

9 February 2023

Our Ref: 21BRT0290

Your Ref:

Attention: Jadranko Mujagic

Honeycombes Developments Pty Ltd
Level 9, 300 Ann Street
BRISBANE QLD 4001

Dear Jadranko,

**RE: Oxley Priority Development Area (PDA) – Blume Residential Development
Updated Traffic Impact Assessment – Technical Note**

1. Background

I refer to your engagement of TTM Consulting Pty Ltd (TTM) to undertake an assessment of the likely traffic impacts associated with a change to the proposed development within Stage 1C of the Oxley PDA.

An application has previously been lodged with Economic Development Queensland (EDQ) for a Retirement Facility (77 dwelling units), Community Use and Sales Office building. It is understood that this application is currently on hold and a new Development Application is to be lodged which seeks to vary the way in which the proposal is described from a land-use definition perspective. The new application proposes to describe the 77 dwelling units as both Retirement Facility and Multiple Dwelling.

In terms of traffic impacts, multiple dwellings typically generate higher traffic demands than retirement facility dwellings. The purpose of this updated traffic impact assessment is to identify this potential increased traffic demand and its impacts on the surrounding road network.

In 2020, TTM prepared the initial traffic impact assessment for the overall Oxley PDA development as documented in our report dated 20th August 2020. That assessment was based on initially identified development land uses and yields. Along with the subject development, other changes to the balance of the overall PDA development, in terms of both use and yield, has subsequently occurred. As such, and for completeness, this updated traffic impact assessment considers all changes within the overall PDA development.

It is understood that this technical note will accompany a development application to EDQ for the proposed change in the way the use is defined (from retirement facility to retirement facility/multiple dwelling).

2. Development Yields

Table 1 below summarises the initially identified development uses and yields used in the initial traffic impact assessment and the current uses and yields. It is noted that, for the purposes of this assessment, the subject development has been assumed to be entirely multiple dwelling units (instead of a mix of retirement facility/multiple dwelling units) because of the fact that multiple dwelling units typically have a higher traffic generating potential than retirement facility units i.e. this assessment is conservative in nature and assesses a 'worst-case' scenario.

Table 1: Development Yields Comparison Summary

Land Use	Initial Development	Current Development
Detached Dwellings	80 dwellings	87 dwellings
Retirement Living Dwellings	150 dwellings	-
Multiple Dwellings	-	77 dwellings
Residential Aged Care Facility	-	150 beds
Child Care Centre	70 children	70 children

3. Development Traffic Generation

Tables 2 and 3 below summarises the estimated daily and peak hour traffic generation of the initially identified development and the current development schemes respectively. Table 4 below summarises the change in development traffic generation between the two masterplan scenarios.

As indicated, the current masterplan development scheme results in higher traffic demands than those of the initial masterplan development scenario. The consequences of these traffic demand changes are addressed in the following sections.

Table 2: Estimated Development Traffic Generation – Initial Masterplan

Use	Yield		Daily (24-hr)				AM Peak Hour						PM Peak Hour					
			Rate	VPD	IN	OUT	Rate	VPH	IN		OUT		Rate	VPH	IN		OUT	
	Qty	Units							%	VPH	%	VPH			%	VPH	%	VPH
Detached Dwellings	80	dwellings	9	720	360	360	0.85	68	20%	14	80%	54	0.85	68	70%	48	30%	20
Retirement Living	150	dwellings	2.5	375	188	188	0.3	45	30%	14	70%	32	0.2	30	70%	21	30%	9
Child Care	70	children	7.5	525	263	263	0.8	56	55%	31	45%	25	0.7	49	45%	22	55%	27
Total				1620	810	810		169		58		111		147		91		56

Table 3: Estimated Development Traffic Generation – Current Masterplan

Use	Yield		Daily (24-hr)				AM Peak Hour						PM Peak Hour					
			Rate	VPD	IN	OUT	Rate	VPH	IN		OUT		Rate	VPH	IN		OUT	
	Qty	Units							%	VPH	%	VPH			%	VPH		
Detached Dwellings	87	dwellings	9	783	392	392	0.85	74	20%	15	80%	59	0.85	74	70%	52	30%	22
Multiple Dwellings	77	dwellings	6.5	501	250	250	0.65	50	20%	10	80%	40	0.65	50	70%	35	30%	15
RACF	150	beds	2.37	356	178	178	0.12	18	71%	13	29%	5	0.17	26	44%	11	56%	14
Child Care	70	children	7.5	525	263	263	0.8	56	55%	31	45%	25	0.7	49	45%	22	55%	27
Total				2164	1082	1082		198		68		130		199		120		78

Table 4: Comparison of Estimated Development Traffic Generation

Scenario	Daily (24-hr)			AM Peak Hour			PM Peak Hour		
	Total	IN	OUT	Total	IN	OUT	Total	IN	OUT
Original TIA	1620	810	810	169	58	111	147	91	56
Current / Updated	2164	1082	1082	198	68	130	199	120	78
Change	544	272	272	29	10	19	52	29	22

4. Development Traffic Volumes

Traffic volume diagrams detailing the peak hour traffic demands on the road network are presented in **Attachment A**.

5. Traffic Impact Analysis

Consistent with the initial traffic impact assessment the impacts of the development have been considered in terms of peak hour traffic (intersection performance) and daily traffic (road link performance). In terms of intersections, the initial assessment identified that no adverse impacts would result on the road network with the exception of the Seventeen Mile Rocks Road / Kingsgate Street / Service Road intersection for which an upgrade was identified as being required. As such, this updated assessment has been limited to this particular intersection.

5.1 Seventeen Mile Rocks Road / Kingsgate Street / Service Road Intersection

The intersection has been analysed for the estimated 10-year design horizon traffic demands (**Attachment A**) using SIDRA 9 analysis software. The existing intersection has been assessed under the Base Case (without development) and Project Case (with development) scenarios and the approved intersection upgrade configuration has been assessed for the Project Case. Figure 1 below shows the upgrade concept as included in the initial traffic impact assessment.

Detailed analysis outputs are presented in **Attachment B**. Table 5 below summarises the key performance indicators from the analysis.

Consistent with the findings of the initial traffic impact assessment the analysis indicates the following:

- Under Base Case (without development) conditions the existing intersection would operate at a degree of saturation (94%) above the typically accepted threshold (85%) during the morning peak hour, suggesting that an upgrade would be required within the 10-year design horizon irrespective of the development.
- Under the Project Case (with development) conditions the existing intersection would operate with an excessively high degree of saturation (103%) and excessive average delay and queueing. The impacts of the development should therefore be mitigated.
- The upgraded intersection configuration would mitigate the impacts of the development and result in acceptable levels of performance for all movements at the intersection with the highest degree of

saturation being 85% and more importantly the highest average delay being 26 seconds (noting that the typically accepted threshold is 42 seconds).

It is therefore concluded that the currently approved intersection upgrade is adequate to accommodate the revised master plan development without any need for additional upgrades being necessary.

