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21 December 2023

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Senior Transport Engineer
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City of Port Phillip

Via email: [redacted]@portphillip.vic.gov.au

Head Street Traffic Analysis
Elwood Foreshore

Dear [redacted]

Ratio has been engaged by City of Port Phillip to conduct further traffic analysis with regards to the masterplan of Elwood Foreshore and its potential impacts on Head Street.

The following works have been prepared by Ratio as an addendum to the Car Parking Study prepared for the Elwood Foreshore Masterplan.

During the course of this assessment, intersection turning movement count data has been collected, intersections analysed, and intercept survey data collected for visitors of Elwood Foreshore. The findings of the assessment are summarised below.

1. Response to Comments

Comments

A response to the Elwood Foreshore Masterplan Car Parking Assessment was provided by Bayside City Council on 31 August 2023 raising concerns that the right turn bans at the Head Street/St Kilda Street intersection would result in detours and increased through traffic, and that a SIDRA intersection analysis had not been undertaken, among others.

Response

The primary destination for visitors driving to Elwood Foreshore is the on-site car park, comprising the highest number of spaces at approximately 302 spaces and being centrally located. The masterplan seeks to consolidate car parking areas to a central and prominent location which is visible from Ormond Esplanade, as displayed in Figure 1, making the on-site car park more visible to visitors from the road frontage.

The on-site car park is to be accessed via the existing fully directional traffic signal on Ormond Esplanade, allowing visitors to approach from either direction and turn into the site via the signals. An existing fully directional secondary access point to the east of the signals is also provided.

Figure 1: Masterplan

The Head Street car parking spaces provide a subsidiary car parking area for visitors. Visitors parking on Head Street are considered most likely to be either visitors to the residential dwellings fronting Head Street, or regular visitors of Elwood Foreshore. Both types of visitors are anticipated to be familiar with the Head Street turning restrictions and will navigate their way through the road network accordingly, as will their GPS route mapping tools should drivers choose to use them.

No changes are proposed to the intersection of Head Street and St Kilda Street. An existing right turn ban is in place for both the north and south approach on St Kilda Street in order to reduce delays to through traffic on St Kilda Street.

As a result of the right turn bans being in place, it is considered less likely that new visitors to the area will opportunistically turn into Head Street, which is considered to reduce the demand for car parking on Head Street, and to significantly reduce delays on Ormond Esplanade and St Kilda Street for through traffic compared to a situation in which the Head Street intersection did not have right turn bans in place.

In the event that a visitor to Head Street misses their turn or mistakenly approaches from a different road connection, there is potential for that visitor to drive beyond Head Street and park within the on-site car park or another adjacent street.

Access routes through the road network to the subject site are to remain as per existing conditions after the development of the Elwood Foreshore Masterplan. Key routes to the site are discussed in Appendix A. The masterplan does not seek to alter the existing turning restrictions at the Head Street/St Kilda Street intersection. The masterplan seeks to utilise the existing fully directional access points and traffic signal on Ormond Esplanade to provide a consolidated and easily identifiable on-site car park for visitors to Elwood Foreshore.

A detailed SIDRA analysis has been undertaken for the networked intersection of Head Street/St Kilda Street, and St Kilda Street/Ormond Esplanade as presented in this letter.

2. Origin Surveys

Visitors to Elwood Foreshore were surveyed on Thursday 31st August 2023 and Saturday 2nd September 2023 to query the postcode which they travelled from. Should an arriving vehicle carry multiple visitors, one respondent was surveyed. Results for the Thursday and Saturday surveys are displayed in Figure 2 and Figure 3, respectively.

The results of the Thursday survey show highest number of people to have come from postcodes in closest proximity to the site; with 15 respondents coming from 3186 (North Brighton) and 23 respondents coming from 3184 (Elwood). A smaller number of respondents were found to travel from remote postcodes, with the furthest travelling from 3030 (Cocoroc).

The results of the Saturday survey showed a wider range of postcodes which respondents had travelled from, although the highest number of respondents were still found to come from nearby postcodes including 3184 (Elwood) and 3185 (Elsternwick). The respondent travelling the furthest originated from 3350 (Ballarat).

Figure 2: Thursday Postcode Origin Surveys

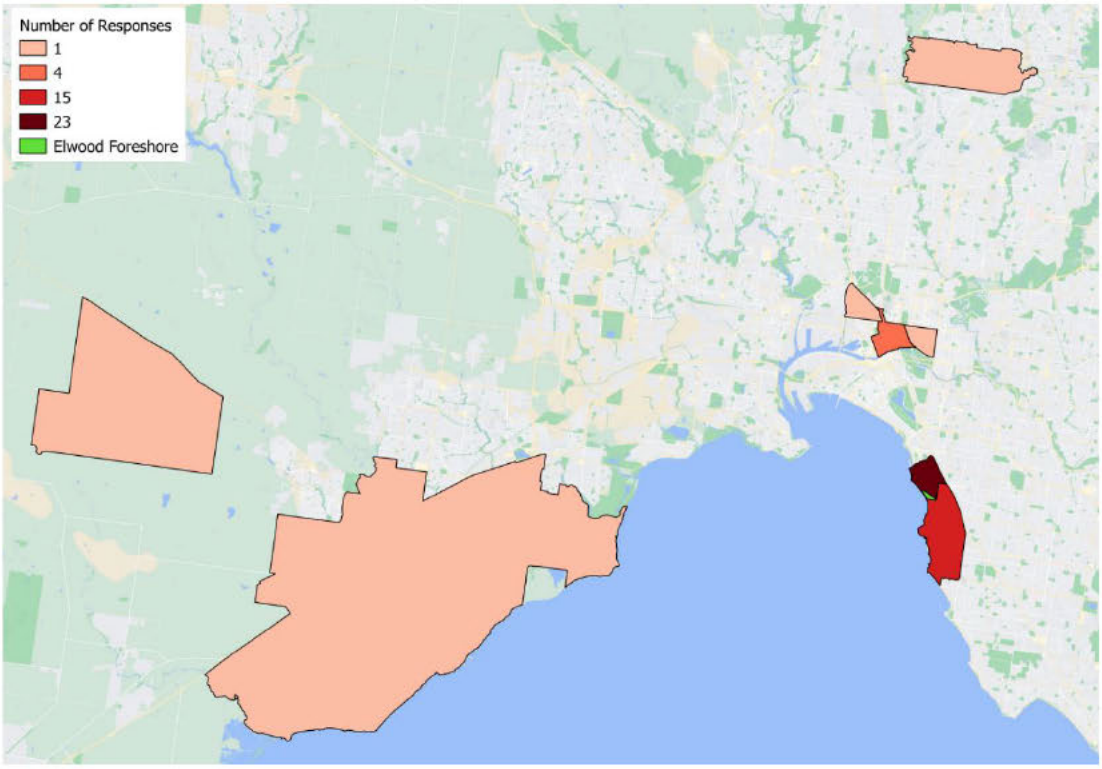
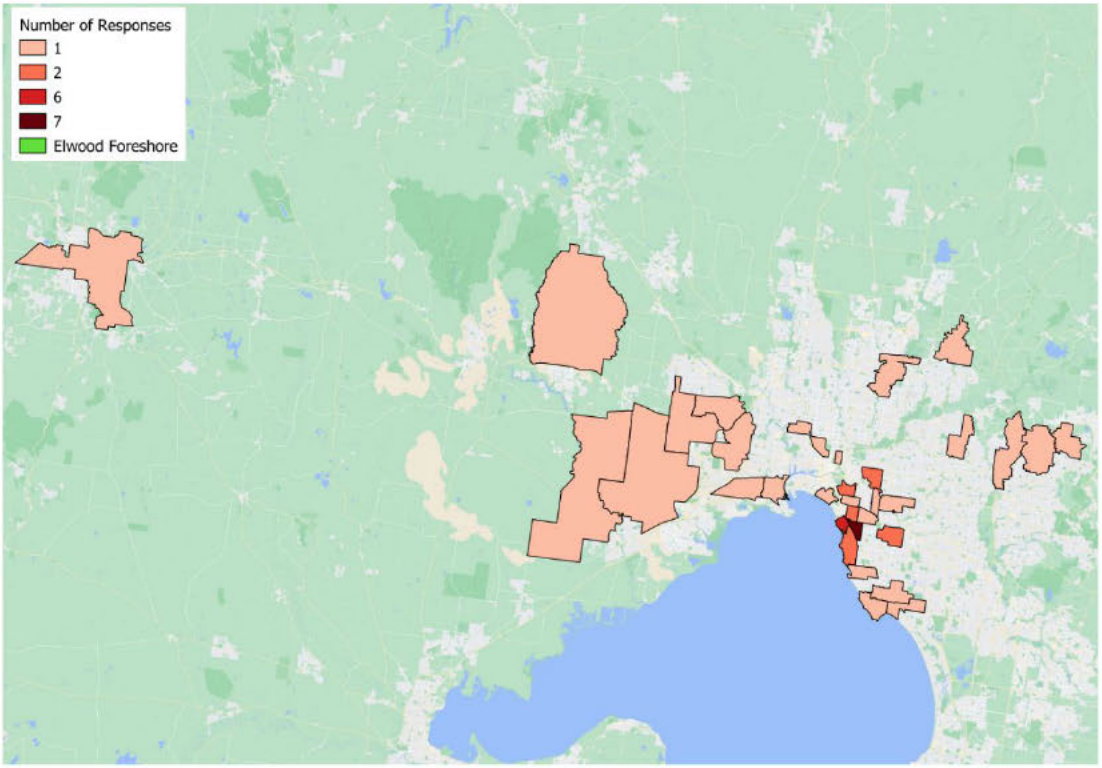


Figure 3: Saturday Postcode Origin Surveys



3. Intersection Analysis

The intersection of Head Street, Ormond Esplanade and St Kilda Street has been analysed under existing and post-development conditions.

In order to establish existing conditions, traffic turning movement surveys were conducted at the intersection during the following dates and times:

— Thursday 31st August 2023: 8:00am to 10:00am, and 4:00pm to 6:00pm;

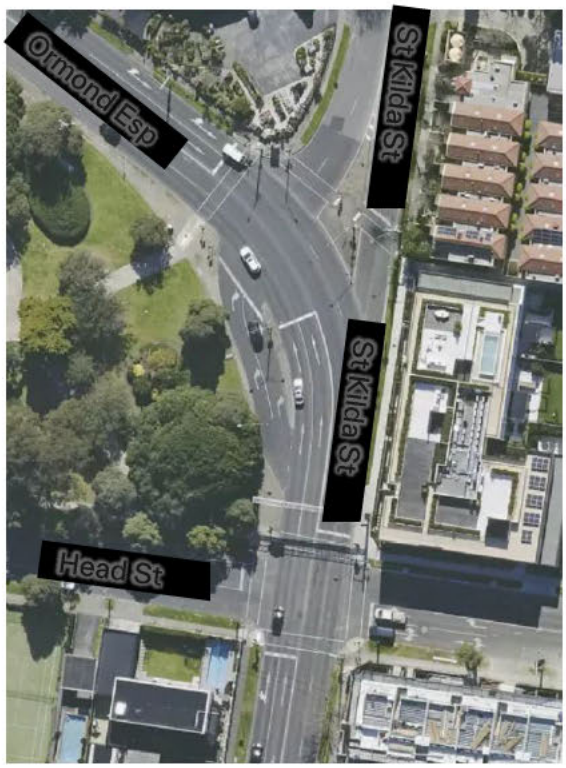
— Saturday 2nd September 2023: 10:00am to 2:00pm.

Results of the surveys are provided within Appendix B.

The traffic count surveys and the following analysis have considered the double intersection of Ormond Esplanade/St Kilda Road and Head Street/Ormond Esplanade, as displayed in the aerial image in Figure 4.

A site inspection was conducted to observe the functionality of the intersection and to time the signal phasing on Thursday 12th October 2023 during the AM peak hour.

Figure 4: Subject Intersection



Source: landchecker.com.au

3.1 Peak Hour Turning Movements

The peak hours were found to occur during the following times:

— Thursday AM peak: 8:00am – 9:00am,

— Thursday PM peak: 4:45pm – 5:45pm,

— Saturday peak: 1:00pm – 2:00pm.

The Thursday and Saturday peak hour turning movement counts through the subject intersection are displayed in Figure 5 and Figure 6, respectively.

