Appendix 4

Additional Intersection Analysis and Response to Submissions

Prepared by Intersect Traffic - May 2018

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Intersect Traffic
TRAFFIC AND CIVIL ENGINEERING CONSULTANTS

Ref: 13/024

22nd May 2018

Hanson Construction Materials
Level 5, 75 George Street
PARRAMATTA NSW 2150

Attention: - Andrew Driver

Dear Andrew,

RE: Additional Intersection Analysis and Response to Submissions – Brandy Hill Quarry Expansion.

This letter report provides the results of additional assessment and response to submissions provided by the Department of Planning and Environment and Roads and Maritime Services regarding the proposed extension of the Brandy Hill Quarry.

Intersection Survey and Assessment

Please note that it is considered unreasonable and unnecessary to undertake intersection analysis of all intersections along the haulage routes to the sub-arterial and higher road network as many intersections are observed to be operating with uninterrupted flow conditions and the increase in traffic is not significant enough to alter or impact on intersection efficiency. It is more realistic to assess traffic impacts on the major intersections along the haulage routes that may not be operating with uninterrupted flow conditions and thus likely to be the most sensitive to traffic volume increases. Therefore, the NSW RMS request for further modelling of the three critical intersections along the Raymond Terrace haulage route is considered more practical and targeted based on their superior knowledge of the state road network.

Therefore, additional traffic counts have been undertaken at the following three intersections as requested by NSW RMS and these intersections have been modelled using the Sidra

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Intersection 7 intersection analysis model for post development conditions consistent with the existing intersection modelling undertaken in the TIA.

- Raymond Terrace Road / Seaham Road give way controlled rural seagull;
- William Bailey Street / Port Stephens Street / Newline Road roundabout; and
- Adelaide Street / William Bailey Street signalised intersection.

Modelling for these intersections was carried out on the basis that;

1. Intersection layouts remain unchanged;
2. The worst-case scenario such that all additional quarry traffic i.e. 60 vtph during a major order was directed to the Pacific Motorway / Highway at Raymond Terrace.
3. At Adelaide Street 90 % of the development traffic had an origin / destination to the south towards Hexham and 10 % had an origin / destination to the north towards Karuah / Medowie / Port Stephens;
4. The adopted background traffic growth was 1.5 % per annum which is the average background traffic growth rate adopted by NSW RMS in their lower Hunter traffic models;
5. Existing traffic dated used was collected by Northern Transport Planning and Engineering on behalf of Intersect Traffic on 3rd August 2017 and
6. Modelling of the rural seagull at Raymond Terrace Road / Seaham Road did not match the observed behaviour during the traffic counts when the Sidra defaults were used therefore a calibration step was included in this modelling. The calibration was based on the critical gap acceptance criteria for right turning vehicles out of Raymond Terrace Road.

The traffic data collected, and the Sidra Summary results are provided within ***Attachments A and B*** of this response respectively. The modelling undertaken on these intersections showed the following;

- The intersections are all currently operating within the acceptable criteria set by the NSW RMS for LoS, average delays and back of queue lengths during the existing peak AM and PM traffic periods;

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- The additional traffic generated by the development does not adversely impact on the current operation of these intersections as post development these intersections initially continue to operate within the acceptable criteria set by the NSW RMS for LoS, average delays and back of queue lengths during the peak AM and PM traffic periods.
- As expected with background traffic growth intersection performance continues to deteriorate over the expected life of the quarry with both the Raymond Terrace Road / Seaham Road rural seagull and the Adelaide Street / William Bailey Street traffic signals operating at capacity by 2024 and 2044 respectively.
- The William Bailey Street / Port Stephens Street / Newline Road roundabout however continues to operate satisfactorily post development through to at least 2044. It is noted however that the proposed Kings Hill residential development has a major impact on this intersection and as a result this intersection is likely to be converted to traffic signals in the future should the residential development proceed. It is understood the upgrading of this intersection is included within the proposed S94 Developer Contributions Plan for the Kings Hill residential development.
- With background traffic growth to 2024 the Raymond Terrace Road / Seaham Road rural seagull would need to be upgraded to a roundabout. This development's contribution to the traffic volumes through the intersection in 2024 is only 3.4 % in the AM peak and 3 % in the PM peak indicating an average contribution of 3.2%. Port Stephens Council has advised NSW RMS already has plans to upgrade this intersection to a roundabout under the blackspot program.
- With background traffic growth through to 2044 (expected life of the quarry) the Adelaide Street / William Bailey Street traffic signals will need to be upgraded to provide additional right turn lanes on both streets. This development's contribution to the traffic volumes through the intersection in 2044 is only 2.4 % in the AM peak and 1.9 % in the PM peak indicating any contribution to the upgrade should only be an average of 2.25 % and arguably should only be applied should the quarry life extend beyond 2044. It is also noted that this intersection is also affected by the proposed Kings Hill residential development and upgrading of the intersection is understood to be included within the proposed S94 Developer Contributions Plan for the Kings Hill residential development.

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Overall it can still be concluded that the proposed Quarry Expansion will not adversely impact on the adjoining local and state road network though minor contribution to the future upgrading of the Raymond Terrace Road / Seaham Road rural seagull intersection may be appropriate through a Voluntary Planning Agreement.

Cumulative Traffic Levels

With regards to cumulative traffic levels, the TIA prepared for the Martin's Creek Quarry Expansion by Seca Solution (August 2016) has been reviewed. Table 4.3 of this report identified that the Quarry would generate up to 5 – 6 vtph on their Route 2 which runs through Clarencetown Road, Brandy Hill Drive, Seaham Road and William Bailey Street to Adelaide Street. The Intersect Traffic TIA for the Brandy Hill Quarry made an informed assumption that the Martin's Creek Quarry expansion would increase traffic on the local road network by 5 vtph. It is therefore considered that the TIA prepared for this project has made suitable allowance for the additional traffic generated by the Martins Creek Expansion particularly as the Martins Creek Quarry expansion TIA is based on the full output from the quarry and thus the 5 – 6 vtph would include current traffic volumes.

Drivers Code of Conduct

It is also noted that the Department of Planning and Environment requested that Hanson prepare a Traffic Management Plan and Driver's Code of Conduct and describe measures that may be included in these plans to mitigate potential impacts to amenity.

Generally, a Traffic Management Plan incorporates a Driver Code of Conduct which informs and requires drivers to adhere to road rules, general good practice and specific site related strategies to minimise impacts on adjoining properties and improve road safety. Particular reference in the Driver Code of Conduct include a three strikes enforcement strategy, identification of road safety issues on the main haulage routes from the site and compliance with consent conditions. Examples of strategies contained in existing TMP's in operation on other Hanson Construction Materials Quarries include;

- Limiting truck movements at certain times of the day as per consent conditions;

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- Identifying set haulage routes to the sub-arterial road network or higher;
- Use of compression braking and other night time noise issues;
- Load covering;
- Adequately separating deliveries leaving the site;
- Emergency and incident response; and
- Road maintenance measures.

The applicant would expect and accept a condition of consent requiring the preparation of a Traffic Management Plan and Driver Code of Conduct for the quarry with input from Council, NSW RMS and the local community consultative committee.

Consultation with Maitland City Council's Traffic Engineer Mr. Scott Henderson and Port Stephens Council's Traffic Engineer Mr Joe Gleeson has indicated that both Council officers accepted that a condition of consent requiring preparation of a Traffic Management Plan and Driver Code of Conduct for the quarry would alleviate their concerns with the project subject to both Council's having input into the preparation of these documents.

For further information or clarification please do not hesitate to contact me on 02 4936 6200 or 0423 324 188.

Yours sincerely

Jeff Garry

Director
Intersect Traffic

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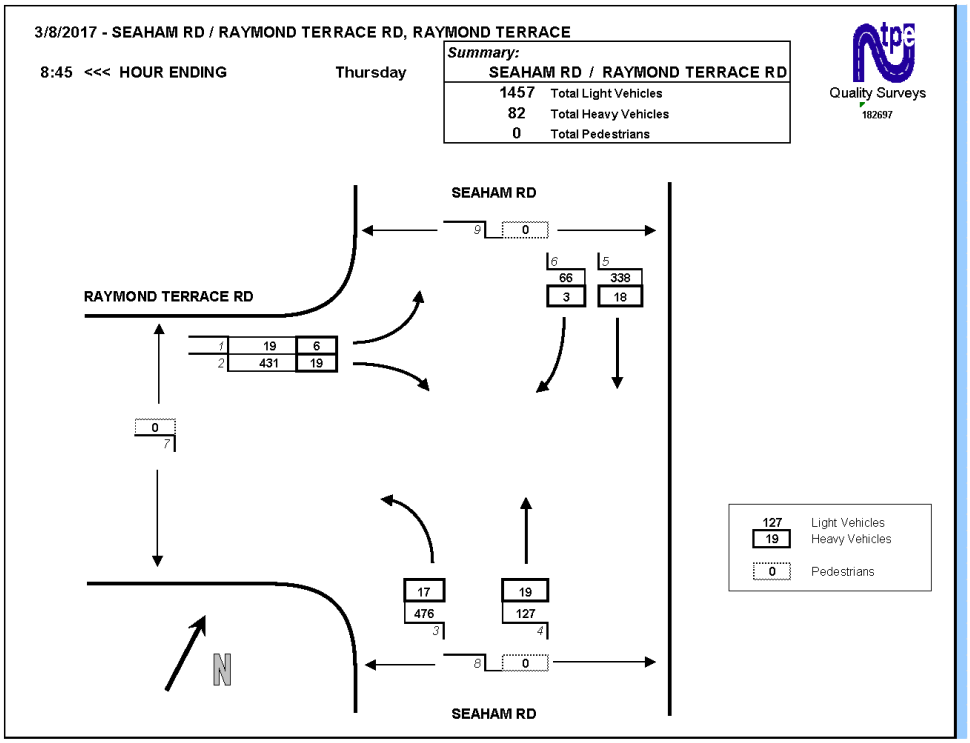
Attachment A



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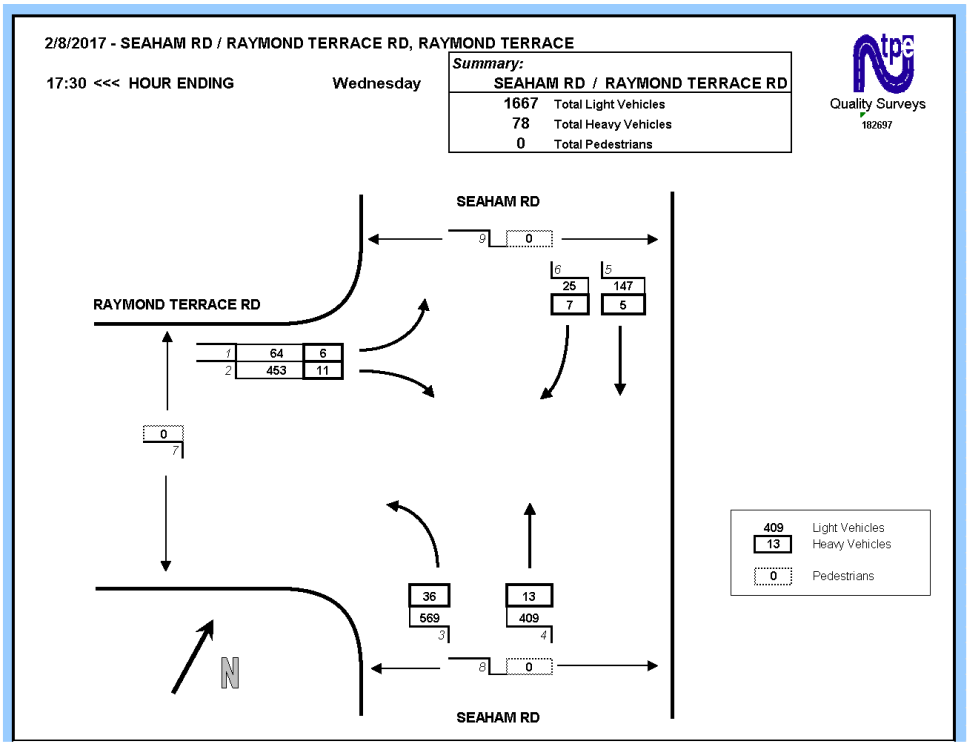