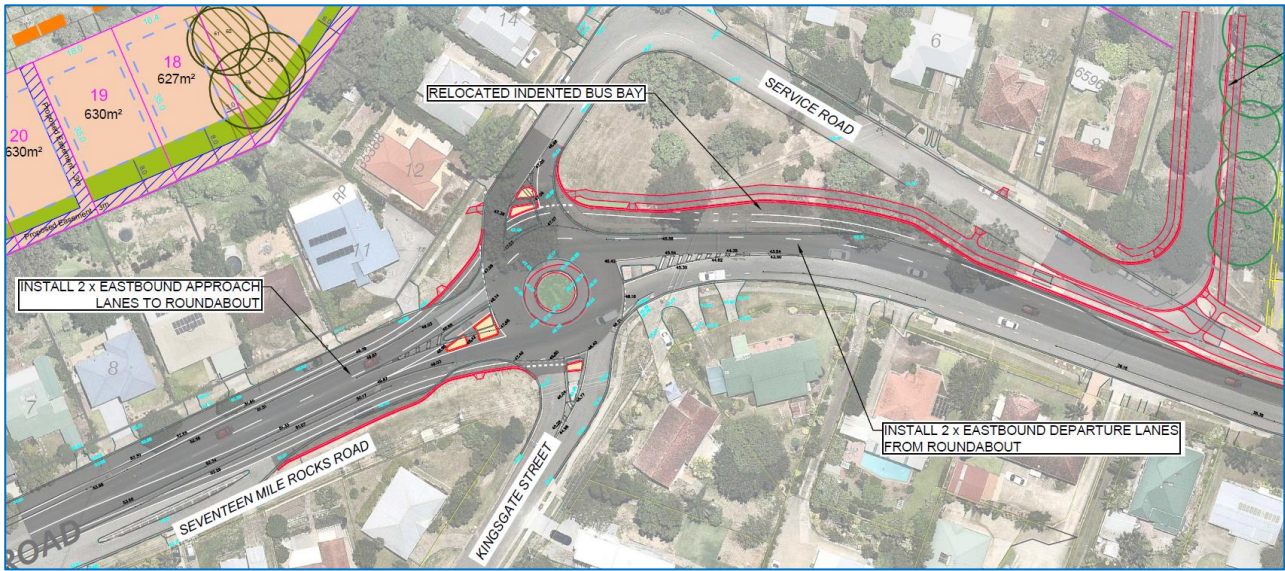


Figure 1: Initially Approved Upgrade Concept Plan

Table 5: Summary of SIDRA Analysis Performance Measures

Case	Degree of Saturation	Maximum Average Delay (sec)	Level of Service (A-F)	95 th Percentile Queue Length (m)			
				South	East	North	West
AM Base	94%	36	A	2	40	2	287
AM Project	103%	196	D	2	51	112	634
AM Project (upgrade)	73%	24	A	2	49	13	66
PM Base	74%	21	A	1	76	1	25
PM Project	85%	27	A	2	146	5	35
PM Project (upgrade)	85%	26	A	2	140	3	20

5.2 Road Link Performance

Figure 2 below shows the estimated daily traffic volumes on the Seventeen Mile Rocks service road and the internal roads within the PDA development area, along with the road hierarchy classifications and design traffic thresholds in accordance with Council’s planning scheme.

As indicated, all daily traffic volumes are well within the design traffic thresholds. Therefore, the existing and proposed road links are adequate to accommodate the PDA development.

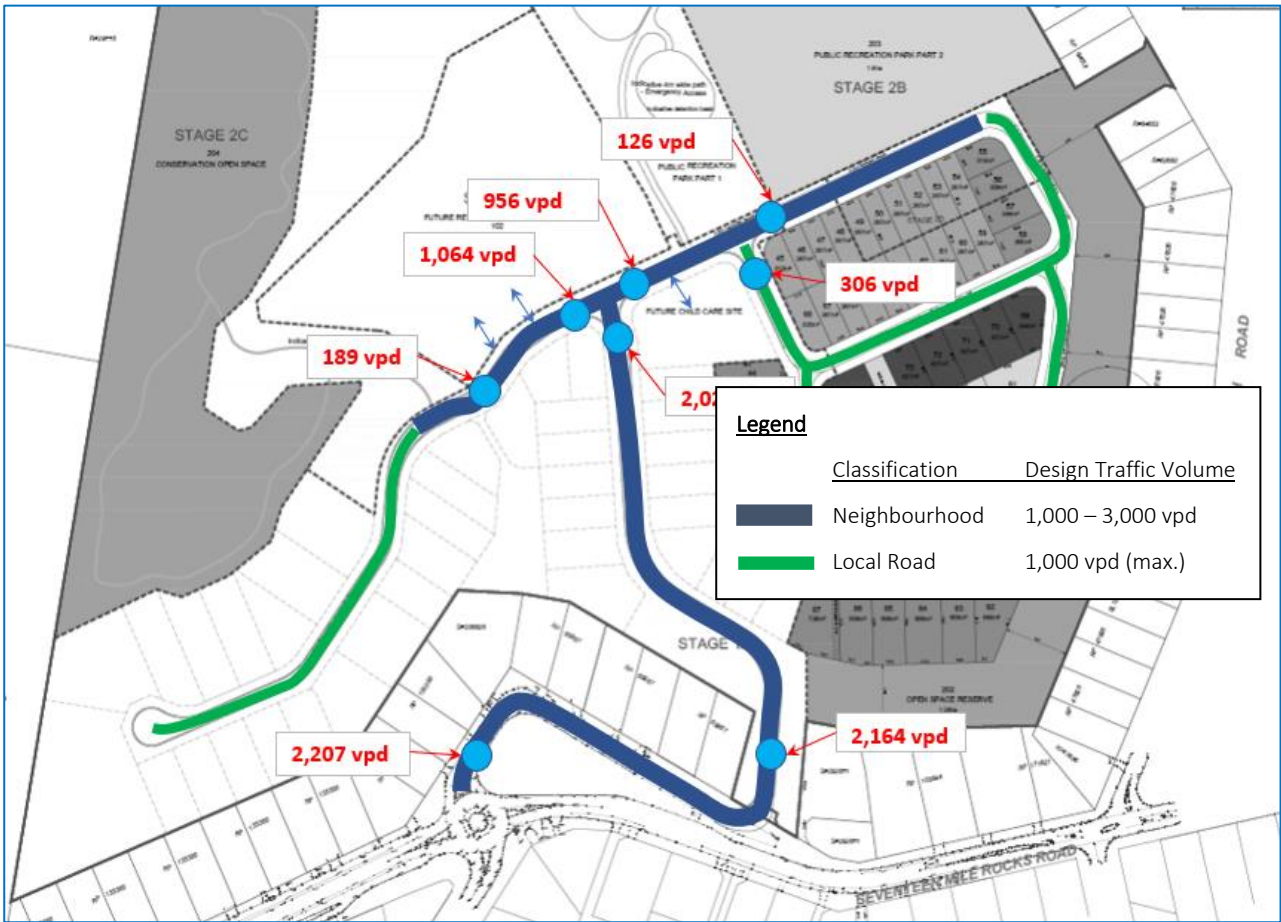


Figure 2: Estimated Daily Traffic Volumes

6. Conclusions

Based upon the updated traffic impact assessment undertaken, and documented herein, it is concluded that the changes to the PDA development, including the change proposed for the Blume residential development within Stage 1C, do not result in any significant additional impacts to those identified in the initial traffic impact assessment. The existing and proposed road network is adequate to accommodate the traffic demands of the development with the recommended, and currently approved, upgrade to the Seventeen Mile Rocks Road / Kingsgate Street / Service Road roundabout intersection being required as per the initial traffic impact assessment.

I trust the information provided herein is adequate for your purposes. Should you require any further information or assistance, please contact me by phone on (07) 3327 9500 or 0418 666 233 or by email at dgrummitt@ttmgroup.com.au.