Figure 5: Existing Thursday AM and PM Peak Turning Movement Counts

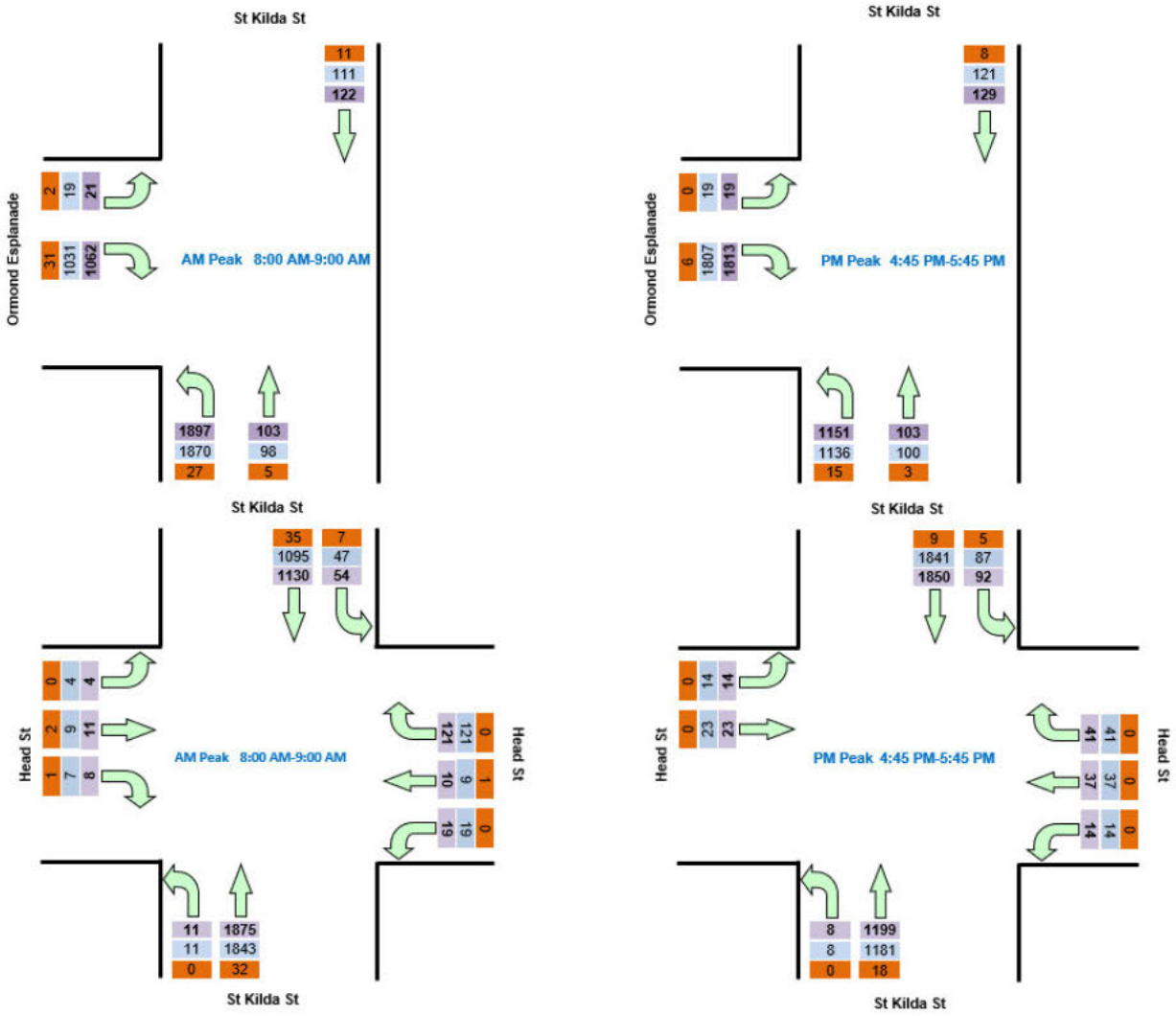
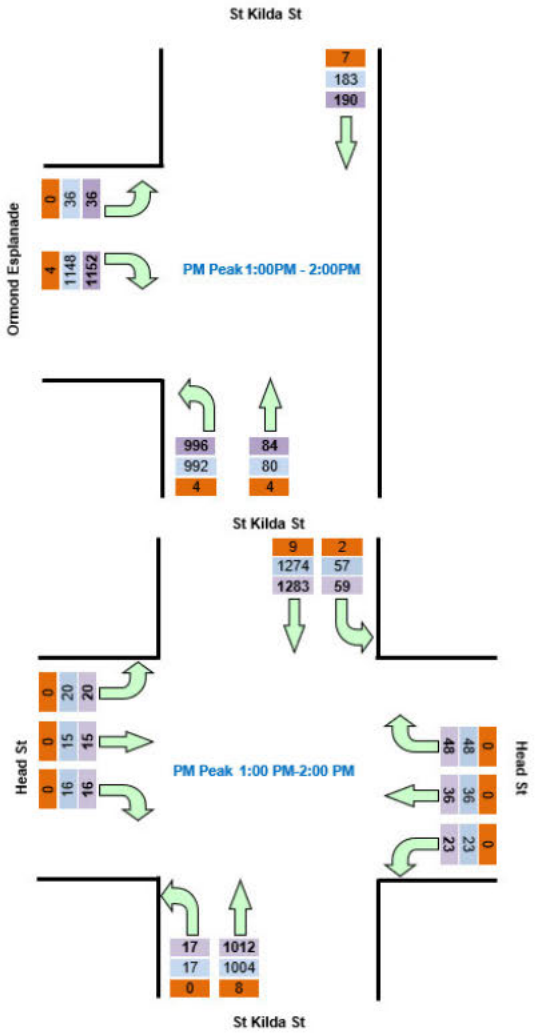


Figure 6: Existing Saturday Peak Turning Movement Results



3.2 SIDRA Parameters

The program SIDRA intersections version 9.1 was used to analyse the subject intersection.

The intersection was modelled as a Common Control Group with the arrival pattern of vehicles between each intersection set to favourable progression, i.e., traffic moved within a dense platoon through the site. In addition, site observations showed that the intersection was running on an average cycle time of 120-seconds.

The key parameters used to determine the operational capacity of an intersection are queue length, average delay and degree of saturation (or volume to capacity ratio).

Degree of Saturation is a ratio of arrival (or demand) flow to capacity. Degrees of saturation above 1.0 represent oversaturated conditions and degrees of saturation below 1.0 represent undersaturated conditions. The operational rating associated with the degree of saturation is summarised in Table 1.

Table 1: Ratings of Degree of Saturation

Degree of Saturation (DOS)	Rating
Up to 0.6	Excellent
0.61 – 0.70	Very Good
0.71 – 0.80	Good
0.81 – 0.90	Fair
0.91 – 1.00	Poor
Greater than 1.00	Very Poor

Although operating conditions with a degree of saturation around 1.00 are undesirable, it is acknowledged that this level of congestion is typical of many metropolitan intersections during the AM and PM peak hours.

The 95th percentile queue length is the value below which 95 percent of all observed cycle queue lengths fall, or 5 percent of all observed queue lengths exceed.

Average Delay is the average time, in seconds, that all vehicles making a particular movement can expect to wait at an intersection.

3.3 Existing Conditions Results

Thursday Existing Conditions Results

The Thursday peak hour traffic volumes displayed in Figure 5 were applied to the SIDRA intersection layout for the double intersection of Ormond Esplanade/St Kilda Road and Head Street/Ormond Esplanade displayed in Appendix C. The results of the analysis are summarised in Table 2 and detailed results displayed in Appendix C.

Table 2: SIDRA Results - Thursday Existing Conditions

	Approach	Mvmnt	AM Peak			PM Peak		
			DOS	95%ile Queue (m)	Avg Delay (s)	DOS	95%ile Queue (m)	Avg Delay (s)
	St Kilda Street (SouthEast)	Left	0.69	25	3	0.42	5	3
		Right	0.22	22	58	0.22	14	59
	St Kilda Street (North)	Left	0.26	25	55	0.27	16	55
	Ormond Esplanade (West)	Through	0.40	78	11	0.71	136	15
		Right	0.40	78	9	0.71	136	14
	All vehicles (intersection 1)		**0.69**			**0.71**		

	St Kilda Street (South)	Left	0.72	238	16	0.44	57	11
		Through	0.72	238	10	0.44	57	5
	Head Street (East)	Left	0.39	32	58	0.23	13	56
		Through	0.39	32	53	0.23	13	51
		Right	0.39	32	58	0.23	13	59
	St Kilda Street (North)	Left	0.42	9	4	0.69	16	4
		Through	0.42	9	0	0.69	16	0
	Head Street (West)	Left	0.11	9	55	0.16	9	55
		Through	0.11	9	50	0.16	9	50
		Right	0.11	9	55	0.16	9	58
	All vehicles (Intersection 2)		**0.72**			**0.69**		

Results both the peak hour analysis and intersection turning movement counts show there to be significant tidal flow of traffic during the weekday AM and PM peak hours.

During the AM peak, tidal traffic flow is observed in the northbound direction towards the Melbourne CBD. Other traffic movements through the double intersection, including turning movements and through movements in the southbound direction on Ormond Esplanade and St Kilda Street are observed to be comparatively low.

Similarly, during the PM peak, tidal traffic flow is observed in the southbound direction from the CBD. As per the AM peak hour, other movements through the intersection including turning movements and through movements in the non-tidal direction are comparatively low.

In order to cater for the tidal traffic flow, most of the intersection phase timing is to accommodate through movements on Ormond Esplanade and St Kilda Street. Queues are observed on the south approach of St Kilda Street during the AM peak, and on the north approach on Ormond Esplanade during the PM peak which are found to clear in one to two cycles. All other turning movements are observed to clear each cycle.

The intersection is shown to operate under 'Good' conditions during the AM peak hour and 'very good' conditions during the PM peak hour.

Saturday Existing Conditions Results

The Saturday peak hour traffic volumes displayed in Figure 6 were applied to the SIDRA intersection layout displayed in Appendix C. The results of the analysis are summarised in Table 3 and detailed results displayed in Appendix C.

Table 3: SIDRA Results – Saturday Existing Conditions

Approach	Movement	Peak Hour		
		DOS	95%ile Queue (m)	Avg Delay (s)
St Kilda Street (SouthEast)	Left	0.36	47	5
	Right	0.18	18	57
St Kilda Street (North)	Left	0.80	46	68
Ormond Esplanade (West)	Through	0.85	213	26
	Right	0.85	213	25
All vehicles (Intersection 1)		**0.85**		
St Kilda Street (South)	Left	0.43	12	11
	Through	0.43	12	5
Head Street (East)	Left	0.29	4	56
	Through	0.29	4	52
	Right	0.29	4	60
St Kilda Street (North)	Left	0.48	9	7
	Through	0.48	9	4
Head Street (West)	Left	0.27	3	57
	Through	0.27	3	52
	Right	0.27	3	59
All vehicles (Intersection 2)		**0.48**		

The Saturday results indicate traffic to be more evenly split between northbound and southbound movements on Ormond Esplanade and St Kilda Street. Due to drivers in the community having more varied destinations on a weekend compared to weekday, a higher number of turning movements through the intersection is observed. The intersection is found to function under 'fair' conditions during the Saturday peak.

3.4 Post Development Conditions

As per the Elwood Foreshore masterplan, it is proposed to provide a total of approximately 80 additional car parking spaces accessed via Head Street; including 29 spaces within the site and the remainder on the northern side of Head Street.

In order to assess the likely impact associated with traffic movements from the proposed car parking spaces, a number of key assumptions have been made:

— Elwood Foreshore is anticipated to experience peak activity during weekends.

— As outlined in the Car Parking Assessment prepared by Ratio, visitors to Elwood Foreshore are anticipated to remain on site for an average stay of 2 hours. On this basis, half of the new car parking space on Head Street are assumed to turnover during the Saturday peak hour. The 80 new car parking spaces are therefore estimated to generate 40 ingress movements and 40 egress movements during the Saturday peak hour. It has been conservatively assumed that an additional 10% traffic may be generated by circulating vehicles searching for a car parking space on Saturday, therefore Head Street may experience up to an additional 44 ingress and 44 egress movements.

— It has conservatively been assumed that a quarter of the car parking spaces on Head Street will turnover during the weekday AM and PM peak hours. The 80 new car parking spaces are therefore estimated to generate 20 ingress movements and 20 egress movements during the Thursday AM and PM peak hours.

— The directional distribution of vehicles to and from the proposed parking spaces is based on the origin-destination surveys undertaken on Thursday 31 August 2023, previously displayed in Figure 2 and Figure 3. Directionals splits have been adopted as per Table 4 below.

Table 4: Directional Distribution of Proposed Parking Spaces

Direction of Travel	Thursday (Weekday)	Saturday (Weekend)
North / West	60%	50%
East	10%	20%
South	30%	30%
Total	100%	100%

— Right-turn bans on the northern approach to the St Kilda Street / Head Street intersection have been considered. Inbound traffic movements have therefore been distributed between Head Street east approach and St Kilda Street south approach.

Based on the above, the additional traffic generated by the proposed car parking accessed from Head Street was added to existing conditions to understand the 'post development' conditions.

The Thursday AM and PM peak hour post-development volumes are presented in Figure 7, and Saturday peak hour post-development volumes are presented in Figure 8.

