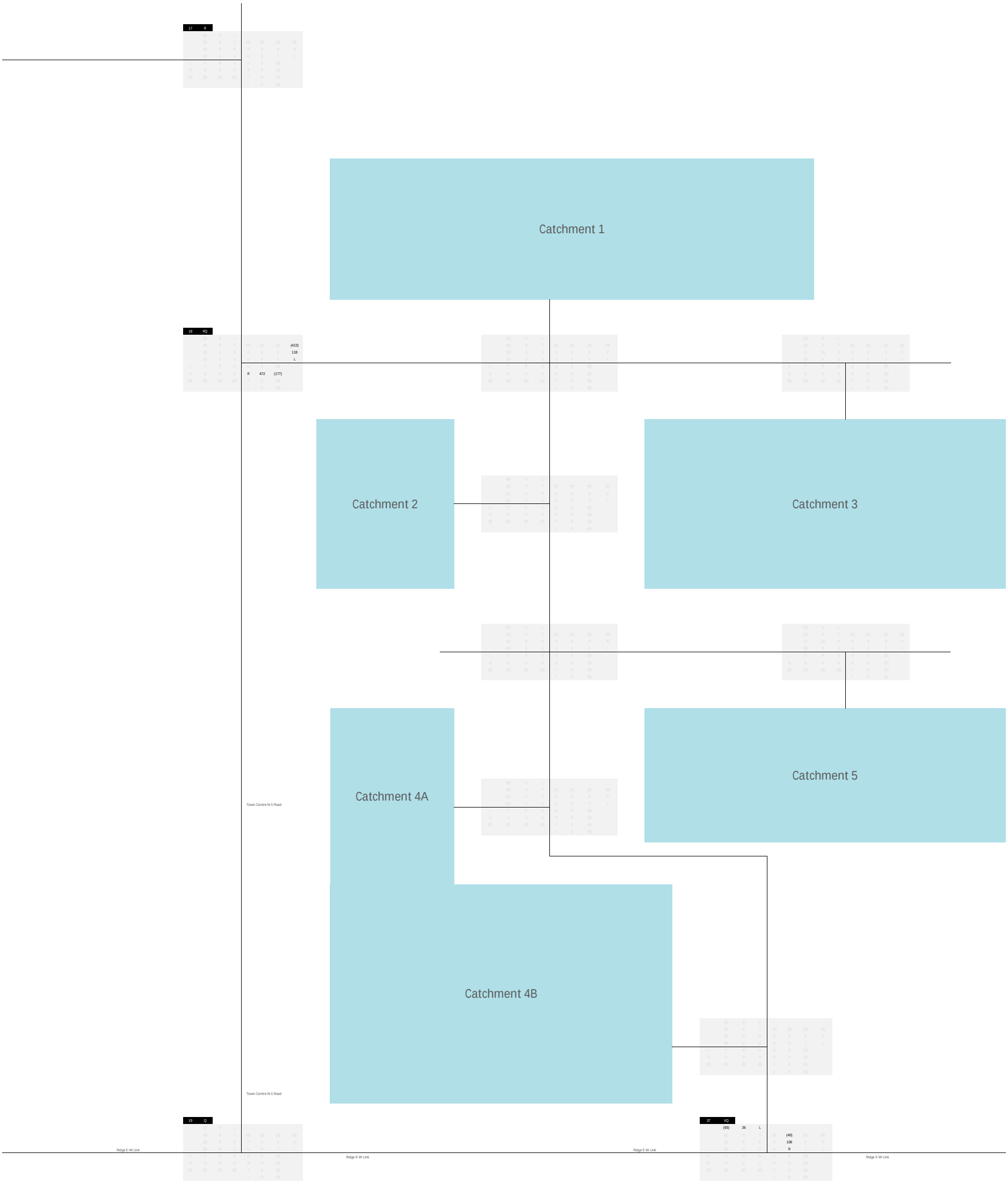


Figure 1

Interim Development Volumes

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

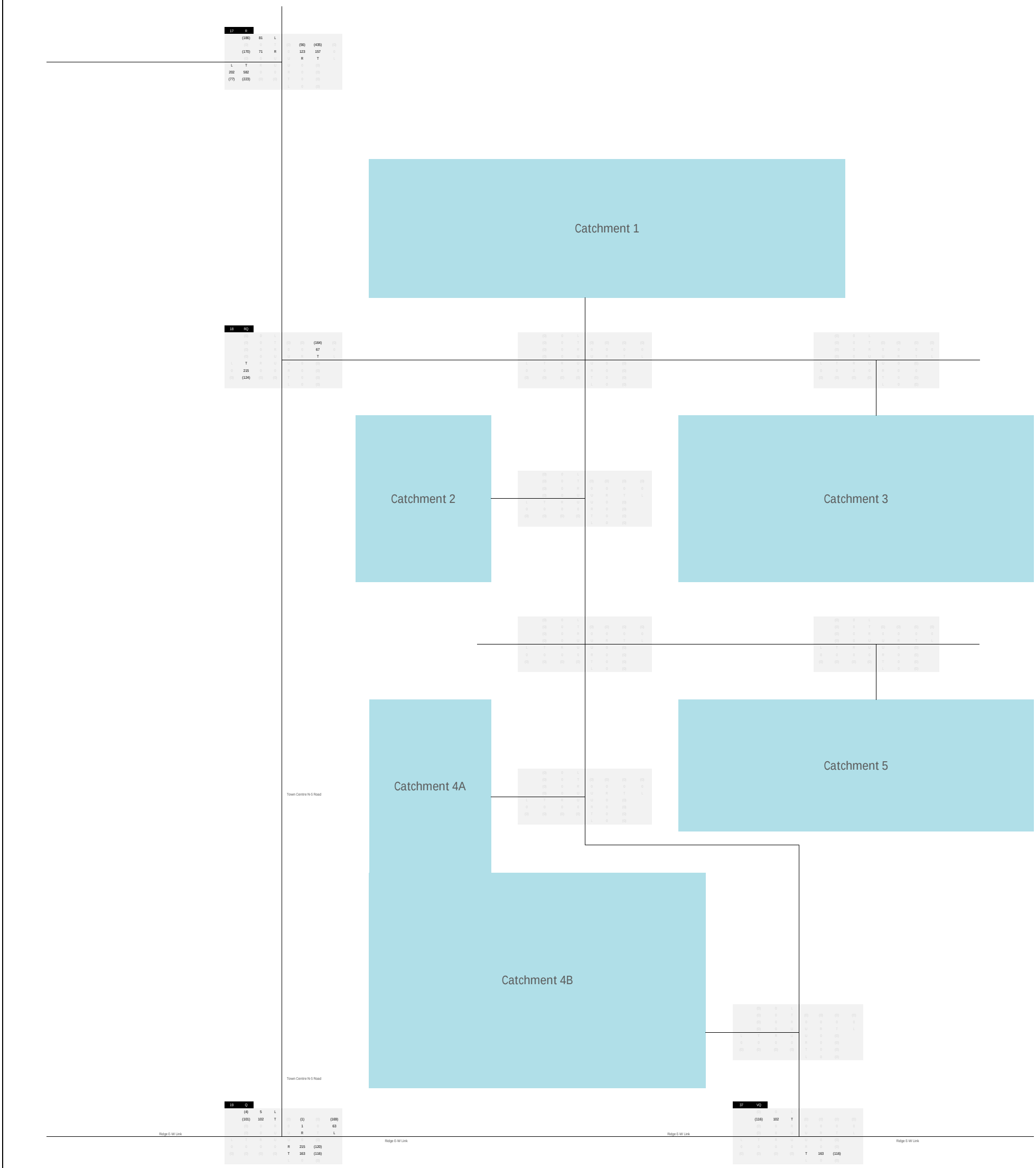


Figure 2

2031 Background Traffic Volumes

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

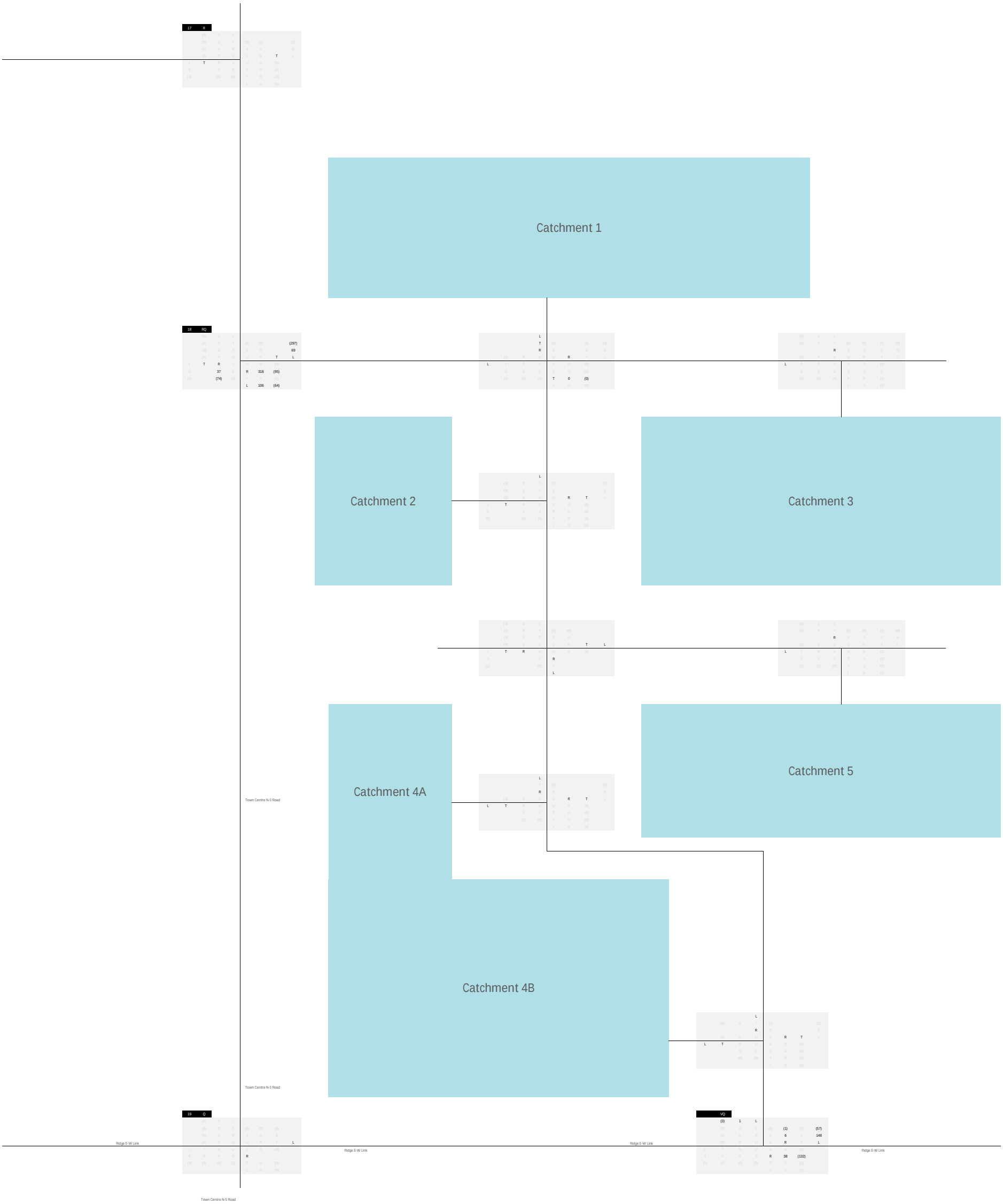


Figure 3

Ultimate Development Volumes

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

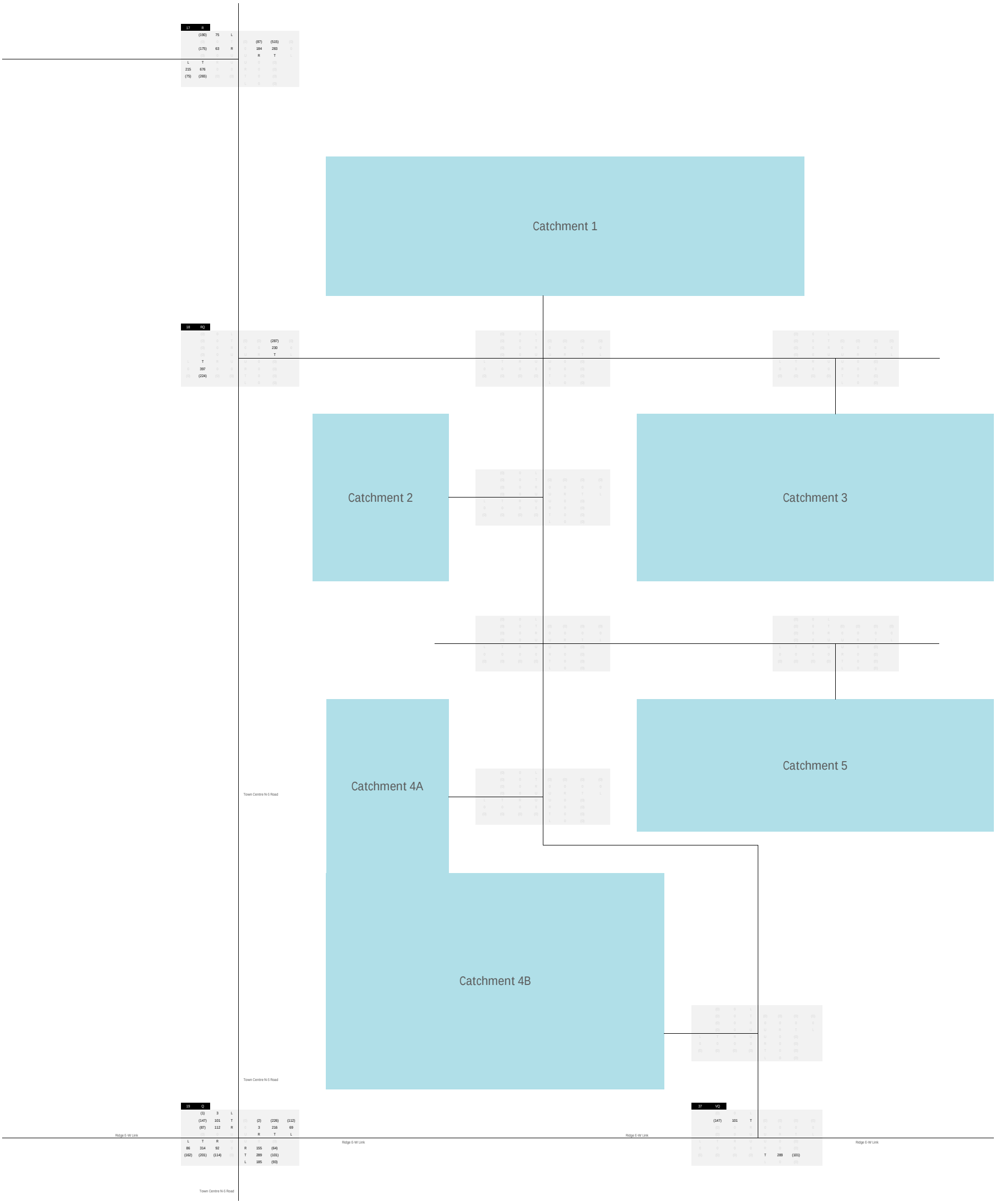


Figure 4

Ultimate Background Traffic Volumes

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

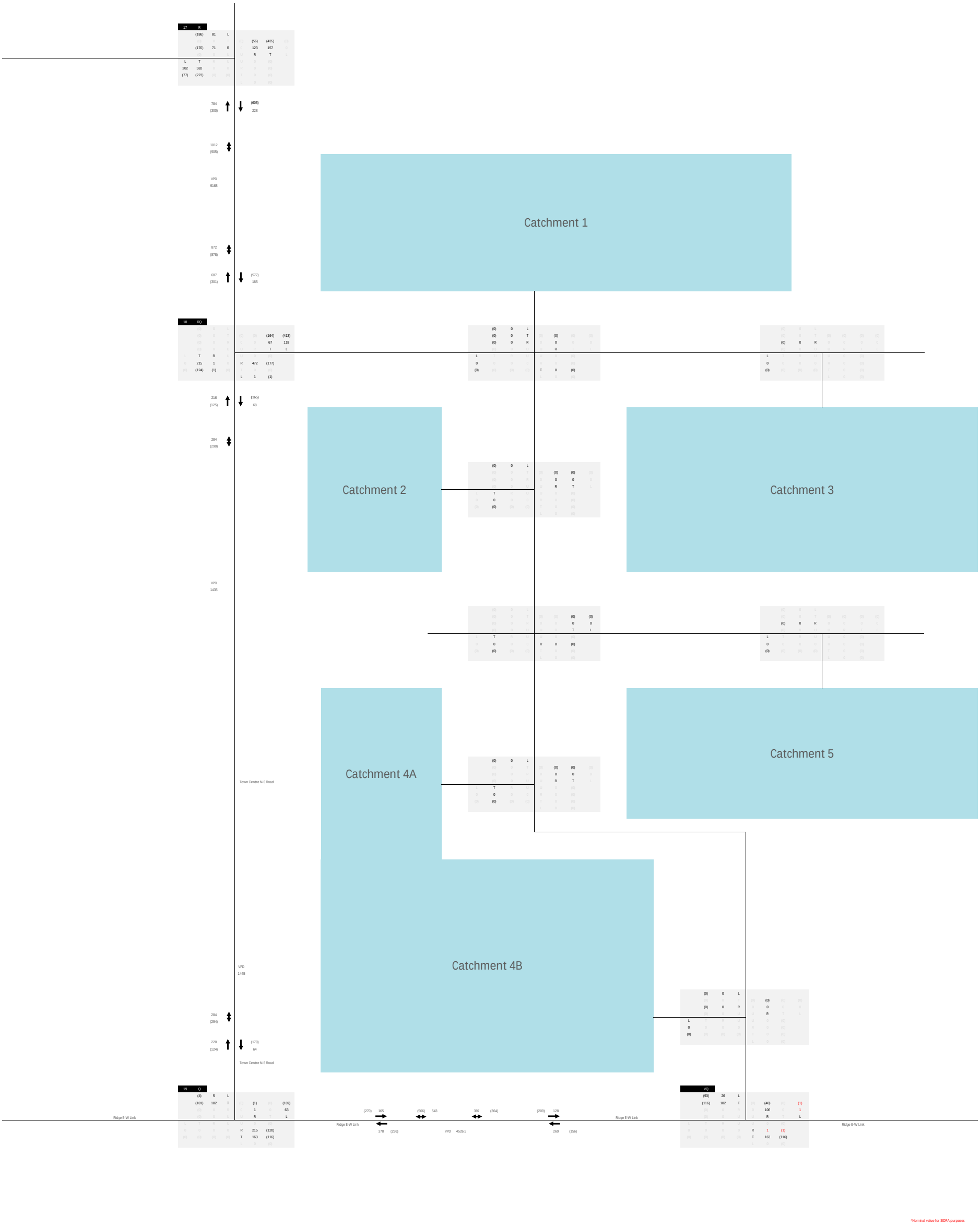