Yours sincerely,



David Grummitt | RPEQ MIEAust NER
Director
TTM Consulting Pty Ltd

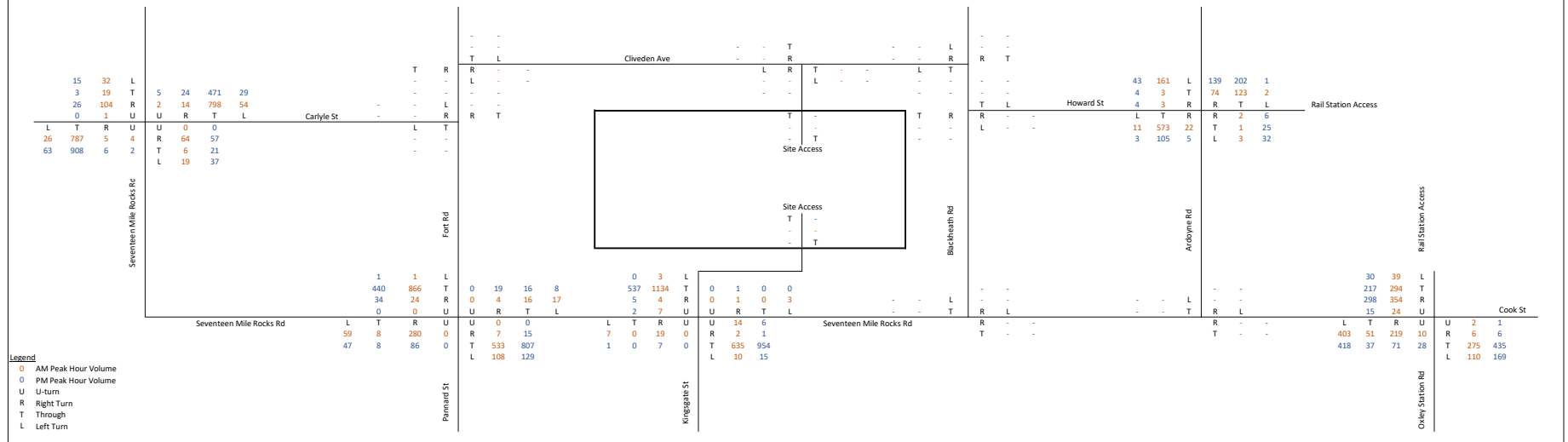
Attachments:

- A. Traffic Volume Diagrams
- B. SIDRA Analysis Outputs

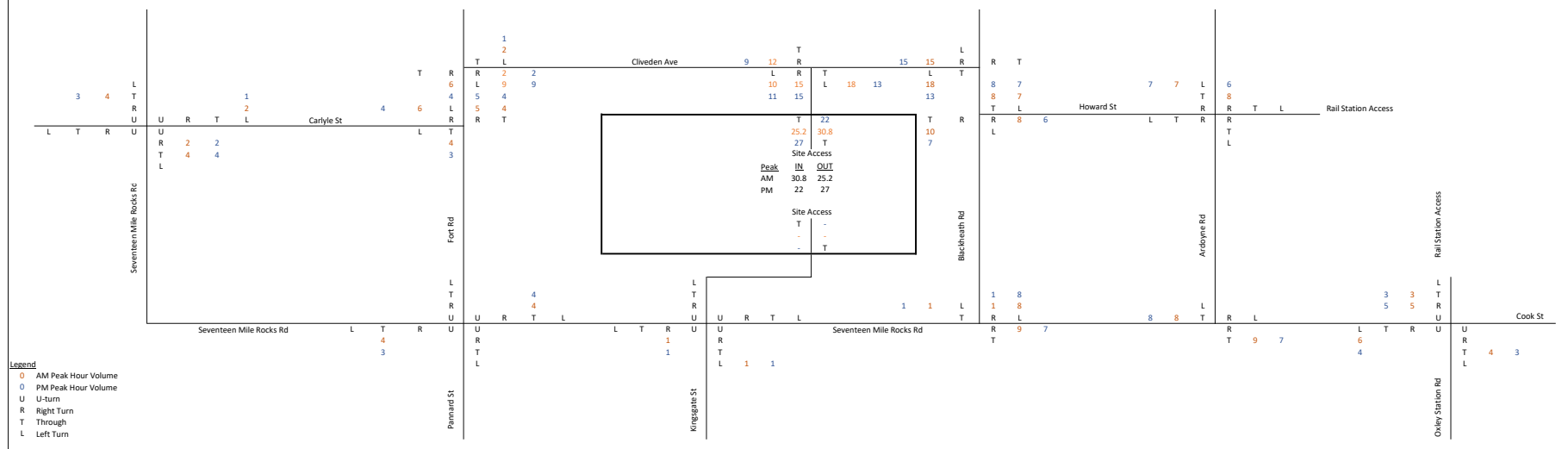
Attachment A: Traffic Volume Diagrams

Surveyed 2018 Peak Hour Traffic Volumes

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745

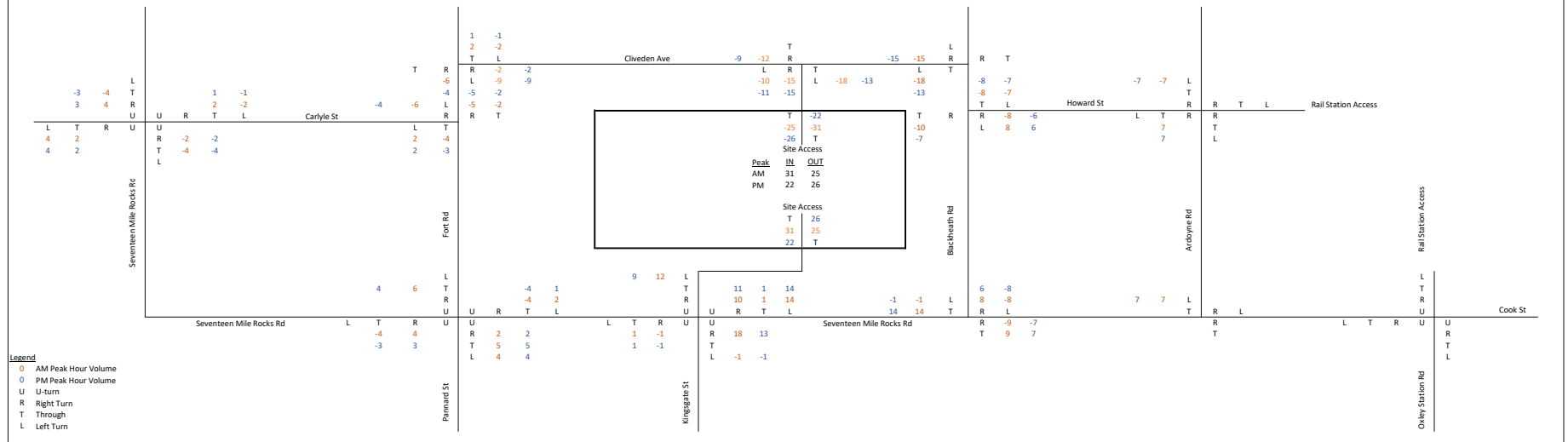


AM Peak Hour =	0730-0830
PM Peak Hour =	1645-1745



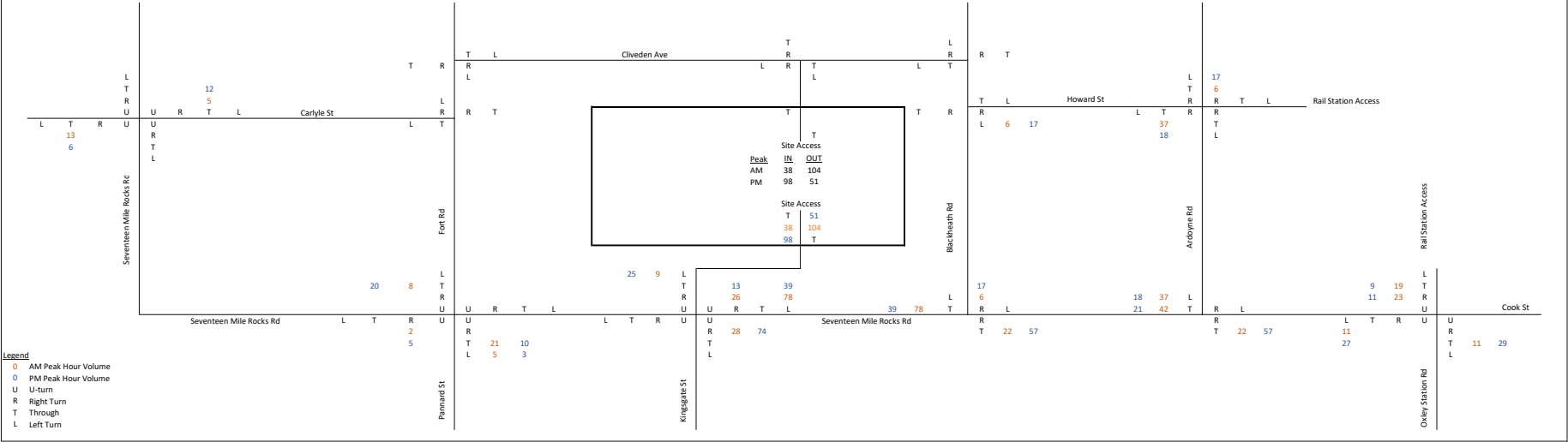
Estimated Change in Child Care Centre Peak Hour Traffic Volumes