Figure 7: Post Development Thursday AM and PM Peak Hour Volumes

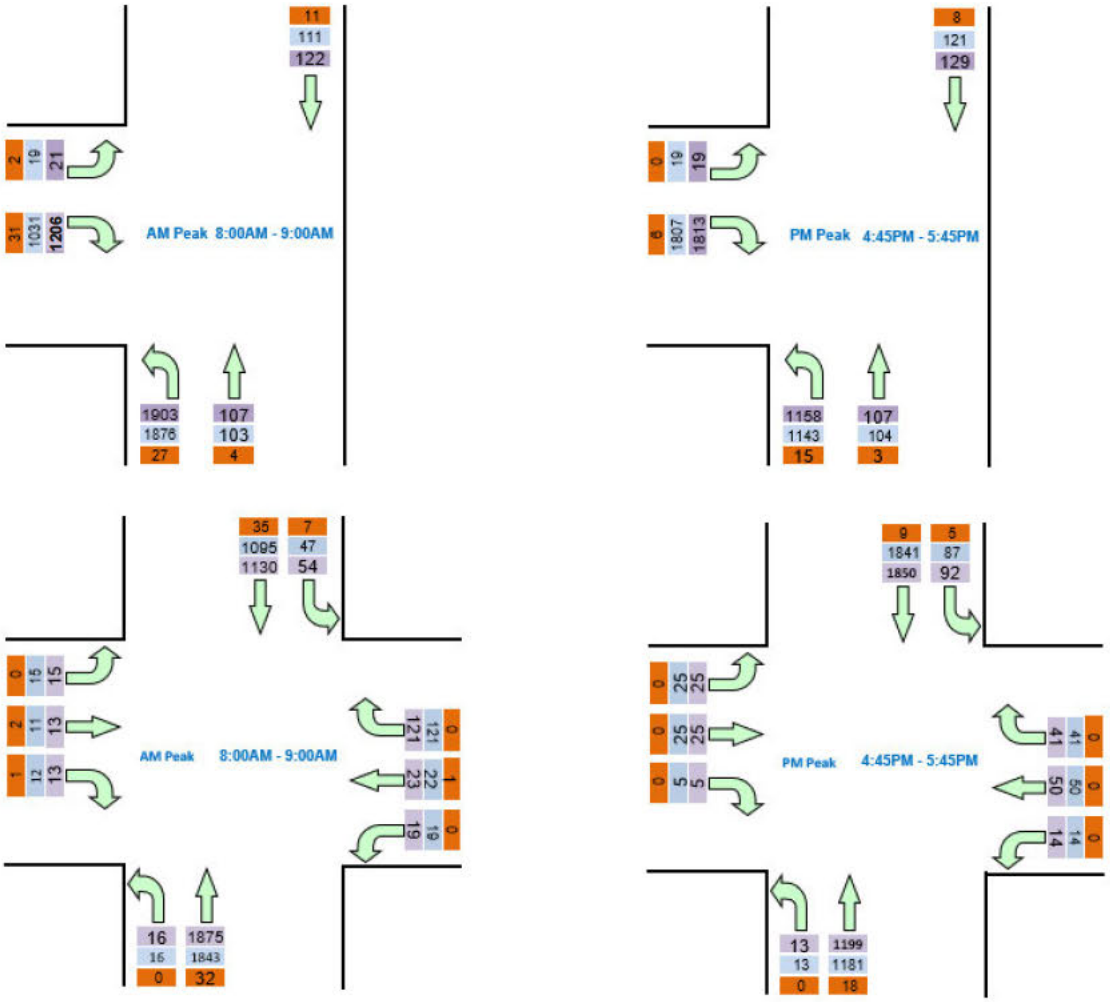
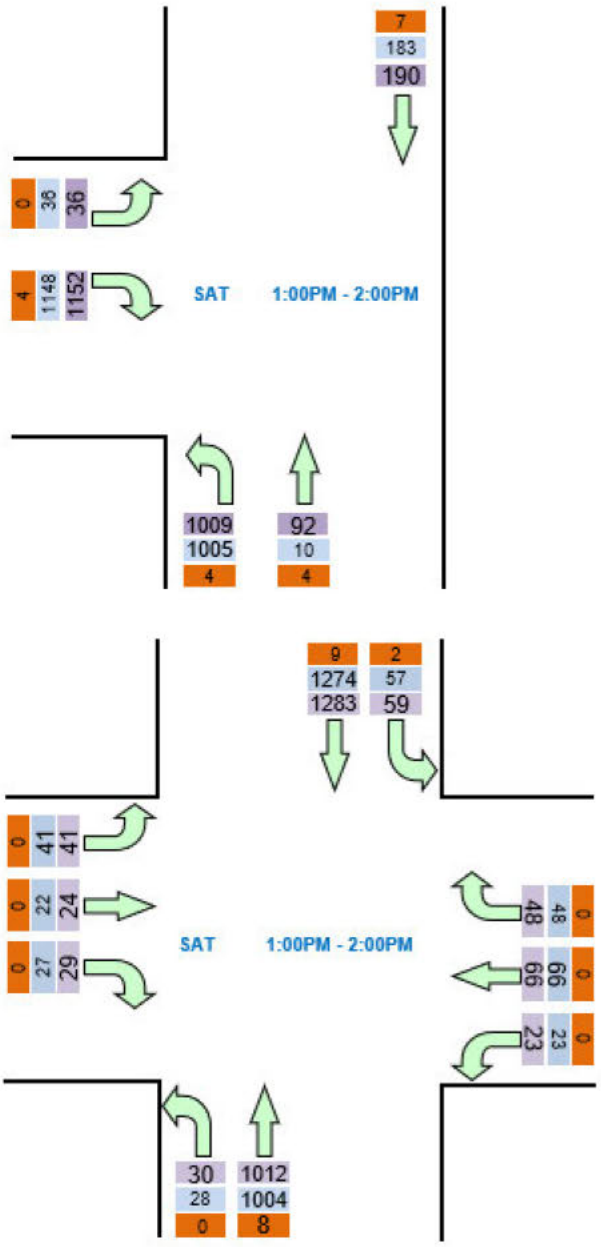


Figure 8: Post Development Saturday Peak Hour Volumes



3.5 Post Development Conditions Results

Thursday Post Development Conditions Results

The post-development Thursday peak hour traffic volumes displayed in Figure 7, were applied to the SIDRA intersection layout for the double intersection of Ormond Esplanade/St Kilda Road and Head Street/Ormond Esplanade. The results of the analysis are summarised in Table 5 and Table 6, and detailed results displayed in Appendix D.

Table 5: SIDRA Results - Thursday AM Peak Post Development Conditions

Approach	Mvmnt	AM Existing Conditions			AM Post-Dev Conditions		
		DOS	95%ile Queue (m)	Avg Delay (s)	DOS	95%ile Queue (m)	Avg Delay (s)
St Kilda Street (SouthEast)	Left	0.69	25	3	0.69	26	3
	Right	0.22	22	58	0.22	23	58
St Kilda Street (North)	Left	0.26	25	55	0.26	25	55
Ormond Esplanade (West)	Through	0.40	78	11	0.40	78	11
	Right	0.40	78	9	0.40	78	9
All vehicles (intersection 1)		**0.69**			**0.69**		
St Kilda Street (South)	Left	0.72	238	16	0.72	239	16
	Through	0.72	238	10	0.72	239	10
Head Street (East)	Left	0.39	32	58	0.43	36	57
	Through	0.39	32	53	0.43	36	53
	Right	0.39	32	58	0.43	36	59
St Kilda Street (North)	Left	0.42	9	4	0.42	9	4
	Through	0.42	9	0	0.42	9	0
Head Street (West)	Left	0.11	9	55	0.20	17	56
	Through	0.11	9	50	0.20	17	51
	Right	0.11	9	55	0.20	17	57
All vehicles (Intersection 2)		**0.72**			**0.72**		

Review of the above results during the weekday AM peak hour show there to be near negligible increases to queues and delays as a result of the additional vehicle movements generated by additional car parking spaces on Head Street.

The intersection is anticipated to continue to operate under 'Good' conditions post-development during the AM peak hour.

Table 6: SIDRA Results - Thursday PM Peak Post Development Conditions

Approach	Mvmnt	PM Existing Conditions			PM Post-Dev Conditions		
		DOS	95%ile Queue (m)	Avg Delay (s)	DOS	95%ile Queue (m)	Avg Delay (s)
St Kilda Street (SouthEast)	Left	0.42	5	3	0.42	9	3
	Right	0.22	14	59	0.22	23	58
St Kilda Street (North)	Left	0.27	16	55	0.27	26	55
Ormond Esplanade (West)	Through	0.71	136	15	0.71	222	15
	Right	0.71	136	14	0.71	222	14
All vehicles (intersection 1)		**0.71**			**0.71**		
St Kilda Street (South)	Left	0.44	57	11	0.44	93	11
	Through	0.44	57	5	0.44	93	5
Head Street (East)	Left	0.23	13	56	0.27	26	56
	Through	0.23	13	51	0.27	26	51
	Right	0.23	13	59	0.25	17	59
St Kilda Street (North)	Left	0.69	16	4	0.69	26	4
	Through	0.69	16	0	0.69	26	0
Head Street (West)	Left	0.16	9	55	0.25	22	56
	Through	0.16	9	50	0.25	22	52
	Right	0.16	9	58	0.25	22	59
All vehicles (Intersection 2)		**0.69**			**0.69**		

Review of the above results during the weekday PM peak hour show queues to increase on the tidal movements (being southbound on Ormond Esplanade). Whilst queues are estimated to marginally increase, these are shown to clear with each traffic signal such that delays are anticipated to remain fairly constant and the overall operation of the double traffic signal anticipated to remain operating under 'good' conditions with consistent degree of saturation with existing conditions.

Saturday Post Development Conditions Results

The Saturday peak hour traffic volumes displayed in Figure 8 were applied to the SIDRA intersection layout. The results of the analysis are summarised in Table 7 and detailed results displayed in Appendix D.

Table 7: SIDRA Results – Saturday Post Development Conditions

Approach	Mvmnt	Existing Conditions			Post-Dev Conditions		
		DOS	95%ile Queue (m)	Avg Delay (s)	DOS	95%ile Queue (m)	Avg Delay (s)
St Kilda Street (SouthEast)	Left	0.36	47	5	0.37	49	6
	Right	0.18	18	57	0.19	19	57
St Kilda St (North)	Left	0.80	46	68	0.80	46	68
Ormond Esplanade (West)	Through	0.85	213	26	0.85	213	26
	Right	0.85	213	25	0.85	213	25
All vehicles (Intersection 1)		**0.85**			**0.85**		
St Kilda Street (South)	Left	0.43	12	11	0.47	85	11
	Through	0.43	12	5	0.47	85	5
Head Street (East)	Left	0.29	4	56	0.39	38	57
	Through	0.29	4	52	0.39	38	52
	Right	0.29	4	60	0.39	38	63
St Kilda Street (North)	Left	0.48	9	7	0.48	65	7
	Through	0.48	9	4	0.48	65	4
Head Street (West)	Left	0.27	3	57	0.58	41	61
	Through	0.27	3	52	0.58	41	55
	Right	0.27	3	59	0.58	41	65
All vehicles (Intersection 2)		**0.48**			**0.58**		

As discussed previously, peak activity on site at the Elwood Foreshore is anticipated to occur during weekends, therefore the Saturday peak hour is anticipated to generate the highest number of new traffic movements through the intersection of Head Street and St Kilda Street.

Review of the above results shows that whilst marginal increases in queues are anticipated on Head Street, these vehicles are anticipated to clear with each signal cycle. Delays are anticipated to largely remain consistent with existing conditions. The intersection is anticipated to operate under 'Fair' conditions consistent with Saturday existing conditions.

3.6 Summary

As part of the Elwood Foreshore masterplan, it is proposed to construct approximately 80 additional car parking spaces to Head Street, located at the southern frontage of the Elwood Foreshore.

The intersection of Head Street, Ormond Esplanade and St Kilda Street has been analysed under existing and post-development conditions, with the preceding assessment is summarised as follows:

— Under existing conditions, tidal traffic flow is observed both during the weekday AM and PM peak hours:

- AM Peak: Tidal traffic flow in northbound direction towards CBD;
- PM Peak: Tidal traffic flow in southbound direction from CBD.

— Existing conditions intersection analysis shows:

- AM Peak: Queues on the south approach of St Kilda Street, which clear in one to two signal cycles, with all other turning movements clearing every cycle. Intersection operating under 'Good' conditions;
- PM Peak: Queues on the north approach of Ormond Esplanade, which clear in one to two signal cycles, with all other turning movements clearing every cycle Intersection operating under 'Very Good' conditions.

— More even traffic distribution is observed through the intersection during the Saturday peak, including a higher number of turning movements. Intersection operating under 'Fair' conditions.

— Post-development conditions considered traffic generated by the 80 additional car parking spaces on Head Street.

— Peak activity generated by the subject site is anticipated to occur on a Saturday.

— Post-development conditions intersection analysis showed:

- AM Peak: near negligible increases to queues and delays. Intersection anticipated to continue to operate under 'Good' conditions;
- PM Peak: queues anticipated to marginally increase, with the greatest increase anticipated to the tidal flow movement on Ormond Esplanade. Queues are anticipated to clear each cycle with post-development delays remaining largely consistent with existing conditions delays. Intersection anticipated to continue to operate under 'Good' conditions;
- Saturday Peak: queues anticipated to marginally increase, which are shown to clear each cycle. Delays are anticipated to remain largely consistent with existing conditions.

Should you have any queries please contact Hilary Marshall or the undersigned on 9429 3111.