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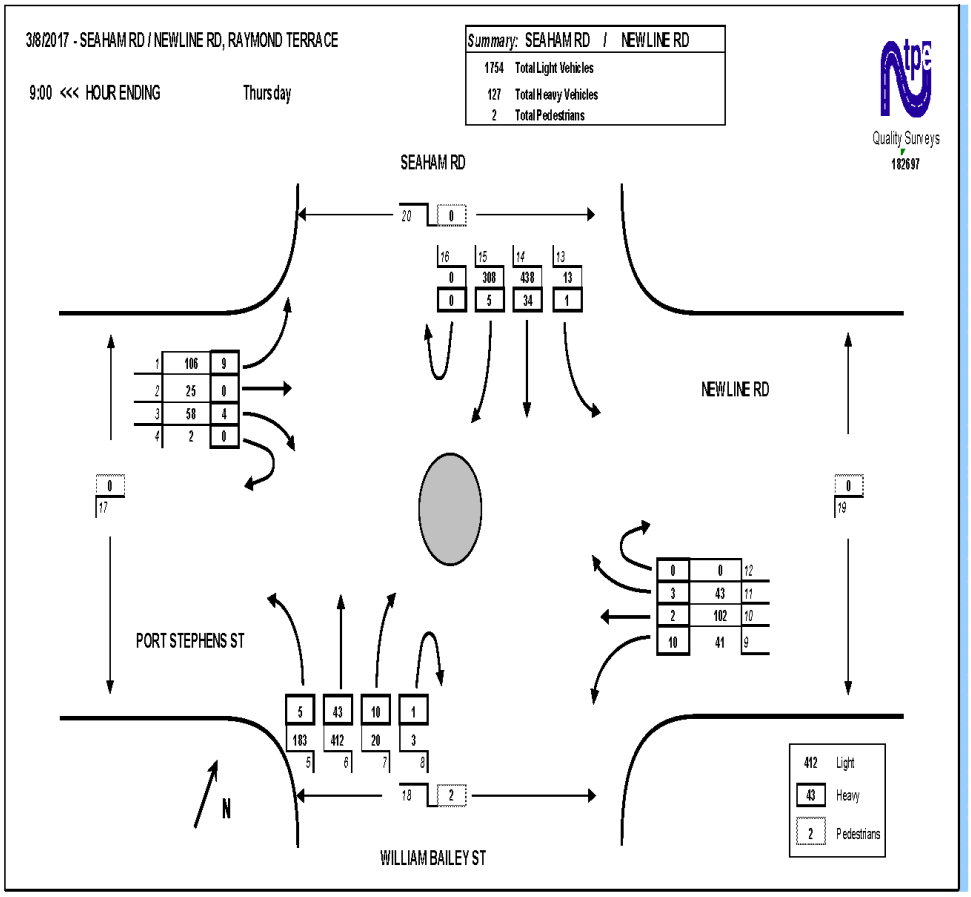

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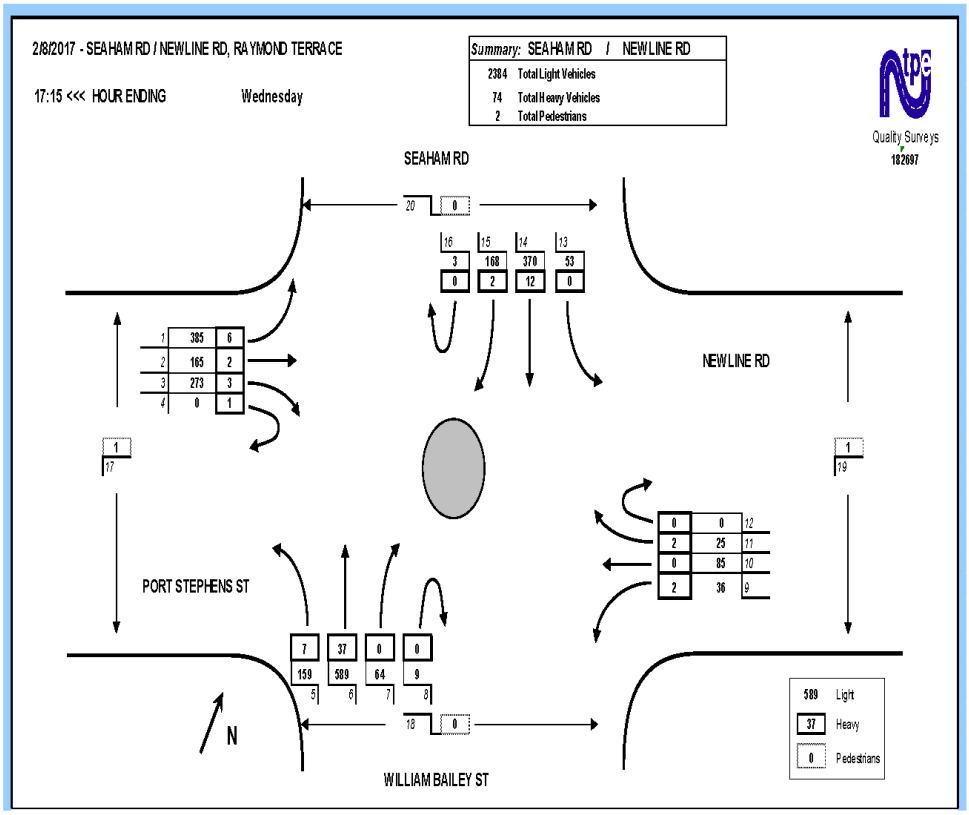

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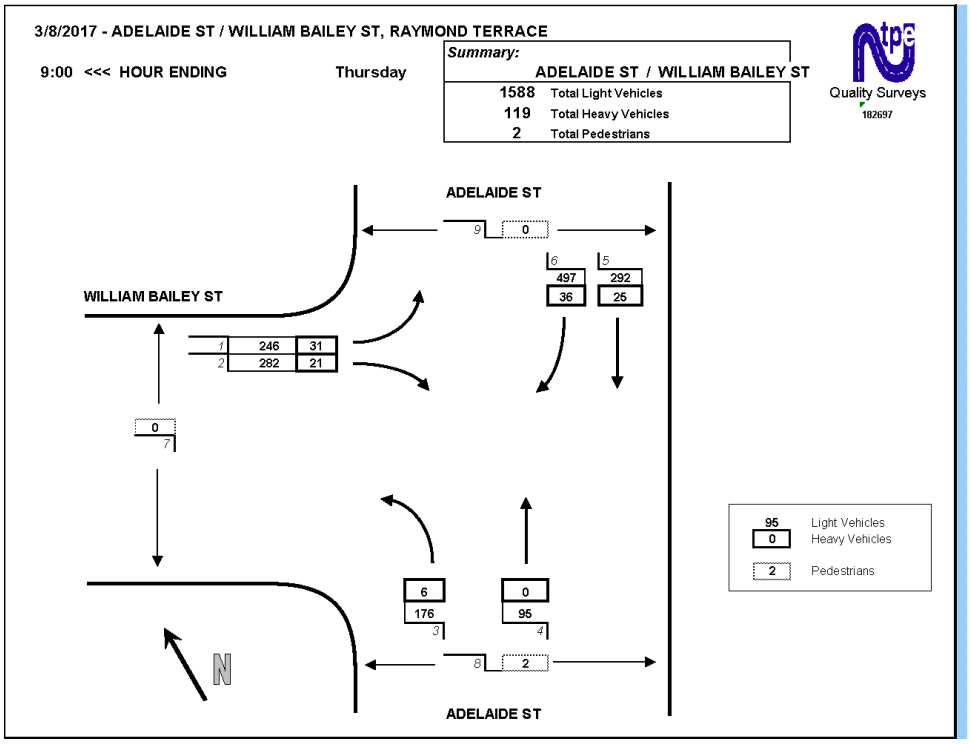

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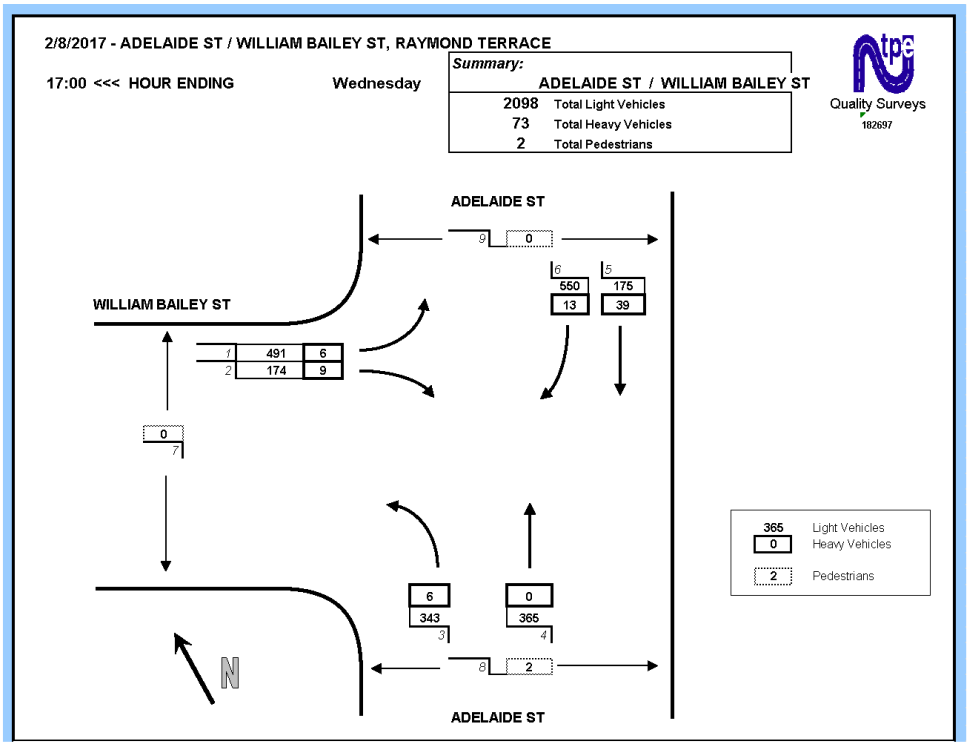

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Attachment B

MOVEMENT SUMMARY

▽ Site: 101 [2017 AM peak]

Raymond Terrace Road / Seaham Road Rural Seagull
Existing traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	25	24.0	0.496	9.6	LOS A	3.7	27.4	0.60	0.89	54.6
3	R2	450	4.2	0.496	11.0	LOS A	3.7	27.4	0.60	0.89	59.6
Approach		475	5.3	0.496	11.0	LOS A	3.7	27.4	0.60	0.89	59.3
East: Seaham Road											
4	L2	493	3.4	0.325	7.7	LOS A	1.7	12.5	0.20	0.57	63.6
5	T1	146	13.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		639	5.6	0.325	5.9	LOS A	1.7	12.5	0.16	0.44	66.6
West: Seaham Road											
11	T1	356	5.1	0.189	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	69	4.3	0.045	7.2	LOS A	0.2	1.5	0.27	0.60	62.7
Approach		425	4.9	0.189	1.2	NA	0.2	1.5	0.04	0.10	76.5
All Vehicles		1539	5.3	0.496	6.2	NA	3.7	27.4	0.26	0.48	66.5

MOVEMENT SUMMARY

▽ Site: 101 [2017 PM peak]

Raymond Terrace Road / Seaham Road Rural Seagull
Existing traffic
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	70	8.6	0.773	16.7	LOS B	8.3	59.9	0.83	1.27	51.8
3	R2	464	2.4	0.773	19.5	LOS B	8.3	59.9	0.83	1.27	53.0
Approach		534	3.2	0.773	19.1	LOS B	8.3	59.9	0.83	1.27	52.9
East: Seaham Road											
4	L2	605	6.0	0.392	7.6	LOS A	2.3	17.1	0.15	0.57	63.1
5	T1	422	3.1	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		1027	4.8	0.392	4.5	LOS A	2.3	17.1	0.09	0.34	69.0
West: Seaham Road											
11	T1	152	3.3	0.080	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R2	32	21.9	0.032	9.0	LOS A	0.1	1.1	0.48	0.67	56.5
Approach		184	6.5	0.080	1.6	NA	0.1	1.1	0.08	0.12	74.6
All Vehicles		1745	4.5	0.773	8.6	NA	8.3	59.9	0.31	0.60	63.6