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



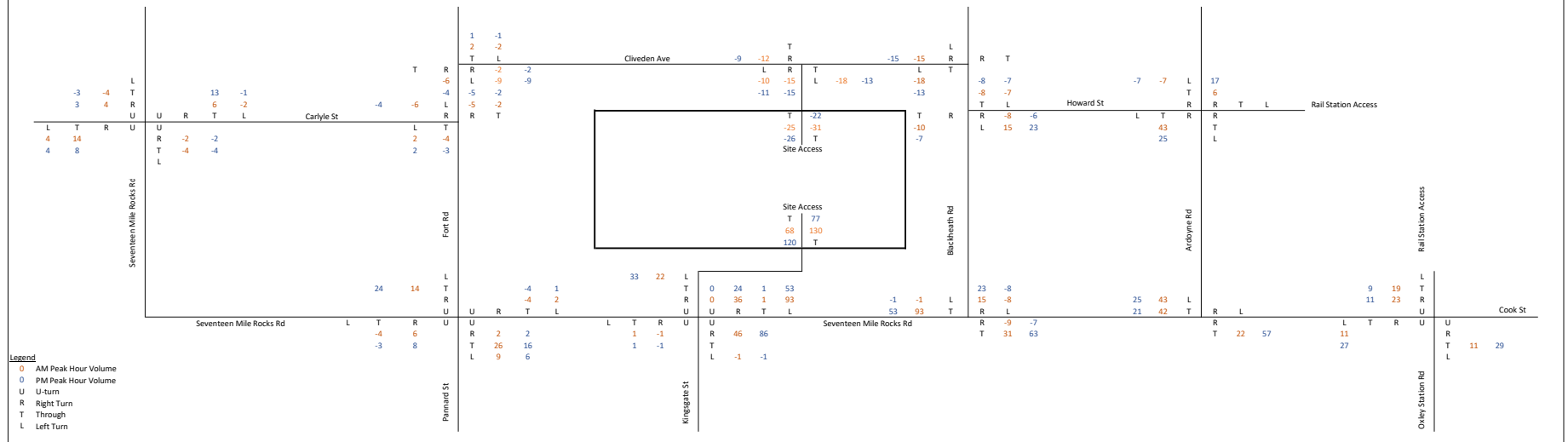
Estimated Residential (Detached Dwelling, Multiple-unit Dwelling & Residential Aged Care Facility) Peak Hour Traffic Volumes

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



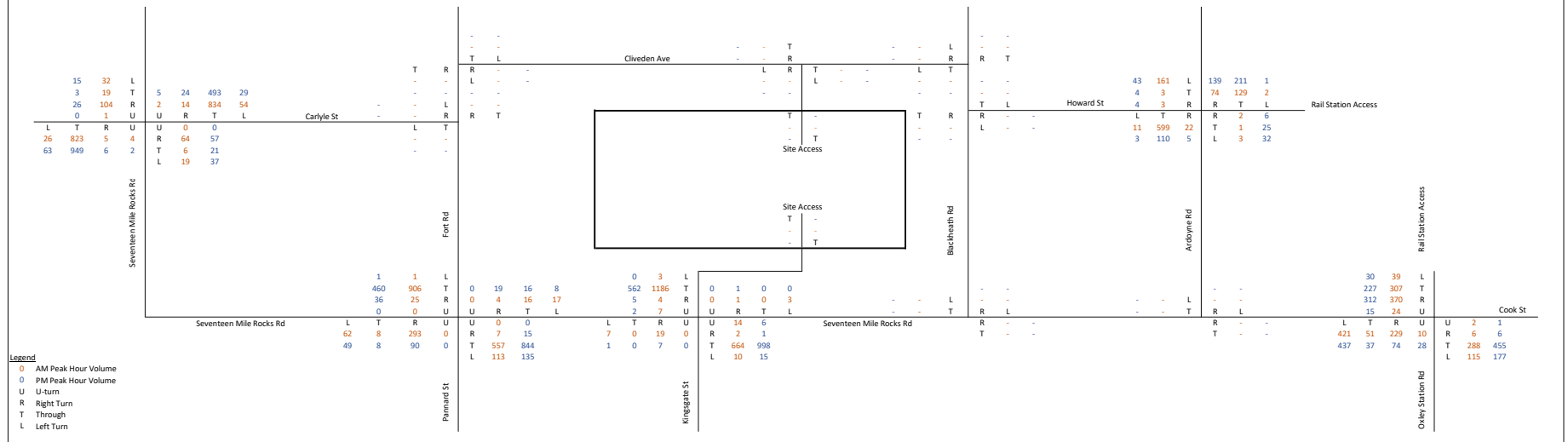
Estimated Proposed Development Peak Hour Traffic Volumes

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



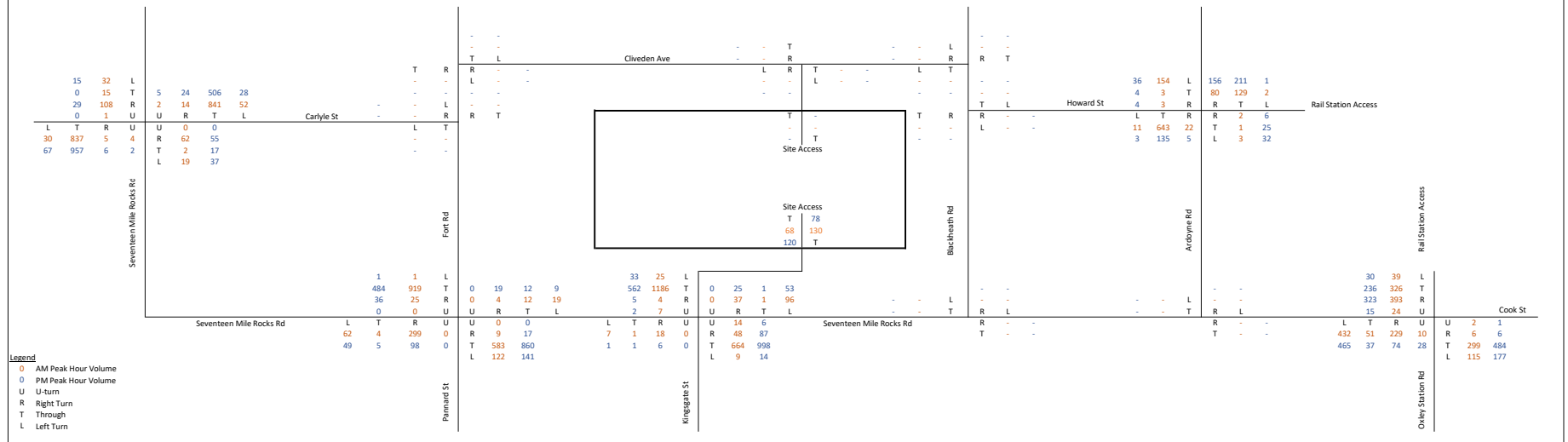
Estimated 2021 BASE Peak Hour Traffic Volumes (WITHOUT Proposed Development)

