TRAFFIC AND PARKING IMPACT ASSESSMENT OF PROPOSED ALTERATION AND ADDITIONS TO THE SUTHERLAND ENTERTAINMENT CENTRE AT 30 ETON STREET, SUTHERLAND

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Site Address: **30 Eton Street, Sutherland**

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EXECUTIVE SUMMARY

M^C^Laren Traffic Engineering (MTE) was commissioned by NBRS Architecture *to provide a Traffic and Parking Impact Assessment of the Proposed Alteration and* Additions to the Sutherland Entertainment Centre *at 30 Eton Street, Sutherland.*

The Sutherland Entertainment Centre (SEC) hosts a variety of public and community events every year, providing a community facility for small, medium and large events. The proposed alterations and additions to the five (5) level Entertainment Centre results in the reduction of patron capacity to a maximum of 700 from 884 for various events and is focusing on the promotion of the use of the site for theatre and public events. The proposal provides loading facilities only and relies solely on existing on-street parking, public off-street parking and public transport for guests. Vehicular access to the loading facilities are provided from Merton Street

This Traffic and Parking Impact Assessment (TPIA) has taken into consideration the Secretary's Environmental Assessment Requirements dated 8th of November. The forecast peak hour traffic generation is estimated to be 175 peak hour vehicles for individual events and 300 vehicle trips for accumulative peak events. The forecast traffic generation of up to 175 and 300 peak hour vehicle trips has been assessed on the external road network. The external road network is considered to adequately absorb the forecast traffic generation as is currently occurring. As a result of the redevelopment, the peak hour traffic generation of the site will be less (300 accumulative peak hour vehicles trips opposed to 346, or 175 vehicle trips reduced from 375 vehicle trips for peak individual events), thereby reducing the overall impact to the surrounding road network during events.

The proposed development is expected to demand 183 car parking spaces during a single event and 324 during combined events. There is ample spare on-street and off-street public car parking capacity to accommodate the proposed car parking demand noting that the peak parking demand of the site has reduced by some 211 (394 to 183) car parking spaces for single events and 46 (370 to 324) spaces for combined events.

To reduce traffic and parking impacts of the proposal the following operational documentation should be provided:

- *Green Travel Plan to promote the alternative transport modes;*
- *Operational Management Plan to ensure parking impacts are reduced by ensuring no back to back events occur.*
- *Plan of Management for the drop-off and pick-up operation of buses so to ensure the capacity of the bus drop-off and pick-up area is not exceeded to cause queuing impacts along Eton Street. The operator of the Sutherland Entertainment Centre will need to manage the bus drop-off and pick-up area in conjunction with bus operators and schools.*

- *Special Event Management Plan detailing the temporary event dates and closure of Merton Street for the loading / unloading and storage of delivery vehicles up to 19m in length and associated traffic control, impacts to public users as a result of road closures and how emergency access will be maintained.*

Management Plans should be regularly reviewed and updated to reflect any changes in the operational requirements of the site.

To facilitate access to and from the site for vehicles up to 19m in length (Articulated Vehicles) modifications to the roundabout intersection of Flora Street / Eton Street and Merton Street driveway will be required. Further, to provide access for waste collection vehicles and emergency vehicles removal of six (6) on-street car parking spaces will be required from Merton Street.

Typically, after the Development Application stage, detailed Construction Traffic Management Plans shall be provided at the construction certificate stage prior to construction and as part of a consent condition, to be approved by Council. Once a builder has been engaged, confirmation of the number of staff and construction vehicles can be provided and assessed (if required). Construction vehicular traffic is temporary in nature and is not expected to exceed the operating capacities of nearby intersections or be substantially greater than the assessed operation of the proposed development as detailed within this report.

Considering the location and constraint of the site and surrounding environs, it is expected that all staff car parking will need to park on-street within the available unrestricted parking areas, whilst all construction vehicular traffic will require Works Zone from Eton Street, Merton Street (potential road closure) or both. Based upon a preliminary assessment of the construction of the site, the following recommendations / constraints are summarised below to ensure the safety of all users:

- *The use of Eton Street by delivery vehicles should be limited as a result of the existing highly pedestrianised area. In the event that Eton Street is used by delivery vehicles, appropriate Type B hoarding will need to be implemented to maintain pedestrian safety and pedestrian walkways.*

- *Any use of Merton Street by Tower Cranes or mobile cranes will likely require modifications to the planter box and driveway along Merton Street at the intersection with Flora Street and will need to be restored after construction in consultation with Council.*

- *Construction delivery vehicles shall be restricted to occur outside of peak school pick-up and drop-off times.*

- *The largest vehicle that can travel to and from the site will be restricted to a 19m length Articulated Vehicle, subject to the modifications to the existing roundabout at Flora Street / Eton Street and the Merton Street Driveway.*

1 INTRODUCTION

M^C^Laren Traffic Engineering was commissioned by *NBRS Architecture* to provide a Traffic and Parking Impact Assessment of the Proposed Alteration and Additions to the Sutherland Entertainment Centre at 30 Eton Street, Sutherland as depicted in **Annexure A** for reference.

1.1 Description and Scale of Development

The subject site is occupied by the existing Sutherland Entertainment Centre and is currently zoned *B3 – Commercial Core* under the *Sutherland Shire Local Environmental Plan 2015*. The site has frontages to Eton Street to the west and Merton Street to the east.

The site is located within the Sutherland Commercial Core, with various retail and commercial premises located to the west, a public recreation area (Peace Park) directly to the north and an off-street public car area to the east (Flora Street Car Park). Sutherland Train Station is located within a 300m walking distance to the west of the site, Sutherland Public School is located to the south of the site and the Sutherland Multi-Purpose Centre is located to the east of the site along Flora Street.

1.1.1 Proposed Scale

The Sutherland Entertainment Centre (SEC) hosts a variety of public and community events every year, providing a community facility for small, medium and large events. The proposed alterations and additions to the five (5) level Entertainment Centre results in the reduction of patron capacity for various events and is focussed on the promotion of the use of the site for theatre and public events over function uses. The notable changes to the SEC is outlined below:

- The auditorium will be renovated with the existing flat floor space remodelled into a tiered theatre. The new theatre will provide an enhanced viewing experiencing for up to 700 patrons;
- New loading / unloading facilities from Merton Street will be provided with direct access to the back of house areas;
    - All vehicular access to the two (2) loading bays along Merton Street will be provided via single lane driveways from Merton Street. The largest vehicle that can access the southern loading bay is an 8.8m length Medium Rigid Vehicle and the largest vehicle that can access the northern loading bay is a B99 design vehicle / courier vehicle.
- The front entry to the Sutherland Entertainment Centre (SEC) will be provided with a pergola to improve the relationship with the park. The use of this space will also function as an exhibition space / performance area.

The existing scale of events and proposed scale of events of the SEC relevant to traffic and parking is summarised in **Table 1** below.

TABLE 1: COMPARISON OF EXISTING AND FUTURE OPERATION OF THE SEC

Event Type	Existing Scale		Proposed Scale	
	Patron Capacity	Staff	Patron Capacity	Staff
Meeting Room	40 to 120 (3)	1 to 5	40 to 120 (3)	1 to 5
Place of Assembly (1)	884	9	700	9
Place of Public Performance (2)	884	9	700	9
Function Centre	400 to 550	21	120 to 150	10 to 16
Standing Event / Cocktail Event	1,200 to 1,500	23	250	16 to 18
Special Event	884	9	700	9
Friday Outdoor Music	300 to 500 (4)	18	300 to 500 (4)	18

Notes: 1 – School presentations and dance performances.

2 – Cinema, theatre and live shows.

3 – Seated capacity of 90

4 – These are maximum potential numbers which are not expected to occur every Friday

In addition to the above outside events held by the SEC, there is a maximum of 15 staff that operate the centre between 8:00am to 5:00pm. It should be noted that the reduction in standing events / cocktail events is a result of the formalisation of the theatre area (i.e. modifying the floor to primarily serve theatre events), compared to the existing use whereby the existing theatre area could be fitout for standing events / cocktail events. This will not be possible under the future development and as such standing events / cocktail events will be limited to the lobby area only.

The existing and future operating hours relevant to traffic and parking are summarised below:

- Hours of Operation – 7:00am to 12:00am, seven (7) days a week:
  - Typical hours of operation of events range from 9:00am to 11:00pm;
  - Event durations being between one (1) hour to all day;
  - There is a maximum of four (4) events per day, with the potential to have back to back events on the same day which typically occur for school presentations rather than theatre use. The maximum number of back to back school events is three (3) per day (this does not occur every day, but is the maximum that may occur during peak school use periods, i.e. December);
  - Bump in times typically occur two (2) hours before the start of an event, with some major events taking up to two (2) days;

- Bump out times typically occur within one (1) hour after the end of an event, with the end of events being 11pm.
- Special Events (e.g. Wiggles) occur rarely (up to twice a year) and range from 1 day to a week. This may increase with the redevelopment of the site and each special event should be subject to its own event management plan to be approved by Council.