Yours sincerely,

[redacted]

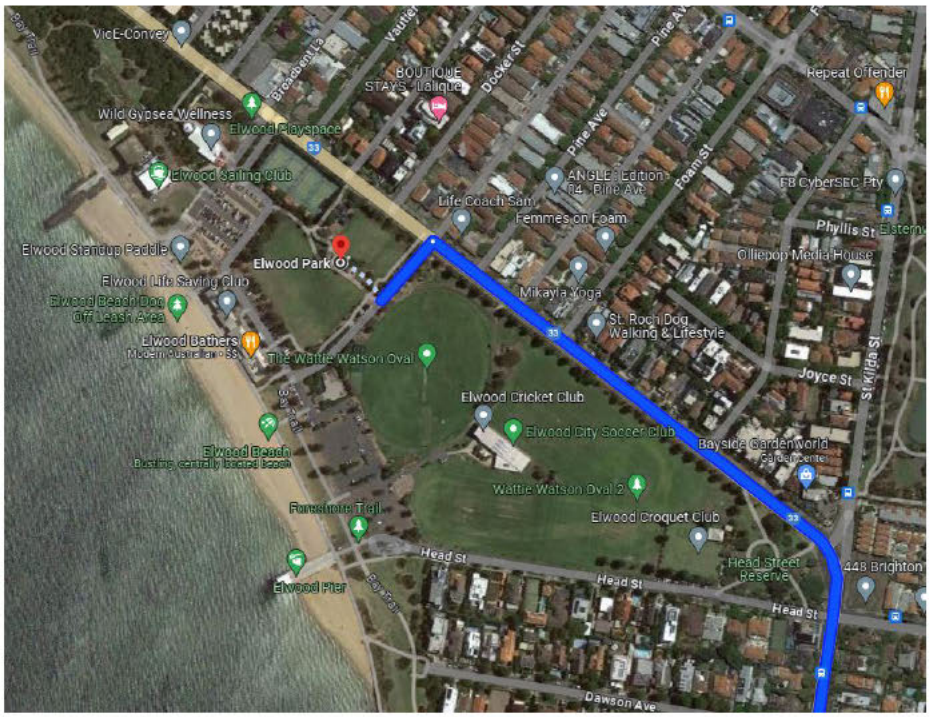
[redacted]

Associate: Transport

Appendix A Route Navigation

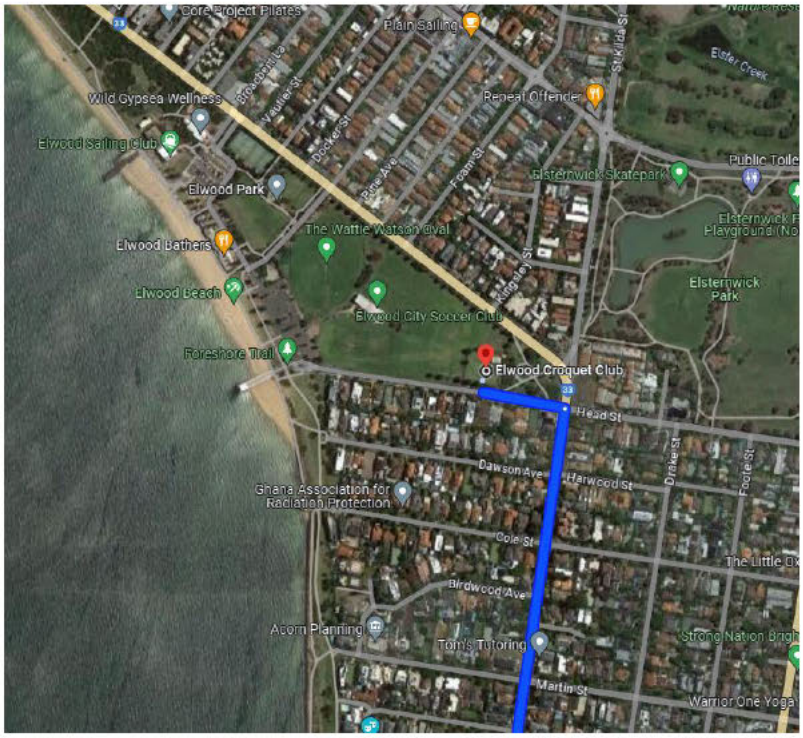
Visitors navigating to the site, searching for key destinations including the Elwood Park, Elwood Angling Club, Elwood Sailing Club, Elwood Bathers, are directed to the main on-site car park, as displayed in the sample route map in Figure 9.

Figure 9: Navigating to Main Car Park On Site



Car parking spaces on Head Street are most conveniently accessed from the South, or from the West. When navigating from the south, visitors wishing to visit locations such as the Croquet Club can easily approach on St Kilda Street and turn left into Head Street as displayed in Figure 10.

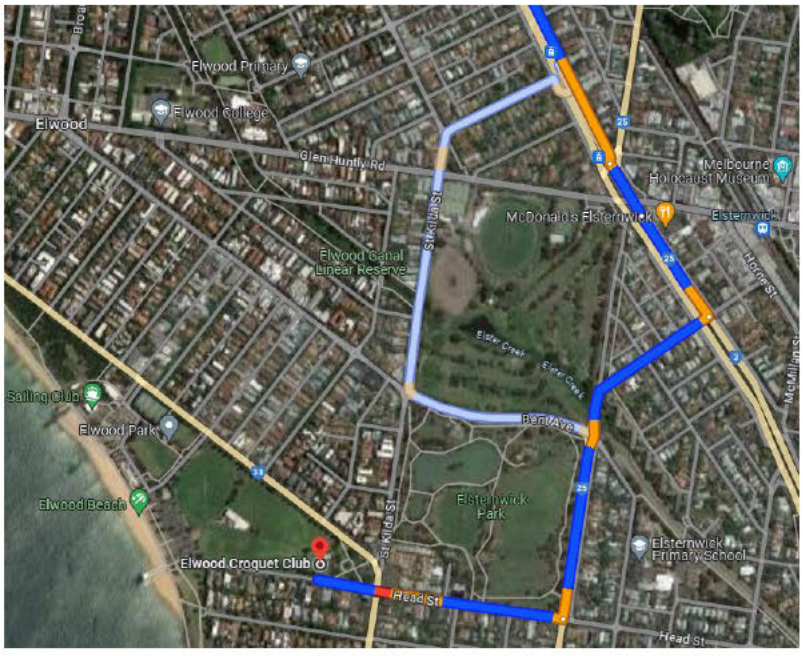
Figure 10: Navigating from South to Head Street



When approaching from the North from outside of the area of Port Phillip Council and wishing to visit Head Street, visitors may approach via Brighton Road, Rusden Street, New Street and Head Street as displayed in the example route navigation in Figure 11.

Rusden Street, New Street and Head Street (east of St Kilda Street) are classified as major Council roads and can accommodate the expected increase in traffic associated to the additional car parking spaces created in Head Street.

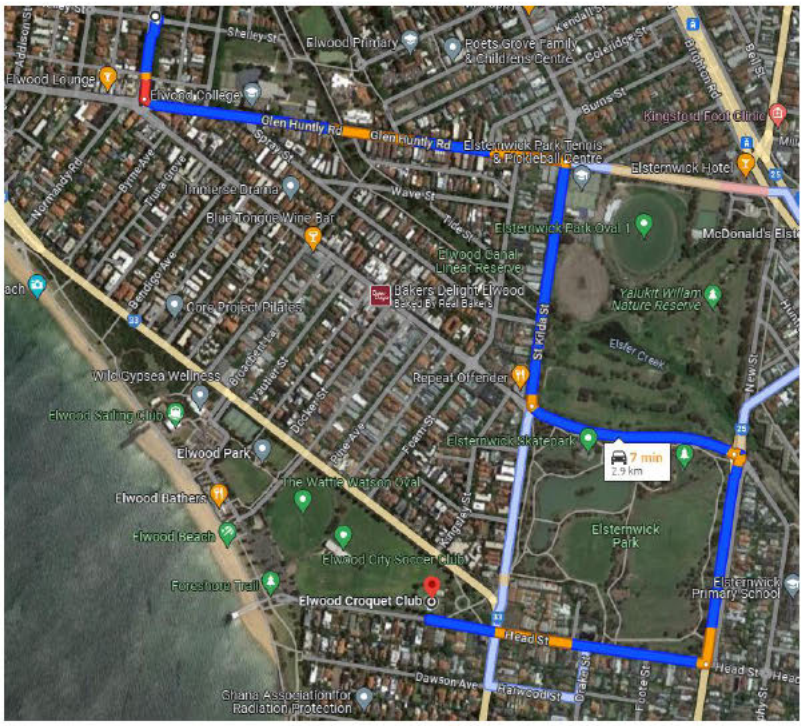
Figure 11: Navigating from North to Head Street



When approaching from the North from within Port Phillip, visitors destined for Head Street may approach via St Kilda Street and detour around Elsternwick Park, as displayed in Figure 12.

The suggested Google Maps route, displayed in Figure 12, utilises St Kilda Street, which is a Department of Transport and Planning arterial road, and Bent Avenue, New Street and Head Street (east of St Kilda Street), which are classified as major Council roads, which can accommodate the expected increase in traffic associated to the additional car parking spaces created in Head Street.

Figure 12: Navigating from North to Head Street



It is noted that the suggested route mapping displayed above is only in the scenario where someone from the north is specifically travelling to Head Street, which would be uncommon, as the main on-site car park is anticipated to be the primary place of destination.

The anticipated traffic volumes are low in traffic engineering terms, especially considering that this detour route is only expected to apply to local traffic originating from south of Nepean Highway and in the event the driver is also suggested to detour through Elsternwick Park. All other origins to the north, east and south are not required to utilise the local street network.

It should be noted that some non-local traffic is expected when local streets are in the vicinity of places of interest.

Each of the routes as described and displayed above are to remain as per existing conditions after the development of the Elwood Foreshore Masterplan. The masterplan does not seek to alter the existing turning restrictions at the Head Street/St Kilda Street intersection. The masterplan seeks to utilise the existing fully directional access points and traffic signal on Ormond Esplanade to provide a consolidated and easily identifiable on-site car park for visitors to Elwood Foreshore.

Appendix B Intersection Turning Movement Count Survey Results

TRANS TRAFFIC SURVEY

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TURNING MOVEMENT SURVEY

Intersection of Ormond Esplanade and St Kilda St, Elwoo

GPS *-37.891159, 144.990650*

Date:	Thu 31/08/23
Weather:	Fine
Suburban:	Elwood
Customer:	Ratio

North:	St Kilda St
East:	N/A
South:	St Kilda St
West:	Ormond Esplanade

Survey Period	AM:	8:00 AM-10:00 AM
	PM:	4:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:45 PM-5:45 PM

All Vehicles

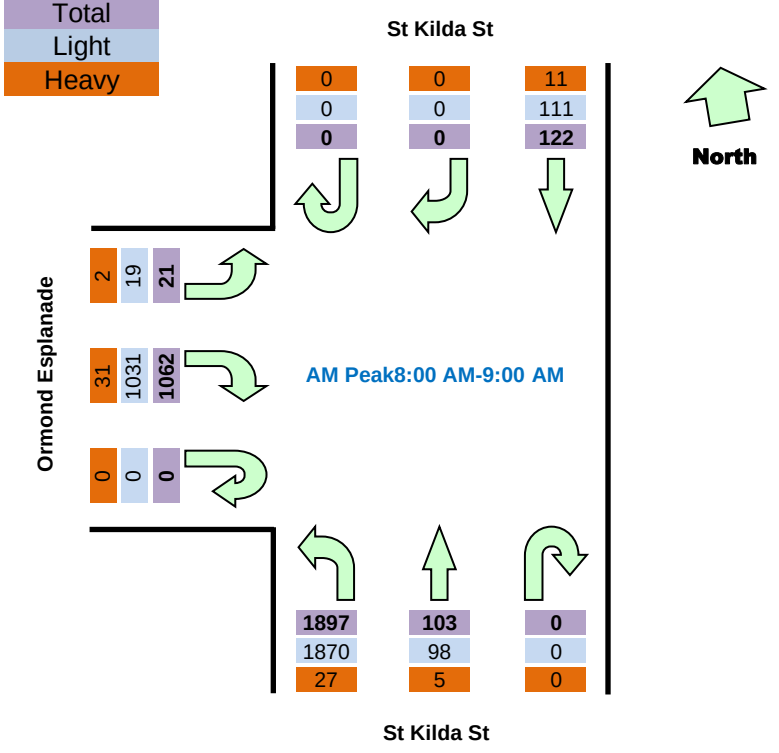
Time		North Approach St Kilda St			South Approach St Kilda St			st Approach Ormond Esplan			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
8:00	8:15	0	0	36	0	30	467	0	262	7	3205	Peak
8:15	8:30	0	0	32	0	19	540	0	301	6	3122	
8:30	8:45	0	0	27	0	26	470	0	260	2	2832	
8:45	9:00	0	0	27	0	28	420	0	239	6	2588	
9:00	9:15	0	0	24	0	24	441	0	227	3	2412	
9:15	9:30	0	0	26	0	18	337	0	225	2		
9:30	9:45	0	0	17	0	10	307	0	200	7		
9:45	10:00	0	0	27	0	19	285	0	203	10		
16:00	16:15	0	0	29	0	23	301	0	430	5	3094	
16:15	16:30	0	0	29	0	28	244	0	432	4	3098	
16:30	16:45	0	0	36	0	12	220	0	510	8	3176	
16:45	17:00	0	0	20	0	17	265	0	474	7	3215	Peak
17:00	17:15	0	0	33	0	25	298	0	432	4	3188	
17:15	17:30	0	0	39	0	34	305	0	434	3		
17:30	17:45	0	0	37	0	27	283	0	473	5		
17:45	18:00	0	0	29	0	21	238	0	462	6		