Figure 5

2031 Background Traffic Volumes with Development

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L	Left Turn
T	Through
R	Right Turn
U	U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

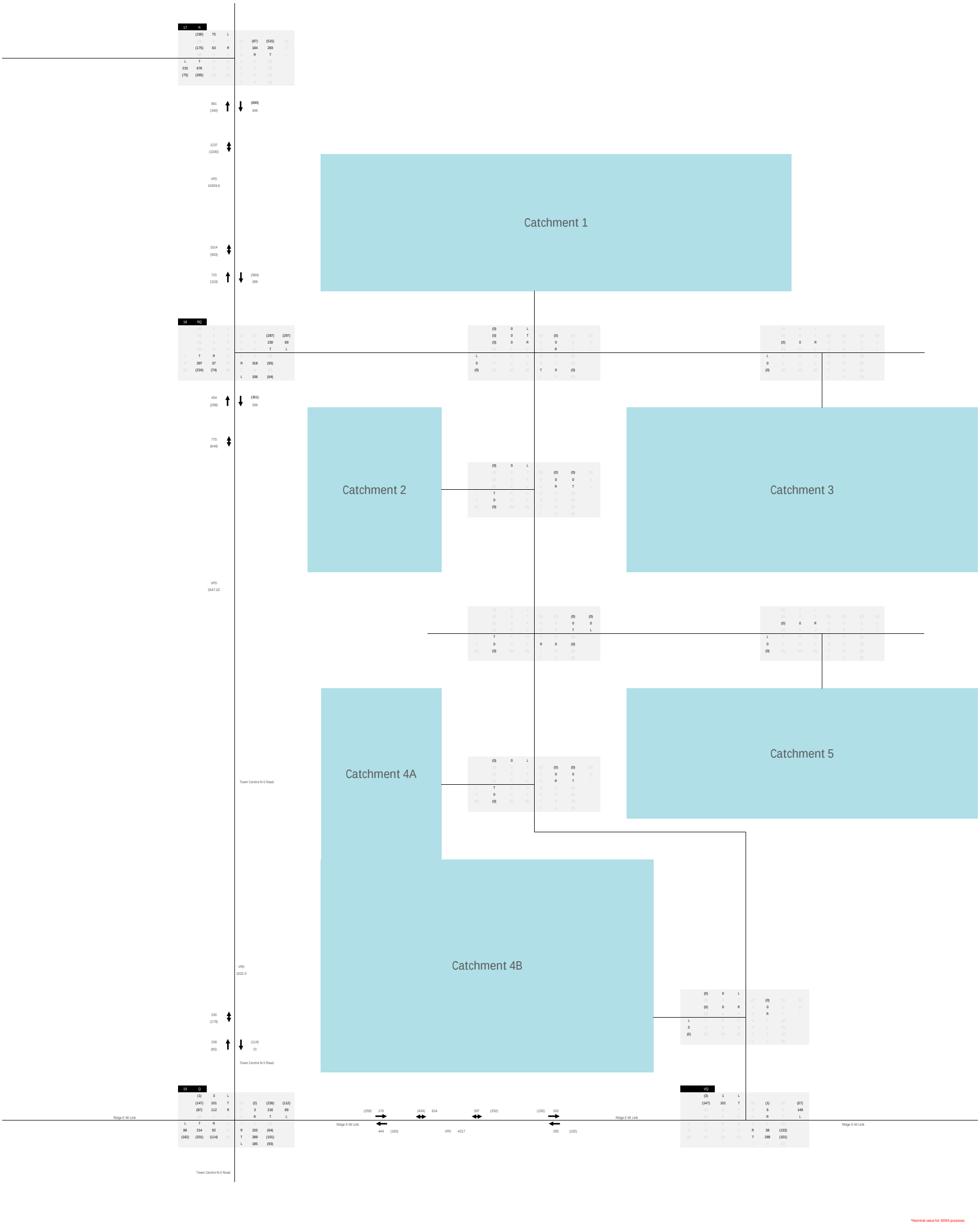


Figure 6

Ultimate Background Traffic Volumes with Development

620.V11743

Precinct 6 ROL 1 - Yarrabilba Masterplan

Legend

L Left Turn
T Through
R Right Turn
U U-Turn

00 Weekday AM Peak Hour Volumes
(00) Weekday PM Peak Hour Volumes

Subject Site

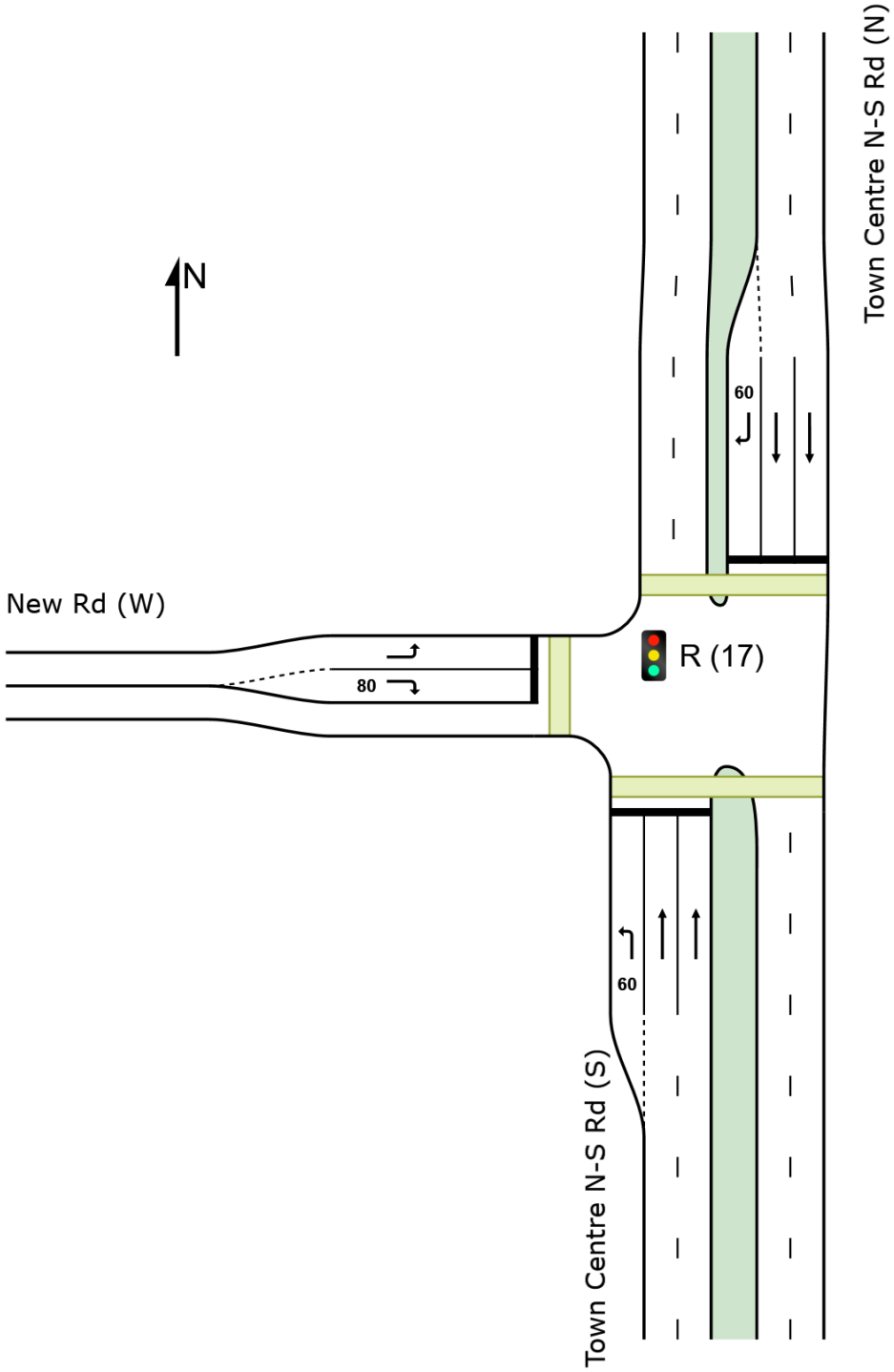
Appendix D Detailed Sidra Outputs Scenario 1 (Interim)