It should be noted that the proposed development provides bar and kitchen facilities, but it is expected that these areas are entirely ancillary to the development as a whole and are provided to serve the primary use of the site as outlined in **Table 1**.

1.2 State Environmental Planning Policy (Infrastructure) 2007

The proposed development is reducing in capacity and as such does not qualify as a traffic generating development with relevant size and/or capacity under *Clause 104* of the *SEPP (Infrastructure) 2007.* Accordingly, formal referral to the Roads and Maritime Services (RMS) is not required under ISEPP.

1.3 Secretary's Environmental Assessment Requirements (SEARs) & RMS Requirements

As part of the proposed alterations and addition to the Sutherland Entertainment Centre a request to obtain the Secretary's Environmental Assessment Requirements (SEARs) is required under *Clause 3 of Schedule 2 of the Environmental Planning and Assessment Regulations 2000 (EP&A Regulations*). The SEARs relevant to traffic and parking are reproduced in **Annexure B** for reference.

The traffic and transport related items within the SEARs are listed in **Table 2** (TfNSW) and **Table 3** (RMS) below with section references that address the requirements.

TABLE 2: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (TFNSW)

Requirement	Relevant Section
11. Transport and Accessibility (Operation)	
Analysis of the future daily and peak hour vehicle, public transport, pedestrian and bicycle movements likely to be generated by the proposed development and assessment of the impacts on the local road network, including key intersection capacity and any potential need for upgrading or road works (if required)	**Section 4**
An assessment of the accessibility of the development by public and active transport, including measures to promote travel choices for employees and visitors that support the achievement of State Plan targets, such as implementing a location-specific sustainable travel plan and provision of end of trip facilities for staff	**Section 2.5, Section 3 & Section 3.1.1**
Details of the proposed access, bicycle and car parking provision and end of trip facilities associated with the proposed development including compliance with the relevant parking codes and Australian Standards	**Section 3**
Details of servicing vehicle movements and site access arrangements including vehicle types and likely arrival and departure times of service vehicles, loading dock provision and access.	**Section 3.4**
12. Construction	
Details of peak hour and daily construction and servicing vehicle movements and access arrangements and cumulative impact from surrounding development sites, on the local road network, public transport services and parking (including the temporary loss of parking on the site)	**Section 4 & 5**
Road safety at key intersections and locations subject to heavy vehicle movements and high pedestrian activity	**Section 5**
Details of access arrangements for workers to/from the site, emergency vehicles and service vehicle movements	**Section 5**
Details of temporary cycling and pedestrian access during construction demonstrating that pedestrian and bicycle rider movements along footways and cycleways are maintained at all times during construction activities. Should the development require closure of either facility, adequate safety measures and diversion measures to limit time delay and detour distances should be detailed.	**Section 5**
Assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrians, cyclists and public transport operations	**Section 5**
13. Servicing and Waste	
Identify appropriate servicing arrangements (including but not limited to, waste management, loading zones and mechanical plant) for the site.	**Section 3.4**

TABLE 3: SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (RMS)

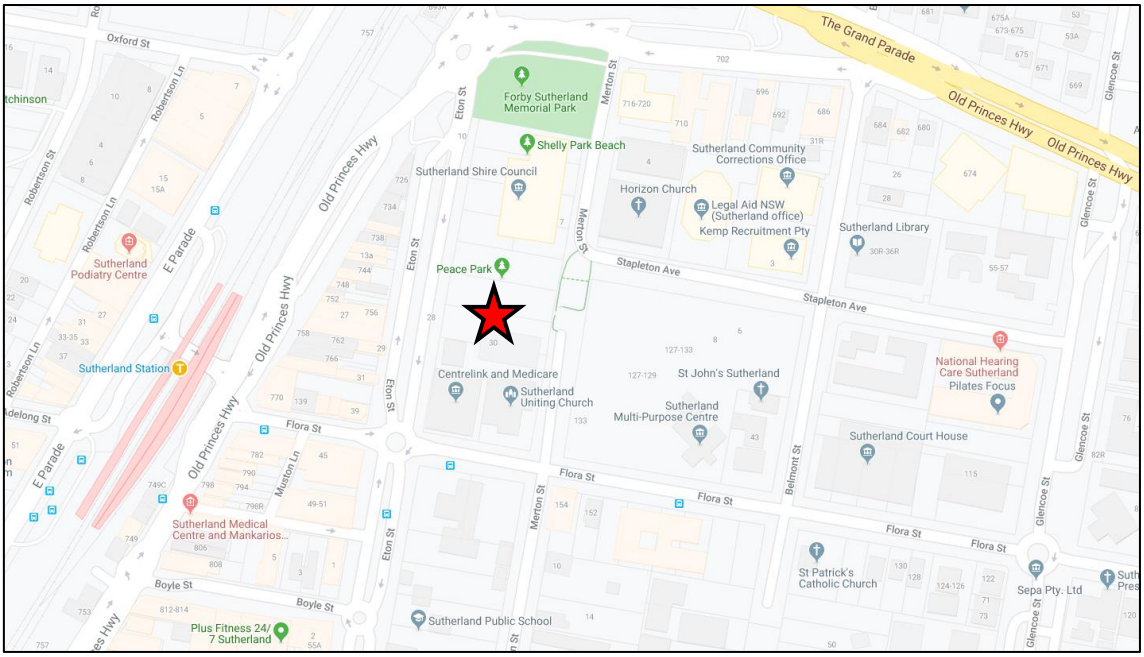
Requirement	Relevant Section
Transport for NSW Requirements	
11. Transport and Accessibility (Operation)	
Daily and peak traffic movements likely to be generated by the proposed development including the impact on surrounding road network intersections and the need / associated funding for upgrading or road improvement works (if required).	**Section 4**
Details of the proposed site access and parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e. turn paths, sight distance requirements, aisle widths, etc).	**Section 1 & Section 3**
Detailing vehicle circulation, proposed number of car parking spaces and compliance with the appropriate parking codes.	**Section 3**
Details of the light and heavy vehicle movements (including vehicle type and likely arrival and departure times), including service vehicle movements both for construction and for events.	**Section 3.4 & Section 5**
An assessment of the accessibility of the development by public and active transport.	**Section 2.5**

1.4 Site Context

The location of the site is shown on an aerial photo and a street map below in **Figure 1** and **Figure 2** respectively.

Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has characteristics as described in the following sub-sections within close proximity to the site.

2.1.1 Eton Street

- Unclassified LOCAL Road;
- Approximately 24m wide two-way carriageway (one lane in each direction) with central carriageway parking and kerbside parking provided on both sides of the road;
- Default 50km/h speed limit applies with a signposted 10km/h shared zone between the two (2) pedestrian crossing facilities;
- Time restricted 1-hour kerbside parking and time-restricted 2-hour angled parking between 8:30am-6pm, Monday-Friday and 8:30am-12:30pm, Saturday. Provision of *"Bus Zone"* signage along the eastern side of Eton Street fronting Peace Park and signposted disabled car parking (1 space) along the eastern side of Eton Street. *"Loading Zone"* signage is scattered along the western side of Eton Street between some driveways, with "*No Parking"* signage located between some driveways.

2.1.2 Merton Street (south)

- Unclassified LOCAL cul-de-sac Road, separated to the north section of Merton Road by the Sutherland Peace Park;
- Approximately 11.5m wide two-way carriageway providing 90 degree parking on the eastern side of the road;
- Approximately 3.3m wide at the access point from Flora Street, restricted by an existing planter-box.
- Unsignposted - default 50km/h speed limit applies;
- Unrestricted and time restricted 4-hour parking between 830am-6pm, Monday-Friday, kerbside parking permitted along the eastern side of the road. Provision of *"Loading Zone"* signage along the eastern side of the road at the end of the road and provision of "*Loading Zone"* and "*No Parking"* signage provided along the western side of the road.

2.1.3 Flora Street

- Unclassified COLLECTOR Road;
- Approximately 12m wide two-way carriageway and kerbside parking on both sides of the road;
- Signposted 50km/h speed limit, with 40km/h school zone restrictions;
- Generally, 1-hour time restricted kerbside parking permitted between 8:30am-6pm, Monday-Friday and 8:30am-12:30pm, Saturday, along both sides of the road.