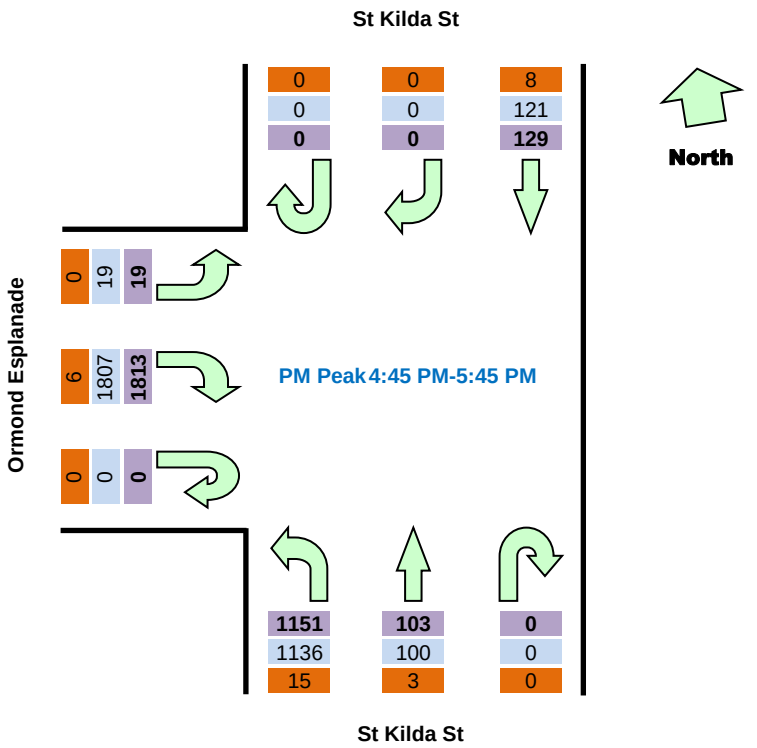
Peak Time		North Approach St Kilda St			South Approach St Kilda St			st Approach Ormond Esplan			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:00	9:00	0	0	122	0	103	1897	0	1062	21	3205
16:45	17:45	0	0	129	0	103	1151	0	1813	19	3215

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy





TRANS TRAFFIC SURVEY

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TURNING MOVEMENT SURVEY

Intersection of Head St and St Kilda St, Brighton

GPS *-37.891727,144.990675*

Date:	Sat 02/09/23
Weather:	Fine
Suburban:	Brighton
Customer:	Ratio

North:	St Kilda St
East:	Head St
South:	St Kilda St
West:	Head St

Survey Period	AM:	10:00 AM-12:00 PM
	PM:	12:00 PM-2:00 PM
Traffic Peak	AM:	11:00 AM-12:00 PM
	PM:	1:00 PM-2:00 PM

All Vehicles

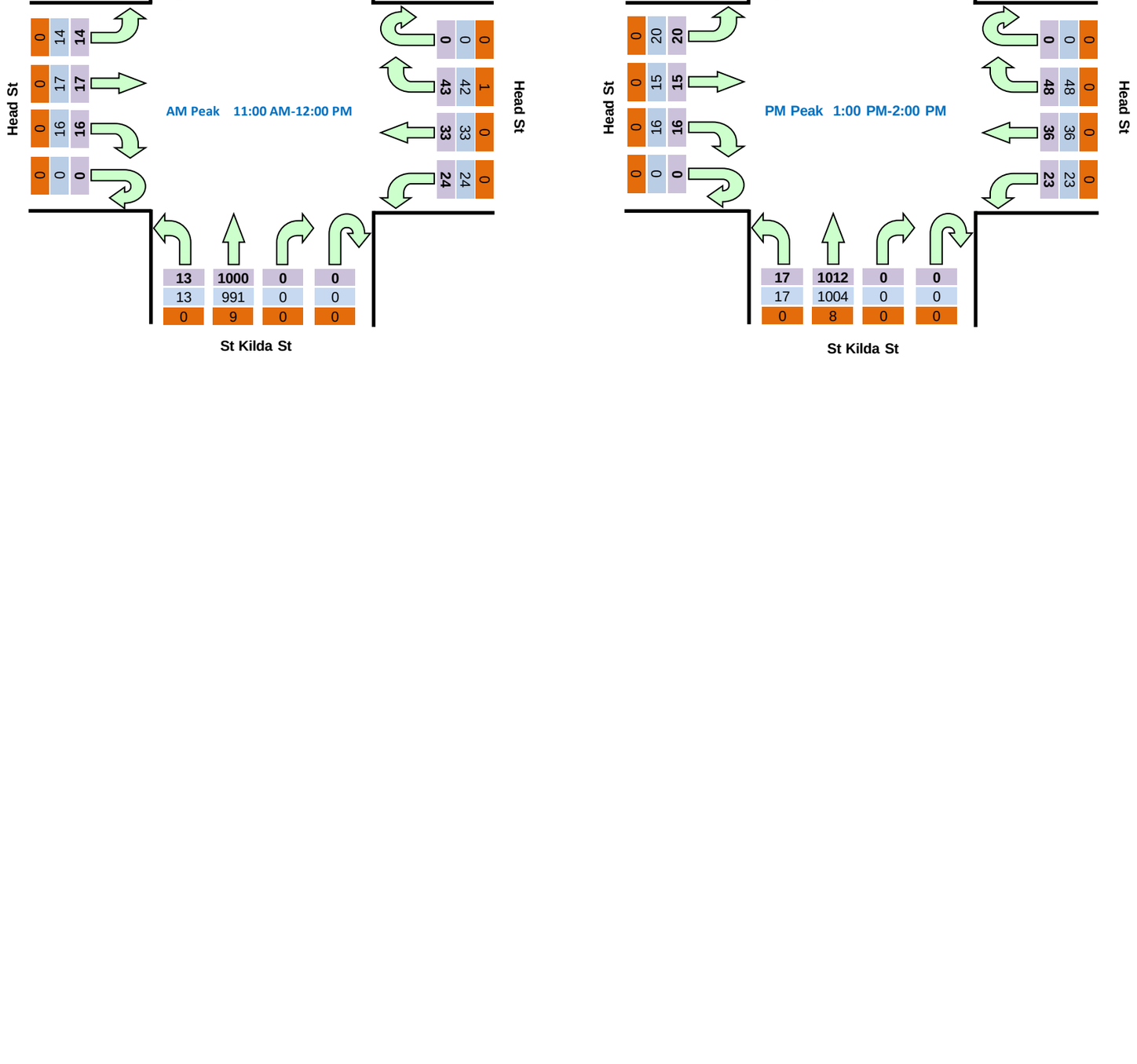
Time		North Approach St Kilda St				East Approach Head St				South Approach St Kilda St				West Approach Head St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
10:00	10:15	0	0	203	8	0	8	10	2	0	0	191	3	0	9	7	3	2034	
10:15	10:30	0	0	237	13	0	10	9	5	0	0	200	12	0	5	6	2	2123	
10:30	10:45	0	0	233	20	0	12	5	1	0	0	223	4	0	1	4	2	2190	
10:45	11:00	0	0	294	18	0	8	3	1	0	0	242	5	0	2	7	6	2298	
11:00	11:15	0	0	259	17	0	11	6	7	0	0	219	5	0	4	3	2	2358	Peak
11:15	11:30	0	0	271	13	0	10	10	6	0	0	235	3	0	5	7	6		
11:30	11:45	0	0	297	20	0	14	6	5	0	0	256	4	0	1	5	5		
11:45	12:00	0	0	304	17	0	8	11	6	0	0	290	1	0	6	2	1		
12:00	12:15	0	0	303	11	0	13	4	5	0	0	314	3	0	3	7	2	2527	
12:15	12:30	0	0	294	17	0	17	7	7	0	0	284	8	0	1	5	6	2454	
12:30	12:45	0	0	290	19	0	7	9	1	0	0	291	8	0	0	7	4	2459	
12:45	13:00	0	0	264	15	0	18	6	4	0	0	251	8	0	3	4	7	2387	
13:00	13:15	0	0	274	17	0	8	9	6	0	0	260	3	0	5	4	6	2529	Peak
13:15	13:30	0	0	310	16	0	11	12	10	0	0	268	8	0	6	4	6		
13:30	13:45	0	0	294	10	0	19	4	4	0	0	221	2	0	4	3	3		
13:45	14:00	0	0	405	16	0	10	11	3	0	0	263	4	0	1	4	5		

Peak Time		North Approach St Kilda St				East Approach Head St				South Approach St Kilda St				West Approach Head St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
11:00	12:00	0	0	1131	67	0	43	33	24	0	0	1000	13	0	16	17	14	2358
13:00	14:00	0	0	1283	59	0	48	36	23	0	0	1012	17	0	16	15	20	2529

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Ormond Esplanade and St Kilda St, Elwoo

GPS *-37.891159, 144.990650*

Date:	Sat 02/09/23
Weather:	Fine
Suburban:	Elwood
Customer:	Ratio

North:	St Kilda St
East:	N/A
South:	St Kilda St
West:	Ormond Esplanade

Survey Period	AM:	10:00 AM-12:00 PM
	PM:	12:00 PM-2:00 PM
Traffic Peak	AM:	11:45 AM-12:45 PM
	PM:	12:00 PM-1:00 PM

All Vehicles

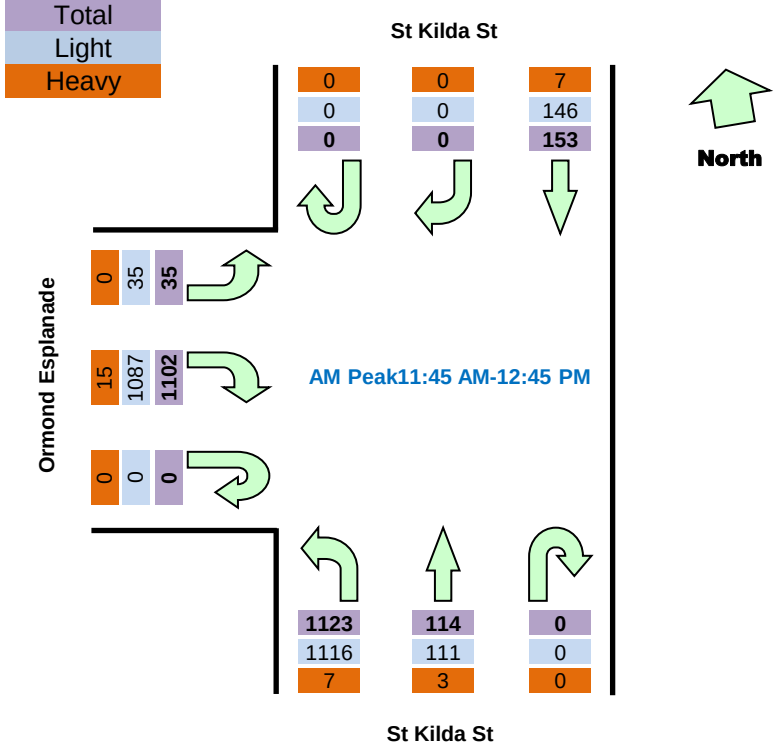
Time		North Approach St Kilda St			South Approach St Kilda St			st Approach Ormond Esplan			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
10:00	10:15	0	0	30	0	11	191	0	181	11	1963	
10:15	10:30	0	0	33	0	19	193	0	217	8	2056	
10:30	10:45	0	0	30	0	21	216	0	223	5	2131	
10:45	11:00	0	0	33	0	18	238	0	279	6	2235	
11:00	11:15	0	0	49	0	25	207	0	227	9	2286	Peak
11:15	11:30	0	0	33	0	14	237	0	251	10	2416	
11:30	11:45	0	0	40	0	26	249	0	277	7	2504	
11:45	12:00	0	0	37	0	23	276	0	284	5	2527	
12:00	12:15	0	0	38	0	29	300	0	276	4	2466	Peak
12:15	12:30	0	0	39	0	27	280	0	272	15	2397	
12:30	12:45	0	0	39	0	35	267	0	270	11	2386	
12:45	13:00	0	0	30	0	24	252	0	249	9	2318	
13:00	13:15	0	0	42	0	21	253	0	249	13	2458	
13:15	13:30	0	0	54	0	29	256	0	272	11		
13:30	13:45	0	0	38	0	13	230	0	266	7		
13:45	14:00	0	0	56	0	21	257	0	365	5		

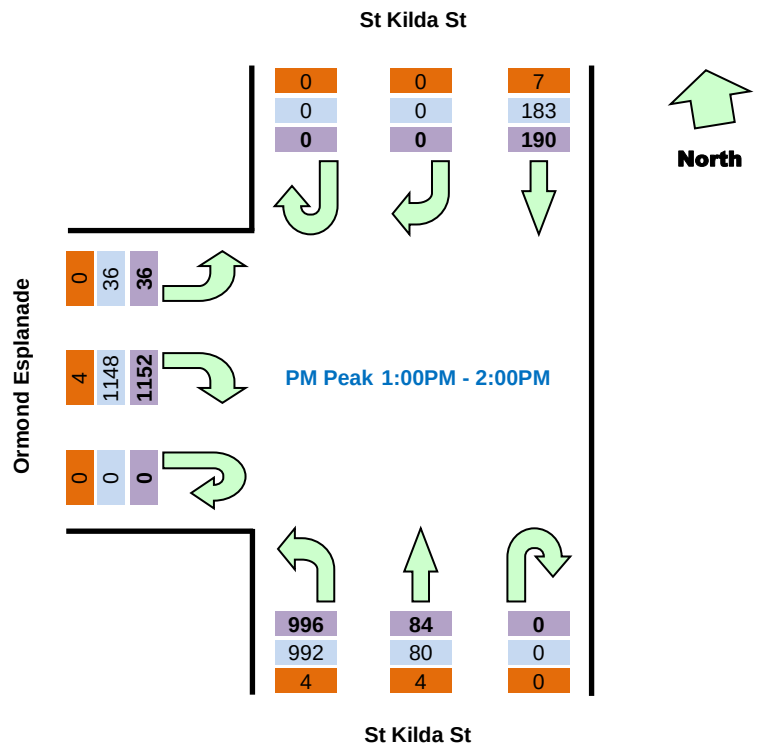
Peak Time		North Approach St Kilda St			South Approach St Kilda St			st Approach Ormond Esplan			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
11:45	12:45	0	0	153	0	114	1123	0	1102	35	2527
13:00	14:00	0	0	190	0	84	996	0	1152	36	2458