SITE LAYOUT

Site: R (17) [2031 AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: R (17) [2031 AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	213	3.0	213	3.0	*0.433	38.4	LOS D	8.7	62.2	0.88	0.80	0.88	35.8
2	T1	All MCs	613	3.0	613	3.0	*0.445	26.2	LOS C	11.4	81.8	0.81	0.69	0.81	41.9
Approach			825	3.0	825	3.0	0.445	29.4	LOS C	11.4	81.8	0.83	0.72	0.83	40.1
North: Town Centre N-S Rd (N)															
8	T1	All MCs	165	3.0	165	3.0	0.120	22.8	LOS C	2.7	19.2	0.70	0.56	0.70	43.6
9	R2	All MCs	129	3.0	129	3.0	*0.375	44.4	LOS D	5.6	40.4	0.92	0.78	0.92	33.9
Approach			295	3.0	295	3.0	0.375	32.3	LOS C	5.6	40.4	0.80	0.66	0.80	38.7
West: New Rd (W)															
10	L2	All MCs	85	3.0	85	3.0	0.090	18.4	LOS B	2.1	14.8	0.53	0.69	0.53	44.6
12	R2	All MCs	75	3.0	75	3.0	0.152	35.6	LOS D	2.8	20.0	0.80	0.74	0.80	37.0
Approach			160	3.0	160	3.0	0.152	26.4	LOS C	2.8	20.0	0.66	0.71	0.66	40.7
All Vehicles			1280	3.0	1280	3.0	0.445	29.7	LOS C	11.4	81.8	0.80	0.71	0.80	39.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	59.7	20.0	0.34
North: Town Centre N-S Rd (N)												
P3	Full	50	53	38.8	LOS D	0.1	0.1	0.88	0.88	54.2	20.0	0.37
West: New Rd (W)												
P4	Full	50	53	25.3	LOS C	0.1	0.1	0.71	0.71	40.6	20.0	0.49
All Pedestrians		150	158	36.1	LOS D	0.1	0.1	0.85	0.85	51.5	20.0	0.39

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: R (17) [2031 AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

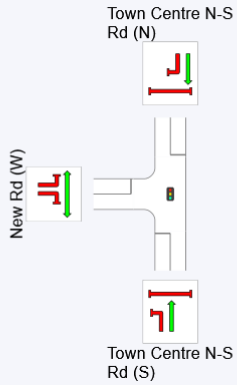
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	42	67
Green Time (sec)	36	19	27
Phase Time (sec)	42	25	33
Phase Split	42%	25%	33%
Phase Frequency (%)	100.0	100.0	100.0

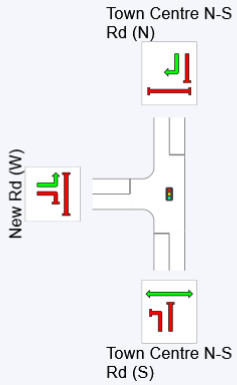
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

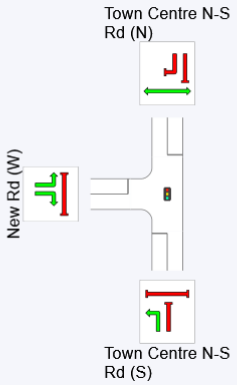
Phase A **REF**



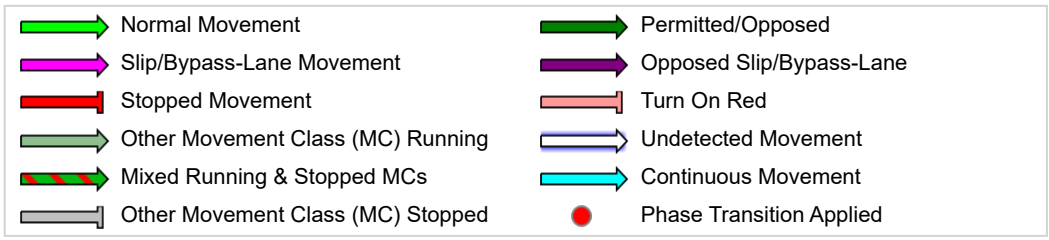
Phase B



Phase C



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: R (17) [2031 PM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	81	3.0	81	3.0	0.159	34.8	LOS C	3.0	21.4	0.79	0.74	0.79	37.1
2	T1	All MCs	235	3.0	235	3.0	0.175	24.1	LOS C	3.9	28.3	0.73	0.59	0.73	43.0
Approach			316	3.0	316	3.0	0.175	26.8	LOS C	3.9	28.3	0.75	0.63	0.75	41.3
North: Town Centre N-S Rd (N)															
8	T1	All MCs	458	3.0	458	3.0	* 0.342	25.8	LOS C	8.2	59.2	0.78	0.66	0.78	42.1
9	R2	All MCs	59	3.0	59	3.0	* 0.171	42.6	LOS D	2.4	17.5	0.87	0.74	0.87	34.4
Approach			517	3.0	517	3.0	0.342	27.7	LOS C	8.2	59.2	0.79	0.67	0.79	41.1
West: New Rd (W)															
10	L2	All MCs	196	3.0	196	3.0	0.203	18.7	LOS B	5.0	35.6	0.56	0.72	0.56	44.4
12	R2	All MCs	179	3.0	179	3.0	* 0.351	36.8	LOS D	7.0	50.4	0.84	0.78	0.84	36.6
Approach			375	3.0	375	3.0	0.351	27.4	LOS C	7.0	50.4	0.70	0.75	0.70	40.2
All Vehicles			1207	3.0	1207	3.0	0.351	27.4	LOS C	8.2	59.2	0.75	0.68	0.75	40.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	59.7	20.0	0.34
North: Town Centre N-S Rd (N)												
P3	Full	50	53	37.9	LOS D	0.1	0.1	0.87	0.87	53.3	20.0	0.38
West: New Rd (W)												
P4	Full	50	53	26.0	LOS C	0.1	0.1	0.72	0.72	41.4	20.0	0.48
All Pedestrians		150	158	36.1	LOS D	0.1	0.1	0.85	0.85	51.4	20.0	0.39

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: R (17) [2031 PM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

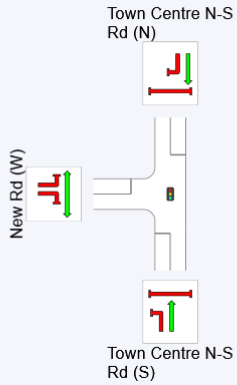
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	41	66
Green Time (sec)	35	19	28
Phase Time (sec)	41	25	34
Phase Split	41%	25%	34%
Phase Frequency (%)	100.0	100.0	100.0

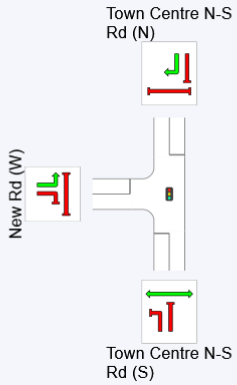
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

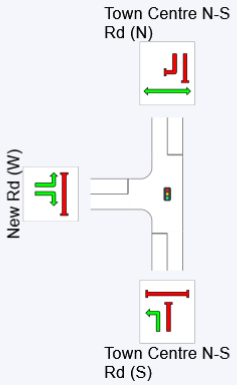
Phase A **REF**



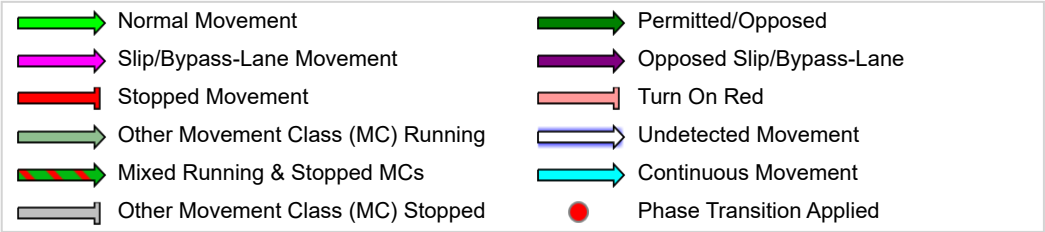
Phase B



Phase C



REF: Reference Phase
VAR: Variable Phase



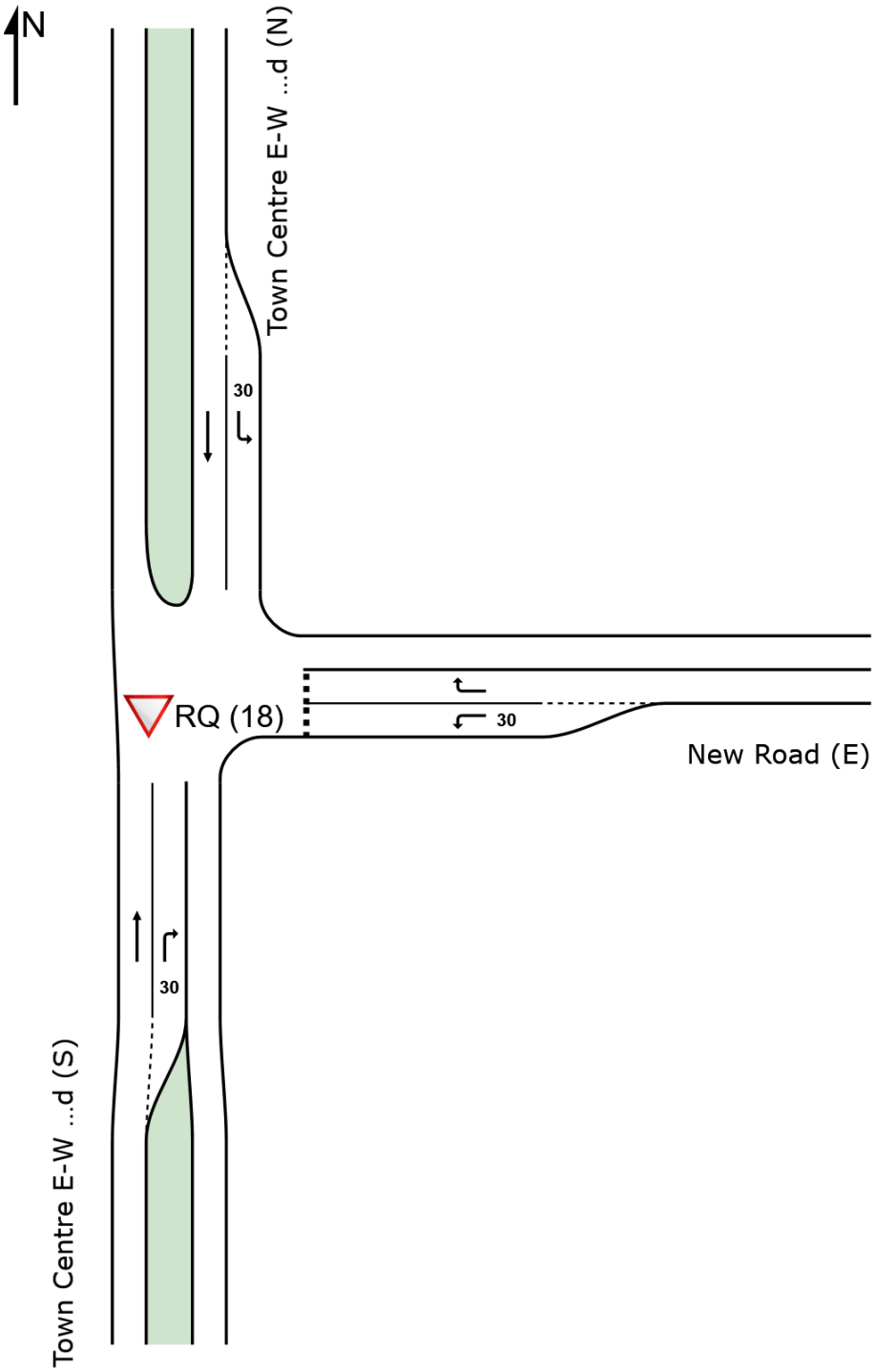
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SITE LAYOUT

Site: RQ (18) [2031 AM (Site Folder: RQ_18_TownCentreN-S_NewRoad)]

Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: RQ (18) [2031 AM (Site Folder: RQ_18_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre E-W Road (S)															
2	T1	All MCs	226	3.0	226	3.0	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	All MCs	1	3.0	1	3.0	0.001	6.2	LOS A	0.0	0.0	0.29	0.52	0.29	51.8
Approach			227	3.0	227	3.0	0.118	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: New Road (E)															
4	L2	All MCs	1	3.0	1	3.0	0.001	5.8	LOS A	0.0	0.0	0.15	0.53	0.15	52.3
6	R2	All MCs	497	3.0	497	3.0	0.745	16.0	LOS C	9.2	65.8	0.79	1.13	1.61	46.0
Approach			498	3.0	498	3.0	0.745	16.0	LOS C	9.2	65.8	0.79	1.13	1.61	46.0
North: Town Centre E-W Road (N)															
7	L2	All MCs	124	3.0	124	3.0	0.068	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
8	T1	All MCs	71	3.0	71	3.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			195	3.0	195	3.0	0.068	3.6	NA	0.0	0.0	0.00	0.37	0.00	55.2
All Vehicles			920	3.0	920	3.0	0.745	9.4	NA	9.2	65.8	0.43	0.69	0.87	50.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: RQ (18) [2031 PM (Site Folder: RQ_18_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre E-W Road (S)															
2	T1	All MCs	131	3.0	131	3.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
3	R2	All MCs	1	3.0	1	3.0	0.001	8.7	LOS A	0.0	0.0	0.53	0.60	0.53	50.4
Approach			132	3.0	132	3.0	0.068	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
East: New Road (E)															
4	L2	All MCs	1	3.0	1	3.0	0.001	6.2	LOS A	0.0	0.0	0.26	0.52	0.26	52.0
6	R2	All MCs	186	3.0	186	3.0	0.351	12.1	LOS B	1.7	12.5	0.63	0.87	0.79	48.3
Approach			187	3.0	187	3.0	0.351	12.1	LOS B	1.7	12.5	0.63	0.87	0.78	48.3
North: Town Centre E-W Road (N)															
7	L2	All MCs	435	3.0	435	3.0	0.239	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	52.7
8	T1	All MCs	173	3.0	173	3.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			607	3.0	607	3.0	0.239	4.0	NA	0.0	0.0	0.00	0.41	0.00	54.6
All Vehicles			926	3.0	926	3.0	0.351	5.1	NA	1.7	12.5	0.13	0.45	0.16	53.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