A detailed map of the surrounding signposting and parking restrictions is provided in **Annexure C** for reference.

2.2 Existing Traffic Management

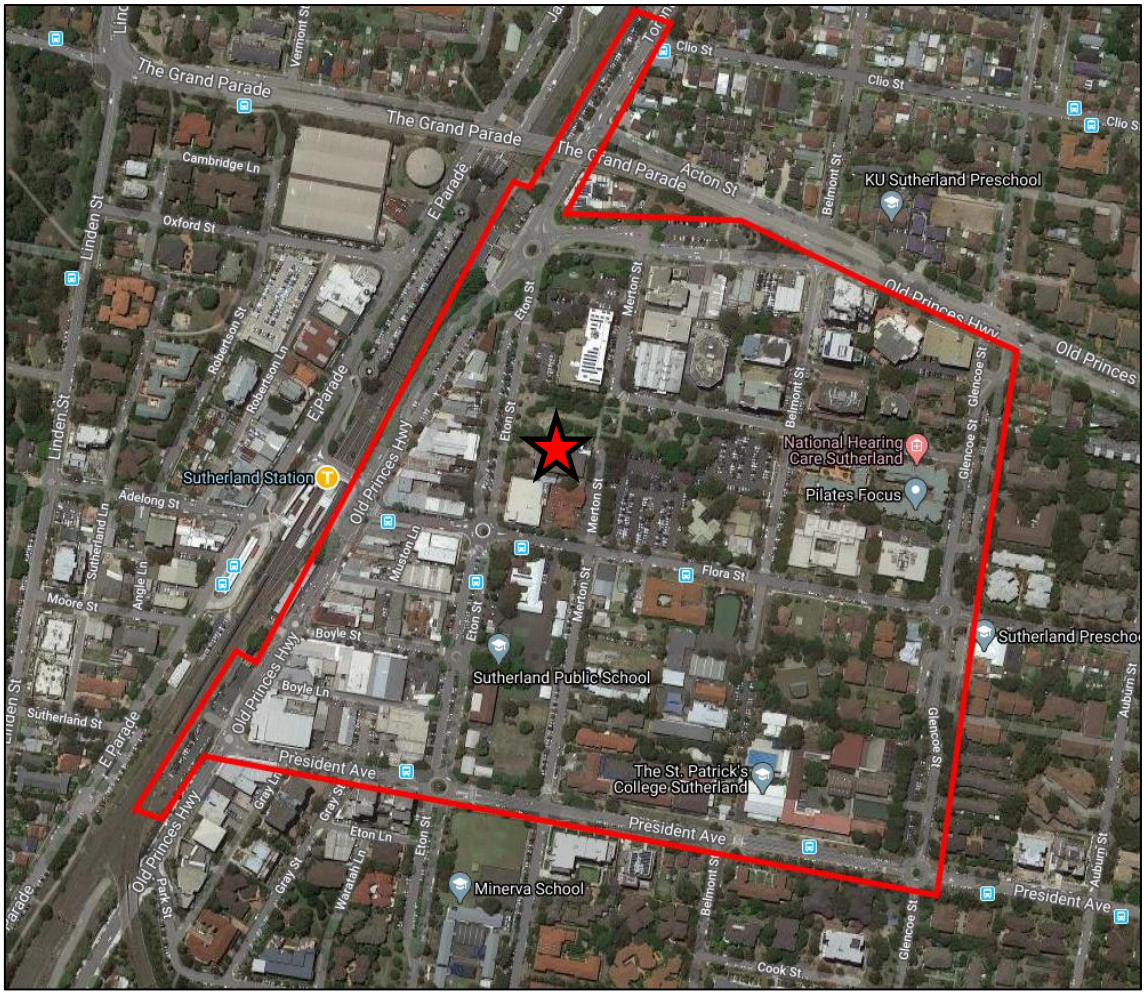
- Roundabout controlled intersection of Eton Street / Flora Street;
- Roundabout controlled intersection of Eton Street / Old Princes Highway / Toronto Parade;
- Priority controlled intersection of Merton Street / Flora Street;
- Raised pedestrian crossing on Eton Street between Eton Arcade (31 Eton Street) and Sutherland Entertainment Centre (30 Eton Street);
- Raised pedestrian crossing on Eton Street between 726 Old Princes Highway and Sutherland Shire Council Building (20 Eton Street);
- Pedestrian refuge on Eton Street at the Eton Street / Flora Street roundabout.

2.3 Existing Parking Environment

Parking counts within 400m walking distance of the site were undertaken on Saturday 1st February 2020 between the hours of 10:00am to 2:00pm, and Monday 3rd February 2020 and between the hours of 6:30am and 10:00am to 2:30pm to 7:00pm to examine the availability of on-street parking during a typical weekend and weekday.

The survey area is depicted in **Figure 3**, with a summary of parking capacity and parking restrictions during the survey period presented in **Table 4** and **Figure 4**. A map of parking restrictions and detailed survey results are reproduced in **Annexure C** and **Annexure D** respectively.

It should be noted that the parking survey area included the Flora Street car park, Toronto Parade car park, Old Princes Highway car park and Council car parks fronting Eton Street and Merton Street.



Site Location Survey Area

FIGURE 3: PARKING SURVEY AREA

TABLE 4: PARKING CAPACITY AND RESTRICTIONS

Time	Parking Restriction					Total Available (2)
	<2hr	≥2hr	Un-restricted (1)	No Parking	Council Only	
Morning Weekday						
6:30	11	0	1,305	96	37	1,316
7:00	11	0	1,222	100	116	1,233
7:30	11	0	1,311	11	116	1,322
8:00	11	0	1,280	42	116	1,291
8:30	332	352	606	43	116	1,290
9:00	335	352	636	10	116	1,323
9:30	336	352	635	10	116	1,323
Evening Weekday						
2:30	337	352	592	52	116	1,281
3:00	337	352	590	54	116	1,279
3:30	322	352	627	32	116	1,301
4:00	322	352	650	9	116	1,324
4:30	322	352	650	9	116	1,324
5:00	321	329	675	8	116	1,325
5:30	321	329	675	8	116	1,325
6:00	11	0	1,394	7	37	1,405
6:30	11	0	1,394	7	37	1,405
Midday Weekend						
10:00	321	222	809	97	0	1,352
10:30	321	222	809	97	0	1,352
11:00	321	222	809	97	0	1,352
11:30	321	222	809	97	0	1,352
12:00	321	222	809	97	0	1,352
12:30	12	0	1,340	97	0	1,352
1:00	12	0	1,340	97	0	1,352
1:30	12	0	1,340	97	0	1,352

Notes: (1) Unrestricted total includes 24 permanent disabled parking spaces.
(2) Total available to public. Does not include Council parking areas when restricted to Council only.