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



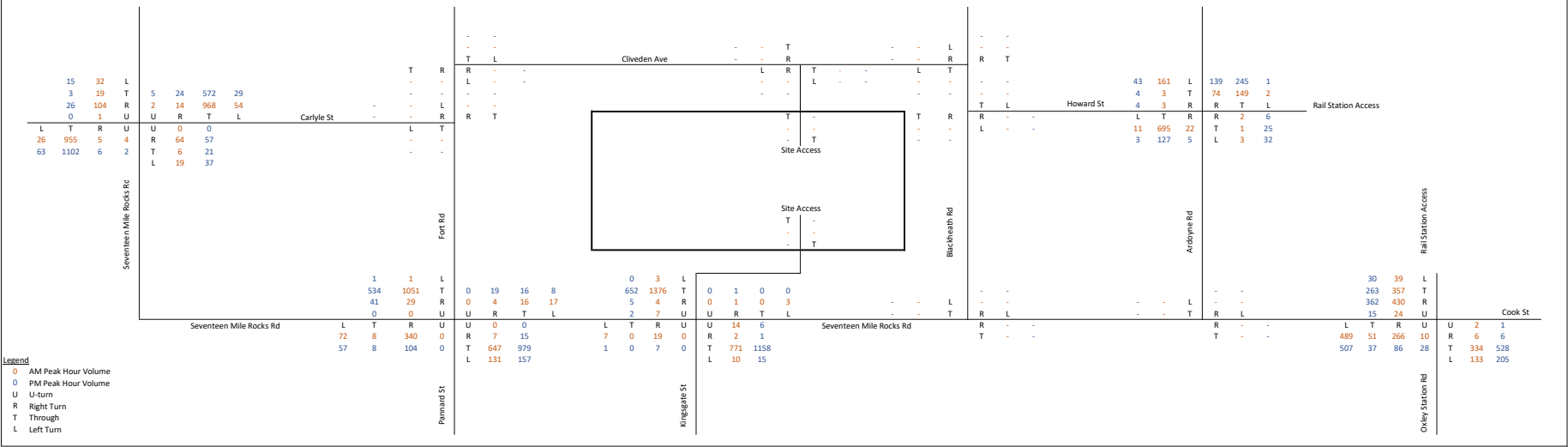
Estimated 2021 PROJECT Peak Hour Traffic Volumes (WITH Proposed Development)

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



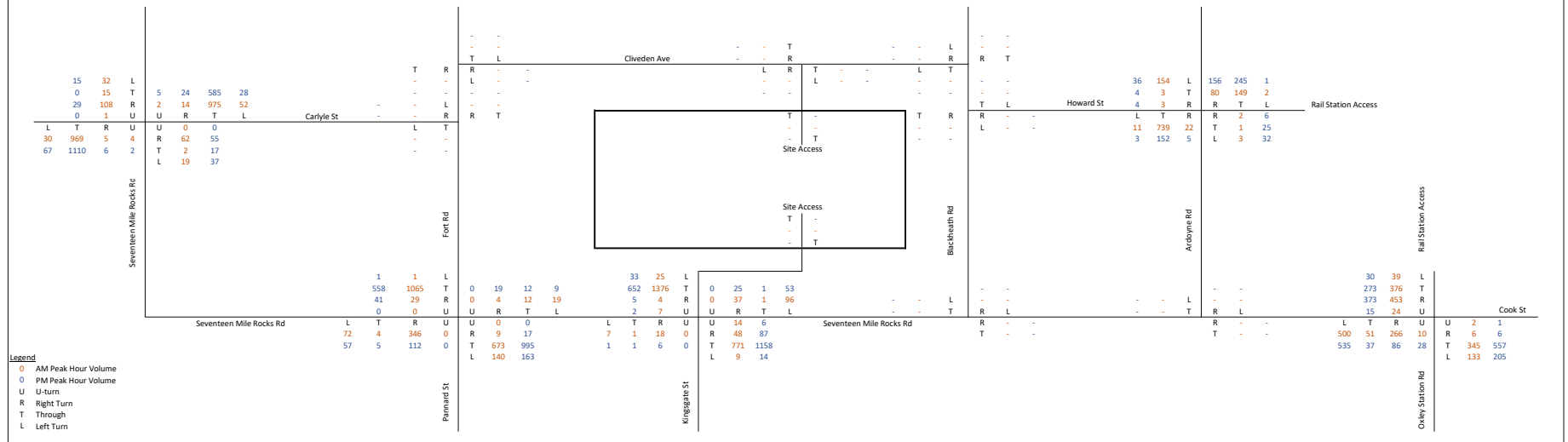
Estimated 2031 BASE Peak Hour Traffic Volumes (WITHOUT Proposed Development)

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



Estimated 2031 PROJECT Peak Hour Traffic Volumes (WITH Proposed Development)