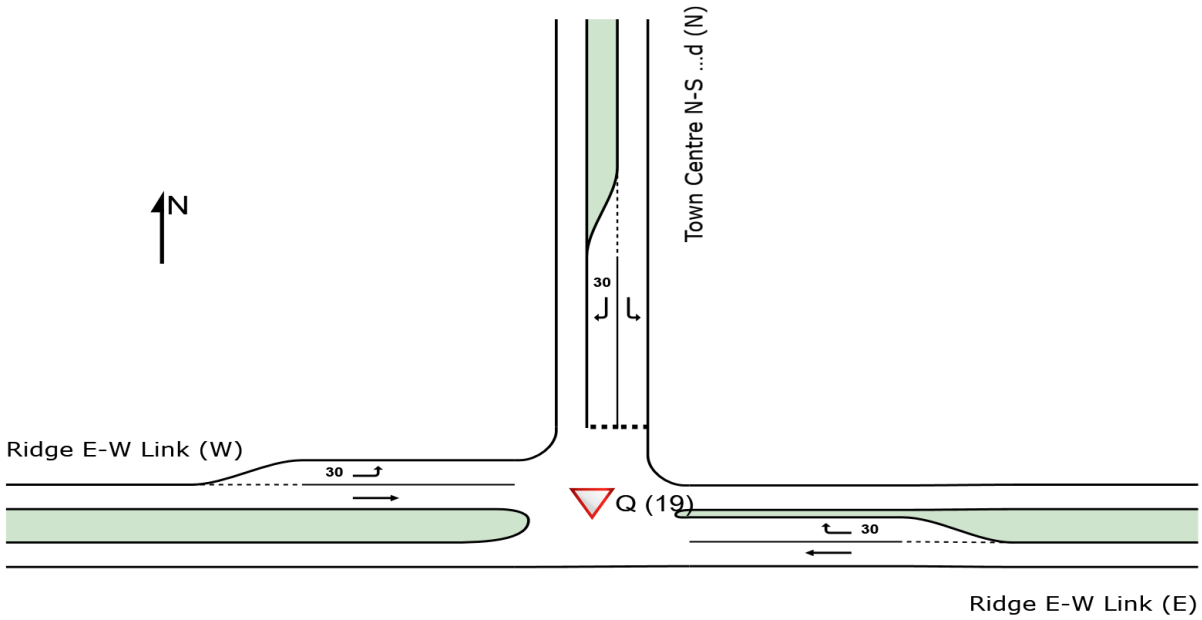
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SITE LAYOUT

Site: Q (19) [2031 AM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Priority intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: Q (19) [2031 AM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	172	3.0	172	3.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	226	3.0	226	3.0	0.178	6.1	LOS A	0.8	5.7	0.25	0.56	0.25	52.0
Approach			398	3.0	398	3.0	0.178	3.5	NA	0.8	5.7	0.14	0.32	0.14	55.1
North: Town Centre N-S Road (N)															
7	L2	All MCs	66	3.0	66	3.0	0.056	6.0	LOS A	0.2	1.5	0.20	0.55	0.20	52.1
9	R2	All MCs	1	3.0	1	3.0	0.002	9.6	LOS A	0.0	0.0	0.53	0.60	0.53	49.9
Approach			67	3.0	67	3.0	0.056	6.1	LOS A	0.2	1.5	0.21	0.55	0.21	52.1
West: Ridge E-W Link (W)															
10	L2	All MCs	5	3.0	5	3.0	0.003	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	107	3.0	107	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			113	3.0	113	3.0	0.056	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.6
All Vehicles			578	3.0	578	3.0	0.178	3.1	NA	0.8	5.7	0.12	0.29	0.12	55.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: Q (19) [2031 PM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	122	3.0	122	3.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	126	3.0	126	3.0	0.099	6.0	LOS A	0.4	3.0	0.23	0.56	0.23	52.0
Approach			248	3.0	248	3.0	0.099	3.1	NA	0.4	3.0	0.12	0.28	0.12	55.6
North: Town Centre N-S Road (N)															
7	L2	All MCs	178	3.0	178	3.0	0.150	6.1	LOS A	0.6	4.2	0.22	0.56	0.22	52.1
9	R2	All MCs	1	3.0	1	3.0	0.002	8.1	LOS A	0.0	0.0	0.45	0.55	0.45	51.0
Approach			179	3.0	179	3.0	0.150	6.1	LOS A	0.6	4.2	0.22	0.56	0.22	52.1
West: Ridge E-W Link (W)															
10	L2	All MCs	4	3.0	4	3.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	106	3.0	106	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			111	3.0	111	3.0	0.056	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles			538	3.0	538	3.0	0.150	3.5	NA	0.6	4.2	0.13	0.32	0.13	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

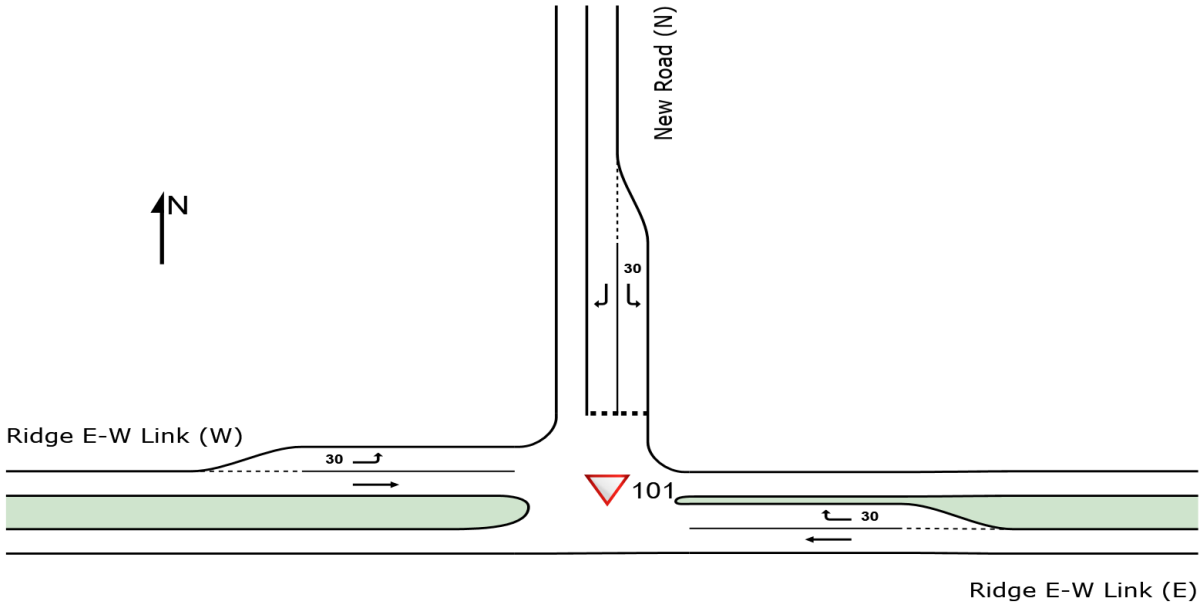
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SITE LAYOUT

Site: 101 [2031 AM (Site Folder: VQ_RidgeE-W_NewRoad)]

Priority intersection: Ridge E-W Link/New Rooad
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: \\au.slr.local\Corporate\Projects-SLR\620-BNE\620-BNE\620.11743 Yarrabilba Master Plan Development\06 SLR Data\Precinct 6\2023 05 16 - SLR - P6A (North) SIDRA Analysis\2023 05 - SIDRA\620.11743 Yarrabilba Precinct 6 Sidra 2023 06 19.sip9

MOVEMENT SUMMARY

Site: 101 [2031 AM (Site Folder: VQ_RidgeE-W_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Ridge E-W Link/New Rooad
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	172	3.0	172	3.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	3.0	1	3.0	0.001	6.0	LOS A	0.0	0.0	0.24	0.52	0.24	52.0
Approach			173	3.0	173	3.0	0.090	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: New Road (N)															
7	L2	All MCs	1	3.0	1	3.0	0.001	5.9	LOS A	0.0	0.0	0.20	0.52	0.20	52.2
9	R2	All MCs	112	3.0	112	3.0	0.152	8.0	LOS A	0.6	4.4	0.45	0.66	0.45	51.1
Approach			113	3.0	113	3.0	0.152	8.0	LOS A	0.6	4.4	0.45	0.66	0.45	51.1
West: Ridge E-W Link (W)															
10	L2	All MCs	27	3.0	27	3.0	0.015	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	107	3.0	107	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			135	3.0	135	3.0	0.056	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.4
All Vehicles			420	3.0	420	3.0	0.152	2.5	NA	0.6	4.4	0.12	0.22	0.12	56.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [2031 PM (Site Folder: VQ_RidgeE-W_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Ridge E-W Link/New Rooad
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	122	3.0	122	3.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	1	3.0	1	3.0	0.001	6.4	LOS A	0.0	0.0	0.31	0.52	0.31	51.8
Approach			123	3.0	123	3.0	0.064	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: New Road (N)															
7	L2	All MCs	1	3.0	1	3.0	0.001	6.0	LOS A	0.0	0.0	0.21	0.52	0.21	52.1
9	R2	All MCs	42	3.0	42	3.0	0.057	7.8	LOS A	0.2	1.6	0.42	0.63	0.42	51.2
Approach			43	3.0	43	3.0	0.057	7.7	LOS A	0.2	1.6	0.41	0.63	0.41	51.3
West: Ridge E-W Link (W)															
10	L2	All MCs	98	3.0	98	3.0	0.054	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	122	3.0	122	3.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			220	3.0	220	3.0	0.064	2.5	NA	0.0	0.0	0.00	0.26	0.00	56.5
All Vehicles			386	3.0	386	3.0	0.064	2.3	NA	0.2	1.6	0.05	0.22	0.05	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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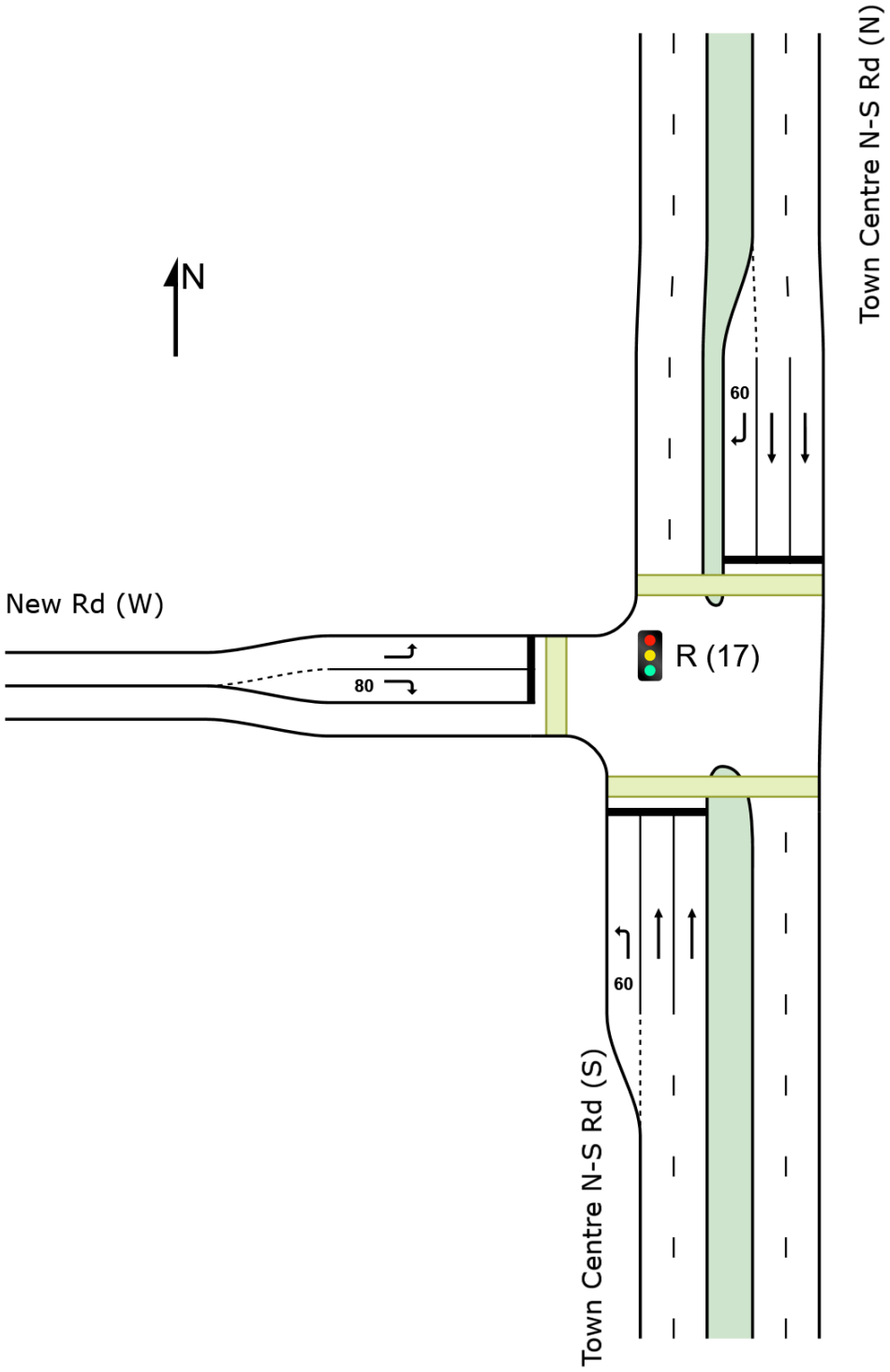
Appendix E Detailed Sidra Outputs Scenario 2 (Ultimate)