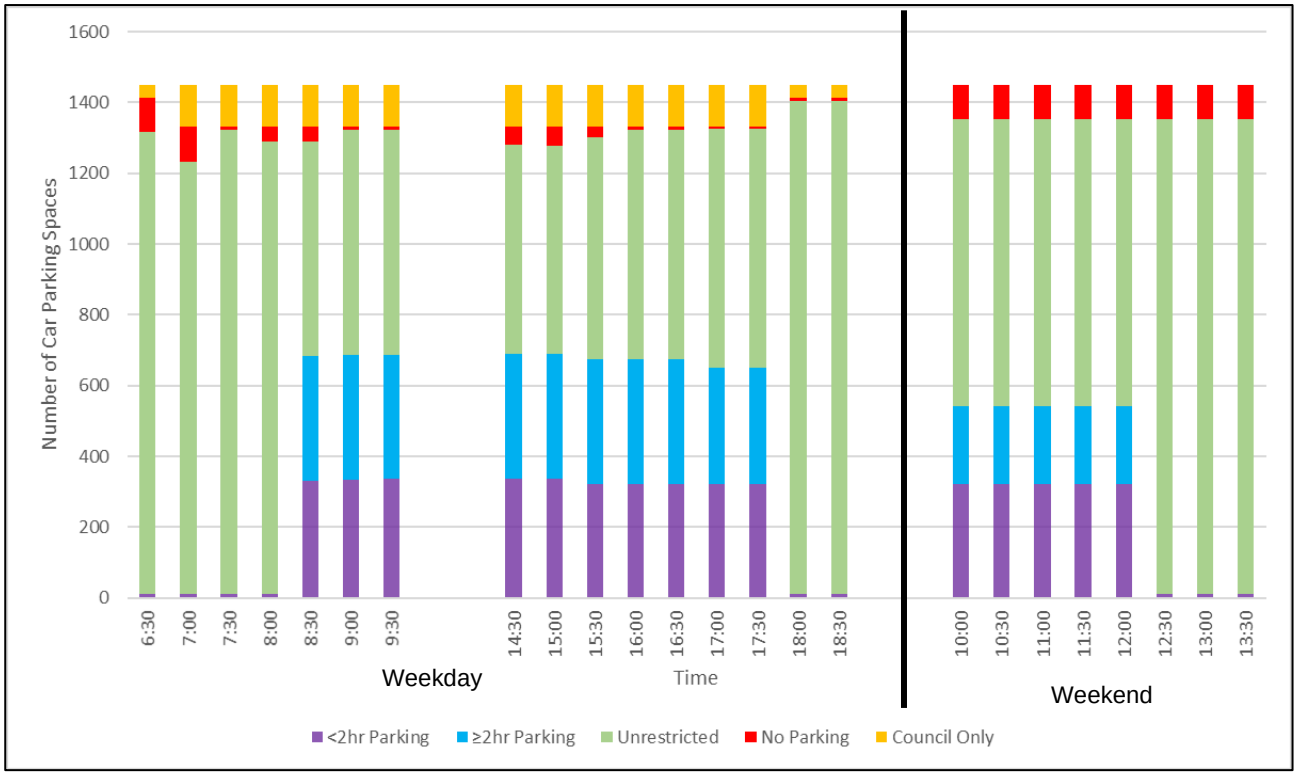


FIGURE 4: PARKING CAPACITY AND RESTRICTIONS

As shown above, within the town centre of Sutherland over the survey days there are large changes in unrestricted car parking as a result of time restricted parking. The parking capacity available to the public of the survey area ranges from 1,233 to 1,405 car parking spaces. The notable car parking capacities within the survey area (including time) is summarised below:

- Unrestricted car parking capacity ranges from 590 to 1,394;
- Time restricted parking capacity equal to or greater than 2 hours ranges from 0 to 352;
- Time restricted parking capacity less than 2 hours ranges from 11 to 337.

The detailed summary of the availability of remaining parking within the survey area is shown in **Figure 5** & **Figure 6** below.

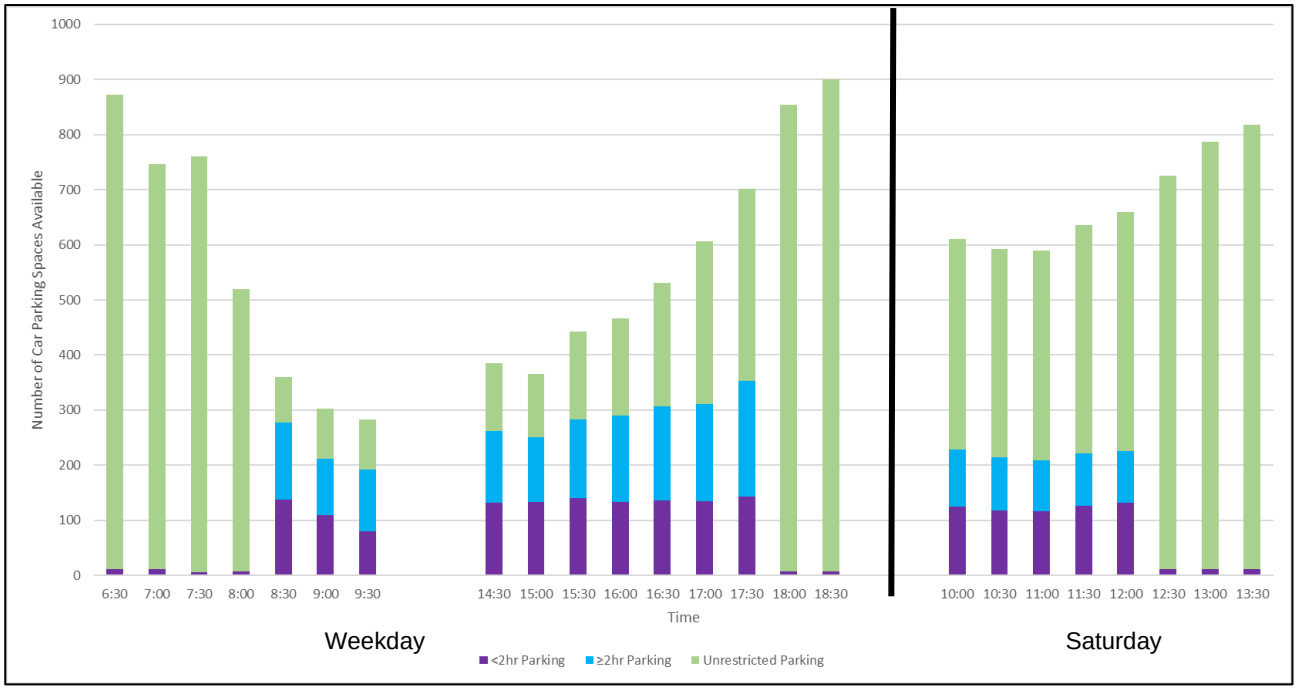


FIGURE 5: SUMMARY OF PARKING RESULTS (NUMBER)

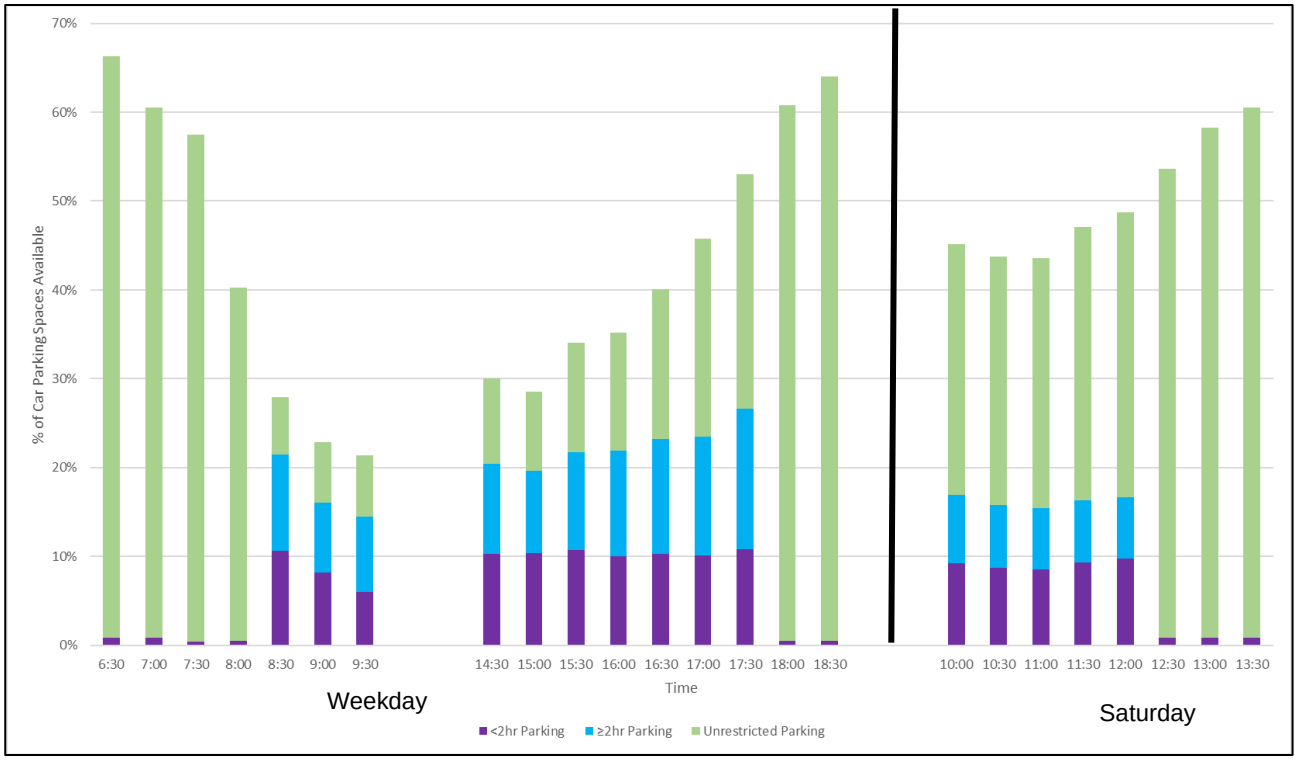


FIGURE 6: SUMMARY OF PARKING RESULTS (PERCENTAGE)

Of the available parking within the survey area the following are relevant to note with respect to car parking availability:

- Weekday:
    - The minimum available parking prior to parking restrictions occurred at 8:00am, with the following remaining capacities:
        - A minimum of 513 unrestricted car parking spaces available;
        - A minimum of 7 time restricted parking less than 2 hours available;
        - Nil 2 hour or greater time restricted parking available.
    - The minimum available parking during the surveyed period occurred at 9:30am, with the following remaining capacities:
        - A minimum of 91 unrestricted car parking spaces;
        - A minimum of 80 time restricted parking less than 2 hours;
        - A minimum of 112 time restricted parking greater to or equal 2 hours.
    - The minimum available parking in the afternoon after time restricted parking ended was observed to occur at 6:00pm, with the following remaining capacities:
        - A minimum of 847 unrestricted car parking spaces;
        - A minimum of 7 time restricted parking less than 2 hours;
        - Nil 2 hour or greater time restricted parking available.
- Weekend:
    - The minimum available parking during the time restricted parking periods (prior to 12:00pm) occurred at 11:00am, with the following remaining capacities:
        - A minimum of 380 unrestricted car parking spaces;
        - A minimum of 116 time restricted parking less than 2 hours;
        - A minimum of 93 time restricted parking greater to or equal 2 hours.
    - The minimum available parking after time restricted parking ended was observed to occur at 12:30pm, with the following remaining capacities:
        - A minimum of 713 unrestricted car parking spaces;
        - A minimum of 12 time restricted parking less than 2 hours;

- Nil 2 hour or greater time restricted parking available.

It should be noted that it is assumed in the outcomes above that the Council parking areas during signposted restriction to “Council Vehicles and Permit Holders Only” are assumed to be not available to the general public. These restrictions occur between 7:00am to 6:00pm Monday to Friday for the Flora Street car park and 6:00am to 10:00pm Monday to Friday for the Sutherland Shire Council Chamber car parks.

In addition, it is relevant to note that during the Saturday survey period, the Shire Farmers Markets was held, providing for a typical Saturday period. Whilst the existing SEC did not hold any events on the dates surveyed (parking and intersection). The above results thereby provide for a base case to inform future parking demand as a result of events held at the SEC, noting that general staff of the SEC have already been captured within existing parking conditions.

2.4 Existing Traffic Volumes

Intersection traffic surveys were conducted at the intersections of Eton Street / Flora Street, Eton Street / Toronto Parade / Old Princes Highway, Flora Street / Belmont Street and Stapleton Avenue / Belmont Street from 7:00am to 10:00am and 2:30pm to 6:30pm on Monday the 3rd of February 2020, representing a typical operating weekday. The full survey results are shown in **Annexure D** for reference.

2.4.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 8.0 **Table 5** below summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure E** for reference.

TABLE 5: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation(1)	Average Delay(2) (sec/vehicle)	Level of Service(3)(4)	Control Type	Worst Movement
EXISTING PERFORMANCE						
Eton Street / Flora Street	AM	0.41	8.2 (Worst: 13.2)	**A** (Worst: A)	Roundabout	U-turn From Flora Street (W)
	PM	0.49	7.1 (Worst: 13.6)	**A** (Worst: A)		U-turn From Flora Street (E)
Eton Street / Old Princes Highway / Toronto Parade	AM	0.62	8.7 (Worst: 16.7)	**A** (Worst: B)	Roundabout	U-turn From Old Princes Highway (W)
	PM	0.64	9.2 (Worst: 20.6)	**A** (Worst: B)		U-turn From Old Princes Highway (E)
Flora Street / Belmont Street	AM	0.23	4.7 (Worst: 13.4)	**N/A** (Worst: A)	STOP	RT from Belmont Street (N)
	PM	0.20	4.5 (Worst: 11.9)	**N/A** (Worst: A)		RT from Belmont Street (N)
Belmont Street / Stapleton Avenue	AM	0.12	4.3 (Worst: 7.6)	**N/A** (Worst: A)	Give Way	RT from Belmont Street (N & S)
	PM	0.12	4.5 (Worst: 7.4)	**N/A** (Worst: A)		RT from Belmont Street (N & S)

NOTES:

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

(4) Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movement

As shown above, all assessed intersections are currently performing at a high level of efficiency, with a level of service “A” or “B” conditions in both the AM & PM peak hour periods. The level of service “A” and “B” performance is characterised by low approach delays and spare capacity.

It should be noted that the assessed peak hour period were the highest observed over the survey period and not necessarily the peak commuter periods. It was observed that the school peak hour period was the PM peak hour at the intersections of Belmont Street / Flora Street and Belmont Street / Stapleton Street and have been modelled as the worst case scenario.

It should be noted that the assessed intersections have been assessed independently of one another and from the town centre. The actual performance of the interactions may be worse when considering the site context, being within a town centre, whereby *SIDRA Intersection* cannot simulate high turnover parking conditions as a result of time restricted parking areas and also school pick-up and drop-off conditions.

2.5 Public Transport

The subject site has access to existing bus stop (ID: 2232125) located approximately 100m walking distance to the south of site on Flora Street. The bus stop services existing bus routes 961 (Barden Ridge to Miranda), 962 (East Hills to Miranda), 963 (Alfords Point to Menai), 965 (Sutherland to Woronora), 967 (Como West to Miranda via Oyster Bay), 969 (Cronulla to Sutherland), 975 (Miranda to Grays Point), 976 (Sutherland to Grays Point) and 993 (Miranda to Woronora Heights) provided by Transdev NSW. In addition to the above Sutherland Bus Interchange is located on the western side of the railway line within a 450m walking distance of the site. The bus interchange provides the above services and 968 (Bonnet Bay to Miranda via Carella) and 991 (Heathcote to Sutherland) provided by Transdev NSW.

Sutherland Train Station is located via a 300m walking distance to the west of the subject site, servicing the T4 – Eastern Suburbs and Illawarra Line. A train service is provided every 5 – 10 minutes in commuter peak periods and provides direct access between Cronulla, Waterfall and Bondi Junction via Central Station (Sydney CBD), train services also link to Wollongong.

The location of the site subject to the surrounding public transport network is shown in **Figure 7** below.

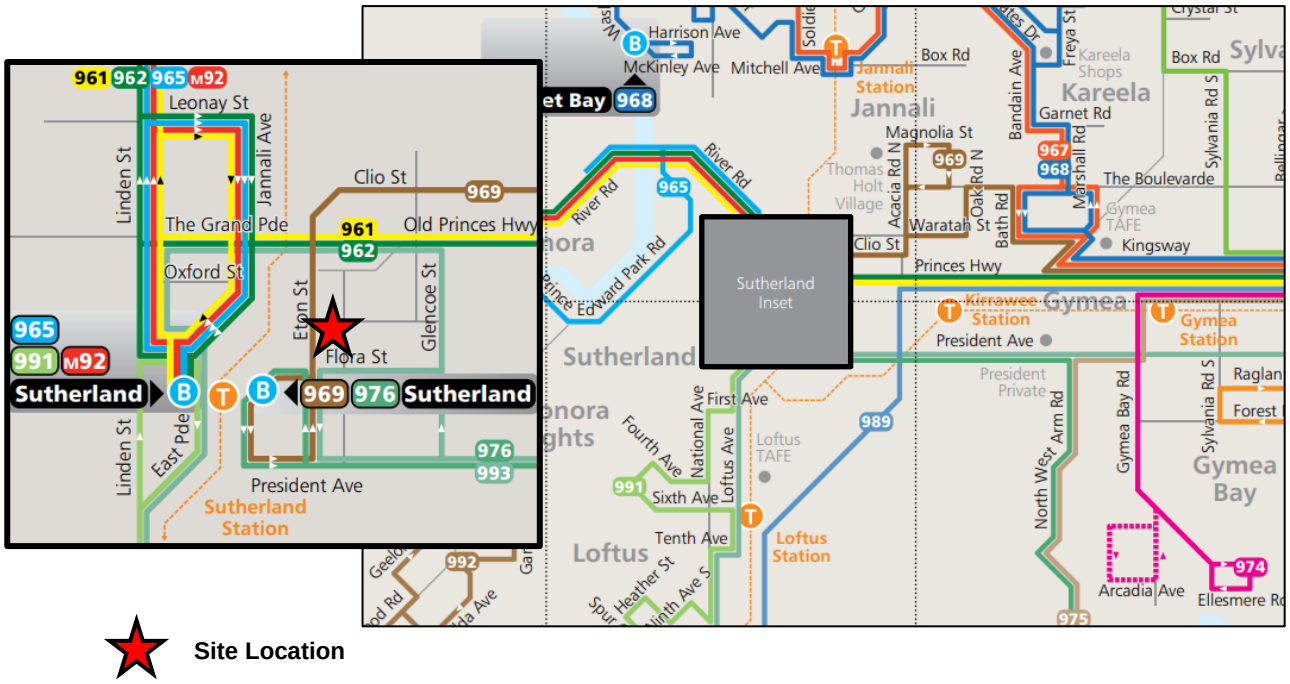


FIGURE 7: PUBLIC TRANSPORT NETWORK MAP

The subject site benefits from the existing signposted "*Bus Zone*" located along Eton Street fronting Peace Park. The existing bus zone is approximately 39m in length, capable of accommodating a maximum of three buses at any one time. The bus zone is not used by public bus services and is utilised by the Sutherland Entertainment Centre on event days. The primary use of the bus zone is by schools that utilise the existing SEC for presentations and large events.