MOVEMENT SUMMARY

Site: 101 [2017 AM peak + development]

Raymond Terrace Road / Seaham Road Rural Seagull

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	25	24.0	0.520	10.2	LOS A	4.0	29.4	0.64	0.94	54.1
3	R2	450	4.2	0.520	11.7	LOS A	4.0	29.4	0.64	0.94	59.0
Approach		475	5.3	0.520	11.6	LOS A	4.0	29.4	0.64	0.94	58.7
East: Seaham Road											
4	L2	493	3.4	0.325	7.7	LOS A	1.7	12.5	0.20	0.57	63.6
5	T1	176	27.8	0.107	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		669	9.9	0.325	5.7	LOS A	1.7	12.5	0.15	0.42	67.1
West: Seaham Road											
11	T1	386	12.4	0.214	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	69	4.3	0.047	7.3	LOS A	0.2	1.5	0.31	0.61	62.5
Approach		455	11.2	0.214	1.1	NA	0.2	1.5	0.05	0.09	76.7
All Vehicles		1599	8.9	0.520	6.1	NA	4.0	29.4	0.27	0.48	66.7

MOVEMENT SUMMARY

Site: 101 [2017 PM peak + development]

Raymond Terrace Road / Seaham Road Rural Seagull

Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	70	8.6	0.822	19.8	LOS B	9.9	70.9	0.87	1.39	49.5
3	R2	464	2.4	0.822	22.7	LOS B	9.9	70.9	0.87	1.39	50.6
Approach		534	3.2	0.822	22.3	LOS B	9.9	70.9	0.87	1.39	50.5
East: Seaham Road											
4	L2	605	6.0	0.392	7.6	LOS A	2.3	17.1	0.15	0.57	63.1
5	T1	452	9.5	0.246	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		1057	7.5	0.392	4.3	LOS A	2.3	17.1	0.09	0.33	69.2
West: Seaham Road											
11	T1	192	18.2	0.110	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R2	32	21.9	0.034	9.3	LOS A	0.1	1.1	0.51	0.69	56.2
Approach		224	18.8	0.110	1.3	NA	0.1	1.1	0.07	0.10	75.4
All Vehicles		1815	7.6	0.822	9.3	NA	9.9	70.9	0.32	0.61	63.0

MOVEMENT SUMMARY

Site: 101 [2024 AM peak]

Raymond Terrace Road / Seaham Road Rural Seagull

Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	28	24.0	0.610	11.4	LOS A	5.4	39.7	0.70	1.03	52.9
3	R2	497	4.2	0.610	13.3	LOS A	5.4	39.7	0.70	1.03	57.5
Approach		525	5.3	0.610	13.2	LOS A	5.4	39.7	0.70	1.03	57.3
East: Seaham Road											
4	L2	545	3.4	0.362	7.7	LOS A	2.0	14.5	0.22	0.58	63.4
5	T1	194	27.8	0.118	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
Approach		739	9.9	0.362	5.7	LOS A	2.0	14.5	0.17	0.42	67.1
West: Seaham Road											
11	T1	427	12.4	0.236	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	76	4.3	0.053	7.4	LOS A	0.2	1.7	0.33	0.61	62.4
Approach		503	11.2	0.236	1.1	NA	0.2	1.7	0.05	0.09	76.6
All Vehicles		1767	8.9	0.610	6.6	NA	5.4	39.7	0.29	0.51	66.1

MOVEMENT SUMMARY

Site: 101 [2024 PM peak]

Raymond Terrace Road / Seaham Road Rural Seagull

Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	77	8.6	1.015	88.5	LOS F[11]	41.9	301.4	1.00	3.12	25.5
3	R2	513	2.4	1.015	92.3	LOS F[11]	41.9	301.4	1.00	3.12	25.8
Approach		590	3.2	1.015	91.8	LOS F[11]	41.9	301.4	1.00	3.12	25.7
East: Seaham Road											
4	L2	669	6.0	0.435	7.6	LOS A	2.7	20.0	0.17	0.57	63.0
5	T1	499	9.5	0.272	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		1168	7.5	0.435	4.4	LOS A	2.7	20.0	0.10	0.32	69.2
West: Seaham Road											
11	T1	212	18.2	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	80.0
12	R2	35	21.9	0.040	9.6	LOS A	0.2	1.3	0.53	0.72	55.9
Approach		248	18.8	0.122	1.4	NA	0.2	1.3	0.08	0.10	75.3
All Vehicles		2006	7.6	1.015	29.7	NA	41.9	301.4	0.36	1.12	46.5

MOVEMENT SUMMARY

Site: 101 [2044 AM peak]

Raymond Terrace Road / Seaham Road Rural Seag
Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	35	24.0	0.928	29.3	LOS C	21.4	156.4	0.92	1.92	41.1
3	R2	632	4.2	0.928	33.0	LOS C	21.4	156.4	0.92	1.92	43.9
Approach		667	5.3	0.928	32.8	LOS C	21.4	156.4	0.92	1.92	43.8
East: Seaham Road											
4	L2	693	3.4	0.468	7.9	LOS A	2.9	21.2	0.29	0.58	63.1
5	T1	247	27.8	0.150	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
Approach		940	9.9	0.468	5.8	LOS A	2.9	21.2	0.22	0.43	66.8
West: Seaham Road											
11	T1	542	12.4	0.301	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	97	4.3	0.072	7.7	LOS A	0.3	2.3	0.38	0.64	62.2
Approach		639	11.2	0.301	1.2	NA	0.3	2.3	0.06	0.10	76.6
All Vehicles		2247	8.9	0.928	12.5	NA	21.4	156.4	0.38	0.78	59.6

MOVEMENT SUMMARY

Site: 101 [2044 PM peak]

Raymond Terrace Road / Seaham Road Rural Seagull

Giveway / Yield (Two-Way)
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	98	8.6	1.827	1503.8	LOS F[11]	432.8	3112.3	1.00	14.31	2.3
3	R2	652	2.4	1.827	1506.8	LOS F[11]	432.8	3112.3	1.00	14.31	2.3
Approach		750	3.2	1.827	1506.4	LOS F[11]	432.8	3112.3	1.00	14.31	2.3
East: Seaham Road											
4	L2	850	6.0	0.558	7.7	LOS A	4.2	30.9	0.23	0.56	62.7
5	T1	635	9.5	0.346	0.0	LOS A	0.0	0.0	0.00	0.00	79.8
Approach		1485	7.5	0.558	4.4	LOS A	4.2	30.9	0.13	0.32	69.0
West: Seaham Road											
11	T1	270	18.2	0.155	0.0	LOS A	0.0	0.0	0.00	0.00	79.9
12	R2	45	21.9	0.063	11.0	LOS A	0.2	2.1	0.60	0.80	54.8
Approach		315	18.8	0.155	1.6	NA	0.2	2.1	0.09	0.11	75.0
All Vehicles		2550	7.6	1.827	446.0	NA	432.8	3112.3	0.38	4.41	7.4

MOVEMENT SUMMARY

Site: 101v [2044 PM peak no development - Conversion]

Raymond Terrace Road / Seaham Road Rural Seagull

Roundabout
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Raymond Terrace Road											
1	L2	98	8.6	0.175	10.9	LOS A	0.9	6.7	0.67	0.79	60.5
3	R2	652	2.4	0.674	19.3	LOS B	7.7	55.2	0.88	0.99	56.5
Approach		750	3.2	0.674	18.2	LOS B	7.7	55.2	0.85	0.97	56.9
East: Seaham Road											
4	L2	850	6.0	0.543	5.6	LOS A	5.5	40.6	0.31	0.49	65.9
5	T1	593	3.1	0.379	6.2	LOS A	3.1	22.0	0.25	0.45	68.0
Approach		1443	4.8	0.543	5.9	LOS A	5.5	40.6	0.28	0.47	66.7
West: Seaham Road											
11	T1	212	3.3	0.267	9.5	LOS A	1.9	14.0	0.81	0.76	63.7
12	R2	45	21.9	0.107	18.3	LOS B	0.6	4.8	0.75	0.85	53.4
Approach		257	6.6	0.267	11.1	LOS A	1.9	14.0	0.80	0.77	61.6
All Vehicles		2450	4.5	0.674	10.2	LOS A	7.7	55.2	0.51	0.65	62.8

MOVEMENT SUMMARY

Site: 101 [2017 AM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	115	7.8	0.130	6.6	LOS A	0.7	5.4	0.61	0.67	53.0
2	T1	25	0.0	0.113	6.7	LOS A	0.6	4.3	0.61	0.73	52.0
3	R2	62	6.5	0.113	11.5	LOS A	0.6	4.3	0.61	0.73	51.8
3u	U	2	0.0	0.113	13.4	LOS A	0.6	4.3	0.61	0.73	52.9
Approach		204	6.4	0.130	8.2	LOS A	0.7	5.4	0.61	0.70	52.5
East: William Bailey Street											
4	L2	188	2.7	0.231	7.4	LOS A	1.3	9.3	0.62	0.71	52.5
5	T1	455	9.5	0.458	7.0	LOS A	3.3	25.2	0.70	0.70	53.2
6	R2	30	33.3	0.458	12.5	LOS A	3.3	25.2	0.70	0.70	52.0
6u	U	4	25.0	0.458	14.3	LOS A	3.3	25.2	0.70	0.70	53.3
Approach		677	8.7	0.458	7.4	LOS A	3.3	25.2	0.68	0.71	52.9
North: Newline Road											
7	L2	51	19.6	0.302	8.7	LOS A	1.5	10.8	0.68	0.84	51.1
8	T1	104	1.9	0.302	8.1	LOS A	1.5	10.8	0.68	0.84	52.7
9	R2	46	6.5	0.302	13.0	LOS A	1.5	10.8	0.68	0.84	52.5
9u	U	1	0.0	0.302	14.8	LOS B	1.5	10.8	0.68	0.84	53.6
Approach		202	7.4	0.302	9.4	LOS A	1.5	10.8	0.68	0.84	52.2
West: William Bailey Street											
10	L2	14	7.1	0.167	5.3	LOS A	0.9	6.8	0.37	0.48	53.3
11	T1	472	7.2	0.442	5.0	LOS A	3.4	24.9	0.39	0.53	53.9
12	R2	313	1.6	0.442	9.4	LOS A	3.4	24.9	0.40	0.56	53.4
12u	U	1	0.0	0.442	11.5	LOS A	3.4	24.9	0.40	0.56	54.5
Approach		800	5.0	0.442	6.7	LOS A	3.4	24.9	0.40	0.54	53.7
All Vehicles		1883	6.7	0.458	7.4	LOS A	3.4	25.2	0.55	0.65	53.1