AM Peak Hour = 0730-0830
PM Peak Hour = 1645-1745



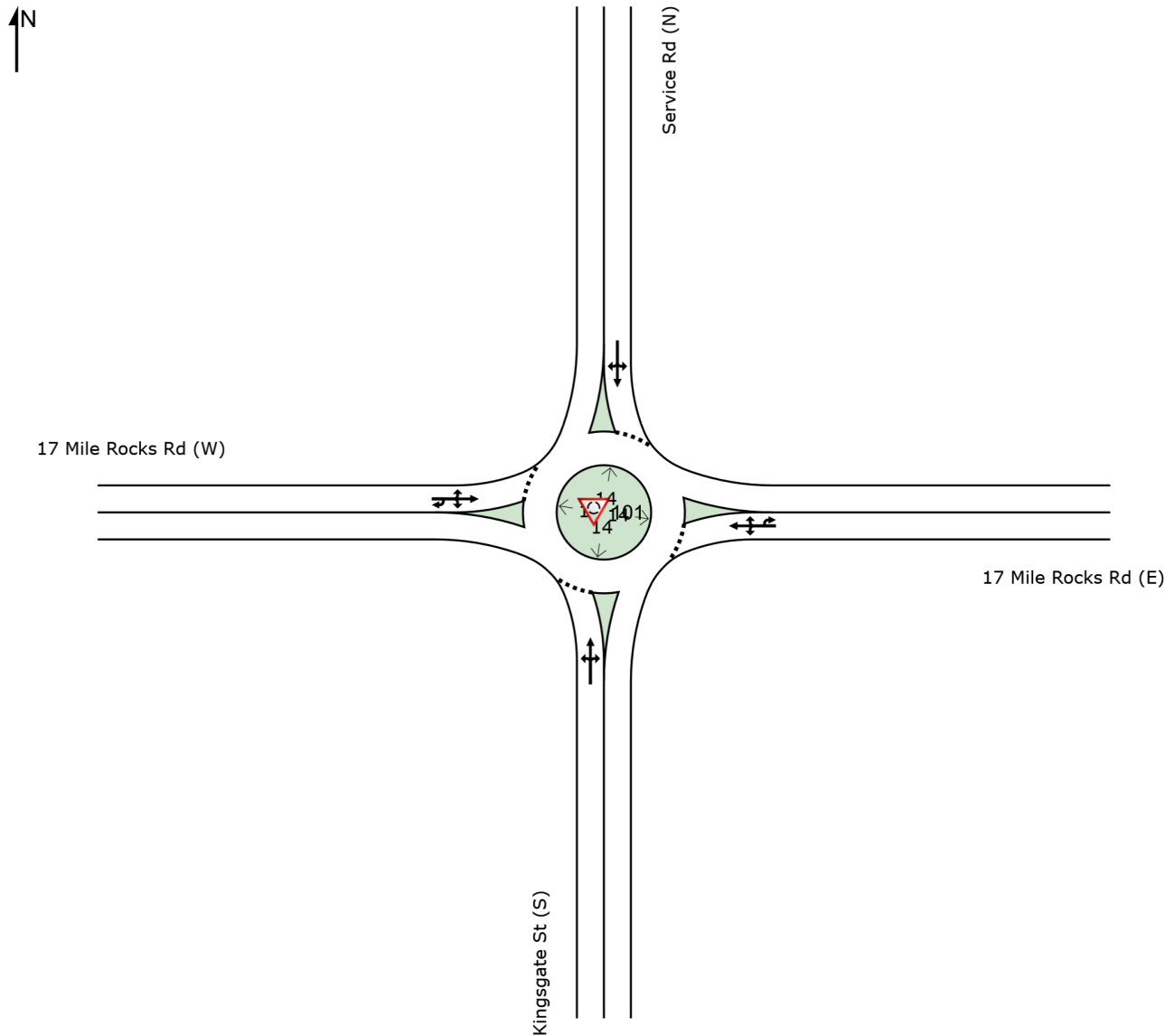
Attachment B: SIDRA Analysis Outputs

SITE LAYOUT

 **Site: 101 [2031 AM BASE (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Existing Roundabout Intersection
2031 AM Peak Hour (0730-0830) - Without Development
Site Category: (None)
Roundabout

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



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Project: L:\Synergy\Projects\2021\21BRT0290 Oxley PDA - Lifestyle Apartments & Community Centre\6 - Analysis\2-17 Mile Rocks - Kingsgate.sip9

MOVEMENT SUMMARY

 **Site: 101 [2031 AM BASE (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Existing Roundabout Intersection
2031 AM Peak Hour (0730-0830) - Without Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Kingsgate St (S)														
1	L2	7	0.0	7	0.0	0.043	9.8	LOS A	0.2	1.7	0.72	0.74	0.72	48.9
2	T1	1	0.0	1	0.0	0.043	10.0	LOS B	0.2	1.7	0.72	0.74	0.72	49.8
3	R2	19	0.0	20	0.0	0.043	13.9	LOS B	0.2	1.7	0.72	0.74	0.72	49.6
Approach		27	0.0	28	0.0	0.043	12.7	LOS B	0.2	1.7	0.72	0.74	0.72	49.4
East: 17 Mile Rocks Rd (E)														
4	L2	10	0.0	11	0.0	0.521	4.3	LOS A	5.5	39.8	0.15	0.42	0.15	54.0
5	T1	771	4.0	812	4.0	0.521	4.6	LOS A	5.5	39.8	0.15	0.42	0.15	55.1
6	R2	2	0.0	2	0.0	0.521	8.4	LOS A	5.5	39.8	0.15	0.42	0.15	54.9
6u	U	14	0.0	15	0.0	0.521	10.3	LOS B	5.5	39.8	0.15	0.42	0.15	55.7
Approach		797	3.9	839	3.9	0.521	4.7	LOS A	5.5	39.8	0.15	0.42	0.15	55.1
North: Service Rd (N)														
7	L2	3	0.0	3	0.0	0.039	31.6	LOS C	0.3	1.8	1.00	0.89	1.00	38.6
8	T1	1	0.0	1	0.0	0.039	31.9	LOS C	0.3	1.8	1.00	0.89	1.00	39.2
9	R2	1	0.0	1	0.0	0.039	35.8	LOS D	0.3	1.8	1.00	0.89	1.00	39.1
Approach		5	0.0	5	0.0	0.039	32.5	LOS C	0.3	1.8	1.00	0.89	1.00	38.8
West: 17 Mile Rocks Rd (W)														
10	L2	3	0.0	3	0.0	0.938	5.5	LOS A	40.3	287.1	0.90	0.38	0.90	51.0
11	T1	1376	2.0	1448	2.0	0.938	5.8	LOS A	40.3	287.1	0.90	0.38	0.90	52.0
12	R2	4	0.0	4	0.0	0.938	9.6	LOS A	40.3	287.1	0.90	0.38	0.90	51.8
12u	U	7	0.0	7	0.0	0.938	11.5	LOS B	40.3	287.1	0.90	0.38	0.90	52.5
Approach		1390	2.0	1463	2.0	0.938	5.9	LOS A	40.3	287.1	0.90	0.38	0.90	52.0
All Vehicles		2219	2.6	2336	2.6	0.938	5.6	LOS A	40.3	287.1	0.63	0.40	0.63	53.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: 101 [2031 AM PROJECT (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Existing Roundabout Intersection
2031 AM Peak Hour (0730-0830) - With Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Kingsgate St (S)														
1	L2	7	0.0	7	0.0	0.048	10.9	LOS B	0.3	2.1	0.80	0.77	0.80	48.2
2	T1	1	0.0	1	0.0	0.048	11.2	LOS B	0.3	2.1	0.80	0.77	0.80	49.1
3	R2	18	0.0	19	0.0	0.048	15.0	LOS B	0.3	2.1	0.80	0.77	0.80	48.9
Approach		26	0.0	27	0.0	0.048	13.8	LOS B	0.3	2.1	0.80	0.77	0.80	48.7
East: 17 Mile Rocks Rd (E)														
4	L2	9	0.0	9	0.0	0.608	4.6	LOS A	7.1	51.1	0.37	0.45	0.37	53.0
5	T1	771	4.0	812	4.0	0.608	5.0	LOS A	7.1	51.1	0.37	0.45	0.37	54.0
6	R2	48	0.0	51	0.0	0.608	8.8	LOS A	7.1	51.1	0.37	0.45	0.37	53.9
6u	U	14	0.0	15	0.0	0.608	10.6	LOS B	7.1	51.1	0.37	0.45	0.37	54.6
Approach		842	3.7	886	3.7	0.608	5.3	LOS A	7.1	51.1	0.37	0.45	0.37	54.0
North: Service Rd (N)														
7	L2	96	0.0	101	0.0	0.988	192.0	LOS F	16.0	112.3	1.00	1.65	2.87	14.3
8	T1	1	0.0	1	0.0	0.988	192.3	LOS F	16.0	112.3	1.00	1.65	2.87	14.4
9	R2	37	0.0	39	0.0	0.988	196.2	LOS F	16.0	112.3	1.00	1.65	2.87	14.4
Approach		134	0.0	141	0.0	0.988	193.2	LOS F	16.0	112.3	1.00	1.65	2.87	14.4
West: 17 Mile Rocks Rd (W)														
10	L2	25	0.0	26	0.0	1.033	41.6	LOS D	89.0	633.5	1.00	0.90	1.67	35.2
11	T1	1376	2.0	1448	2.0	1.033	42.0	LOS D	89.0	633.5	1.00	0.90	1.67	35.6
12	R2	4	0.0	4	0.0	1.033	45.7	LOS D	89.0	633.5	1.00	0.90	1.67	35.5
12u	U	7	0.0	7	0.0	1.033	47.6	LOS D	89.0	633.5	1.00	0.90	1.67	35.9
Approach		1412	1.9	1486	1.9	1.033	42.0	LOS D	89.0	633.5	1.00	0.90	1.67	35.6
All Vehicles		2414	2.4	2541	2.4	1.033	37.3	LOS D	89.0	633.5	0.78	0.78	1.27	37.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: 101 [2031 PM BASE (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Existing Roundabout Intersection
2031 PM Peak Hour (1645-1745) - Without Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Kingsgate St (S)														
1	L2	1	0.0	1	0.0	0.022	17.3	LOS B	0.1	1.0	0.89	0.75	0.89	44.3
2	T1	1	0.0	1	0.0	0.022	17.6	LOS B	0.1	1.0	0.89	0.75	0.89	45.1
3	R2	7	0.0	7	0.0	0.022	21.4	LOS C	0.1	1.0	0.89	0.75	0.89	44.9
Approach		9	0.0	9	0.0	0.022	20.5	LOS C	0.1	1.0	0.89	0.75	0.89	44.9
East: 17 Mile Rocks Rd (E)														
4	L2	15	0.0	16	0.0	0.741	4.3	LOS A	10.8	76.0	0.15	0.42	0.15	54.1
5	T1	1158	1.0	1219	1.0	0.741	4.6	LOS A	10.8	76.0	0.15	0.42	0.15	55.2
6	R2	1	0.0	1	0.0	0.741	8.4	LOS A	10.8	76.0	0.15	0.42	0.15	55.0
6u	U	6	0.0	6	0.0	0.741	10.3	LOS B	10.8	76.0	0.15	0.42	0.15	55.8
Approach		1180	1.0	1242	1.0	0.741	4.6	LOS A	10.8	76.0	0.15	0.42	0.15	55.2
North: Service Rd (N)														
7	L2	1	0.0	1	0.0	0.004	8.1	LOS A	0.0	0.2	0.64	0.58	0.64	51.0
8	T1	1	0.0	1	0.0	0.004	8.3	LOS A	0.0	0.2	0.64	0.58	0.64	52.0
9	R2	1	0.0	1	0.0	0.004	12.2	LOS B	0.0	0.2	0.64	0.58	0.64	51.7
Approach		3	0.0	3	0.0	0.004	9.5	LOS A	0.0	0.2	0.64	0.58	0.64	51.6
West: 17 Mile Rocks Rd (W)														
10	L2	1	0.0	1	0.0	0.431	4.3	LOS A	3.6	25.4	0.13	0.43	0.13	54.2
11	T1	652	1.0	686	1.0	0.431	4.6	LOS A	3.6	25.4	0.13	0.43	0.13	55.3
12	R2	5	0.0	5	0.0	0.431	8.4	LOS A	3.6	25.4	0.13	0.43	0.13	55.1
12u	U	2	0.0	2	0.0	0.431	10.3	LOS B	3.6	25.4	0.13	0.43	0.13	55.8
Approach		660	1.0	695	1.0	0.431	4.6	LOS A	3.6	25.4	0.13	0.43	0.13	55.3
All Vehicles		1852	1.0	1949	1.0	0.741	4.7	LOS A	10.8	76.0	0.15	0.42	0.15	55.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 **Site: 101 [2031 PM PROJECT (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Existing Roundabout Intersection
2031 PM Peak Hour (1645-1745) - With Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Kingsgate St (S)														
1	L2	1	0.0	1	0.0	0.030	22.3	LOS C	0.2	1.5	0.99	0.80	0.99	41.9
2	T1	1	0.0	1	0.0	0.030	22.6	LOS C	0.2	1.5	0.99	0.80	0.99	42.6
3	R2	6	0.0	6	0.0	0.030	26.5	LOS C	0.2	1.5	0.99	0.80	0.99	42.4
Approach		8	0.0	8	0.0	0.030	25.5	LOS C	0.2	1.5	0.99	0.80	0.99	42.4
East: 17 Mile Rocks Rd (E)														
4	L2	14	0.0	15	0.0	0.848	4.8	LOS A	20.7	145.8	0.53	0.41	0.53	52.4
5	T1	1158	1.0	1219	1.0	0.848	5.1	LOS A	20.7	145.8	0.53	0.41	0.53	53.4
6	R2	87	0.0	92	0.0	0.848	9.0	LOS A	20.7	145.8	0.53	0.41	0.53	53.2
6u	U	6	0.0	6	0.0	0.848	10.8	LOS B	20.7	145.8	0.53	0.41	0.53	54.0
Approach		1265	0.9	1332	0.9	0.848	5.4	LOS A	20.7	145.8	0.53	0.41	0.53	53.4
North: Service Rd (N)														
7	L2	53	0.0	56	0.0	0.118	8.6	LOS A	0.7	4.9	0.72	0.76	0.72	50.7
8	T1	1	0.0	1	0.0	0.118	8.8	LOS A	0.7	4.9	0.72	0.76	0.72	51.7
9	R2	25	0.0	26	0.0	0.118	12.7	LOS B	0.7	4.9	0.72	0.76	0.72	51.5
Approach		79	0.0	83	0.0	0.118	9.9	LOS A	0.7	4.9	0.72	0.76	0.72	50.9
West: 17 Mile Rocks Rd (W)														
10	L2	33	0.0	35	0.0	0.545	5.0	LOS A	5.0	35.0	0.45	0.49	0.45	52.9
11	T1	652	1.0	686	1.0	0.545	5.3	LOS A	5.0	35.0	0.45	0.49	0.45	53.9
12	R2	5	0.0	5	0.0	0.545	9.2	LOS A	5.0	35.0	0.45	0.49	0.45	53.7
12u	U	2	0.0	2	0.0	0.545	11.0	LOS B	5.0	35.0	0.45	0.49	0.45	54.5
Approach		692	0.9	728	0.9	0.545	5.3	LOS A	5.0	35.0	0.45	0.49	0.45	53.9
All Vehicles		2044	0.9	2152	0.9	0.848	5.6	LOS A	20.7	145.8	0.51	0.45	0.51	53.4