2.5.1 NSW Planning Guidelines for Walking & Cycling

The NSW Government recognises the importance of walking and cycling to provide sustainable transport options for neighbourhoods and cities. The NSW Planning Guidelines for Walking and Cycling 2004 are recommended guidelines in creating healthier and more sustainable neighbourhoods and cities for everyone in NSW.

At the development application stage, the NSW Guideline recommends the following with respect to promoting the use of walking and cycling routes:

- Provide a Transport Access Guide;
- Provide bicycle parking and end of trip facilities;

Due to the nature of the proposed development the bicycle visitor parking demand will be minimal. Although, as part of this report it has been recommended to provide a Green Travel Plan for guests and staff travelling to and from the site. This will include consideration of available transport options including train, bus and cycleways. The public transport options will primarily be targeted towards guests that travel to the site, whilst cycleways will target staff travelling to and from the site. The bicycle parking provision required under Council's DCP and the NSW Planning Guidelines for Walking and Cycling 2004 are outlined in **Section 3.3** of this report.

2.5.2 Future Transport Strategy 2056

The Future Transport Strategy 2056 is an overarching strategy for a 40 year vision to improve NSW and Regional Transport Systems as a result of immense growth within Sydney. Transport plays a vital role in economic development in towns and cities and the Future Transport in Greater Sydney aims to provide access to facilities within 30 minutes by public or active transport.

The vision for Greater Sydney is to provide a metropolis of three cities as shown in **Figure 8** and as per the following:

- Eastern Harbour City – Stretching from the Northern Beaches to Sutherland Shire;
- Central River City – Extending outward from Greater Parramatta to Blacktown Norwest, Epping, Rhodes and towards Bankstown
- Western Parkland City – Focused around the western Sydney Airport – Badgerys Creek Aerotropolis and extending north to Greater Penrith, east to Liverpool and south to Campbelltown – Macarthur

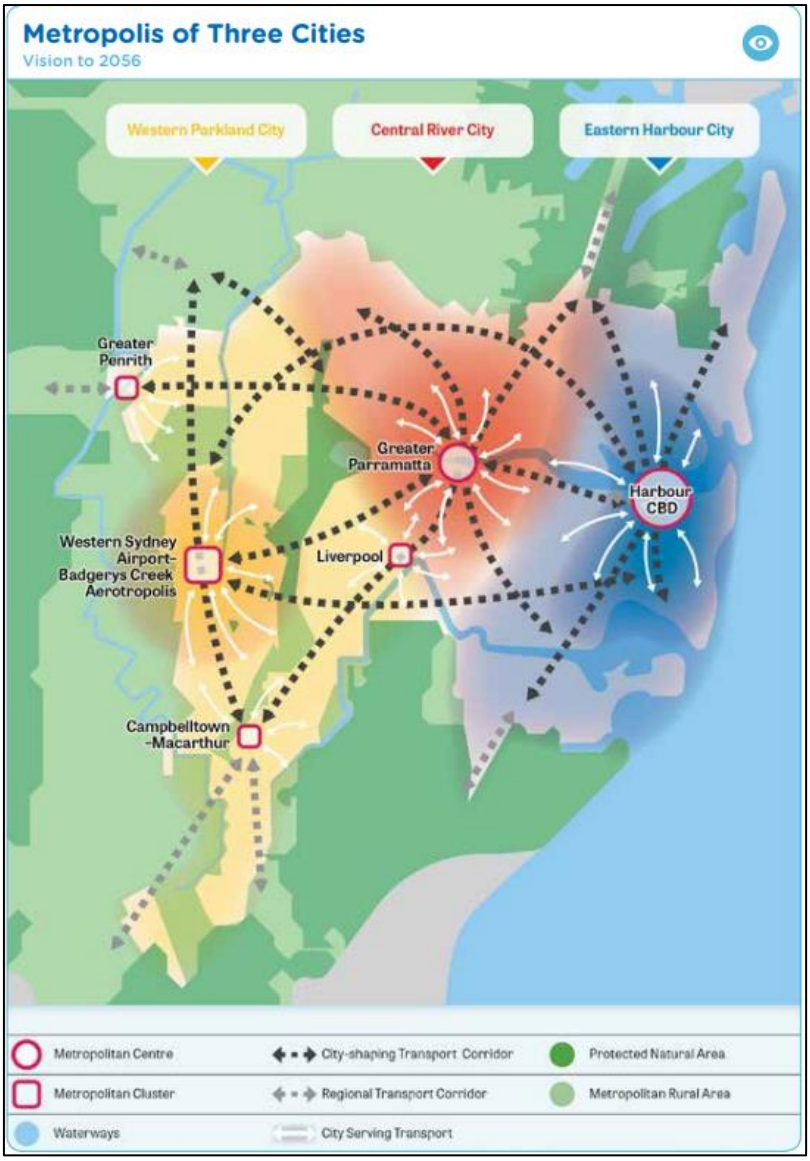


FIGURE 8: VISION FOR GREATER SYDNEY

The aim of the future is to connect people to employment areas by providing public transport, walking and cycling transport options. The anticipated corridors to move people and goods via multiple transport options is shown in **Figure 9**.

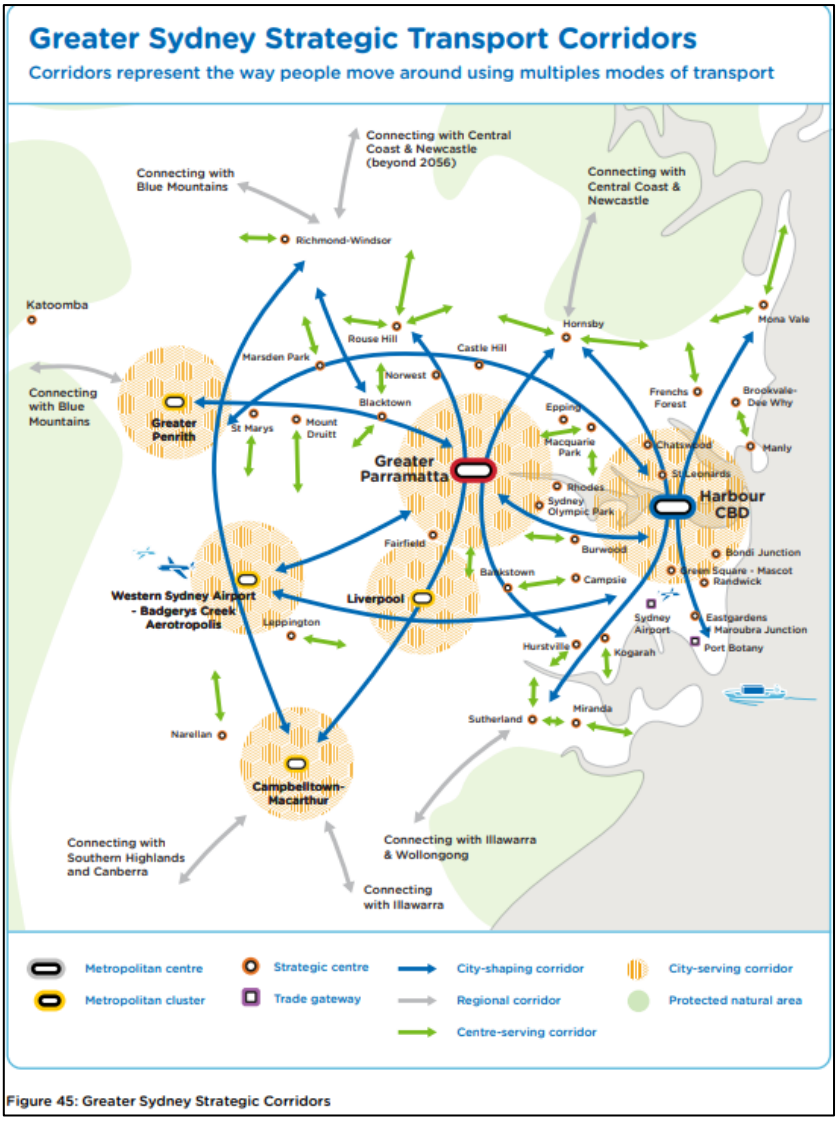


FIGURE 9: FUTURE STRATEGIC TRANSPORT CORRIDORS

2.6 Future Road and Infrastructure Upgrades

From the Sutherland Shire Council Development Application tracker and website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 PARKING ASSESSMENT