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy





TRANS TRAFFIC SURVEY

trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Head St and St Kilda St, Brighton

GPS *-37.891727,144.990675*

Date:	Sat 02/09/23
Weather:	Fine
Suburban:	Brighton
Customer:	Ratio

North:	St Kilda St
East:	Head St
South:	St Kilda St
West:	Head St

Survey Period	AM:	10:00 AM-12:00 PM
	PM:	12:00 PM-2:00 PM
Traffic Peak	AM:	11:00 AM-12:00 PM
	PM:	1:00 PM-2:00 PM

All Vehicles

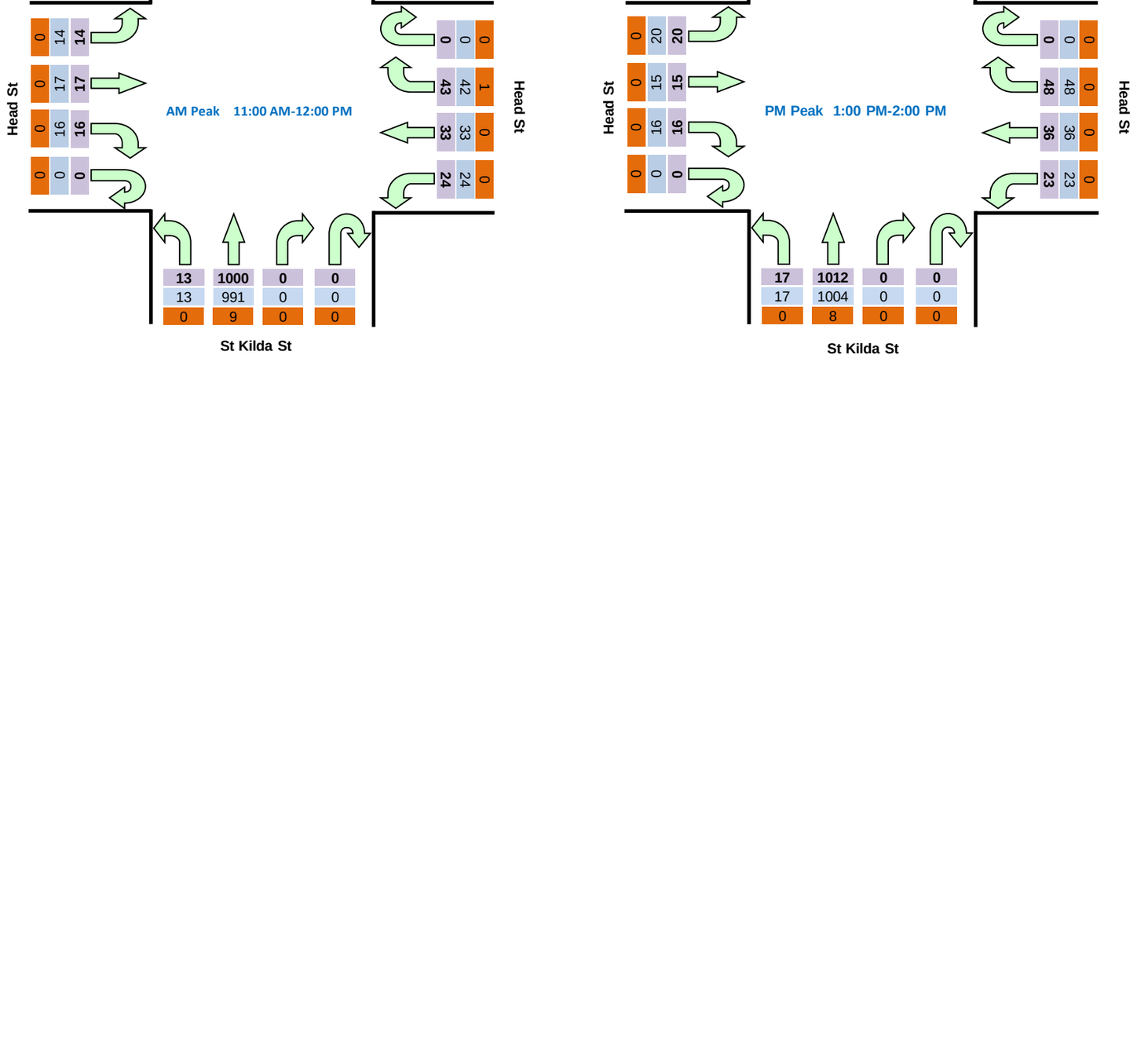
Time		North Approach St Kilda St				East Approach Head St				South Approach St Kilda St				West Approach Head St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
10:00	10:15	0	0	203	8	0	8	10	2	0	0	191	3	0	9	7	3	2034	
10:15	10:30	0	0	237	13	0	10	9	5	0	0	200	12	0	5	6	2	2123	
10:30	10:45	0	0	233	20	0	12	5	1	0	0	223	4	0	1	4	2	2190	
10:45	11:00	0	0	294	18	0	8	3	1	0	0	242	5	0	2	7	6	2298	
11:00	11:15	0	0	259	17	0	11	6	7	0	0	219	5	0	4	3	2	2358	Peak
11:15	11:30	0	0	271	13	0	10	10	6	0	0	235	3	0	5	7	6		
11:30	11:45	0	0	297	20	0	14	6	5	0	0	256	4	0	1	5	5		
11:45	12:00	0	0	304	17	0	8	11	6	0	0	290	1	0	6	2	1		
12:00	12:15	0	0	303	11	0	13	4	5	0	0	314	3	0	3	7	2	2527	
12:15	12:30	0	0	294	17	0	17	7	7	0	0	284	8	0	1	5	6	2454	
12:30	12:45	0	0	290	19	0	7	9	1	0	0	291	8	0	0	7	4	2459	
12:45	13:00	0	0	264	15	0	18	6	4	0	0	251	8	0	3	4	7	2387	
13:00	13:15	0	0	274	17	0	8	9	6	0	0	260	3	0	5	4	6	2529	Peak
13:15	13:30	0	0	310	16	0	11	12	10	0	0	268	8	0	6	4	6		
13:30	13:45	0	0	294	10	0	19	4	4	0	0	221	2	0	4	3	3		
13:45	14:00	0	0	405	16	0	10	11	3	0	0	263	4	0	1	4	5		

Peak Time		North Approach St Kilda St				East Approach Head St				South Approach St Kilda St				West Approach Head St				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
11:00	12:00	0	0	1131	67	0	43	33	24	0	0	1000	13	0	16	17	14	2358
13:00	14:00	0	0	1283	59	0	48	36	23	0	0	1012	17	0	16	15	20	2529

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

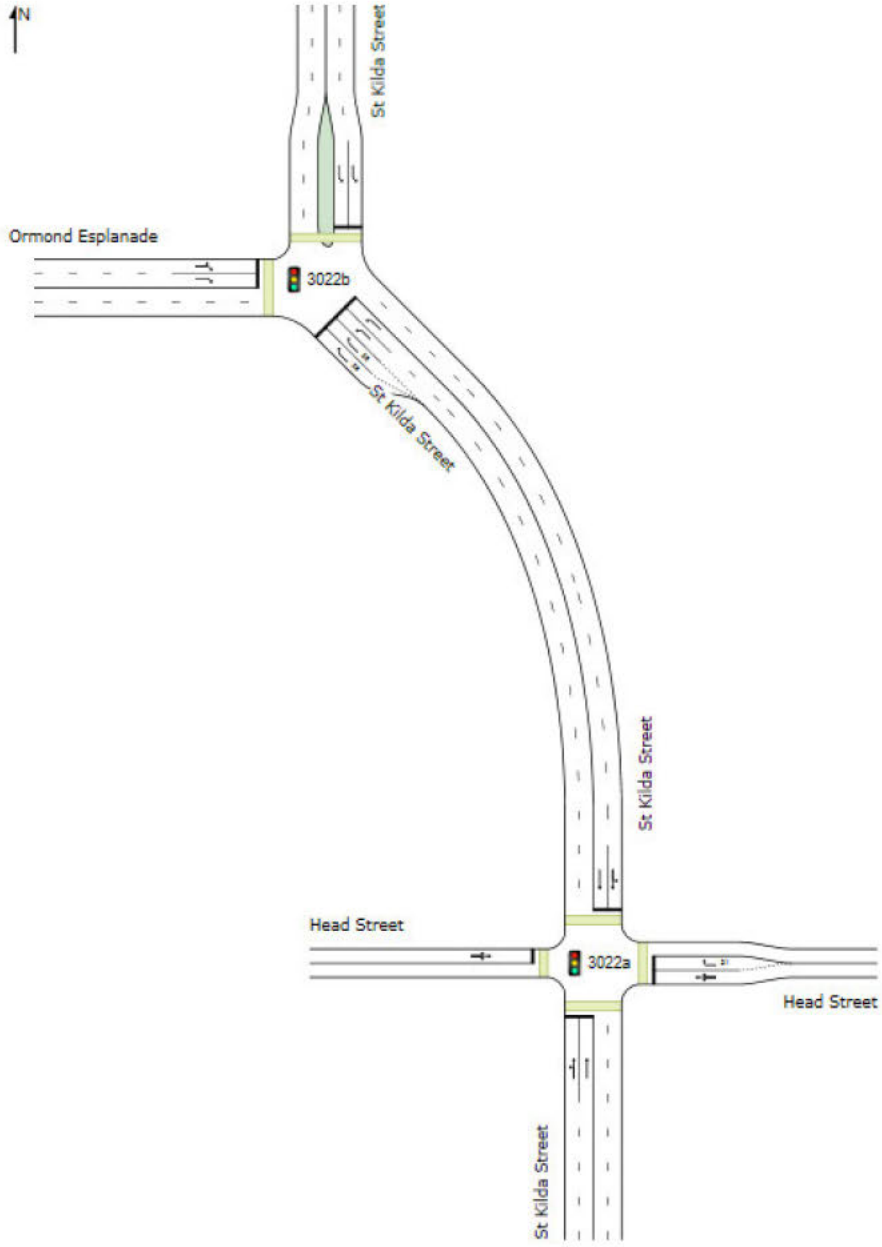
Graphic

Total
Light
Heavy



Appendix C Existing Conditions SIDRA Results

Figure 13: SIDRA Layout

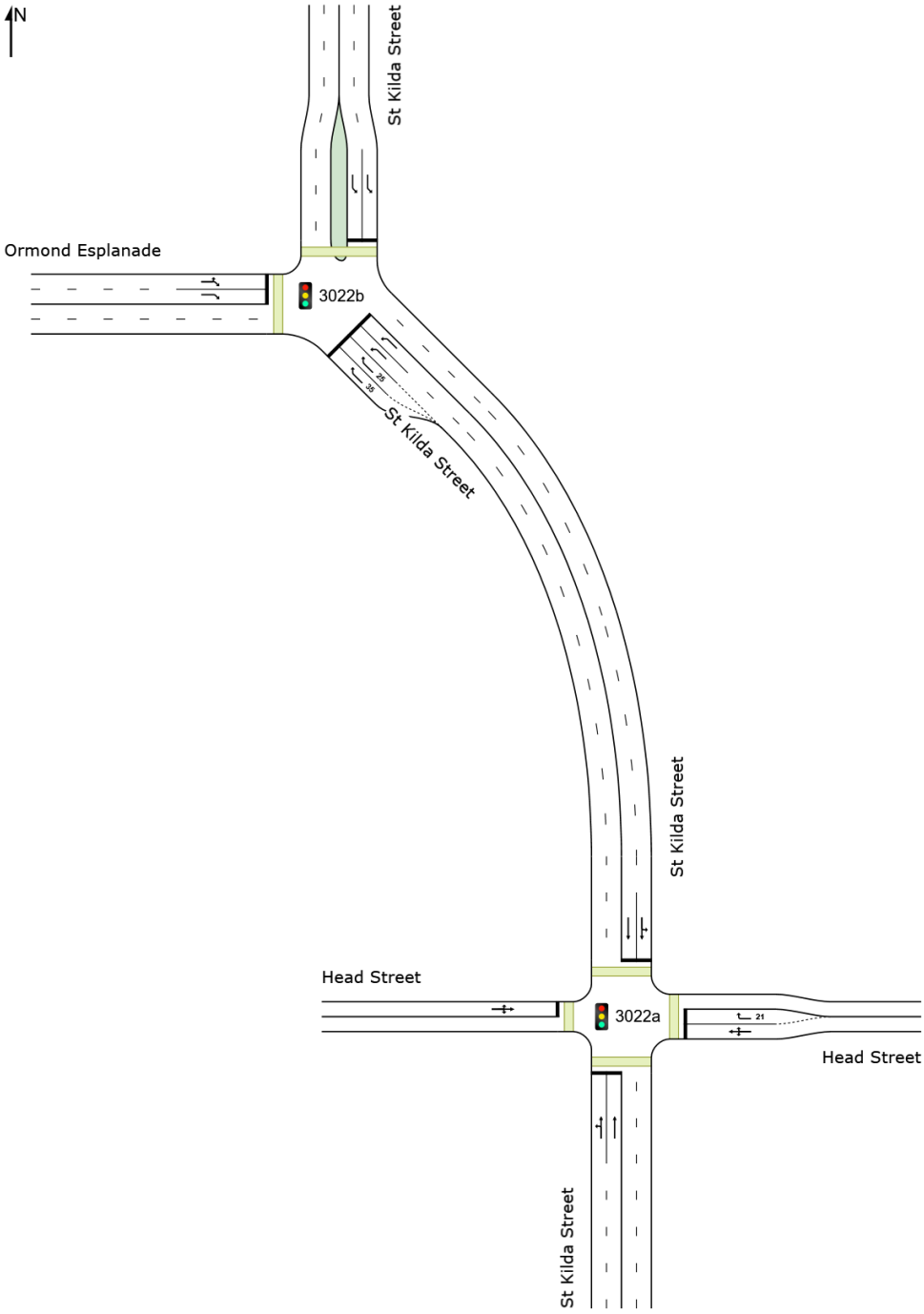


NETWORK LAYOUT

Network: N101 [EX SAT_Ormond/St Kilda/Head (Network Folder: EX)]