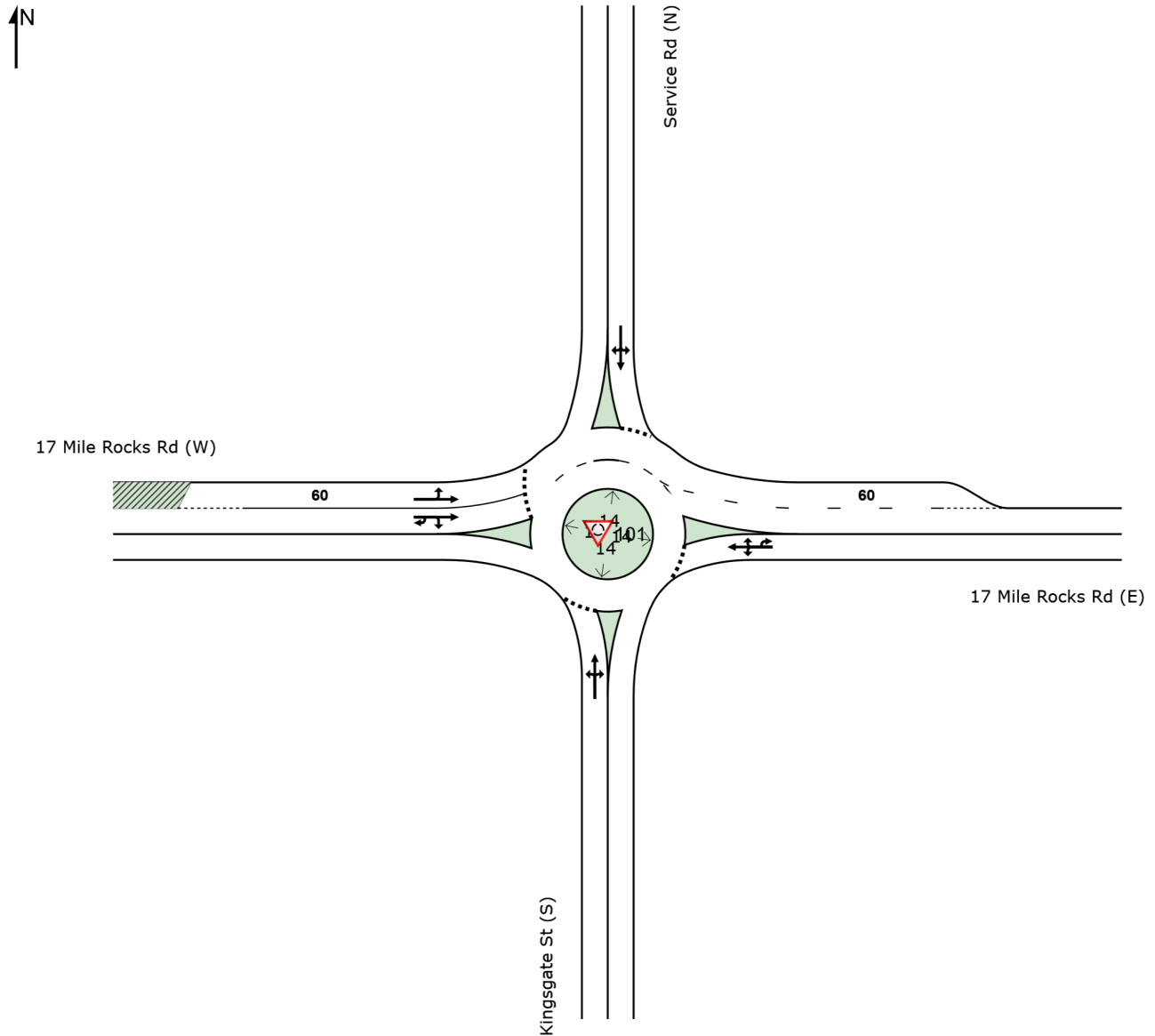
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