MOVEMENT SUMMARY

Site: 101 [2017 PM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	391	1.5	0.571	11.3	LOS A	4.8	33.9	0.88	1.02	50.0
2	T1	167	1.2	0.564	10.3	LOS A	5.0	35.1	0.88	0.99	50.1
3	R2	276	1.1	0.564	14.9	LOS B	5.0	35.1	0.88	0.99	50.1
3u	U	1	0.0	0.564	16.9	LOS B	5.0	35.1	0.88	0.99	50.9
Approach		835	1.3	0.571	12.3	LOS A	5.0	35.1	0.88	1.00	50.0
East: William Bailey Street											
4	L2	166	4.2	0.211	6.5	LOS A	1.2	8.5	0.54	0.64	53.1
5	T1	626	5.9	0.558	6.0	LOS A	4.7	34.9	0.66	0.61	53.4
6	R2	64	0.0	0.558	10.5	LOS A	4.7	34.9	0.66	0.61	53.4
6u	U	9	100.0	0.558	15.0	LOS B	4.7	34.9	0.66	0.61	52.5
Approach		865	6.1	0.558	6.6	LOS A	4.7	34.9	0.63	0.62	53.3
North: Newline Road											
7	L2	38	5.3	0.233	8.2	LOS A	1.2	8.5	0.71	0.83	51.7
8	T1	85	0.0	0.233	8.2	LOS A	1.2	8.5	0.71	0.83	52.9
9	R2	27	7.4	0.233	13.1	LOS A	1.2	8.5	0.71	0.83	52.7
9u	U	1	0.0	0.233	14.9	LOS B	1.2	8.5	0.71	0.83	53.8
Approach		151	2.6	0.233	9.1	LOS A	1.2	8.5	0.71	0.83	52.6
West: William Bailey Street											
10	L2	53	0.0	0.184	8.0	LOS A	1.1	7.6	0.69	0.74	52.1
11	T1	382	3.1	0.487	7.5	LOS A	4.1	29.1	0.79	0.76	52.4
12	R2	170	1.2	0.487	11.9	LOS A	4.1	29.1	0.81	0.77	52.1
12u	U	3	0.0	0.487	14.0	LOS A	4.1	29.1	0.81	0.77	53.2
Approach		608	2.3	0.487	8.8	LOS A	4.1	29.1	0.79	0.76	52.3
All Vehicles		2459	3.3	0.571	9.2	LOS A	5.0	35.1	0.76	0.80	51.9

MOVEMENT SUMMARY

Site: 101 [2017 AM + development]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	115	7.8	0.136	6.9	LOS A	0.8	5.8	0.65	0.70	52.9
2	T1	25	0.0	0.119	7.0	LOS A	0.6	4.7	0.65	0.75	51.8
3	R2	62	6.5	0.119	11.8	LOS A	0.6	4.7	0.65	0.75	51.6
3u	U	2	0.0	0.119	13.7	LOS A	0.6	4.7	0.65	0.75	52.7
Approach		204	6.4	0.136	8.5	LOS A	0.8	5.8	0.65	0.72	52.4
East: William Bailey Street											
4	L2	188	2.7	0.235	7.4	LOS A	1.3	9.5	0.62	0.71	52.5
5	T1	485	15.1	0.503	7.6	LOS A	3.9	30.9	0.73	0.75	52.9
6	R2	30	33.3	0.503	12.9	LOS A	3.9	30.9	0.73	0.75	51.9
6u	U	4	25.0	0.503	14.7	LOS B	3.9	30.9	0.73	0.75	53.2
Approach		707	12.6	0.503	7.8	LOS A	3.9	30.9	0.70	0.74	52.7
North: Newline Road											
7	L2	51	19.6	0.312	9.0	LOS A	1.5	11.3	0.70	0.85	50.9
8	T1	104	1.9	0.312	8.4	LOS A	1.5	11.3	0.70	0.85	52.5
9	R2	46	6.5	0.312	13.3	LOS A	1.5	11.3	0.70	0.85	52.3
9u	U	1	0.0	0.312	15.0	LOS B	1.5	11.3	0.70	0.85	53.4
Approach		202	7.4	0.312	9.7	LOS A	1.5	11.3	0.70	0.85	52.0
West: William Bailey Street											
10	L2	14	7.1	0.177	5.3	LOS A	1.0	7.5	0.37	0.48	53.3
11	T1	502	12.7	0.467	5.1	LOS A	3.8	28.0	0.41	0.53	53.7
12	R2	313	1.6	0.467	9.4	LOS A	3.8	28.0	0.42	0.56	53.4
12u	U	1	0.0	0.467	11.5	LOS A	3.8	28.0	0.42	0.56	54.5
Approach		830	8.4	0.467	6.7	LOS A	3.8	28.0	0.41	0.54	53.6
All Vehicles		1943	9.6	0.503	7.6	LOS A	3.9	30.9	0.57	0.66	53.0

MOVEMENT SUMMARY

Site: 101 [2017 PM + development]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	391	1.5	0.587	11.7	LOS A	4.9	34.9	0.88	1.03	49.7
2	T1	167	1.2	0.577	10.5	LOS A	5.1	35.8	0.89	1.02	49.9
3	R2	276	1.1	0.577	15.2	LOS B	5.1	35.8	0.89	1.02	49.9
3u	U	1	0.0	0.577	17.2	LOS B	5.1	35.8	0.89	1.02	50.7
Approach		835	1.3	0.587	12.6	LOS A	5.1	35.8	0.89	1.02	49.8
East: William Bailey Street											
4	L2	166	4.2	0.222	6.5	LOS A	1.2	9.1	0.54	0.64	53.1
5	T1	656	10.2	0.588	6.2	LOS A	5.1	39.1	0.68	0.62	53.2
6	R2	64	0.0	0.588	10.5	LOS A	5.1	39.1	0.68	0.62	53.3
6u	U	9	100.0	0.588	15.2	LOS B	5.1	39.1	0.68	0.62	52.3
Approach		895	9.3	0.588	6.7	LOS A	5.1	39.1	0.66	0.63	53.1
North: Newline Road											
7	L2	38	5.3	0.243	8.4	LOS A	1.3	9.0	0.73	0.85	51.5
8	T1	85	0.0	0.243	8.4	LOS A	1.3	9.0	0.73	0.85	52.7
9	R2	27	7.4	0.243	13.4	LOS A	1.3	9.0	0.73	0.85	52.5
9u	U	1	0.0	0.243	15.1	LOS B	1.3	9.0	0.73	0.85	53.6
Approach		151	2.6	0.243	9.4	LOS A	1.3	9.0	0.73	0.85	52.4
West: William Bailey Street											
10	L2	53	0.0	0.200	8.1	LOS A	1.2	8.5	0.70	0.75	52.0
11	T1	412	10.2	0.527	8.2	LOS A	4.7	35.2	0.81	0.82	52.0
12	R2	170	1.2	0.527	12.4	LOS A	4.7	35.2	0.83	0.83	51.9
12u	U	3	0.0	0.527	14.5	LOS A	4.7	35.2	0.83	0.83	52.9
Approach		638	6.9	0.527	9.3	LOS A	4.7	35.2	0.81	0.81	52.0
All Vehicles		2519	5.6	0.588	9.5	LOS A	5.1	39.1	0.77	0.82	51.7

MOVEMENT SUMMARY

Site: 101 [2024 AM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	127	7.8	0.163	7.4	LOS A	1.0	7.4	0.71	0.74	52.6
2	T1	28	0.0	0.143	7.5	LOS A	0.8	6.0	0.70	0.78	51.5
3	R2	69	6.5	0.143	12.4	LOS A	0.8	6.0	0.70	0.78	51.3
3u	U	2	0.0	0.143	14.2	LOS A	0.8	6.0	0.70	0.78	52.4
Approach		225	6.4	0.163	9.0	LOS A	1.0	7.4	0.71	0.76	52.1
East: William Bailey Street											
4	L2	208	2.7	0.271	7.9	LOS A	1.6	11.4	0.67	0.75	52.1
5	T1	536	15.1	0.579	9.1	LOS A	5.4	43.0	0.80	0.85	52.4
6	R2	33	33.3	0.579	14.5	LOS A	5.4	43.0	0.80	0.85	51.4
6u	U	4	25.0	0.579	16.3	LOS B	5.4	43.0	0.80	0.85	52.7
Approach		781	12.6	0.579	9.1	LOS A	5.4	43.0	0.77	0.82	52.3
North: Newline Road											
7	L2	56	19.6	0.373	10.2	LOS A	2.0	14.9	0.75	0.90	50.1
8	T1	115	1.9	0.373	9.6	LOS A	2.0	14.9	0.75	0.90	51.6
9	R2	51	6.5	0.373	14.5	LOS A	2.0	14.9	0.75	0.90	51.4
9u	U	1	0.0	0.373	16.2	LOS B	2.0	14.9	0.75	0.90	52.5
Approach		223	7.4	0.373	10.9	LOS A	2.0	14.9	0.75	0.90	51.2
West: William Bailey Street											
10	L2	15	7.1	0.198	5.5	LOS A	1.1	8.6	0.40	0.50	53.2
11	T1	555	12.7	0.523	5.3	LOS A	4.5	33.7	0.46	0.55	53.5
12	R2	346	1.6	0.523	9.6	LOS A	4.5	33.7	0.48	0.57	53.2
12u	U	1	0.0	0.523	11.7	LOS A	4.5	33.7	0.48	0.57	54.3
Approach		917	8.4	0.523	6.9	LOS A	4.5	33.7	0.46	0.55	53.4
All Vehicles		2147	9.6	0.579	8.3	LOS A	5.4	43.0	0.63	0.71	52.6

MOVEMENT SUMMARY

Site: 101 [2024 PM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	432	1.5	0.740	17.5	LOS B	7.9	56.2	0.99	1.19	46.1
2	T1	185	1.2	0.719	15.3	LOS B	8.0	56.8	1.00	1.17	47.0
3	R2	305	1.1	0.719	19.9	LOS B	8.0	56.8	1.00	1.17	47.0
3u	U	1	0.0	0.719	21.9	LOS B	8.0	56.8	1.00	1.17	47.7
Approach		923	1.3	0.740	17.9	LOS B	8.0	56.8	0.99	1.18	46.5
East: William Bailey Street											
4	L2	183	4.2	0.253	6.8	LOS A	1.5	10.6	0.58	0.67	52.8
5	T1	725	10.2	0.668	7.5	LOS A	7.4	56.2	0.78	0.74	52.7
6	R2	71	0.0	0.668	11.8	LOS A	7.4	56.2	0.78	0.74	52.8
6u	U	10	100.0	0.668	16.9	LOS B	7.4	56.2	0.78	0.74	51.9
Approach		989	9.3	0.668	7.9	LOS A	7.4	56.2	0.74	0.73	52.7
North: Newline Road											
7	L2	42	5.3	0.297	9.3	LOS A	1.6	11.6	0.78	0.89	50.9
8	T1	94	0.0	0.297	9.2	LOS A	1.6	11.6	0.78	0.89	52.1
9	R2	30	7.4	0.297	14.2	LOS A	1.6	11.6	0.78	0.89	51.9
9u	U	1	0.0	0.297	15.9	LOS B	1.6	11.6	0.78	0.89	53.0
Approach		167	2.6	0.297	10.2	LOS A	1.6	11.6	0.78	0.89	51.8
West: William Bailey Street											
10	L2	59	0.0	0.237	8.6	LOS A	1.4	10.6	0.75	0.79	51.6
11	T1	455	10.2	0.626	10.0	LOS A	6.9	51.2	0.90	0.92	51.1
12	R2	188	1.2	0.626	14.5	LOS B	6.9	51.2	0.93	0.95	50.9
12u	U	3	0.0	0.626	16.6	LOS B	6.9	51.2	0.93	0.95	51.9
Approach		705	6.9	0.626	11.2	LOS A	6.9	51.2	0.90	0.92	51.1
All Vehicles		2783	5.6	0.740	12.1	LOS A	8.0	56.8	0.87	0.94	50.1

MOVEMENT SUMMARY

Site: 101 [2044 AM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	162	7.8	0.278	9.2	LOS A	2.0	14.8	0.89	0.88	51.3
2	T1	35	0.0	0.250	9.5	LOS A	1.6	11.9	0.86	0.90	50.3
3	R2	87	6.5	0.250	14.4	LOS A	1.6	11.9	0.86	0.90	50.1
3u	U	3	0.0	0.250	16.2	LOS B	1.6	11.9	0.86	0.90	51.1
Approach		287	6.4	0.278	10.9	LOS A	2.0	14.8	0.88	0.89	50.8
East: William Bailey Street											
4	L2	264	2.7	0.400	9.8	LOS A	2.7	19.2	0.80	0.87	50.8
5	T1	681	15.1	0.850	21.9	LOS B	16.4	130.8	1.00	1.37	44.4
6	R2	42	33.3	0.850	27.5	LOS B	16.4	130.8	1.00	1.37	43.7
6u	U	6	25.0	0.850	29.2	LOS C	16.4	130.8	1.00	1.37	44.6
Approach		993	12.6	0.850	19.0	LOS B	16.4	130.8	0.95	1.24	45.9
North: Newline Road											
7	L2	72	19.6	0.631	18.4	LOS B	4.7	34.9	0.91	1.10	45.2
8	T1	146	1.9	0.631	17.5	LOS B	4.7	34.9	0.91	1.10	46.4
9	R2	65	6.5	0.631	22.4	LOS B	4.7	34.9	0.91	1.10	46.3
9u	U	1	0.0	0.631	24.1	LOS B	4.7	34.9	0.91	1.10	47.2
Approach		284	7.4	0.631	18.9	LOS B	4.7	34.9	0.91	1.10	46.1
West: William Bailey Street											
10	L2	20	7.1	0.262	5.9	LOS A	1.6	12.1	0.48	0.55	52.8
11	T1	705	12.7	0.691	5.9	LOS A	7.6	56.7	0.62	0.59	52.9
12	R2	440	1.6	0.691	10.2	LOS A	7.6	56.7	0.68	0.61	52.5
12u	U	1	0.0	0.691	12.2	LOS A	7.6	56.7	0.68	0.61	53.6
Approach		1166	8.4	0.691	7.5	LOS A	7.6	56.7	0.64	0.60	52.8
All Vehicles		2730	9.6	0.850	13.2	LOS A	16.4	130.8	0.81	0.91	49.2

MOVEMENT SUMMARY

Site: 101 [2044 PM]

William Bailey Street / Port Stephens Street / Newline Road roundabout.