New Network
Network Category: (None)
EQUISAT (Fixed-Time/SCATS) Isolated
Common Control Group: CCG1 [Ormond ESP/St Kilda Street/Head Street]

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



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
3022b	CCG1	EX SAT_St Kilda Street / Ormond Esplanade
3022a	CCG1	EX SAT_St Kilda Street / Head Street

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Ormond ESP/St Kilda Street/Head Street]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [EX SAT_Ormond/St Kilda/Head (Network Folder: EX)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [EX SAT_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	1048	2.0	1048	2.0	0.363	5.2	LOS A	6.6	47.3	0.22	0.60	0.22	48.5
23a	R1	All MCs	88	2.0	88	2.0	0.176	57.3	LOS E	2.5	17.8	0.99	0.75	0.99	21.4
Approach			1137	2.0	1137	2.0	0.363	9.3	LOS A	6.6	47.3	0.28	0.61	0.28	44.2
North: St Kilda Street															
7a	L1	All MCs	200	2.0	200	2.0	*0.796	67.7	LOS E	6.5	46.4	1.00	0.96	1.27	17.7
Approach			200	2.0	200	2.0	0.796	67.7	LOS E	6.5	46.4	1.00	0.96	1.27	17.7
West: Ormond Esplanade															
10	L2	All MCs	38	1.0	38	1.0	0.853	25.6	LOS C	29.9	213.1	0.73	0.86	0.83	39.1
12a	R1	All MCs	1213	2.0	1213	2.0	*0.853	24.8	LOS C	29.9	213.1	0.73	0.86	0.83	33.3
Approach			1251	2.0	1251	2.0	0.853	24.8	LOS C	29.9	213.1	0.73	0.86	0.83	33.5
All Vehicles			2587	2.0	2587	2.0	0.853	21.3	LOS C	29.9	213.1	0.56	0.76	0.62	35.0
Site: 3022a [EX SAT_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	18	2.0	18	2.0	0.432	10.7	LOS B	11.6	84.1	0.38	0.35	0.38	49.3
2	T1	All MCs	1065	4.0	1065	4.0	0.432	5.2	LOS A	11.6	84.1	0.38	0.35	0.38	51.3
Approach			1083	4.0	1083	4.0	0.432	5.2	LOS A	11.6	84.1	0.38	0.35	0.38	51.2
East: Head Street															
4	L2	All MCs	24	2.0	24	2.0	0.292	56.1	LOS E	3.7	26.7	0.94	0.74	0.94	29.6
5	T1	All MCs	38	2.0	38	2.0	0.292	51.5	LOS D	3.7	26.7	0.94	0.74	0.94	30.2
6	R2	All MCs	51	4.0	51	4.0	0.292	59.5	LOS E	3.7	26.7	0.95	0.75	0.95	19.8
Approach			113	2.9	113	2.9	0.292	56.1	LOS E	3.7	26.7	0.95	0.74	0.95	26.1
North: St Kilda Street															
7	L2	All MCs	62	2.0	62	2.0	0.480	7.4	LOS A	9.2	65.3	0.32	0.33	0.32	44.0
8	T1	All MCs	1351	2.0	1351	2.0	0.480	3.8	LOS A	9.2	65.3	0.32	0.31	0.32	53.6
Approach			1413	2.0	1413	2.0	0.480	4.0	LOS A	9.2	65.3	0.32	0.31	0.32	53.1
West: Head Street															
10	L2	All MCs	21	4.0	21	4.0	0.268	56.8	LOS E	2.9	21.0	0.94	0.74	0.94	20.1
11	T1	All MCs	16	2.0	16	2.0	0.268	51.8	LOS D	2.9	21.0	0.94	0.74	0.94	29.9
12	R2	All MCs	17	2.0	17	2.0	0.268	59.4	LOS E	2.9	21.0	0.94	0.74	0.94	29.2
Approach			54	2.8	54	2.8	0.268	56.2	LOS E	2.9	21.0	0.94	0.74	0.94	26.5
All Vehicles			2662	2.9	2662	2.9	0.480	7.7	LOS A	11.6	84.1	0.38	0.35	0.38	48.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 3022b [EX SAT_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [EX SAT_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Ormond ESP/St Kilda Street/Head Street]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [EX THU AM_Ormond/St Kilda/Head (Network Folder: EX)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [EX THU AM_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	1997	2.0	1997	2.0	0.691	3.0	LOS A	3.5	25.2	0.07	0.54	0.07	51.4
23a	R1	All MCs	108	2.0	108	2.0	0.216	57.8	LOS E	3.1	21.9	0.99	0.76	0.99	21.3
Approach			2105	2.0	2105	2.0	0.691	5.8	LOS A	3.5	25.2	0.12	0.55	0.12	47.9
North: St Kilda Street															
7a	L1	All MCs	128	2.0	128	2.0	0.255	54.7	LOS D	3.4	24.5	0.94	0.75	0.94	20.2
Approach			128	2.0	128	2.0	0.255	54.7	LOS D	3.4	24.5	0.94	0.75	0.94	20.2
West: Ormond Esplanade															
10	L2	All MCs	22	1.0	22	1.0	0.395	10.5	LOS B	10.9	77.6	0.36	0.66	0.36	46.7
12a	R1	All MCs	1118	2.0	1118	2.0	0.395	9.4	LOS A	10.9	77.7	0.36	0.66	0.36	46.0
Approach			1140	2.0	1140	2.0	0.395	9.4	LOS A	10.9	77.7	0.36	0.66	0.36	46.0
All Vehicles			3374	2.0	3374	2.0	0.691	8.9	LOS A	10.9	77.7	0.23	0.59	0.23	45.1
Site: 3022a [EX THU AM_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	12	2.0	12	2.0	0.721	15.6	LOS B	32.8	237.5	0.63	0.58	0.63	46.3
2	T1	All MCs	1974	4.0	1974	4.0	*0.721	10.0	LOS B	32.8	237.6	0.63	0.58	0.63	45.2
Approach			1985	4.0	1985	4.0	0.721	10.1	LOS B	32.8	237.6	0.63	0.58	0.63	45.2
East: Head Street															
4	L2	All MCs	20	2.0	20	2.0	0.389	57.5	LOS E	4.4	31.9	0.96	0.77	0.96	29.2
5	T1	All MCs	11	2.0	11	2.0	*0.389	52.9	LOS D	4.4	31.9	0.96	0.77	0.96	29.8
6	R2	All MCs	127	4.0	127	4.0	0.389	58.0	LOS E	4.4	31.9	0.96	0.77	0.96	20.0
Approach			158	3.6	158	3.6	0.389	57.6	LOS E	4.4	31.9	0.96	0.77	0.96	22.3
North: St Kilda Street															
7	L2	All MCs	57	2.0	57	2.0	0.423	3.8	LOS A	1.2	8.7	0.04	0.09	0.04	47.7
8	T1	All MCs	1189	2.0	1189	2.0	0.423	0.3	LOS A	1.2	8.7	0.04	0.06	0.04	59.2
Approach			1246	2.0	1246	2.0	0.423	0.5	LOS A	1.2	8.7	0.04	0.06	0.04	58.5
West: Head Street															
10	L2	All MCs	4	4.0	4	4.0	0.111	54.9	LOS D	1.3	9.1	0.91	0.69	0.91	20.8
11	T1	All MCs	12	2.0	12	2.0	0.111	49.9	LOS D	1.3	9.1	0.91	0.69	0.91	30.6
12	R2	All MCs	8	2.0	8	2.0	0.111	55.4	LOS E	1.3	9.1	0.91	0.69	0.91	29.9
Approach			24	2.3	24	2.3	0.111	52.7	LOS D	1.3	9.1	0.91	0.69	0.91	29.0
All Vehicles			3414	3.2	3414	3.2	0.721	9.1	LOS A	32.8	237.6	0.43	0.40	0.43	46.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Site: 3022b [EX THU AM_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [EX THU AM_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [St Kilda/Ormond/Head]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [EX THU PM_Ormond/St Kilda/Head (Network Folder: EX)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [EX THU PM_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	1212	2.0	1212	2.0	0.419	2.9	LOS A	0.7	5.1	0.04	0.52	0.04	51.5
23a	R1	All MCs	108	2.0	108	2.0	0.216	58.8	LOS E	1.9	13.6	1.00	0.76	1.00	21.1
Approach			1320	2.0	1320	2.0	0.419	7.5	LOS A	1.9	13.6	0.12	0.54	0.12	46.0
North: St Kilda Street															
7a	L1	All MCs	136	2.0	136	2.0	*0.270	54.8	LOS D	2.2	15.9	0.94	0.75	0.94	20.1
Approach			136	2.0	136	2.0	0.270	54.8	LOS D	2.2	15.9	0.94	0.75	0.94	20.1
West: Ormond Esplanade															
10	L2	All MCs	20	1.0	20	1.0	0.706	15.4	LOS B	19.1	135.9	0.61	0.76	0.61	44.0
12a	R1	All MCs	1908	2.0	1908	2.0	*0.706	14.3	LOS B	19.1	136.0	0.61	0.76	0.61	41.0
Approach			1928	2.0	1928	2.0	0.706	14.3	LOS B	19.1	136.0	0.61	0.76	0.61	41.1
All Vehicles			3384	2.0	3384	2.0	0.706	13.3	LOS B	19.1	136.0	0.43	0.68	0.43	41.2
Site: 3022a [EX THU PM_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	8	2.0	8	2.0	0.436	10.7	LOS B	7.8	56.5	0.38	0.35	0.38	49.3
2	T1	All MCs	1262	4.0	1262	4.0	0.436	5.2	LOS A	7.8	56.5	0.38	0.35	0.38	51.3
Approach			1271	4.0	1271	4.0	0.436	5.2	LOS A	7.8	56.5	0.38	0.35	0.38	51.3
East: Head Street															
4	L2	All MCs	15	2.0	15	2.0	0.225	55.5	LOS E	1.8	13.0	0.93	0.72	0.93	29.9
5	T1	All MCs	39	2.0	39	2.0	0.225	50.9	LOS D	1.8	13.0	0.93	0.72	0.93	30.6
6	R2	All MCs	43	4.0	43	4.0	0.225	58.5	LOS E	1.8	13.0	0.94	0.74	0.94	20.0
Approach			97	2.9	97	2.9	0.225	55.0	LOS D	1.8	13.0	0.94	0.73	0.94	26.4
North: St Kilda Street															
7	L2	All MCs	97	2.0	97	2.0	0.694	3.8	LOS A	2.2	16.0	0.07	0.12	0.07	47.7
8	T1	All MCs	1947	2.0	1947	2.0	0.694	0.3	LOS A	2.3	16.0	0.07	0.09	0.07	59.1
Approach			2044	2.0	2044	2.0	0.694	0.5	LOS A	2.3	16.0	0.07	0.09	0.07	58.4
West: Head Street															
10	L2	All MCs	15	4.0	15	4.0	0.162	55.4	LOS E	1.3	9.3	0.92	0.70	0.92	21.0
11	T1	All MCs	24	2.0	24	2.0	0.162	50.4	LOS D	1.3	9.3	0.92	0.70	0.92	30.8
12	R2	All MCs	1	2.0	1	2.0	0.162	57.9	LOS E	1.3	9.3	0.92	0.70	0.92	30.1
Approach			40	2.7	40	2.7	0.162	52.4	LOS D	1.3	9.3	0.92	0.70	0.92	27.8
All Vehicles			3452	2.8	3452	2.8	0.694	4.4	LOS A	7.8	56.5	0.22	0.21	0.22	52.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

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

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Site: 3022b [EX THU PM_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [EX THU PM_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.