SITE LAYOUT

 **Site: 101 [2031 AM PROJECT - Upgrade (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Upgraded Roundabout Intersection
2031 AM Peak Hour (0730-0830) - With Development
Site Category: (None)
Roundabout

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



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Project: L:\Synergy\Projects\2021\21BRT0290 Oxley PDA - Lifestyle Apartments & Community Centre\6 - Analysis\2-17 Mile Rocks - Kingsgate.sip9

MOVEMENT SUMMARY

 **Site: 101 [2031 AM PROJECT - Upgrade (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Upgraded Roundabout Intersection
2031 AM Peak Hour (0730-0830) - With Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Kingsgate St (S)														
1	L2	7	0.0	7	0.0	0.047	10.6	LOS B	0.3	2.0	0.80	0.76	0.80	48.4
2	T1	1	0.0	1	0.0	0.047	11.0	LOS B	0.3	2.0	0.80	0.76	0.80	49.3
3	R2	18	0.0	19	0.0	0.047	15.0	LOS B	0.3	2.0	0.80	0.76	0.80	49.1
Approach		26	0.0	27	0.0	0.047	13.6	LOS B	0.3	2.0	0.80	0.76	0.80	48.9
East: 17 Mile Rocks Rd (E)														
4	L2	9	0.0	9	0.0	0.607	4.6	LOS A	6.8	49.2	0.36	0.45	0.36	53.1
5	T1	771	4.0	812	4.0	0.607	4.9	LOS A	6.8	49.2	0.36	0.45	0.36	54.2
6	R2	48	0.0	51	0.0	0.607	8.8	LOS A	6.8	49.2	0.36	0.45	0.36	54.1
6u	U	14	0.0	15	0.0	0.607	10.7	LOS B	6.8	49.2	0.36	0.45	0.36	54.8
Approach		842	3.7	886	3.7	0.607	5.2	LOS A	6.8	49.2	0.36	0.45	0.36	54.2
North: Service Rd (N)														
7	L2	96	0.0	101	0.0	0.343	24.3	LOS C	1.9	13.1	0.84	0.96	0.93	47.0
8	T1	1	0.0	1	0.0	0.343	14.5	LOS B	1.9	13.1	0.84	0.96	0.93	47.9
9	R2	37	0.0	39	0.0	0.343	18.3	LOS B	1.9	13.1	0.84	0.96	0.93	47.8
Approach		134	0.0	141	0.0	0.343	22.6	LOS C	1.9	13.1	0.84	0.96	0.93	47.3
West: 17 Mile Rocks Rd (W)														
10	L2	25	0.0	26	0.0	0.307	5.3	LOS A	1.9	13.7	0.32	0.48	0.32	53.2
11	T1	1376	2.0	1448	2.0	0.733	7.5	LOS A	9.3	66.0	0.46	0.48	0.46	53.8
12	R2	4	0.0	4	0.0	0.733	9.1	LOS A	9.3	66.0	0.49	0.47	0.49	53.4
12u	U	7	0.0	7	0.0	0.733	11.1	LOS B	9.3	66.0	0.49	0.47	0.49	54.2
Approach		1412	1.9	1486	1.9	0.733	7.5	LOS A	9.3	66.0	0.45	0.48	0.45	53.8
All Vehicles		2414	2.4	2541	2.4	0.733	7.6	LOS A	9.3	66.0	0.45	0.50	0.45	53.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

Roundabout Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: L:\Synergy\Projects\2021\21BRT0290 Oxley PDA - Lifestyle Apartments & Community Centre\6 - Analysis\2-17 Mile Rocks - Kingsgate.sip9

MOVEMENT SUMMARY

 **Site: 101 [2031 PM PROJECT - Upgrade (Site Folder: General)]**

Seventeen Mile Rocks Rd / Service Rd / Kingsgate St
Upgraded Roundabout Intersection
2031 PM Peak Hour (1645-1745) - With Development
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
South: Kingsgate St (S)														
1	L2	1	0.0	1	0.0	0.029	21.9	LOS C	0.2	1.5	0.99	0.79	0.99	42.1
2	T1	1	0.0	1	0.0	0.029	22.2	LOS C	0.2	1.5	0.99	0.79	0.99	42.8
3	R2	6	0.0	6	0.0	0.029	26.2	LOS C	0.2	1.5	0.99	0.79	0.99	42.6
Approach		8	0.0	8	0.0	0.029	25.2	LOS C	0.2	1.5	0.99	0.79	0.99	42.6
East: 17 Mile Rocks Rd (E)														
4	L2	14	0.0	15	0.0	0.847	4.8	LOS A	19.8	140.0	0.51	0.41	0.51	52.5
5	T1	1158	1.0	1219	1.0	0.847	5.0	LOS A	19.8	140.0	0.51	0.41	0.51	53.7
6	R2	87	0.0	92	0.0	0.847	9.0	LOS A	19.8	140.0	0.51	0.41	0.51	53.4
6u	U	6	0.0	6	0.0	0.847	10.9	LOS B	19.8	140.0	0.51	0.41	0.51	54.1
Approach		1265	0.9	1332	0.9	0.847	5.3	LOS A	19.8	140.0	0.51	0.41	0.51	53.6
North: Service Rd (N)														
7	L2	53	0.0	56	0.0	0.112	8.7	LOS A	0.5	3.3	0.57	0.76	0.57	51.6
8	T1	1	0.0	1	0.0	0.112	7.5	LOS A	0.5	3.3	0.57	0.76	0.57	52.7
9	R2	25	0.0	26	0.0	0.112	11.3	LOS B	0.5	3.3	0.57	0.76	0.57	52.5
Approach		79	0.0	83	0.0	0.112	9.5	LOS A	0.5	3.3	0.57	0.76	0.57	51.9
West: 17 Mile Rocks Rd (W)														
10	L2	33	0.0	35	0.0	0.159	5.4	LOS A	0.9	6.3	0.32	0.49	0.32	53.2
11	T1	652	1.0	686	1.0	0.379	5.4	LOS A	2.8	19.8	0.34	0.48	0.34	54.3
12	R2	5	0.0	5	0.0	0.379	8.8	LOS A	2.8	19.8	0.34	0.47	0.34	54.0
12u	U	2	0.0	2	0.0	0.379	10.8	LOS B	2.8	19.8	0.34	0.47	0.34	54.9
Approach		692	0.9	728	0.9	0.379	5.5	LOS A	2.8	19.8	0.34	0.48	0.34	54.3
All Vehicles		2044	0.9	2152	0.9	0.847	5.6	LOS A	19.8	140.0	0.46	0.45	0.46	53.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
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.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.