Roundabout
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Port Stephens Street											
1	L2	549	1.5	1.356	668.2	LOS F[11]	194.3	1378.2	1.00	8.08	5.0
2	T1	235	1.2	1.276	525.5	LOS F[11]	184.8	1306.0	1.00	7.68	6.4
3	R2	388	1.1	1.276	530.2	LOS F[11]	184.8	1306.0	1.00	7.68	6.4
3u	U	1	0.0	1.276	532.2	LOS F[11]	184.8	1306.0	1.00	7.68	6.4
Approach		1173	1.3	1.356	593.9	LOS F[11]	194.3	1378.2	1.00	7.87	5.6
East: William Bailey Street											
4	L2	233	4.2	0.362	7.7	LOS A	2.3	16.6	0.68	0.75	52.2
5	T1	922	10.2	0.957	28.9	LOS C	33.0	251.9	0.99	1.54	41.0
6	R2	90	0.0	0.957	33.7	LOS C	33.0	251.9	1.00	1.57	40.7
6u	U	13	100.0	0.957	40.3	LOS C	33.0	251.9	1.00	1.57	40.2
Approach		1257	9.3	0.957	25.5	LOS B	33.0	251.9	0.93	1.40	42.6
North: Newline Road											
7	L2	53	5.3	0.466	13.4	LOS A	3.1	22.1	0.89	1.00	48.2
8	T1	119	0.0	0.466	13.3	LOS A	3.1	22.1	0.89	1.00	49.3
9	R2	38	7.4	0.466	18.4	LOS B	3.1	22.1	0.89	1.00	49.1
9u	U	1	0.0	0.466	20.0	LOS B	3.1	22.1	0.89	1.00	50.1
Approach		212	2.6	0.466	14.3	LOS A	3.1	22.1	0.89	1.00	49.0
West: William Bailey Street											
10	L2	74	0.0	0.306	9.0	LOS A	1.9	14.1	0.78	0.83	51.3
11	T1	579	10.2	0.810	15.4	LOS B	13.6	100.9	0.96	1.12	47.7
12	R2	239	1.2	0.810	20.8	LOS B	13.6	100.9	1.00	1.18	46.9
12u	U	4	0.0	0.810	22.9	LOS B	13.6	100.9	1.00	1.18	47.7
Approach		896	6.9	0.810	16.3	LOS B	13.6	100.9	0.96	1.11	47.7
All Vehicles		3539	5.6	1.356	210.9	LOS F[11]	194.3	1378.2	0.96	3.45	13.6

MOVEMENT SUMMARY

Site: 101 [2017 AM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 51 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	317	7.9	0.726	27.1	LOS B	4.3	32.4	1.00	0.89	41.5
6	R2	533	6.8	0.902	37.5	LOS C	18.1	134.2	1.00	1.11	36.4
Approach		850	7.2	0.902	33.6	LOS C	18.1	134.2	1.00	1.03	38.1
North: William Bailey Street											
7	L2	277	11.2	0.210	6.8	LOS A	1.2	9.2	0.32	0.63	52.7
9	R2	303	6.9	0.873	36.5	LOS C	9.4	69.7	1.00	1.08	36.8
Approach		580	9.0	0.873	22.3	LOS B	9.4	69.7	0.67	0.87	43.1
West: Adelaide Street											
10	L2	182	3.3	0.192	11.1	LOS A	2.1	15.2	0.58	0.69	50.0
11	T1	95	0.0	0.269	23.5	LOS B	1.5	10.5	0.94	0.70	43.3
Approach		277	2.2	0.269	15.4	LOS B	2.1	15.2	0.70	0.69	47.5
All Vehicles		1707	7.0	0.902	26.8	LOS B	18.1	134.2	0.84	0.92	41.1

MOVEMENT SUMMARY

Site: 101 [2017 PM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 47 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	214	18.2	0.412	21.1	LOS B	2.4	19.5	0.95	0.74	44.5
6	R2	563	2.3	0.905	35.9	LOS C	18.0	128.6	1.00	1.12	37.1
Approach		777	6.7	0.905	31.8	LOS C	18.0	128.6	0.99	1.02	38.9
North: William Bailey Street											
7	L2	497	1.2	0.397	8.0	LOS A	3.5	25.0	0.47	0.68	52.2
9	R2	183	4.9	0.799	32.2	LOS C	4.8	35.4	1.00	0.97	38.5
Approach		680	2.2	0.799	14.5	LOS B	4.8	35.4	0.61	0.76	47.7
West: Adelaide Street											
10	L2	349	1.7	0.380	11.5	LOS A	4.2	29.7	0.65	0.73	49.8
11	T1	365	0.0	0.816	24.4	LOS B	6.3	44.0	0.98	0.90	42.8
Approach		714	0.8	0.816	18.1	LOS B	6.3	44.0	0.82	0.82	46.0
All Vehicles		2171	3.4	0.905	21.9	LOS B	18.0	128.6	0.82	0.87	43.6

MOVEMENT SUMMARY

Site: 101 [2017 AM + development]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 55 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	317	7.9	0.783	30.6	LOS C	4.8	35.9	1.00	0.94	39.9
6	R2	538	7.6	0.884	35.8	LOS C	18.4	136.9	1.00	1.06	37.0
Approach		855	7.7	0.884	33.9	LOS C	18.4	136.9	1.00	1.01	38.0
North: William Bailey Street											
7	L2	282	12.8	0.211	6.8	LOS A	1.2	9.6	0.29	0.63	52.8
9	R2	328	14.0	0.890	40.3	LOS C	11.4	89.1	1.00	1.10	35.4
Approach		610	13.4	0.890	24.8	LOS B	11.4	89.1	0.67	0.88	41.7
West: Adelaide Street											
10	L2	207	15.0	0.233	11.5	LOS A	2.6	20.7	0.57	0.69	49.4
11	T1	95	0.0	0.290	25.9	LOS B	1.6	11.5	0.95	0.70	42.1
Approach		302	10.3	0.290	16.0	LOS B	2.6	20.7	0.69	0.70	46.9
All Vehicles		1767	10.1	0.890	27.7	LOS B	18.4	136.9	0.83	0.91	40.6

MOVEMENT SUMMARY

Site: 101 [2017 PM + development]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 49 seconds (Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	214	18.2	0.430	22.3	LOS B	2.5	20.5	0.95	0.74	43.9
6	R2	568	3.2	0.901	36.0	LOS C	18.6	133.6	1.00	1.11	37.0
Approach		782	7.3	0.901	32.2	LOS C	18.6	133.6	0.99	1.01	38.7
North: William Bailey Street											
7	L2	502	2.2	0.398	8.0	LOS A	3.6	25.8	0.46	0.68	52.2
9	R2	208	16.3	0.875	37.2	LOS C	6.3	50.0	1.00	1.11	36.4
Approach		710	6.3	0.875	16.5	LOS B	6.3	50.0	0.62	0.80	46.3
West: Adelaide Street											
10	L2	374	8.3	0.423	12.1	LOS A	4.7	35.5	0.66	0.74	49.2
11	T1	365	0.0	0.851	26.6	LOS B	6.8	47.4	0.99	0.94	41.7
Approach		739	4.2	0.851	19.3	LOS B	6.8	47.4	0.82	0.84	45.2
All Vehicles		2231	6.0	0.901	22.9	LOS B	18.6	133.6	0.81	0.89	43.0

MOVEMENT SUMMARY

Site: 101 [2024 AM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 65 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	350	7.9	0.877	40.3	LOS C	6.7	50.0	1.00	1.06	36.1
6	R2	594	7.6	0.914	44.8	LOS D[11]	25.7	191.4	1.00	1.09	33.9
Approach		945	7.7	0.914	43.1	LOS D[11]	25.7	191.4	1.00	1.08	34.7
North: William Bailey Street											
7	L2	312	12.8	0.227	6.8	LOS A	1.6	12.1	0.27	0.62	52.8
9	R2	362	14.0	0.872	41.7	LOS C	13.9	109.2	1.00	1.03	34.9
Approach		674	13.4	0.872	25.6	LOS B	13.9	109.2	0.66	0.84	41.4
West: Adelaide Street											
10	L2	229	15.0	0.260	13.1	LOS A	3.6	28.8	0.58	0.70	48.4
11	T1	105	0.0	0.325	30.5	LOS C	2.1	14.9	0.96	0.71	40.0
Approach		334	10.3	0.325	18.6	LOS B	3.6	28.8	0.70	0.70	45.4
All Vehicles		1953	10.1	0.914	32.9	LOS C	25.7	191.4	0.83	0.93	38.4

MOVEMENT SUMMARY

Site: 101 [2024 PM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 58 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 7 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	236	18.2	0.437	25.5	LOS B	3.2	26.1	0.95	0.75	42.3
6	R2	628	3.2	0.911	40.8	LOS C	24.4	175.3	1.00	1.10	35.3
Approach		864	7.3	0.911	36.6	LOS C	24.4	175.3	0.99	1.00	37.0
North: William Bailey Street											
7	L2	555	2.2	0.429	8.5	LOS A	4.7	33.2	0.45	0.69	51.9
9	R2	230	16.3	0.891	43.3	LOS D[11]	8.3	65.9	1.00	1.12	34.3
Approach		785	6.3	0.891	18.7	LOS B	8.3	65.9	0.61	0.82	45.1
West: Adelaide Street											
10	L2	413	8.3	0.472	14.8	LOS B	6.4	47.6	0.69	0.79	47.6
11	T1	403	0.0	0.866	31.1	LOS C	8.9	62.1	0.98	0.95	39.7
Approach		817	4.2	0.866	22.8	LOS B	8.9	62.1	0.84	0.87	43.4
All Vehicles		2465	6.0	0.911	26.3	LOS B	24.4	175.3	0.82	0.90	41.4

MOVEMENT SUMMARY

Site: 101 [2044 AM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	445	7.9	0.948	98.2	LOS F[11]	20.3	151.7	1.00	1.17	22.9
6	R2	756	7.6	0.965	88.4	LOS F[11]	72.9	544.0	1.00	1.06	24.1
Approach		1201	7.7	0.965	92.0	LOS F[11]	72.9	544.0	1.00	1.10	23.7
North: William Bailey Street											
7	L2	396	12.8	0.266	6.6	LOS A	3.3	25.4	0.17	0.60	53.0
9	R2	461	14.0	0.952	97.4	LOS F[11]	44.0	344.9	1.00	1.05	22.8
Approach		857	13.4	0.952	55.5	LOS D[11]	44.0	344.9	0.62	0.84	31.0
West: Adelaide Street											
10	L2	291	15.0	0.345	29.7	LOS C	11.9	94.0	0.64	0.84	39.8
11	T1	133	0.0	0.351	64.7	LOS E[11]	5.9	41.2	0.95	0.73	29.1
Approach		424	10.3	0.351	40.7	LOS C	11.9	94.0	0.74	0.80	35.7
All Vehicles		2483	10.1	0.965	70.6	LOS F[11]	72.9	544.0	0.82	0.96	27.5