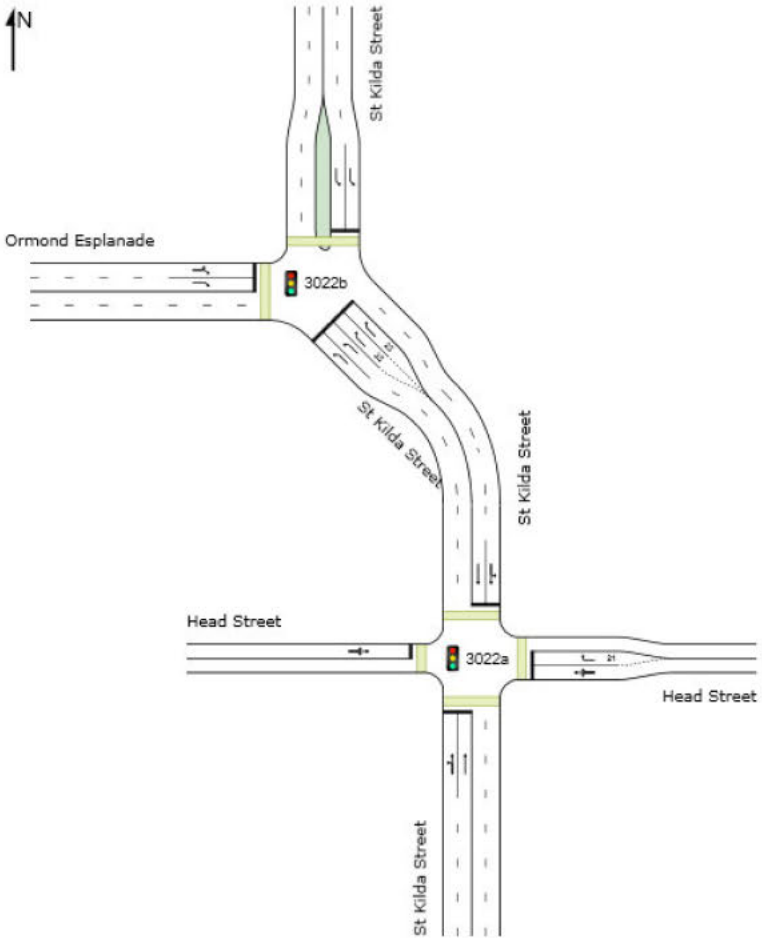
Appendix D Future Conditions SIDRA Results

NETWORK LAYOUT

Network: N101 [Ormond/St Kilda/Head (Network Folder: Existing)]

New Network
Network Category: (None)
EQUISAT (Fixed-Time/SCATS) Isolated
Common Control Group: 3022 [Ormond ESP/St Kilda Street/Head Street]

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



CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Omrond/ St Kilda / Head]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [PD THU AM_Ormond/St Kilda/Head (Network Folder: Post Development)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [PD THU AM_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	2003	2.0	2003	2.0	0.693	3.0	LOS A	3.6	25.5	0.07	0.54	0.07	51.4
23a	R1	All MCs	113	2.0	113	2.0	0.224	57.6	LOS E	3.2	22.7	0.99	0.76	0.99	21.4
Approach			2116	2.0	2116	2.0	0.693	5.9	LOS A	3.6	25.5	0.12	0.55	0.12	47.8
North: St Kilda Street															
7a	L1	All MCs	128	2.0	128	2.0	0.255	54.7	LOS D	3.4	24.5	0.94	0.75	0.94	20.2
Approach			128	2.0	128	2.0	0.255	54.7	LOS D	3.4	24.5	0.94	0.75	0.94	20.2
West: Ormond Esplanade															
10	L2	All MCs	22	1.0	22	1.0	0.395	10.5	LOS B	10.9	77.6	0.36	0.66	0.36	46.7
12a	R1	All MCs	1118	2.0	1118	2.0	0.395	9.4	LOS A	10.9	77.7	0.36	0.66	0.36	46.0
Approach			1140	2.0	1140	2.0	0.395	9.4	LOS A	10.9	77.7	0.36	0.66	0.36	46.0
All Vehicles			3384	2.0	3384	2.0	0.693	8.9	LOS A	10.9	77.7	0.23	0.59	0.23	45.0
Site: 3022a [PD THU AM_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	17	2.0	17	2.0	0.723	15.6	LOS B	33.0	238.8	0.63	0.58	0.63	46.3
2	T1	All MCs	1974	4.0	1974	4.0	*0.723	10.1	LOS B	33.0	239.0	0.63	0.58	0.63	45.2
Approach			1991	4.0	1991	4.0	0.723	10.1	LOS B	33.0	239.0	0.63	0.58	0.63	45.2
East: Head Street															
4	L2	All MCs	20	2.0	20	2.0	0.433	57.4	LOS E	5.0	35.9	0.96	0.77	0.96	29.2
5	T1	All MCs	24	2.0	24	2.0	*0.433	52.8	LOS D	5.0	35.9	0.96	0.77	0.96	29.8
6	R2	All MCs	127	4.0	127	4.0	0.433	59.2	LOS E	5.0	35.9	0.97	0.78	0.97	19.9
Approach			172	3.5	172	3.5	0.433	58.0	LOS E	5.0	35.9	0.97	0.78	0.97	22.9
North: St Kilda Street															
7	L2	All MCs	57	2.0	57	2.0	0.423	3.8	LOS A	1.2	8.7	0.04	0.09	0.04	47.7
8	T1	All MCs	1189	2.0	1189	2.0	0.423	0.3	LOS A	1.2	8.7	0.04	0.06	0.04	59.2
Approach			1246	2.0	1246	2.0	0.423	0.5	LOS A	1.2	8.7	0.04	0.06	0.04	58.5
West: Head Street															
10	L2	All MCs	16	4.0	16	4.0	0.202	55.5	LOS E	2.3	16.5	0.93	0.73	0.93	20.5
11	T1	All MCs	14	2.0	14	2.0	0.202	50.5	LOS D	2.3	16.5	0.93	0.73	0.93	30.3
12	R2	All MCs	14	2.0	14	2.0	0.202	57.1	LOS E	2.3	16.5	0.93	0.73	0.93	29.6
Approach			43	2.7	43	2.7	0.202	54.4	LOS D	2.3	16.5	0.93	0.73	0.93	27.1
All Vehicles			3452	3.2	3452	3.2	0.723	9.6	LOS A	33.0	239.0	0.44	0.40	0.44	45.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 3022b [PD THU AM_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [PD THU AM_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Omrond/ St Kilda / Head]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [PD THU PM_Ormond/St Kilda/Head (Network Folder: Post Development)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [PD THU PM_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	1219	2.0	1219	2.0	0.422	2.9	LOS A	1.2	8.5	0.04	0.52	0.04	51.5
23a	R1	All MCs	113	2.0	113	2.0	0.224	58.4	LOS E	3.2	23.0	1.00	0.76	1.00	21.2
Approach			1332	2.0	1332	2.0	0.422	7.6	LOS A	3.2	23.0	0.12	0.54	0.12	45.9
North: St Kilda Street															
7a	L1	All MCs	136	2.0	136	2.0	*0.270	54.8	LOS D	3.6	26.0	0.94	0.75	0.94	20.1
Approach			136	2.0	136	2.0	0.270	54.8	LOS D	3.6	26.0	0.94	0.75	0.94	20.1
West: Ormond Esplanade															
10	L2	All MCs	20	1.0	20	1.0	0.706	15.4	LOS B	31.2	221.8	0.61	0.76	0.61	44.0
12a	R1	All MCs	1908	2.0	1908	2.0	*0.706	14.3	LOS B	31.2	221.9	0.61	0.76	0.61	41.0
Approach			1928	2.0	1928	2.0	0.706	14.3	LOS B	31.2	221.9	0.61	0.76	0.61	41.1
All Vehicles			3396	2.0	3396	2.0	0.706	13.3	LOS B	31.2	221.9	0.43	0.68	0.43	41.2
Site: 3022a [PD THU PM_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	14	2.0	14	2.0	0.438	10.7	LOS B	12.8	92.7	0.38	0.35	0.38	49.3
2	T1	All MCs	1262	4.0	1262	4.0	0.438	5.2	LOS A	12.8	92.8	0.38	0.35	0.38	51.3
Approach			1276	4.0	1276	4.0	0.438	5.2	LOS A	12.8	92.8	0.38	0.35	0.38	51.2
East: Head Street															
4	L2	All MCs	15	2.0	15	2.0	0.265	55.9	LOS E	3.6	25.8	0.94	0.73	0.94	29.9
5	T1	All MCs	53	2.0	53	2.0	0.265	51.3	LOS D	3.6	25.8	0.94	0.73	0.94	30.6
6	R2	All MCs	43	4.0	43	4.0	0.251	59.8	LOS E	2.4	17.4	0.95	0.74	0.95	19.7
Approach			111	2.8	111	2.8	0.265	55.2	LOS E	3.6	25.8	0.94	0.73	0.94	26.8
North: St Kilda Street															
7	L2	All MCs	97	2.0	97	2.0	0.694	3.8	LOS A	3.7	26.1	0.07	0.12	0.07	47.7
8	T1	All MCs	1947	2.0	1947	2.0	0.694	0.3	LOS A	3.7	26.2	0.07	0.09	0.07	59.1
Approach			2044	2.0	2044	2.0	0.694	0.5	LOS A	3.7	26.2	0.07	0.09	0.07	58.4
West: Head Street															
10	L2	All MCs	26	4.0	26	4.0	0.248	56.1	LOS E	3.1	22.3	0.94	0.73	0.94	20.7
11	T1	All MCs	26	2.0	26	2.0	0.248	51.1	LOS D	3.1	22.3	0.94	0.73	0.94	30.4
12	R2	All MCs	5	2.0	5	2.0	0.248	58.7	LOS E	3.1	22.3	0.94	0.73	0.94	29.8
Approach			58	2.9	58	2.9	0.248	54.0	LOS D	3.1	22.3	0.94	0.73	0.94	26.6
All Vehicles			3488	2.8	3488	2.8	0.694	4.9	LOS A	12.8	92.8	0.22	0.22	0.22	51.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 3022b [PD THU PM_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [PD THU PM_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [Omrond/ St Kilda / Head]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

Network: N101 [PD SAT_Ormond/St Kilda/Head (Network Folder: Post Development)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 120 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 3022b [PD SAT_St Kilda Street / Ormond Esplanade]															
SouthEast: St Kilda Street															
21a	L1	All MCs	1062	2.0	1062	2.0	0.369	5.6	LOS A	6.8	48.6	0.24	0.60	0.24	48.2
23a	R1	All MCs	97	2.0	97	2.0	0.193	56.6	LOS E	2.7	19.2	0.97	0.75	0.97	21.6
Approach			1159	2.0	1159	2.0	0.369	9.9	LOS A	6.8	48.6	0.30	0.62	0.30	43.6
North: St Kilda Street															
7a	L1	All MCs	200	2.0	200	2.0	*0.796	67.7	LOS E	6.5	46.4	1.00	0.96	1.27	17.7
Approach			200	2.0	200	2.0	0.796	67.7	LOS E	6.5	46.4	1.00	0.96	1.27	17.7
West: Ormond Esplanade															
10	L2	All MCs	38	1.0	38	1.0	0.853	25.6	LOS C	29.9	213.1	0.73	0.86	0.83	39.1
12a	R1	All MCs	1213	2.0	1213	2.0	*0.853	24.8	LOS C	29.9	213.1	0.73	0.86	0.83	33.3
Approach			1251	2.0	1251	2.0	0.853	24.8	LOS C	29.9	213.1	0.73	0.86	0.83	33.5
All Vehicles			2609	2.0	2609	2.0	0.853	21.5	LOS C	29.9	213.1	0.56	0.76	0.63	34.9
Site: 3022a [PD SAT_St Kilda Street / Head Street]															
South: St Kilda Street															
1	L2	All MCs	32	2.0	32	2.0	0.481	11.0	LOS B	11.8	85.3	0.40	0.39	0.40	49.0
2	T1	All MCs	1065	4.0	1065	4.0	0.481	5.5	LOS A	11.8	85.3	0.40	0.37	0.40	50.7
Approach			1097	3.9	1097	3.9	0.481	5.6	LOS A	11.8	85.3	0.40	0.38	0.40	50.6
East: Head Street															
4	L2	All MCs	24	2.0	24	2.0	0.389	56.9	LOS E	5.3	37.6	0.96	0.76	0.96	29.6
5	T1	All MCs	69	2.0	69	2.0	0.389	52.4	LOS D	5.3	37.6	0.96	0.76	0.96	30.2
6	R2	All MCs	51	4.0	51	4.0	0.389	62.7	LOS E	5.3	37.6	0.98	0.76	0.98	19.1
Approach			144	2.7	144	2.7	0.389	56.8	LOS E	5.3	37.6	0.96	0.76	0.96	26.8
North: St Kilda Street															
7	L2	All MCs	62	2.0	62	2.0	0.480	7.4	LOS A	9.2	65.3	0.32	0.33	0.32	44.0
8	T1	All MCs	1351	2.0	1351	2.0	0.480	3.8	LOS A	9.2	65.3	0.32	0.31	0.32	53.6
Approach			1413	2.0	1413	2.0	0.480	4.0	LOS A	9.2	65.3	0.32	0.31	0.32	53.1
West: Head Street															
10	L2	All MCs	43	4.0	43	4.0	0.580	60.1	LOS E	5.8	41.3	0.99	0.80	1.00	19.3
11	T1	All MCs	25	2.0	25	2.0	0.580	55.1	LOS E	5.8	41.3	0.99	0.80	1.00	28.9
12	R2	All MCs	31	2.0	31	2.0	0.580	65.1	LOS E	5.8	41.3	0.99	0.80	1.00	28.3
Approach			99	2.9	99	2.9	0.580	60.3	LOS E	5.8	41.3	0.99	0.80	1.00	25.2
All Vehicles			2753	2.8	2753	2.8	0.580	9.4	LOS A	11.8	85.3	0.41	0.38	0.41	46.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 3022b [PD SAT_St Kilda Street / Ormond Esplanade]											
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Ormond Esplanade											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		105	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
Site: 3022a [PD SAT_St Kilda Street / Head Street]											
South: St Kilda Street											
P1	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
East: Head Street											
P2	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
North: St Kilda Street											
P3	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
West: Head Street											
P4	Full	53	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	0.96
All Pedestrians		211	54.3	LOS E	0.2	0.2	0.95	0.95	208.1	200.0	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.