SITE LAYOUT

Site: R (17) [Ultimate AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: R (17) [Ultimate AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	226	3.0	226	3.0	* 0.583	35.1	LOS D	7.7	55.3	0.95	0.82	0.95	37.0
2	T1	All MCs	712	3.0	712	3.0	* 0.581	23.3	LOS C	11.1	79.4	0.89	0.76	0.89	43.4
Approach			938	3.0	938	3.0	0.583	26.2	LOS C	11.1	79.4	0.90	0.77	0.90	41.6
North: Town Centre N-S Rd (N)															
8	T1	All MCs	298	3.0	298	3.0	0.243	20.4	LOS C	4.1	29.1	0.78	0.63	0.78	44.9
9	R2	All MCs	194	3.0	194	3.0	* 0.470	33.4	LOS C	6.3	45.4	0.91	0.80	0.91	37.7
Approach			492	3.0	492	3.0	0.470	25.6	LOS C	6.3	45.4	0.83	0.70	0.83	41.7
West: New Rd (W)															
10	L2	All MCs	79	3.0	79	3.0	0.083	15.2	LOS B	1.4	10.3	0.53	0.69	0.53	46.3
12	R2	All MCs	66	3.0	66	3.0	0.171	32.1	LOS C	2.0	14.6	0.85	0.74	0.85	38.3
Approach			145	3.0	145	3.0	0.171	22.9	LOS C	2.0	14.6	0.68	0.71	0.68	42.3
All Vehicles			1575	3.0	1575	3.0	0.583	25.7	LOS C	11.1	79.4	0.86	0.74	0.86	41.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
North: Town Centre N-S Rd (N)												
P3	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
West: New Rd (W)												
P4	Full	50	53	22.5	LOS C	0.1	0.1	0.78	0.78	37.9	20.0	0.53
All Pedestrians		150	158	28.7	LOS C	0.1	0.1	0.87	0.87	44.1	20.0	0.45

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

PHASING SUMMARY

Site: R (17) [Ultimate AM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

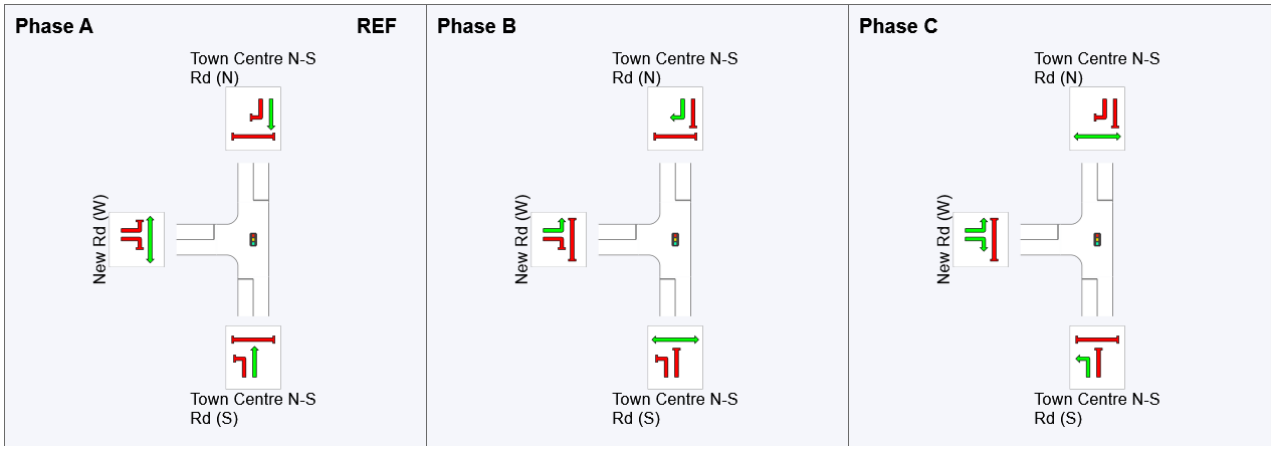
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

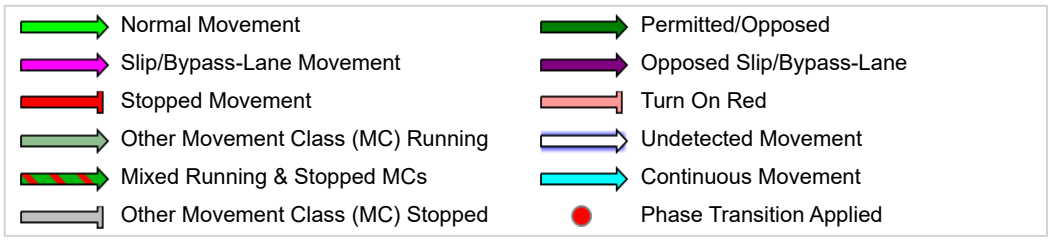
Phase	A	B	C
Phase Change Time (sec)	0	30	53
Green Time (sec)	24	17	16
Phase Time (sec)	30	23	22
Phase Split	40%	31%	29%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: R (17) [Ultimate PM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	79	3.0	79	3.0	0.188	27.8	LOS C	2.1	14.9	0.84	0.74	0.84	39.9
2	T1	All MCs	279	3.0	279	3.0	0.296	22.0	LOS C	3.7	26.5	0.85	0.69	0.85	44.0
Approach			358	3.0	358	3.0	0.296	23.3	LOS C	3.7	26.5	0.85	0.70	0.85	43.1
North: Town Centre N-S Rd (N)															
8	T1	All MCs	542	3.0	542	3.0	* 0.576	23.9	LOS C	7.8	56.1	0.93	0.78	0.93	43.0
9	R2	All MCs	92	3.0	92	3.0	* 0.205	27.1	LOS C	2.4	17.0	0.83	0.75	0.83	40.3
Approach			634	3.0	634	3.0	0.576	24.4	LOS C	7.8	56.1	0.92	0.77	0.92	42.6
West: New Rd (W)															
10	L2	All MCs	200	3.0	200	3.0	0.193	12.9	LOS B	3.1	22.0	0.51	0.71	0.51	47.8
12	R2	All MCs	184	3.0	184	3.0	* 0.439	29.5	LOS C	5.2	37.2	0.90	0.79	0.90	39.4
Approach			384	3.0	384	3.0	0.439	20.8	LOS C	5.2	37.2	0.70	0.75	0.70	43.3
All Vehicles			1376	3.0	1376	3.0	0.576	23.1	LOS C	7.8	56.1	0.84	0.75	0.84	42.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	26.8	LOS C	0.1	0.1	0.91	0.91	42.2	20.0	0.47
North: Town Centre N-S Rd (N)												
P3	Full	50	53	26.8	LOS C	0.1	0.1	0.91	0.91	42.2	20.0	0.47
West: New Rd (W)												
P4	Full	50	53	24.2	LOS C	0.1	0.1	0.86	0.86	39.6	20.0	0.51
All Pedestrians		150	158	25.9	LOS C	0.1	0.1	0.89	0.89	41.3	20.0	0.48

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

PHASING SUMMARY

Site: R (17) [Ultimate PM (Site Folder: R_17_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site Optimum Cycle Time - Minimum Delay)

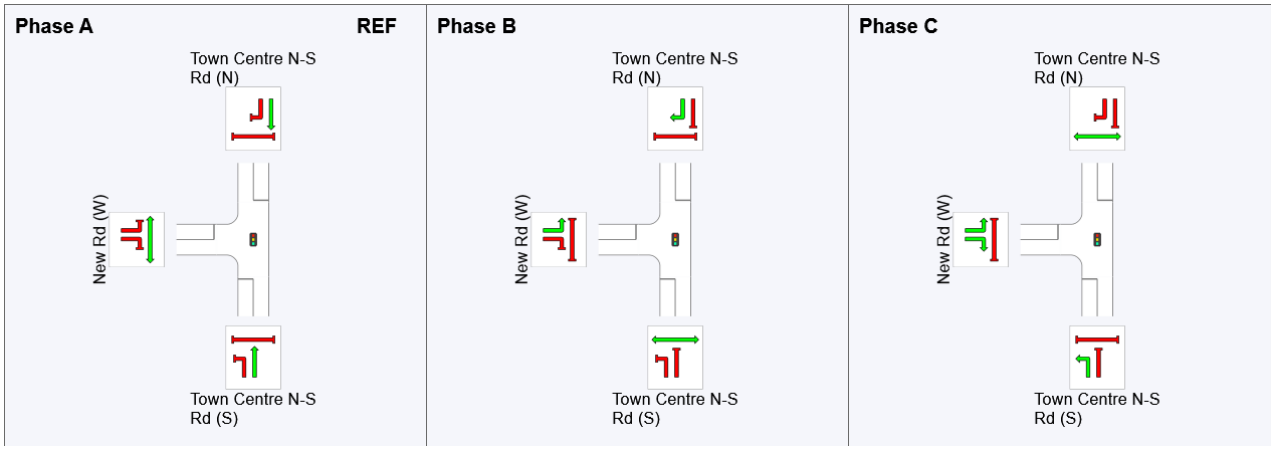
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

Phase Timing Summary

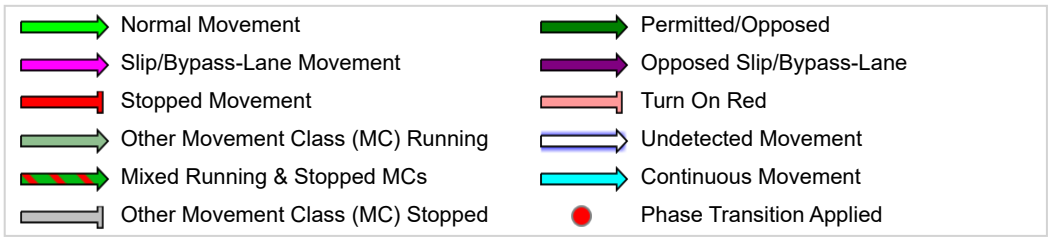
Phase	A	B	C
Phase Change Time (sec)	0	22	44
Green Time (sec)	16	16	15
Phase Time (sec)	22	22	21
Phase Split	34%	34%	32%
Phase Frequency (%)	100.0	100.0	100.0

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



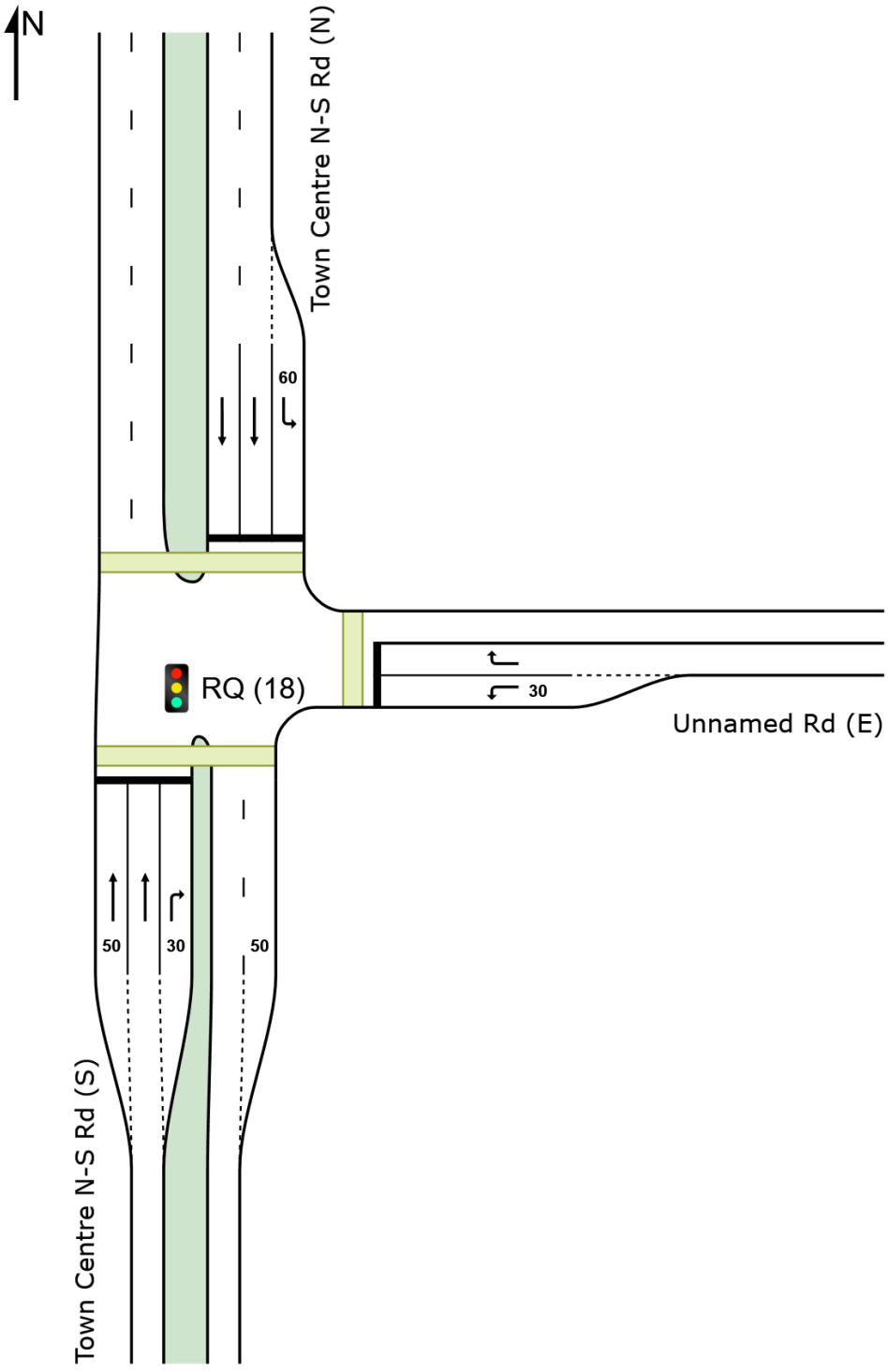
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SITE LAYOUT

Site: RQ (18) [Ultimate AM (Site Folder: General)]