MOVEMENT SUMMARY

Site: 101 [2044 PM]

Adelaide Street / William Bailey Street
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Practical Cycle Time)
Design Life Analysis (Final Year): Results for 27 years

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Adelaide Street											
5	T1	301	18.2	0.462	58.9	LOS E[11]	9.9	79.9	0.94	0.77	30.5
6	R2	798	3.2	0.919	57.9	LOS E[11]	62.0	445.7	0.97	0.97	30.3
Approach		1099	7.3	0.919	58.2	LOS E[11]	62.0	445.7	0.96	0.91	30.3
North: William Bailey Street											
7	L2	705	2.2	0.504	12.9	LOS A	15.0	107.1	0.41	0.74	49.0
9	R2	292	16.3	0.909	88.1	LOS F[11]	24.9	198.7	1.00	0.99	24.2
Approach		998	6.3	0.909	34.9	LOS C	24.9	198.7	0.58	0.82	37.7
West: Adelaide Street											
10	L2	525	8.3	0.623	36.6	LOS C	22.7	170.5	0.80	0.98	37.2
11	T1	513	0.0	0.915	74.0	LOS F[11]	28.2	197.4	0.98	0.98	27.1
Approach		1038	4.2	0.915	55.1	LOS D[11]	28.2	197.4	0.89	0.98	31.4
All Vehicles		3135	6.0	0.919	49.7	LOS D[11]	62.0	445.7	0.82	0.90	32.7

Appendix 5

Additional Haulage Route Assessment

Prepared by Intersect Traffic – May 2019

(Total No. of pages including blank pages = 18)

* A colour version of this Appendix is available on the digital version of this document

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Intersect Traffic
TRAFFIC AND CIVIL ENGINEERING CONSULTANTS

Ref: 13/024

27th May 2019

RW Corkery & Co. Pty Ltd
PO Box 239
BROOKLYN NSW 2083

Attention: - Mr Nicholas Warren

Dear Nick,

RE: Traffic Advice – Additional haulage route assessment – Brandy Hill Quarry Expansion Project

Reference is made to the following advice from Genevieve Seed of NSW Department of Planning and Environment dated 21 March 2019 regarding further assessment of haulage routes for this project;

Your recent advice has nominated two primary haulages routes that have been recommended by the relevant local Councils. The Department is seeking information regarding four intersections along these routes that have not been discussed in the EIS / additional documentation, including:

- *Richardson Road / Adelaide Street and Richardson Road / Pacific Highway; and*
- *Pitnacree Rd / Melbourne Street and Melbourne Street / New England Highway.*

The Additional TIA stated:

Please note that it is considered unreasonable and unnecessary to undertake intersection analysis of all intersections along the haulage routes to the sub-arterial and higher road network as many intersections are observed to be operating with uninterrupted flow conditions and the increase in traffic is not significant enough to alter or impact on intersection efficiency. It is more realistic to assess traffic impacts on the major intersections along the haulage routes that may not be operating with uninterrupted flow conditions and thus likely to be the most sensitive to traffic volume increases.

The Department acknowledges this position. However, the Department seeks further information to support that the increase in traffic would not be significant enough to alter or impact intersection efficiency (i.e. that further analysis at these intersections is not required).

To address this issue, Intersect Traffic consulted with Port Stephens Council's Traffic Engineer Mr. Joe Gleeson and Maitland City Council's Traffic Engineer Mr. Scott

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Henderson to determine the existing conditions along these transportation routes and the potential for an impact on these routes resulting from the quarry traffic.

Following discussions with Mr Joe Gleeson at Port Stephens Council it was agreed that Richardson Road already caters for significant heavy vehicle traffic and is constructed to a high enough standard to cater for truck and dog type movements from the quarry with a maximum peak loading of 30 deliveries per hour (60 vtph). There are several roundabouts along this route, and they could all cater for the swept path of a truck and dog and the roads being major collector or sub-arterial roads are wide enough for these vehicles. There are currently no efficiency issues with the roundabouts which currently operate satisfactorily during peak traffic periods. Therefore an addition of 60 vtph from the quarry which would be rare would be less than 10 % of traffic already travelling through these intersections. Traffic increases of less than 10 % of existing traffic, being less than the normal seasonal and daily variation in peak hour traffic volumes, is generally considered to not result in any noticeable or unacceptable drop in level of service at the intersection. Normally traffic increases of less than 10 % of existing traffic would not require any further intersection analysis. It is therefore reasonable to conclude that the use of the Adelaide Street and Richardson Road route to the M1 Pacific Motorway by heavy vehicles from the quarry would not adversely impact on this part of the local and state road network.

Following discussions with Maitland City Council's Scott Henderson it was decided that due to the current operation of the Melbourne Street / Lawes Street / Pitnacree Road traffic signals and the New England Highway / Melbourne Street traffic signals further intersection analysis was required on the impact of the additional quarry traffic at these intersections using the Sidra Intersection 8 modelling program. These intersections already experience significant delays during peak hour periods, including any contribution from the quarry. Regardless it is Maitland City Council's preferred route for quarry traffic as it avoids heavy vehicles travelling along Belmore Road through Lorn.

As such Intersect Traffic modelled the Melbourne Street / Lawes Street / Pitnacree Road traffic signals and the New England Highway / Melbourne Street traffic signals using the 2015 traffic data supplied by Council. To project these counts to 2019 traffic counts a background traffic growth rate of 1 % per annum was adopted on the state road network and a 1.5 % per annum background traffic growth rate was adopted on the local road network.

As quarry traffic would increase on this preferred route as currently both this route and the Belmore Road route are used by the quarry to access the New England Highway an intersection analysis of traffic during a major contract where up to 30 deliveries per hour could occur was undertaken. The worst-case scenario for such a contract would be if the major contract was in the Maitland area and 30 outbound and 30 inbound trips would occur in the peak hour with all outbound trips turning right into Melbourne Street off Pitnacree Road and then right onto the New England Highway from Melbourne Street. Return trips followed the same route but in the opposite direction. Normal operations were also assessed with the projected 25 % of traffic using this route.

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The results for the Sidra Intersection 8 modelling are shown below in ***Tables 1 and 2*** while the Sidra Movement Summary Sheets are provided in ***Attachment 1***.

Table 1 – Sidra Results – All Vehicles – Melbourne St / Pitnacree Rd / Lawes St intersection.

Scenario	Deg. Satn (v/c)	Average Delay (sec)	Worst Level of Service	95 % Back of Queue distance (vehicles)
Existing 2019 AM	0.968	63.2	E	55.5
Existing 2019 PM	0.944	61.2	E	60.2
2019 AM with development	0.968	63.2	E	55.5
2019 PM with development	0.944	61.5	E	60.8
2019 AM – major contract	0.968	63.5	E	55.5
2019 PM – major contract	0.944	62.1	E	60.8

Table 2 – Sidra Results – All Vehicles – New England Highway / Melbourne St intersection.

Scenario	Deg. Satn (v/c)	Average Delay (sec)	Worst Level of Service	95 % Back of Queue distance (vehicles)
Existing 2019 AM	0.937	60.1	E	57.3
Existing 2019 PM	0.966	65.5	E	68.3
2019 AM with development	0.944	60.7	E	57.4
2019 PM with development	0.966	66.1	E	68.3
2019 AM – major contract	0.977	62.7	E	57.3
2019 PM – major contract	0.986	68.9	E	68.3

This modelling shows that the additional haulage traffic on the East Maitland Haulage Route intersections has little if any impact on the operation of these intersections. There is no overall loss of LoS and average delays and queue lengths increase only by less than 4 seconds and less than 1 vehicle respectively.

Overall it is reasonable to conclude, based on the above Council consultations and SIDRA 8 modelling of the East Maitland signalised intersections, that the proposed Brandy Hill Quarry expansion will not adversely impact on the operation of intersections along the haulage routes through Raymond Terrace and East Maitland.

It is also understood that these routes would be presented in a Driver Code of Conduct and Traffic Management Plan for the quarry . Standard mitigation measures, including limiting convoying, use of exhaust brakes and abiding by sign posted speed limits should equally be applied for these routes and intersections.

For further information or clarification please do not hesitate to contact me on 02 4028 6818 or 0423 324 188.

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Yours sincerely

Jeff Garry

Director
Intersect Traffic

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Attachment 1 – Sidra Movement Summary Tables

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019AM]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	184	4.2	0.957	104.8	LOS F[11]	16.6	120.2	1.00	1.02	1.50	16.3
2	T1	90	1.2	0.718	73.1	LOS F[11]	10.7	76.1	1.00	0.85	1.08	23.9
3	R2	55	2.0	0.718	78.7	LOS F[11]	10.7	76.1	1.00	0.85	1.08	19.9
Approach		329	3.1	0.957	91.7	LOS F[11]	16.6	120.2	1.00	0.95	1.31	18.7
East: Melbourne Street												
4	L2	17	0.0	0.020	29.1	LOS C	0.7	4.6	0.57	0.66	0.57	33.2
5	T1	714	1.7	0.931	58.7	LOS E[11]	55.5	394.5	0.94	1.00	1.12	24.1
6	R2	129	2.6	0.968	109.4	LOS F[11]	11.8	84.1	1.00	1.03	1.59	18.5
Approach		860	1.8	0.968	65.8	LOS E[11]	55.5	394.5	0.94	1.00	1.18	23.0
North: Pitnacree Road												
7	L2	142	3.1	0.926	87.6	LOS F[11]	30.9	218.3	1.00	1.05	1.29	22.0
8	T1	221	0.0	0.926	82.0	LOS F[11]	30.9	218.3	1.00	1.05	1.29	22.3
9	R2	229	7.3	0.627	64.4	LOS E[11]	15.4	114.3	0.97	0.83	0.97	26.1
Approach		591	3.6	0.926	76.5	LOS F[11]	30.9	218.3	0.99	0.97	1.17	23.6
West: Melbourne Street												
10	L2	171	11.8	0.235	32.2	LOS C	8.1	61.9	0.65	0.74	0.65	36.0
11	T1	513	4.5	0.662	32.1	LOS C	26.8	194.6	0.80	0.71	0.80	33.0
12	R2	88	3.8	0.665	82.6	LOS F[11]	6.6	48.0	1.00	0.81	1.07	19.1
Approach		772	6.0	0.665	37.9	LOS C	26.8	194.6	0.79	0.73	0.80	31.3
All Vehicles		2553	3.6	0.968	63.2	LOS E[11]	55.5	394.5	0.91	0.90	1.08	24.3

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	5	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	7	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		15	69.1	LOS F[12]			0.96	0.96

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.