Reference is made to Sutherland Shire Council's *Development Control Plan 2015 Chapter 24: B3 – Commercial Core* which does not outline any car parking requirements for the proposed development but states the following:

> *Where a proposed development is not listed in these controls, or where the development proposal raises unique traffic and parking issues, or where development is identified as Traffic Generating Development, then Traffic Report shall be completed*

Reference is made to Sutherland Shire Council's *Development Control Plan 2015 Chapter 36: Vehicular Access, Traffic, Parking and Bicycles* which designates the following parking rates applicable to the proposed development:

> *Table 1 – Chapter 36:*
>
> *Entertainment facility – Traffic Study*
>
> *Function Centre – Traffic Study*
>
> *Recreation facilities (indoor) – Traffic Study*

Considering the above a first principal assessment will be undertake and based upon the following assumptions:

- Staff driver mode of 88% which is based upon Journey to Work Data as reproduced in **Annexure F**.
- A parking demand rate of 1 space per 4 patrons for larger events (300 or greater patrons) and 1 space per 3 patrons for small events (less than 300 patrons);
- School Events:
  - 1 space per 4 patrons; or
  - 1 bus per 50 patrons.

Based upon the above assumptions the expected car parking demand for the various event types is summarised in **Table 6** below for the existing SEC and proposed alterations and additions.

TABLE 6: ESTIMATED CAR PARKING REQUIREMENTS

Existing Scale[5]				
Event Type	**Scale**	**Rate**	**Parking Demand[4]**	**Total Parking Demand**
Meeting Room	40 to 120[3]	1 space per 3 patrons	40	44
	1 to 5 staff	0.88 spaces per staff	4.4 (4)	
Place of Assembly[1]	884	1 space per 4; or 1 bus per 50 patrons	221 or 18 buses	229 or 18 buses and 8 staff
	9 staff	0.88 spaces per staff	8	
Place of Public Performance[2]	884	1 space per 4 patrons	221	229
	9 staff	0.88 spaces per staff	8	
Function Centre	400 to 550	1 space per 4 patrons	138	157
	21 staff	0.88 spaces per staff	18.5 (19)	
Standing Event / Cocktail Event	1,200 to 1,500	1 space per 4 patrons	374	394
	23 staff	0.88 spaces per staff	20.2 (20)	
Special Event	884	1 space per 4 patrons	221	229
	9 staff	0.88 spaces per staff	8	
Friday Outdoor Music	300 to 500	1 space per 4 patrons	125	141
	18 staff	0.88 spaces per staff	15.8 (16)	
Proposed Scale[5]				
Meeting Room	40 to 120[3]	1 space per 3 patrons	40	44
	5 staff	0.88 spaces per staff	4.4 (4)	
Place of Assembly[1]	700	1 space per 4 patrons; or 1 bus per 50 patrons	175 or 14 buses	183 or 14 buses and 8 staff
	9 staff	0.88 spaces per staff	8	
Place of Public Performance[2]	700	1 space per 4 patrons	175	183
	9 staff	0.88 spaces per staff	8	
Function Centre	120 to 150	1 space per 3 patrons	50	64
	10 to 16 staff	0.88 spaces per staff	14.1 (14)	
Standing Event / Cocktail Event	250	1 space per 3 patrons	83.3 (83)	99
	16 to 18 staff	0.88 spaces per staff	15.8 (16)	
Special Event	700	1 space per 4 patrons	175	183
	9 staff	0.88 spaces per staff	8	
Friday Outdoor Music	300 to 500	1 space per 4 patrons	125	141
	18 staff	0.88 spaces per staff	16.8 (16)	

Note: 1 – School presentations and dance performances.

2 – Cinema, theatre and live shows.

3 – Seated capacity of 90

4 – Car parking demand is based upon the largest range of patrons

5 – Does not include general staff for the daily operations of the site

As shown above, when assessing each event type individually results in a parking demand range of **44** to **183** car parking spaces for the future operation of the site compared to a range of **44** to **394** car parking spaces in the existing conditions. This represents a net peak reduction in parking demand of **211** (394 less 183) car parking spaces.

In addition to the above, the number of school buses required to depart and arrive the site to reach capacity of the SEC reduces from **18** buses to **14** buses, a reduction of **4** buses overall.

Overall as a result of the redevelopment of the SEC, the internal seated and standing capacity is reducing, thereby resulting in a lower car parking demand over existing approved operations.

The minimum observed car parking availability as outlined in **Section 2.3** showed that there was a minimum of **91** unrestricted car parking spaces and **112** time restricted parking of 2-hours or greater, resulting in a total of **203** car parking spaces available for use within the survey area. The reliance of parking areas within time restricted areas of less than 2-hours is likely to be unfeasible as a result of events extending beyond a one-hour interval. There may be some cases where reliance upon 1-hour time restricted parking could occur, but has been discounted within the assessment in order to be conservative.

In any case, the proposed development is estimated to create a demand for **183** car parking spaces as a conservative peak resulting in a remaining capacity of **20** car parking spaces during the worst observed time period at 9:30am. Outside this period (9:30am) there would be additional parking available as **Figure 6** indicates that parking demand decreases as the day progresses.

The surveyed parking area is within 400m walking distance of the site and it is not unreasonable for guests to the SEC requiring to walk 400m, such that reliance on all parking areas within the survey is acceptable. The above assessment is highly conservative considering limited discount has been provided for public transport usages within the town centre, namely bus and train services, such that the actual parking demand of the SEC during its peak usage may be less.

Whilst the above assesses the parking demand based upon a single event, the following events can occur at the same time:

- Friday outdoor music (Peace Park) and indoor function use / theatre use;
- Functions and meeting room use.

In view of the above the accumulative parking demand of the function use and meeting room use is **108** car parking spaces, which is less than the peak of **183** spaces assessed above. The peak parking demand of the Friday outdoor music and theatre use is **324** car parking spaces in the future conditions (**370** in existing conditions). This parking demand as a result of an overlap of events would occur after 6:00pm. The parking availability at 6:00pm as shown in **Figure 6** was observed to be **847** unrestricted car parking spaces, resulting in a

remaining capacity of **477** (847 less 370) car parking spaces. Hence, the overlap of events has an acceptable parking impact and is able to be fully accommodated within the surveyed area. It should be noted that some of the parking impacts would have already occurred and would not be solely new parking demand, as guests travelling home from work would have already parked within unrestricted parking areas and may attend the Friday outdoor music function on their way home from work such that the parking demand of **324** is highly conservative.

In view of the above parking demand and resultant parking conditions the following is recommended to reduce the reliance of on-street car parking which should form part of a Operational Plan of Management for the site:

- Multiple events held on the same day which do not require bus pick-up and drop-off facilities shall be offset at least 1-2 hours between sessions to allow for guests to depart prior to the arrival of the next performance / event (i.e. so the parking demand of two (2) events does not occur at the same time).

- The maximum number of guests on-site shall be restricted to 700 not including staff during business hours on weekdays (8:30am to 5:30pm) when events predominantly use on-street parking instead of bus facilities (i.e. non-school events).

- The maximum number of guests on-site (inclusive of Peace Park) shall be restricted to 1,200 after 5:30pm.

- To reduce the on-street car parking demand, event management shall promote the use of public transport, namely trains and buses. This could be provided to guests through the provision of a Green Travel Plan via website notices and even through the purchase of ticket sales via confirmation emails.

3.1.1 Bus Facilities

The subject site benefits from the existing signposted "*Bus Zone"* located along Eton Street fronting Peace Park. The existing bus zone is approximately 39m in length, capable of accommodating a maximum of three buses at any one time (i.e. 39/12.5). The bus zone is not used by public bus services and is utilised by the Sutherland Entertainment Centre on event days. The primary use of the bus zone is by schools that utilise the existing SEC for presentation and large events.

As a result of the redevelopment of the SEC, the seated capacity is reducing from 884 patrons to 700, thereby reducing the maximum bus parking demand required to fill the SEC from 18 to 14 buses. Considering the drop-off / pick-up bus zone has the capacity for three (3) buses at any one time a Management Plan will be required to manage the arrival and departure rates of buses. The plan of management will be required to detail the following:

- What buses are required to do in the event that all spaces are full, including how this will be enforced.