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: RQ (18) [Ultimate AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
2	T1	All MCs	418	3.0	418	3.0	*0.655	27.3	LOS C	6.2	44.4	0.99	0.84	1.07	41.4
3	R2	All MCs	39	3.0	39	3.0	*0.080	23.7	LOS C	0.9	6.2	0.78	0.71	0.78	41.9
Approach			457	3.0	457	3.0	0.655	27.0	LOS C	6.2	44.4	0.97	0.83	1.04	41.4
East: Unnamed Rd (E)															
4	L2	All MCs	112	3.0	112	3.0	0.097	13.9	LOS B	1.3	9.1	0.41	0.67	0.41	49.5
6	R2	All MCs	335	3.0	335	3.0	*0.747	33.8	LOS C	9.9	71.4	0.97	0.90	1.11	39.0
Approach			446	3.0	446	3.0	0.747	28.8	LOS C	9.9	71.4	0.83	0.85	0.94	41.2
North: Town Centre N-S Rd (N)															
7	L2	All MCs	73	3.0	73	3.0	0.150	24.1	LOS C	1.7	11.9	0.80	0.73	0.80	41.6
8	T1	All MCs	242	3.0	242	3.0	0.579	25.9	LOS C	5.3	37.9	0.95	0.76	0.96	42.1
Approach			315	3.0	315	3.0	0.579	25.5	LOS C	5.3	37.9	0.92	0.76	0.93	42.0
All Vehicles			1218	3.0	1218	3.0	0.747	27.3	LOS C	9.9	71.4	0.90	0.82	0.97	41.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
East: Unnamed Rd (E)												
P2	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
North: Town Centre N-S Rd (N)												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
All Pedestrians		150	158	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: RQ (18) [Ultimate AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

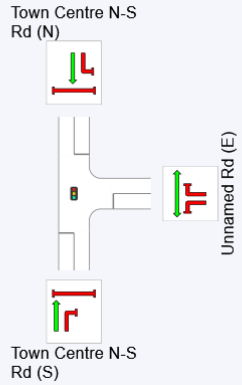
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	16	38
Green Time (sec)	10	16	16
Phase Time (sec)	16	22	22
Phase Split	27%	37%	37%
Phase Frequency (%)	100.0	100.0	100.0

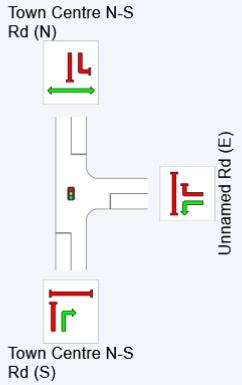
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

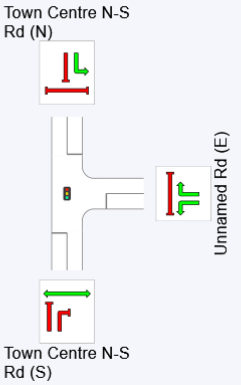
Phase A **REF**



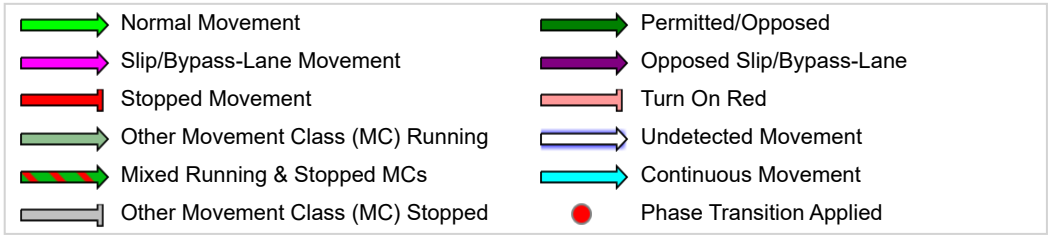
Phase B



Phase C



REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: RQ (18) [Ultimate PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
2	T1	All MCs	236	3.0	236	3.0	0.336	24.0	LOS C	3.1	22.5	0.91	0.72	0.91	43.0
3	R2	All MCs	78	3.0	78	3.0	* 0.161	24.2	LOS C	1.8	12.9	0.80	0.74	0.80	41.7
Approach			314	3.0	314	3.0	0.336	24.0	LOS C	3.1	22.5	0.88	0.72	0.88	42.7
East: Unnamed Rd (E)															
4	L2	All MCs	67	3.0	67	3.0	0.060	10.9	LOS B	0.8	5.6	0.42	0.66	0.42	49.3
6	R2	All MCs	100	3.0	100	3.0	0.220	25.4	LOS C	2.4	17.2	0.83	0.75	0.83	41.2
Approach			167	3.0	167	3.0	0.220	19.6	LOS B	2.4	17.2	0.66	0.71	0.66	44.1
North: Town Centre N-S Rd (N)															
7	L2	All MCs	313	3.0	313	3.0	* 0.688	29.4	LOS C	8.9	63.9	0.96	0.86	1.03	39.3
8	T1	All MCs	302	3.0	302	3.0	* 0.656	25.8	LOS C	6.7	48.3	0.96	0.80	1.01	42.2
Approach			615	3.0	615	3.0	0.688	27.6	LOS C	8.9	63.9	0.96	0.83	1.02	40.7
All Vehicles			1096	3.0	1096	3.0	0.688	25.4	LOS C	8.9	63.9	0.89	0.78	0.93	41.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												
P1	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
East: Unnamed Rd (E)												
P2	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
North: Town Centre N-S Rd (N)												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50
All Pedestrians		150	158	24.4	LOS C	0.1	0.1	0.90	0.90	39.7	20.0	0.50

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PHASING SUMMARY

Site: RQ (18) [Ultimate PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Signalised intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A

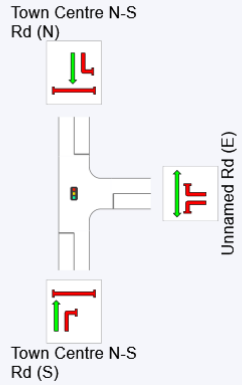
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	17	39
Green Time (sec)	11	16	15
Phase Time (sec)	17	22	21
Phase Split	28%	37%	35%
Phase Frequency (%)	100.0	100.0	100.0

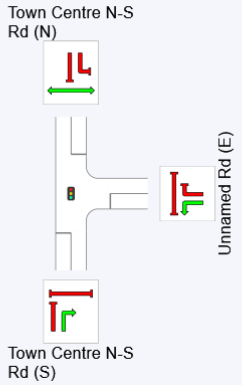
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence

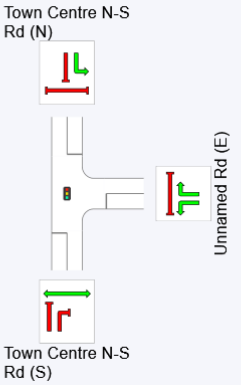
Phase A **REF**



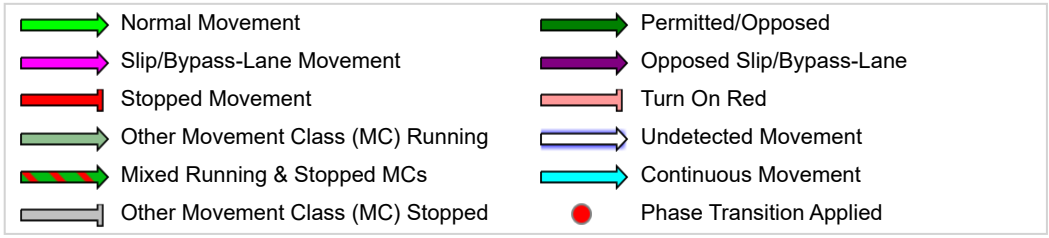
Phase B



Phase C



REF: Reference Phase
VAR: Variable Phase



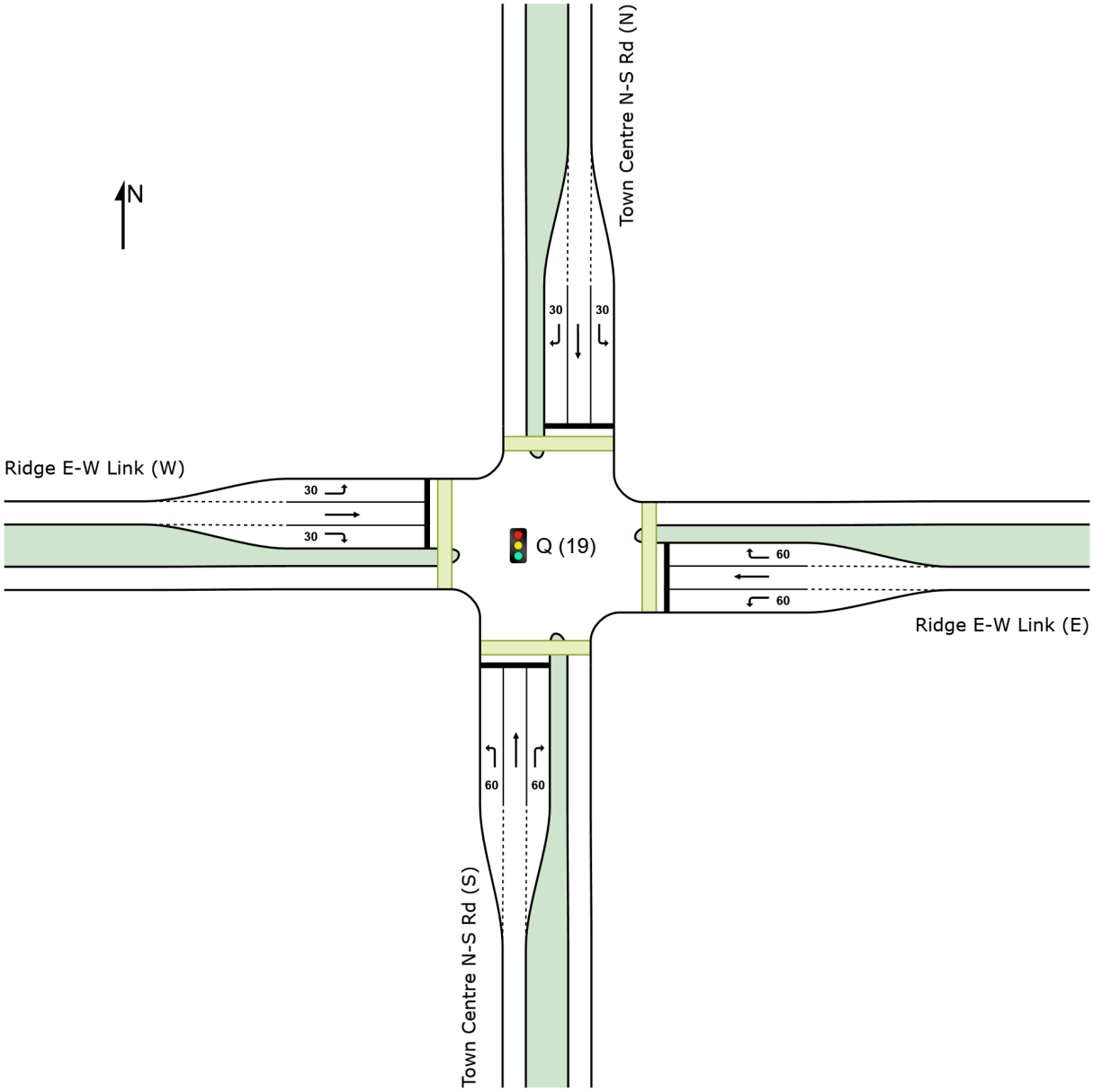
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SITE LAYOUT

Site: Q (19) [Ultimate AM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Signalised intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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MOVEMENT SUMMARY

Site: Q (19) [Ultimate AM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	91	3.0	91	3.0	0.233	32.5	LOS C	2.8	20.2	0.87	0.76	0.87	38.0
2	T1	All MCs	331	3.0	331	3.0	*0.810	35.4	LOS D	12.9	93.0	1.00	0.97	1.20	38.0
3	R2	All MCs	97	3.0	97	3.0	0.571	43.6	LOS D	3.7	26.4	1.00	0.79	1.04	34.2
Approach			518	3.0	518	3.0	0.810	36.4	LOS D	12.9	93.0	0.98	0.90	1.11	37.2
East: Ridge E-W Link (E)															
4	L2	All MCs	195	3.0	195	3.0	0.536	35.6	LOS D	6.6	47.5	0.95	0.81	0.95	36.8
5	T1	All MCs	304	3.0	304	3.0	*0.795	35.4	LOS D	11.8	84.8	1.00	0.95	1.19	38.0
6	R2	All MCs	163	3.0	163	3.0	0.449	35.0	LOS C	5.4	39.0	0.93	0.79	0.93	37.2
Approach			662	3.0	662	3.0	0.795	35.3	LOS D	11.8	84.8	0.97	0.87	1.05	37.5
North: Town Centre N-S Rd (N)															
7	L2	All MCs	73	3.0	73	3.0	0.200	34.0	LOS C	2.3	16.3	0.87	0.75	0.87	37.7
8	T1	All MCs	227	3.0	227	3.0	0.600	31.2	LOS C	7.8	56.2	0.96	0.79	0.96	40.1
9	R2	All MCs	3	3.0	3	3.0	*0.022	42.1	LOS D	0.1	0.8	0.94	0.62	0.94	35.0
Approach			303	3.0	303	3.0	0.600	32.0	LOS C	7.8	56.2	0.94	0.78	0.94	39.4
West: Ridge E-W Link (W)															
10	L2	All MCs	3	3.0	3	3.0	0.009	32.4	LOS C	0.1	0.7	0.83	0.63	0.83	38.0
11	T1	All MCs	106	3.0	106	3.0	0.298	29.2	LOS C	3.5	24.8	0.90	0.71	0.90	40.6
12	R2	All MCs	118	3.0	118	3.0	*0.347	35.2	LOS D	3.9	27.9	0.91	0.77	0.91	37.1
Approach			227	3.0	227	3.0	0.347	32.3	LOS C	3.9	27.9	0.91	0.74	0.91	38.7
All Vehicles			1711	3.0	1711	3.0	0.810	34.7	LOS C	12.9	93.0	0.96	0.85	1.03	37.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												

P1	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
East: Ridge E-W Link (E)												
P2	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
North: Town Centre N-S Rd (N)												
P3	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
West: Ridge E-W Link (W)												
P4	Full	50	53	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42
All Pedestrians		200	211	31.8	LOS D	0.1	0.1	0.92	0.92	47.2	20.0	0.42

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: Q (19) [Ultimate AM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 75 seconds (Site Optimum Cycle Time - Minimum Delay)