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019PM]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	194	3.4	0.846	83.0	LOS F[11]	15.2	109.7	1.00	0.81	1.22	19.1
2	T1	160	3.5	0.943	92.8	LOS F[11]	19.6	141.6	1.00	1.09	1.42	20.7
3	R2	65	3.4	0.943	98.4	LOS F[11]	19.6	141.6	1.00	1.09	1.42	17.1
Approach		418	3.5	0.943	89.1	LOS F[11]	19.6	141.6	1.00	1.00	1.32	19.4
East: Melbourne Street												
4	L2	28	8.0	0.032	26.1	LOS B	1.0	7.6	0.54	0.67	0.54	34.5
5	T1	548	3.0	0.693	28.5	LOS C	28.0	200.9	0.77	0.69	0.77	34.8
6	R2	136	0.8	0.851	87.6	LOS F[11]	10.8	76.3	1.00	0.91	1.28	21.4
Approach		712	2.8	0.851	39.7	LOS C	28.0	200.9	0.80	0.73	0.85	30.5
North: Pitnacree Road												
7	L2	117	1.0	0.944	98.4	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.3
8	T1	119	2.8	0.944	92.8	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.5
9	R2	141	13.5	0.622	73.4	LOS F[11]	10.0	77.7	1.00	0.81	1.00	24.2
Approach		377	6.2	0.944	87.3	LOS F[11]	20.8	147.9	1.00	0.98	1.26	21.7
West: Melbourne Street												
10	L2	296	3.8	0.334	29.9	LOS C	13.0	93.6	0.65	0.76	0.65	37.0
11	T1	772	3.3	0.941	58.2	LOS E[11]	60.2	433.4	0.92	1.00	1.11	24.3
12	R2	141	9.5	0.933	98.4	LOS F[11]	12.2	92.0	1.00	0.98	1.47	16.8
Approach		1208	4.1	0.941	56.0	LOS D[11]	60.2	433.4	0.86	0.94	1.04	25.6
All Vehicles		2716	4.0	0.944	61.2	LOS E[11]	60.2	433.4	0.89	0.90	1.07	24.7

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019AM + development]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	184	4.2	0.957	104.8	LOS F [11]	16.6	120.2	1.00	1.02	1.50	16.3
2	T1	90	1.2	0.718	73.1	LOS F [11]	10.7	76.1	1.00	0.85	1.08	23.9
3	R2	55	2.0	0.718	78.7	LOS F [11]	10.7	76.1	1.00	0.85	1.08	19.9
Approach		329	3.1	0.957	91.7	LOS F [11]	16.6	120.2	1.00	0.95	1.31	18.7
East: Melbourne Street												
4	L2	17	0.0	0.020	28.1	LOS C	0.7	4.6	0.57	0.86	0.57	33.2
5	T1	714	1.7	0.931	58.7	LOS E [11]	55.5	394.5	0.94	1.00	1.12	24.1
6	R2	129	2.6	0.968	109.4	LOS F [11]	11.8	84.1	1.00	1.03	1.59	18.5
Approach		860	1.8	0.968	65.8	LOS E [11]	55.5	394.5	0.94	1.00	1.18	23.0
North: Pitnacree Road												
7	L2	142	3.1	0.926	87.6	LOS F [11]	30.9	218.3	1.00	1.05	1.29	22.0
8	T1	221	0.0	0.926	82.0	LOS F [11]	30.9	218.3	1.00	1.05	1.29	22.3
9	R2	234	9.5	0.652	64.8	LOS E [11]	15.8	120.0	0.97	0.84	0.97	26.0
Approach		597	4.5	0.926	76.6	LOS F [11]	30.9	218.3	0.99	0.97	1.17	23.5
West: Melbourne Street												
10	L2	176	14.6	0.238	32.3	LOS C	8.0	62.9	0.65	0.74	0.65	35.8
11	T1	513	4.5	0.670	32.3	LOS C	27.3	198.4	0.80	0.72	0.80	33.0
12	R2	88	3.8	0.665	82.6	LOS F [11]	6.6	48.0	1.00	0.81	1.07	19.1
Approach		778	6.7	0.670	38.0	LOS C	27.3	198.4	0.79	0.73	0.80	31.2
All Vehicles		2564	4.1	0.968	63.2	LOS E [11]	55.5	394.5	0.91	0.90	1.08	24.3

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	5	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	7	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	2	69.1	LOS F [12]	0.0	0.0	0.96	0.96
All Pedestrians		15	69.1	LOS F [12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019PM + development]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	194	3.4	0.846	83.0	LOS F[11]	15.2	109.7	1.00	0.91	1.22	19.1
2	T1	180	3.5	0.943	92.8	LOS F[11]	19.6	141.6	1.00	1.09	1.42	20.7
3	R2	85	3.4	0.943	98.4	LOS F[11]	19.6	141.6	1.00	1.09	1.42	17.1
Approach		418	3.5	0.943	89.1	LOS F[11]	19.6	141.6	1.00	1.00	1.32	19.4
East: Melbourne Street												
4	L2	28	8.0	0.032	26.1	LOS B	1.0	7.6	0.54	0.67	0.54	34.5
5	T1	548	3.0	0.693	28.5	LOS C	28.0	200.9	0.77	0.69	0.77	34.8
6	R2	136	0.8	0.851	87.6	LOS F[11]	10.8	76.3	1.00	0.91	1.28	21.4
Approach		712	2.8	0.851	39.7	LOS C	28.0	200.9	0.80	0.73	0.85	30.5
North: Pitnacree Road												
7	L2	117	1.0	0.944	98.4	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.3
8	T1	119	2.8	0.944	92.8	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.5
9	R2	146	16.8	0.681	74.4	LOS F[11]	10.5	84.0	1.00	0.82	1.03	24.0
Approach		383	7.6	0.944	87.5	LOS F[11]	20.8	147.9	1.00	0.99	1.26	21.7
West: Melbourne Street												
10	L2	301	5.6	0.342	30.0	LOS C	13.2	96.6	0.65	0.77	0.65	36.9
11	T1	772	3.3	0.943	59.1	LOS E[11]	60.8	437.8	0.92	1.00	1.12	24.0
12	R2	141	9.5	0.933	99.4	LOS F[11]	12.2	92.0	1.00	0.98	1.47	16.8
Approach		1214	4.6	0.943	56.6	LOS E[11]	60.8	437.8	0.86	0.94	1.05	25.5
All Vehicles		2727	4.3	0.944	61.5	LOS E[11]	60.8	437.8	0.89	0.90	1.07	24.6

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019AM + development major contract]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	184	4.2	0.957	104.8	LOS F [11]	16.6	120.2	1.00	1.02	1.50	16.3
2	T1	90	1.2	0.718	73.1	LOS F [11]	10.7	76.1	1.00	0.85	1.08	23.9
3	R2	55	2.0	0.718	78.7	LOS F [11]	10.7	76.1	1.00	0.85	1.08	19.9
Approach		329	3.1	0.957	91.7	LOS F [11]	16.6	120.2	1.00	0.95	1.31	18.7
East: Melbourne Street												
4	L2	17	0.0	0.020	29.1	LOS C	0.7	4.6	0.57	0.66	0.57	33.2
5	T1	714	1.7	0.931	58.7	LOS E [11]	55.5	394.5	0.94	1.00	1.12	24.1
6	R2	129	2.6	0.968	109.4	LOS F [11]	11.8	84.1	1.00	1.03	1.59	18.5
Approach		860	1.8	0.968	65.8	LOS E [11]	55.5	394.5	0.94	1.00	1.18	23.0
North: Pitnacree Road												
7	L2	142	3.1	0.926	87.6	LOS F [11]	30.9	218.3	1.00	1.05	1.29	22.0
8	T1	221	0.0	0.926	82.0	LOS F [11]	30.9	218.3	1.00	1.05	1.29	22.3
9	R2	262	19.1	0.776	69.9	LOS E [11]	19.0	154.9	1.00	0.88	1.08	24.8
Approach		625	8.8	0.926	78.2	LOS F [11]	30.9	218.3	1.00	0.98	1.20	23.2
West: Melbourne Street												
10	L2	204	26.2	0.288	33.2	LOS C	9.3	78.3	0.67	0.76	0.67	35.2
11	T1	513	4.5	0.677	32.5	LOS C	27.7	201.5	0.81	0.72	0.81	32.9
12	R2	88	3.8	0.665	82.6	LOS F [11]	6.6	48.0	1.00	0.81	1.07	19.1
Approach		806	9.9	0.677	38.2	LOS C	27.7	201.5	0.79	0.74	0.80	31.2
All Vehicles		2620	6.1	0.968	63.5	LOS E [11]	55.5	394.5	0.92	0.91	1.09	24.3

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	5	89.1	LOS F [?]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	89.1	LOS F [?]	0.0	0.0	0.96	0.96
P3	North Full Crossing	7	89.1	LOS F [?]	0.0	0.0	0.96	0.96
P4	West Full Crossing	2	89.1	LOS F [?]	0.0	0.0	0.96	0.96
All Pedestrians		15	89.1	LOS F [?]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [Melbourne_Lawes 2019PM + development major contract]

Melbourne Street / Lawes Street traffic signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Lawes Street												
1	L2	194	3.4	0.846	83.0	LOS F[11]	15.2	109.7	1.00	0.91	1.22	19.1
2	T1	160	3.5	0.943	92.8	LOS F[11]	19.6	141.6	1.00	1.09	1.42	20.7
3	R2	65	3.4	0.943	98.4	LOS F[11]	19.6	141.6	1.00	1.09	1.42	17.1
Approach		418	3.5	0.943	89.1	LOS F[11]	19.6	141.6	1.00	1.00	1.32	19.4
East: Melbourne Street												
4	L2	28	8.0	0.032	28.1	LOS B	1.0	7.8	0.54	0.67	0.54	34.5
5	T1	548	3.0	0.893	28.5	LOS C	28.0	200.9	0.77	0.69	0.77	34.8
6	R2	136	0.8	0.851	87.6	LOS F[11]	10.8	76.3	1.00	0.91	1.28	21.4
Approach		712	2.8	0.851	39.7	LOS C	28.0	200.9	0.80	0.73	0.85	30.5
North: Pitnacree Road												
7	L2	117	1.0	0.944	98.4	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.3
8	T1	119	2.8	0.944	92.8	LOS F[11]	20.8	147.9	1.00	1.09	1.41	20.5
9	R2	174	30.1	0.854	85.0	LOS F[11]	13.9	122.6	1.00	0.93	1.25	22.1
Approach		411	13.9	0.944	91.1	LOS F[11]	20.8	147.9	1.00	1.02	1.35	21.1
West: Melbourne Street												
10	L2	329	13.6	0.394	31.0	LOS C	14.9	116.3	0.67	0.78	0.67	36.3
11	T1	772	3.3	0.943	59.1	LOS E[11]	60.8	437.8	0.92	1.00	1.12	24.0
12	R2	141	9.5	0.933	99.4	LOS F[11]	12.2	92.0	1.00	0.98	1.47	16.8
Approach		1242	6.7	0.943	58.2	LOS D[11]	60.8	437.8	0.87	0.94	1.04	25.6
All Vehicles		2783	6.3	0.944	62.1	LOS E[11]	60.8	437.8	0.89	0.91	1.08	24.5

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019AM]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	33	6.7	0.937	74.4	LOS F [11]	57.3	425.6	1.00	1.07	1.21	26.7
2	T1	1263	7.1	0.937	68.6	LOS E [11]	57.3	425.6	1.00	1.07	1.21	27.2
3	R2	153	16.4	0.432	75.3	LOS F [11]	5.4	43.2	0.98	0.77	0.98	22.6
Approach		1449	8.1	0.937	69.4	LOS E [11]	57.3	425.6	1.00	1.04	1.19	26.7
East: Melbourne Street												
4	L2	154	9.2	0.229	38.4	LOS C	7.5	56.5	0.71	0.78	0.71	32.1
5	T1	86	3.8	0.933	81.5	LOS F [11]	29.0	207.8	1.00	1.04	1.32	22.4
6	R2	665	2.6	0.933	87.3	LOS F [11]	35.3	252.8	1.00	1.02	1.30	22.0
Approach		905	3.9	0.933	78.4	LOS F [11]	35.3	252.8	0.95	0.97	1.20	23.2
North: New England Highway												
7	L2	391	5.3	0.349	12.8	LOS A	6.9	50.2	0.51	0.73	0.51	46.5
8	T1	1141	7.7	0.840	47.6	LOS D [11]	41.5	309.9	0.96	0.90	1.01	32.7
9	R2	107	2.0	0.549	75.9	LOS F [11]	7.7	54.5	1.00	0.79	1.00	26.4
Approach		1639	6.7	0.840	41.1	LOS C	41.5	309.9	0.85	0.85	0.89	34.3
West: Melbourne Street												
10	L2	226	3.4	0.857	49.4	LOS D [11]	13.3	95.6	1.00	0.92	1.19	32.8
11	T1	132	1.7	0.857	70.6	LOS F [11]	13.6	97.2	1.00	0.95	1.24	24.6
12	R2	74	2.9	0.857	85.9	LOS F [11]	13.6	97.2	1.00	0.98	1.25	24.3
Approach		432	2.8	0.857	62.2	LOS E [11]	13.6	97.2	1.00	0.94	1.22	28.5
All Vehicles		4426	6.2	0.937	60.1	LOS E [11]	57.3	425.6	0.93	0.95	1.08	28.5