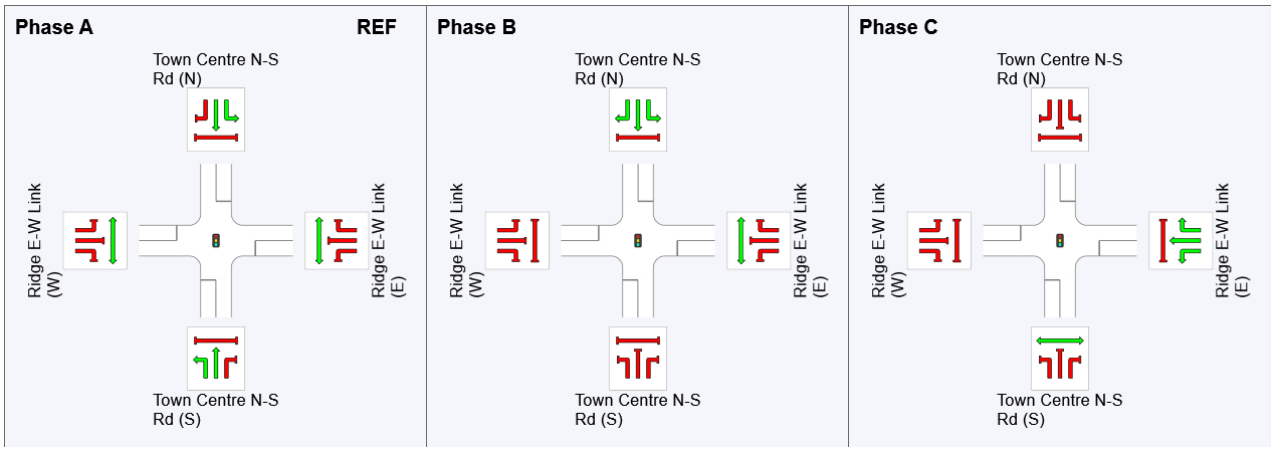
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase A

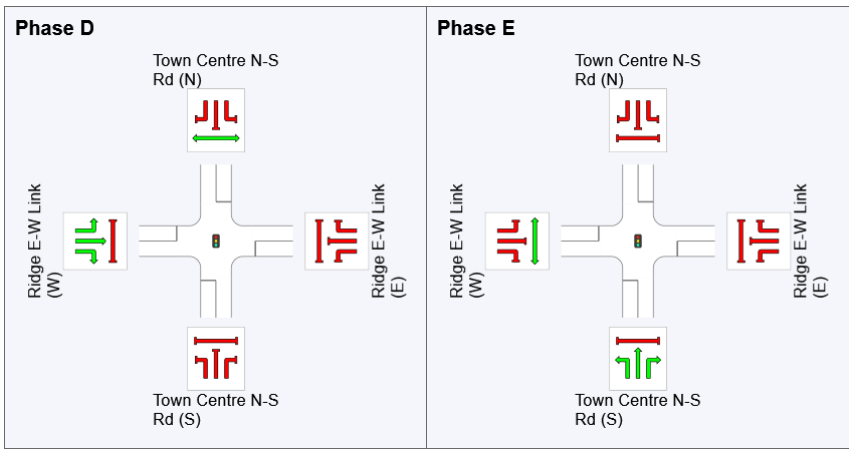
Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	9	21	42	62
Green Time (sec)	3	6	15	14	7
Phase Time (sec)	9	12	21	20	13
Phase Split	12%	16%	28%	27%	17%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0

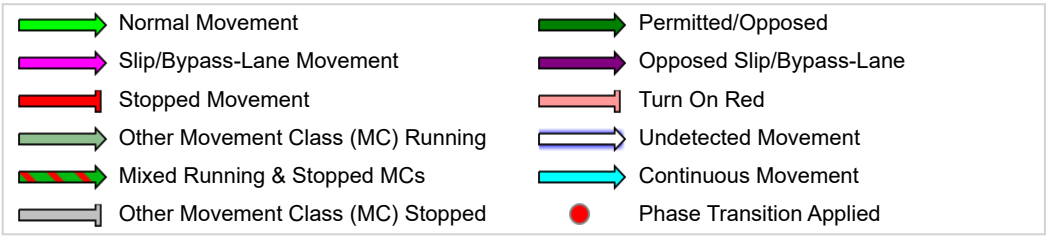
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



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MOVEMENT SUMMARY

Site: Q (19) [Ultimate PM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 72 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Rd (S)															
1	L2	All MCs	171	3.0	171	3.0	0.482	34.4	LOS C	5.5	39.7	0.94	0.80	0.94	37.3
2	T1	All MCs	212	3.0	212	3.0	* 0.569	29.4	LOS C	7.0	50.2	0.96	0.78	0.96	40.5
3	R2	All MCs	120	3.0	120	3.0	0.792	46.4	LOS D	4.7	34.0	1.00	0.93	1.33	33.3
Approach			502	3.0	502	3.0	0.792	35.1	LOS D	7.0	50.2	0.96	0.82	1.04	37.5
East: Ridge E-W Link (E)															
4	L2	All MCs	98	3.0	98	3.0	0.277	33.0	LOS C	3.0	21.7	0.89	0.76	0.89	37.8
5	T1	All MCs	106	3.0	106	3.0	* 0.286	27.5	LOS C	3.3	23.6	0.89	0.70	0.89	41.4
6	R2	All MCs	67	3.0	67	3.0	0.191	32.5	LOS C	2.0	14.6	0.87	0.74	0.87	38.2
Approach			272	3.0	272	3.0	0.286	30.7	LOS C	3.3	23.6	0.89	0.73	0.89	39.2
North: Town Centre N-S Rd (N)															
7	L2	All MCs	118	3.0	118	3.0	0.333	34.6	LOS C	3.7	26.5	0.90	0.77	0.90	37.6
8	T1	All MCs	238	3.0	238	3.0	0.656	31.7	LOS C	8.1	58.5	0.98	0.83	1.02	40.0
9	R2	All MCs	2	3.0	2	3.0	* 0.014	40.7	LOS D	0.1	0.5	0.94	0.61	0.94	35.6
Approach			358	3.0	358	3.0	0.656	32.7	LOS C	8.1	58.5	0.95	0.81	0.98	39.2
West: Ridge E-W Link (W)															
10	L2	All MCs	1	3.0	1	3.0	0.003	30.6	LOS C	0.0	0.2	0.82	0.59	0.82	38.8
11	T1	All MCs	155	3.0	155	3.0	* 0.416	28.3	LOS C	4.9	35.4	0.92	0.74	0.92	41.0
12	R2	All MCs	92	3.0	92	3.0	0.259	33.0	LOS C	2.8	20.2	0.89	0.76	0.89	38.0
Approach			247	3.0	247	3.0	0.416	30.0	LOS C	4.9	35.4	0.91	0.75	0.91	39.8
All Vehicles			1379	3.0	1379	3.0	0.792	32.7	LOS C	8.1	58.5	0.93	0.79	0.97	38.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Town Centre N-S Rd (S)												

P1	Full	50	53	30.3	LOS D	0.1	0.1	0.92	0.92	45.7	20.0	0.44
East: Ridge E-W Link (E)												
P2	Full	50	53	30.3	LOS D	0.1	0.1	0.92	0.92	45.7	20.0	0.44
North: Town Centre N-S Rd (N)												
P3	Full	50	53	30.3	LOS D	0.1	0.1	0.92	0.92	45.7	20.0	0.44
West: Ridge E-W Link (W)												
P4	Full	50	53	30.3	LOS D	0.1	0.1	0.92	0.92	45.7	20.0	0.44
All Pedestrians		200	211	30.3	LOS D	0.1	0.1	0.92	0.92	45.7	20.0	0.44

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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PHASING SUMMARY

Site: Q (19) [Ultimate PM (Site Folder: Q_19_TownCentreN-S_RidgeE-W)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Signalised intersection: Town Centre N-S Road/Ridge E-W Link
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 72 seconds (Site Optimum Cycle Time - Minimum Delay)

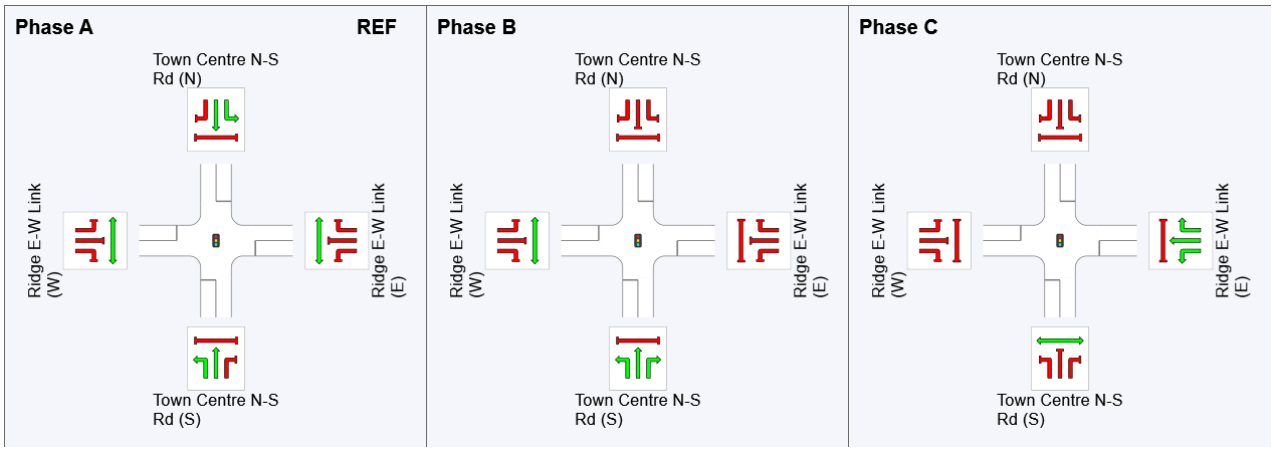
Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Green Split Priority has been specified
Phase Sequence: Variable Phasing
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase A

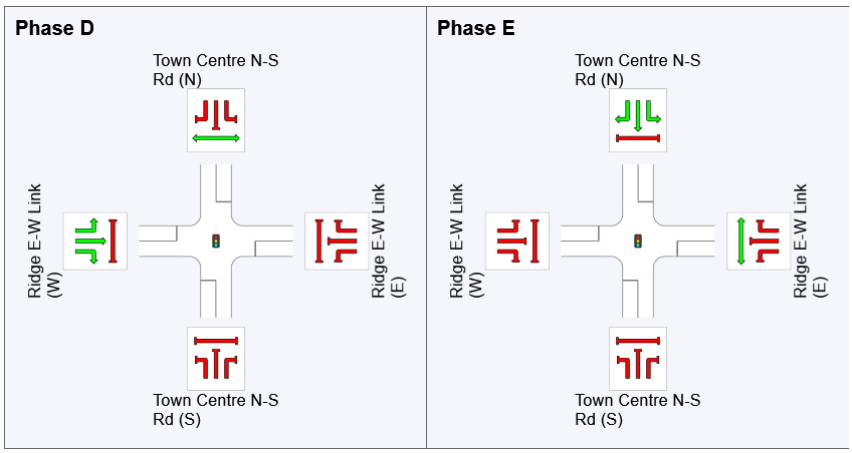
Phase Timing Summary

Phase	A	B	C	D	E
Phase Change Time (sec)	0	8	20	40	60
Green Time (sec)	2	6	14	14	6
Phase Time (sec)	8	12	20	20	12
Phase Split	11%	17%	28%	28%	17%
Phase Frequency (%)	100.0	100.0	100.0	100.0	100.0

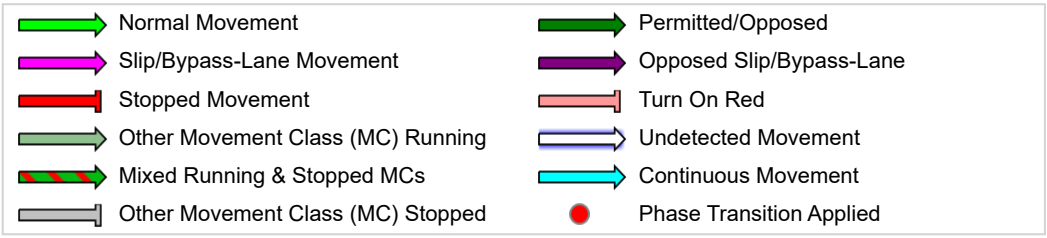
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence





REF: Reference Phase
VAR: Variable Phase



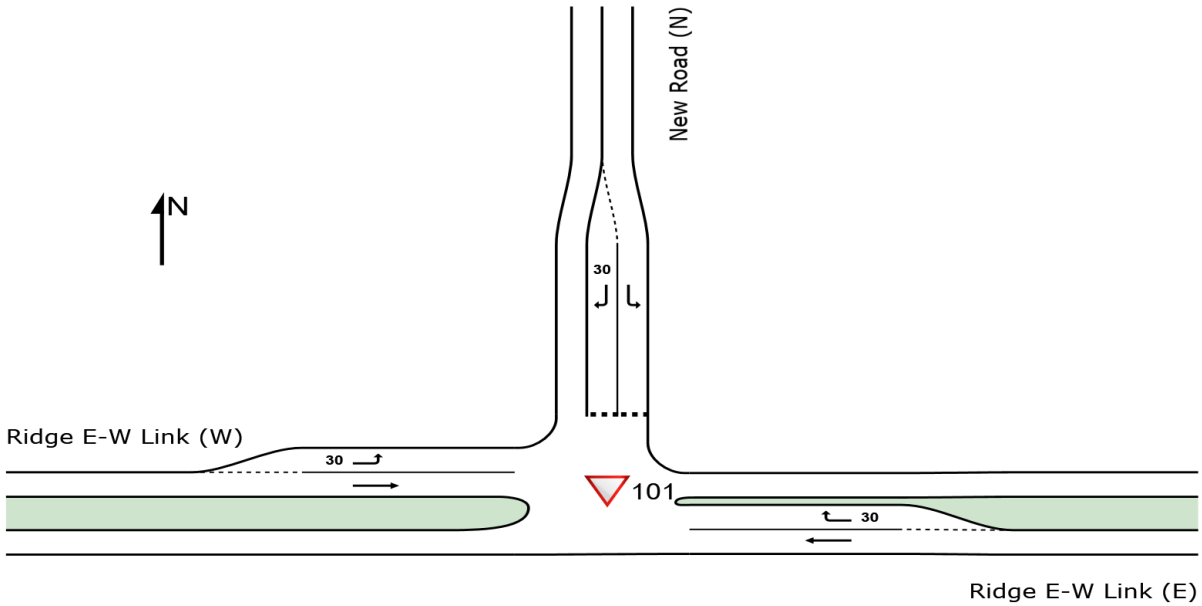
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SITE LAYOUT