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F [12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F [12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F [12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019PM]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	23	0.0	0.927	68.5	LOS E[11]	58.3	426.3	1.00	1.04	1.17	28.1
2	T1	1320	5.3	0.927	62.8	LOS E[11]	58.3	426.3	0.98	1.03	1.17	28.5
3	R2	239	5.0	0.713	80.8	LOS F[11]	8.9	65.3	1.00	0.84	1.09	21.7
Approach		1582	5.2	0.927	65.6	LOS E[11]	58.3	426.3	0.99	1.00	1.15	27.4
East: Melbourne Street												
4	L2	150	11.7	0.239	40.7	LOS C	7.5	57.8	0.74	0.76	0.74	31.2
5	T1	97	2.2	0.942	84.9	LOS F[11]	29.2	208.8	1.00	1.06	1.36	21.9
6	R2	642	2.7	0.942	90.6	LOS F[11]	35.3	252.8	1.00	1.03	1.33	21.5
Approach		889	4.2	0.942	81.6	LOS F[11]	35.3	252.8	0.96	0.99	1.23	22.7
North: New England Highway												
7	L2	743	4.9	0.647	14.6	LOS B	17.5	127.7	0.86	0.80	0.66	45.3
8	T1	1387	4.5	0.968	78.3	LOS F[11]	68.3	498.4	0.99	1.12	1.27	25.3
9	R2	161	2.7	0.946	101.9	LOS F[11]	14.2	101.4	1.00	1.01	1.49	22.2
Approach		2291	4.5	0.966	59.3	LOS E[11]	68.3	498.4	0.88	1.01	1.09	28.7
West: Melbourne Street												
10	L2	255	2.1	0.883	52.4	LOS D[11]	15.1	107.5	1.00	0.94	1.23	31.9
11	T1	161	1.4	0.883	77.0	LOS F[11]	15.1	107.5	1.00	0.98	1.29	23.6
12	R2	45	2.4	0.883	88.5	LOS F[11]	14.5	103.2	1.00	0.99	1.30	24.0
Approach		461	1.9	0.883	64.5	LOS E[11]	15.1	107.5	1.00	0.96	1.26	27.9
All Vehicles		5223	4.4	0.966	65.5	LOS E[11]	68.3	498.4	0.94	1.00	1.15	27.1

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019AM + development]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	33	6.7	0.937	74.5	LOS F[11]	57.4	426.2	1.00	1.07	1.21	26.7
2	T1	1263	7.1	0.937	68.8	LOS E[11]	57.4	426.2	1.00	1.07	1.21	27.2
3	R2	154	17.0	0.437	75.4	LOS F[11]	5.5	43.7	0.98	0.77	0.98	22.6
Approach		1451	8.2	0.937	69.6	LOS E[11]	57.4	426.2	1.00	1.04	1.19	26.7
East: Melbourne Street												
4	L2	155	9.9	0.232	38.5	LOS C	7.5	57.3	0.71	0.76	0.71	32.0
5	T1	86	3.8	0.944	85.1	LOS F[11]	29.8	214.5	1.00	1.05	1.36	21.8
6	R2	669	3.3	0.944	90.9	LOS F[11]	36.4	261.9	1.00	1.03	1.33	21.5
Approach		911	4.4	0.944	81.4	LOS F[11]	36.4	261.9	0.95	0.99	1.23	22.7
North: New England Highway												
7	L2	395	6.4	0.355	12.8	LOS A	7.0	51.5	0.51	0.73	0.51	46.4
8	T1	1141	7.7	0.840	47.6	LOS D[11]	41.5	309.9	0.98	0.90	1.01	32.7
9	R2	107	2.0	0.549	75.9	LOS F[11]	7.7	54.5	1.00	0.79	1.00	26.4
Approach		1643	7.0	0.840	41.1	LOS C	41.5	309.9	0.85	0.85	0.89	34.3
West: Melbourne Street												
10	L2	226	3.4	0.858	49.2	LOS D[11]	13.3	95.6	1.00	0.92	1.20	32.9
11	T1	132	1.7	0.858	70.7	LOS F[11]	13.6	97.4	1.00	0.95	1.24	24.5
12	R2	74	2.9	0.858	88.0	LOS F[11]	13.6	97.4	1.00	0.96	1.26	24.3
Approach		432	2.8	0.858	62.1	LOS E[11]	13.6	97.4	1.00	0.94	1.22	28.5
All Vehicles		4437	6.4	0.944	60.7	LOS E[11]	57.4	426.2	0.93	0.95	1.09	28.3

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019PM + development]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	23	0.0	0.927	68.6	LOS E[11]	58.4	426.9	1.00	1.04	1.17	28.0
2	T1	1320	5.3	0.927	62.9	LOS E[11]	58.4	426.9	0.98	1.03	1.17	28.5
3	R2	240	5.5	0.719	80.9	LOS F[11]	9.0	65.9	1.00	0.84	1.10	21.7
Approach		1583	5.3	0.927	65.8	LOS E[11]	58.4	426.9	0.99	1.01	1.16	27.4
East: Melbourne Street												
4	L2	151	12.3	0.241	40.7	LOS C	7.6	58.6	0.74	0.76	0.74	31.2
5	T1	97	2.2	0.953	88.9	LOS F[11]	30.0	215.7	1.00	1.07	1.39	21.3
6	R2	646	3.4	0.953	94.6	LOS F[11]	36.4	262.3	1.00	1.04	1.38	21.0
Approach		894	4.8	0.953	84.9	LOS F[11]	36.4	262.3	0.98	1.00	1.26	22.1
North: New England Highway												
7	L2	748	5.4	0.653	14.6	LOS B	17.7	130.0	0.67	0.80	0.67	45.2
8	T1	1387	4.5	0.966	76.3	LOS F[11]	68.3	496.4	0.99	1.12	1.27	25.3
9	R2	161	2.7	0.946	101.9	LOS F[11]	14.2	101.4	1.00	1.01	1.49	22.2
Approach		2296	4.7	0.966	59.2	LOS E[11]	68.3	496.4	0.88	1.01	1.09	28.8
West: Melbourne Street												
10	L2	255	2.1	0.883	52.4	LOS D[11]	15.1	107.5	1.00	0.94	1.23	31.9
11	T1	161	1.4	0.883	77.0	LOS F[11]	15.1	107.5	1.00	0.98	1.29	23.6
12	R2	45	2.4	0.883	88.5	LOS F[11]	14.5	103.2	1.00	0.99	1.30	24.0
Approach		461	1.9	0.883	64.5	LOS E[11]	15.1	107.5	1.00	0.96	1.26	27.9
All Vehicles		5234	4.6	0.966	66.1	LOS E[11]	68.3	496.4	0.94	1.00	1.15	27.0

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019AM + major contract]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site User-Given Phase Times)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	33	6.7	0.937	74.4	LOS F[11]	57.3	425.6	1.00	1.07	1.21	26.7
2	T1	1263	7.1	0.937	68.6	LOS E[11]	57.3	425.6	1.00	1.07	1.21	27.2
3	R2	153	16.4	0.461	76.6	LOS F[11]	5.5	43.6	0.99	0.77	0.99	22.4
Approach		1449	8.1	0.937	69.6	LOS E[11]	57.3	425.6	1.00	1.04	1.19	26.7
East: Melbourne Street												
4	L2	154	9.2	0.229	38.4	LOS C	7.5	56.5	0.71	0.76	0.71	32.1
5	T1	86	3.8	0.977	98.8	LOS F[11]	33.5	247.6	1.00	1.11	1.46	19.9
6	R2	697	7.2	0.977	104.6	LOS F[11]	40.9	303.7	1.00	1.08	1.43	19.6
Approach		938	7.2	0.977	93.1	LOS F[11]	40.9	303.7	0.95	1.03	1.32	20.9
North: New England Highway												
7	L2	424	12.7	0.393	12.9	LOS A	7.8	60.2	0.52	0.73	0.52	46.2
8	T1	1141	7.7	0.840	47.6	LOS D[11]	41.5	309.8	0.96	0.90	1.01	32.7
9	R2	107	2.0	0.586	77.1	LOS F[11]	7.7	55.1	1.00	0.79	1.00	26.1
Approach		1672	8.6	0.840	40.7	LOS C	41.5	309.8	0.85	0.85	0.88	34.4
West: Melbourne Street												
10	L2	226	3.4	0.816	45.3	LOS D[11]	12.4	89.2	1.00	0.89	1.13	34.1
11	T1	132	1.7	0.816	87.3	LOS E[11]	13.4	95.5	1.00	0.91	1.17	25.2
12	R2	74	2.9	0.816	82.1	LOS F[11]	13.4	95.5	1.00	0.92	1.18	24.9
Approach		432	2.8	0.816	58.4	LOS E[11]	13.4	95.5	1.00	0.90	1.15	29.4
All Vehicles		4492	7.6	0.977	62.7	LOS E[11]	57.3	425.6	0.93	0.95	1.10	27.8

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96

MOVEMENT SUMMARY

Site: 101 [NEH_Melbourne Street 2019PM + development major contract]

New England Highway / Melbourne Street signals
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 150 seconds (Site Practical Cycle Time)
Design Life Analysis (Final Year): Results for 4 years

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: New England Highway												
1	L2	23	0.0	0.927	68.5	LOS E[11]	58.3	426.3	1.00	1.04	1.17	28.1
2	T1	1320	5.3	0.927	62.8	LOS E[11]	58.3	426.3	0.98	1.03	1.17	28.5
3	R2	239	5.0	0.713	80.8	LOS F[11]	8.9	65.3	1.00	0.84	1.09	21.7
Approach		1582	5.2	0.927	65.6	LOS E[11]	58.3	426.3	0.99	1.00	1.15	27.4
East: Melbourne Street												
4	L2	150	11.7	0.234	39.9	LOS C	7.4	57.2	0.73	0.76	0.73	31.5
5	T1	97	2.2	0.986	103.7	LOS F[11]	33.9	249.9	1.00	1.13	1.49	19.3
6	R2	674	7.5	0.986	109.5	LOS F[11]	40.9	304.9	1.00	1.10	1.48	19.0
Approach		922	7.6	0.986	97.6	LOS F[11]	40.9	304.9	0.96	1.05	1.35	20.2
North: New England Highway												
7	L2	776	8.9	0.687	14.7	LOS B	18.6	140.2	0.69	0.81	0.69	45.1
8	T1	1387	4.5	0.966	78.3	LOS F[11]	68.3	496.4	0.99	1.12	1.27	25.3
9	R2	161	2.7	0.946	101.9	LOS F[11]	14.2	101.4	1.00	1.01	1.49	22.2
Approach		2324	5.8	0.966	58.7	LOS E[11]	68.3	496.4	0.89	1.01	1.09	28.9
West: Melbourne Street												
10	L2	255	2.1	0.934	62.9	LOS E[11]	16.9	120.3	1.00	1.00	1.36	29.3
11	T1	161	1.4	0.934	86.1	LOS F[11]	16.9	120.3	1.00	1.04	1.42	22.0
12	R2	45	2.4	0.934	97.8	LOS F[11]	15.3	108.6	1.00	1.05	1.43	22.5
Approach		461	1.9	0.934	74.4	LOS F[11]	16.9	120.3	1.00	1.02	1.39	25.9
All Vehicles		5289	5.6	0.986	68.9	LOS E[11]	68.3	496.4	0.94	1.02	1.18	26.4

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

11 Level of Service is worse than the Level of Service Target specified in the Parameter Settings dialog.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	9	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P2	East Full Crossing	2	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P3	North Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
P4	West Full Crossing	1	69.1	LOS F[12]	0.0	0.0	0.96	0.96
All Pedestrians		14	69.1	LOS F[12]			0.96	0.96