Site: 101 [Ultimate AM (Site Folder: VQ_RidgeE-W_NewRoad)]

Priority intersection: Ridge E-W Link/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Project: H:\Projects-SLR\620-BNE\620-BNE\620.11743 Yarrabilba Master Plan Development\06 SLR Data\Precinct 6\2023 05 16 - SLR - P6A (North) SIDRA Analysis\2023 05 - SIDRA\620.11743 Yarrabilba Precinct 6 Sidra 2023 06 19.sip9

MOVEMENT SUMMARY

Site: 101 [Ultimate AM (Site Folder: VQ_RidgeE-W_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Priority intersection: Ridge E-W Link/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	304	3.0	304	3.0	0.159	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	40	3.0	40	3.0	0.031	6.0	LOS A	0.1	0.9	0.21	0.55	0.21	52.1
Approach			344	3.0	344	3.0	0.159	0.7	NA	0.1	0.9	0.02	0.06	0.02	58.9
North: New Road (N)															
7	L2	All MCs	156	3.0	156	3.0	0.131	6.0	LOS A	0.5	3.6	0.22	0.56	0.22	52.1
9	R2	All MCs	6	3.0	6	3.0	0.011	9.2	LOS A	0.0	0.3	0.51	0.64	0.51	50.2
Approach			162	3.0	162	3.0	0.131	6.2	LOS A	0.5	3.6	0.23	0.56	0.23	52.0
West: Ridge E-W Link (W)															
10	L2	All MCs	1	3.0	1	3.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	106	3.0	106	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			107	3.0	107	3.0	0.056	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
All Vehicles			614	3.0	614	3.0	0.159	2.0	NA	0.5	3.6	0.07	0.19	0.07	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Ultimate PM (Site Folder: VQ_RidgeE-W_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Priority intersection: Ridge E-W Link/New Rooad
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Ridge E-W Link (E)															
5	T1	All MCs	106	3.0	106	3.0	0.056	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	All MCs	139	3.0	139	3.0	0.115	6.2	LOS A	0.5	3.4	0.28	0.58	0.28	51.9
Approach			245	3.0	245	3.0	0.115	3.5	NA	0.5	3.4	0.16	0.33	0.16	55.1
North: New Road (N)															
7	L2	All MCs	60	3.0	60	3.0	0.053	6.2	LOS A	0.2	1.4	0.25	0.56	0.25	52.0
9	R2	All MCs	1	3.0	1	3.0	0.002	8.5	LOS A	0.0	0.0	0.47	0.56	0.47	50.7
Approach			61	3.0	61	3.0	0.053	6.2	LOS A	0.2	1.4	0.26	0.56	0.26	52.0
West: Ridge E-W Link (W)															
10	L2	All MCs	3	3.0	3	3.0	0.002	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	155	3.0	155	3.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			158	3.0	158	3.0	0.081	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles			464	3.0	464	3.0	0.115	2.7	NA	0.5	3.4	0.12	0.25	0.12	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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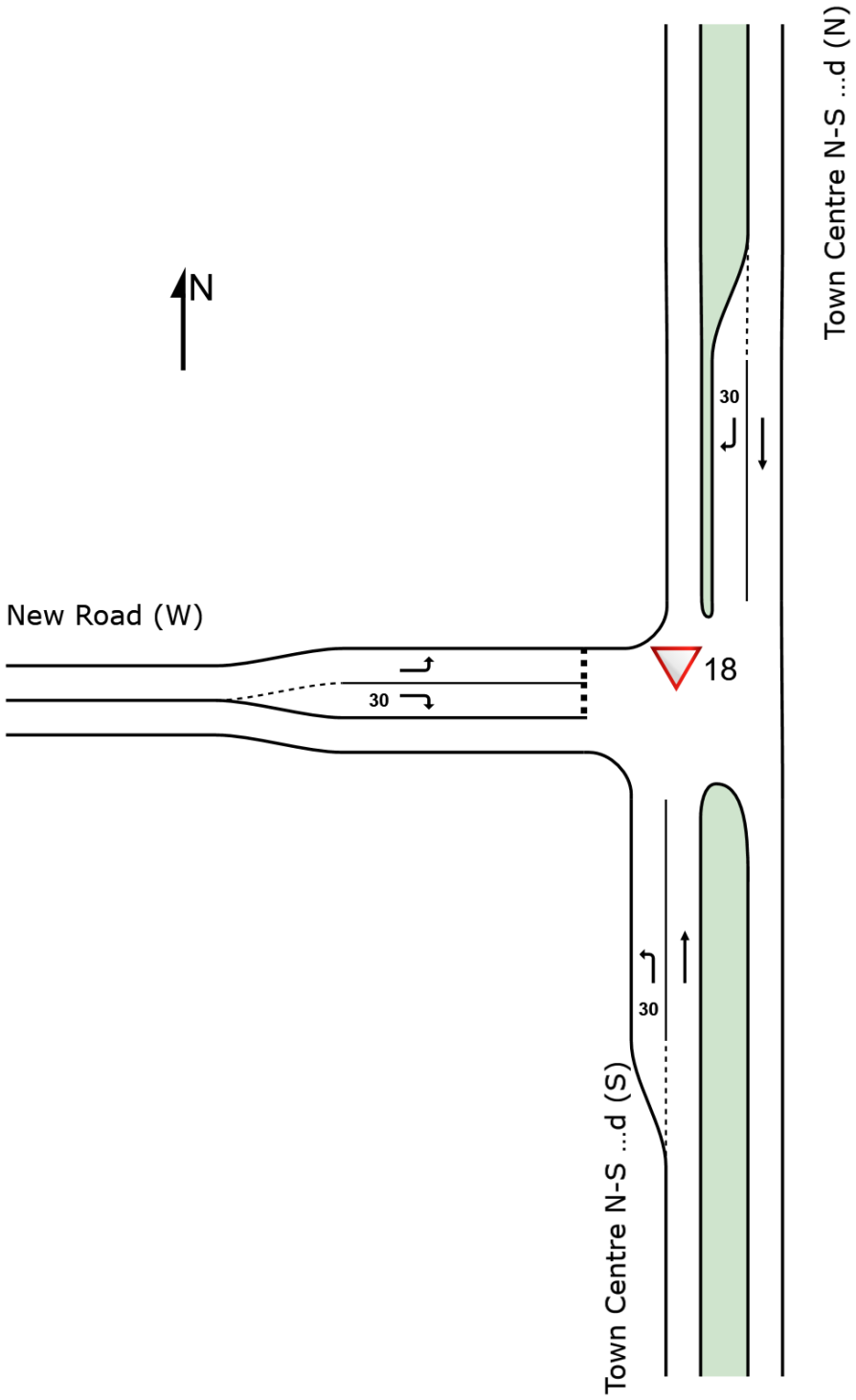
Appendix F Detailed SIDRA Outputs - Node RQQ

SITE LAYOUT

Site: 18 [Ultimate AM (Site Folder: RQQ_18_TownCentreN-S_NewRoad)]

Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY

Site: 18 [Ultimate AM (Site Folder: RQQ_18_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Road (S)															
10	L2	All MCs	2	3.0	2	3.0	0.001	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	497	3.0	497	3.0	0.260	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			499	3.0	499	3.0	0.260	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Town Centre N-S Road (N)															
5	T1	All MCs	303	3.0	303	3.0	0.158	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	4	3.0	4	3.0	0.005	8.1	LOS A	0.0	0.1	0.49	0.62	0.49	50.9
Approach			307	3.0	307	3.0	0.158	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.8
West: New Road (W)															
7	L2	All MCs	19	3.0	19	3.0	0.025	8.2	LOS A	0.1	0.6	0.48	0.67	0.48	50.8
9	R2	All MCs	8	3.0	8	3.0	0.027	15.4	LOS C	0.1	0.6	0.71	0.84	0.71	46.3
Approach			27	3.0	27	3.0	0.027	10.4	LOS B	0.1	0.6	0.55	0.73	0.55	49.4
All Vehicles			834	3.0	834	3.0	0.260	0.5	NA	0.1	0.6	0.02	0.03	0.02	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 18 [Ultimate PM (Site Folder: RQQ_18_TownCentreN-S_NewRoad)]

Output produced by SIDRA INTERSECTION Version: 9.1.2.202

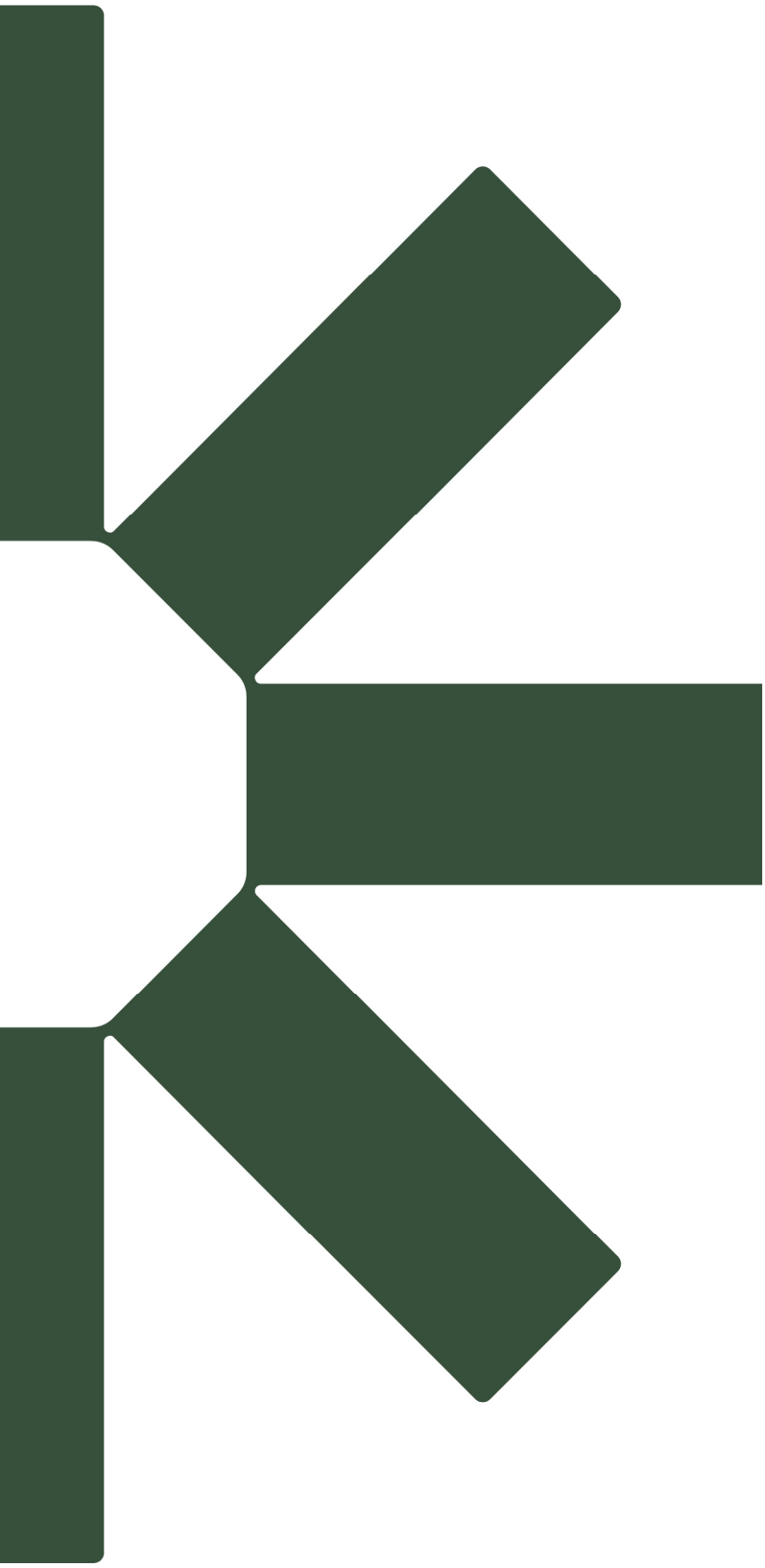
Priority intersection: Town Centre N-S Road/New Road
Prepared by: SJ
Reviewed by: BR
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Town Centre N-S Road (S)															
10	L2	All MCs	7	3.0	7	3.0	0.004	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.8
11	T1	All MCs	280	3.0	280	3.0	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			287	3.0	287	3.0	0.146	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.7
North: Town Centre N-S Road (N)															
5	T1	All MCs	358	3.0	358	3.0	0.187	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	16	3.0	16	3.0	0.015	6.8	LOS A	0.1	0.4	0.37	0.58	0.37	51.6
Approach			374	3.0	374	3.0	0.187	0.3	NA	0.1	0.4	0.02	0.02	0.02	59.5
West: New Road (W)															
7	L2	All MCs	7	3.0	7	3.0	0.007	6.7	LOS A	0.0	0.2	0.34	0.57	0.34	51.7
9	R2	All MCs	3	3.0	3	3.0	0.008	12.0	LOS B	0.0	0.2	0.61	0.70	0.61	48.4
Approach			11	3.0	11	3.0	0.008	8.3	LOS A	0.0	0.2	0.42	0.61	0.42	50.7
All Vehicles			672	3.0	672	3.0	0.187	0.4	NA	0.1	0.4	0.02	0.03	0.02	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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