- The time intervals for the departure of buses from nearby schools that are to be followed by management of each school using the SEC to avoid the accumulation of more than three (3) buses at the SEC. For example a maximum of three (3) buses can leave the school every five (5) minutes.

- The time intervals for the arrival of buses to the SEC to pick-up students at the end of an event and how this will be relayed to drivers.

- Details of where buses layover or park between the start and end of events shall be provided.

- Duties of teachers and students to ensure an efficient arrival and departure operation.

Considering the above the following are relevant to note:

- Assuming it takes 5 minutes to load or unload a bus with students, it would take approximately 25 minutes to load / unload 14 buses.

In view of the above, if school presentations are provided back to back, such as how the existing operation occurs there would be queues of buses within Eton Street. These queues would block traffic travelling south along Eton Street and it is recommended that there be no back to back school presentations. School presentations should be offset by at least one hour between events to allow for the arrival and departure of buses with minimal queuing impacts along Eton Street.

Alternatively, if the capacity of bus storage increases a shorter offset could be provided between school events and there is also the potential for a shorter offset if the capacity of the school event is less than the prescribed maximum patronage limit. For example a school event for 200 students followed by another school event of 200 students. Although this is subject to a case by case assessment and will need to be managed by SEC management in conjunction with bus operators and schools.

3.2 Disabled Parking

Reference is made to the *Building Code of Australia's* (BCA's) *Table D3.5* which classifies an assembly building as a Class 9b building and as such, requires the provision of disabled parking at the rates of:

> ***Class 9b***
>
> *(i) up to 1000 carparking spaces*
>
> > *1 space for every 50 carparking spaces or part thereof*
>
> *and*
>
> *(ii) for each additional 100 carparking spaces or part thereof in excess of 1000 carparking spaces.*
>
> > *1 space*

Based upon the peak parking demand of 324 spaces when overlapping of events occur at 6:00pm, results in the requirement for seven (7) disabled car parking spaces. The locations of all disabled car parking spaces within the survey area are shown in **Annexure C**. The survey area provides for 25 disabled car parking spaces, with seven (7) provided within Eton Street between Peace Park and Flora Street and three (3) provided within Flora Street car park, sufficient to accommodate the anticipated disabled car parking demand of peak events of the site. All disabled spaces are existing and it is expected that they comply with the relevant standard and were certified as such.

3.3 Bicycle & Motorcycle Parking Requirements

Reference is made to Council's *Development Control Plan 2015 Chapter 24 B3 Commercial Core Sutherland* and which outlines the following requirements for bicycle and motorcycle parking spaces.

> ***16. Parking***
>
> ***16.2 Controls***
>
> > *3. In addition to the car parking requirements, motorcycle parking shall be provided at a rate of 1 motorcycle space per 25 car spaces or part thereof. For example, where 26 car parking spaces are required then 2 motorbike parking spaces are to be provided. Motor cycle parking spaces shall comply with the relevant standards.*
> >
> > *4. In addition to the car parking requirements, bicycle parking space must be provided at the rate of 1 space per 10 car parking spaces for first 200 car spaces, then 1 space per 20 parking spaces thereafter. In addition, 1 unisex shower is required per 10 employees.*

Applying the above rates, against the peak anticipated parking demand of 324 car parking spaces results in the requirement of 26 bicycle spaces and 13 motorcycle parking spaces.

It should be noted that the existing SEC does not provide any motorcycle or bicycle parking spaces.

Reference is made to the *NSW Planning Guidelines for Walking and Cycling 2004* which outlines the following bicycle parking requirements for theatres, of which the proposed development is more applicable to.

> *3-5% of staff*
>
> *3-5% of seating capacity*

The seating capacity of the development is 700, whilst the maximum staff on-site at any one time is 33, resulting in a requirement for 21 to 35 visitor spaces and 1 to 2 bicycle spaces for staff. The proposed development provides **20** bicycle spaces for both staff and visitors.

It is not anticipated that guests will cycle to the centre considering the community use / event types held. Some staff may cycle to the SEC and bicycle parking can be informally stored

within the site. It is anticipated if anyone requires parking of a motorcycle, they will utilise existing on-street car parking surrounding the site.

3.4 Servicing & Loading

Council's *Development Control Plan 2015 Chapter 24 B3 Commercial Core Sutherland* does not outline provision of loading requirements but requires the following with respect to loading:

> *All loading, unloading and manoeuvring of vehicles shall take place within the curtilage of the site, and vehicles are to enter and exit the site from a rear laneway wherever possible and in a forward direction at all times.*
>
> *Where other arrangements for loading and unloading of vehicles are proposed they may be acceptable where*
>
> *a. There is low intensity of commercial use;*
>
> *b. The proposed arrangement maintains a safe and convenient pedestrian and traffic environment.*

The existing loading requirements of the site are summarised below which occur during business hours:

- Small Rigid Vehicle for food deliveries;
- B99 vehicles for cleaning;
- Waste collection (red bins) is undertaken from the kerbside along Merton Street;
- Waste collection (yellow bins) are undertaken from the street frontage along Eton Street;
- Deliveries for performances are undertaken from within the loading dock by vehicles up to an 8.8m length Medium Rigid Vehicle;
- During special events which currently occur up to twice a year, loading for a 19m Articulated Vehicle (AV) is required. The current procedure to facilitate 19m length (AV's) into Merton Street is for the AV to reverse down Merton Street and store the AV's container within the existing loading dock. The storage container would extend beyond the property boundary.

The current loading dock provides access in a reverse entry movement and a forward exit movement through the assistance of the existing turning area at the end of Merton Street which restricts parking through signposted "*Loading Zone"* signage. In addition to this there is an existing "*Loading Zone"* along the eastern side of Merton Street which is expected to be used for waste collection.

The future loading facilities for the proposed development will not substantially change. The proposed development relocates the loading dock, providing a loading dock capable of servicing an 8.8m length Medium Rigid Vehicle and a single car parking space / loading area capable of providing access to a B99 design vehicle for deliveries. All movements into and out of the loading areas are required to be undertaken as a reverse entry movement

and forward exit movement, this will result no change from existing conditions. Swept path testing has been undertaken and is reproduced in **Annexure G** for reference, demonstrating successful entry and exit (reverse entry and forward exit).

In addition to the above, a review of the turning area at the northern end of Merton Street has been undertaken for Council's largest waste collection vehicle and NSW Fire Brigade vehicle requirements. Council's largest waste collection vehicle is a 10.24m length Heavy Rigid Vehicle, whilst the NSW Fire Brigade general vehicle is the 8.8m length Medium Rigid Vehicle as defined by AS2890.2:2018. Swept path testing has been undertaken and is reproduced in **Annexure G** for the above design vehicles. The results of the swept paths indicate that six (6) car parking spaces within Merton Street are required to be removed to allow both the waste collection vehicle and General Fire Appliance vehicle to turn around within Merton Street within a three-point turn manoeuvre.

3.4.1 Special Event Deliveries

The existing SEC holds a limited number of special events each year, with current usage being up to twice a year. Special events can range from 1 day to 7 days depending on the performance and typically require loading facilities for up to a 19m length Articulated Vehicle. The existing and future SEC does not provide on-site loading facilities or vehicle access to be serviced by an AV as evident from the existing operation of 19m AV reversing down Merton Street. Considering this, it is recommended that any deliveries by vehicles in excess of an 8.8m length Medium Rigid Vehicle (i.e. Heavy Rigid Vehicles and Articulated Vehicles) be subject to a temporary road closure of Merton Street between Flora Street and Peace Park, such that delivery vehicles can be stored within Merton Street during special events and unloading / loading can take place.

The above operation is to be approved by Council for every special event held per year and any reverse movement into Merton Street is to operate under an appropriate traffic management and traffic control plan. A standard traffic control plan for reverse movements into Merton Street is shown in **Annexure H** for reference.

In view of the above, a Special Event Management Plan should be prepared which should provide, but not limited to, the following:

- Date and operating hours of each special event;
- The haulage route for delivery vehicles to / from the site;
- The procedure to be implemented to alert the public of the temporary road Closure of Merton Street;
- The traffic control plan to be implemented for reverse movements into Merton Street;
    - To be restricted to occur outside of peak traffic periods, namely pick-up and drop-off periods for schools and commuter peak periods.
- Location of stored vehicles within Merton Street to ensure access for Fire and waste collection vehicles are maintained;
- How pedestrians will be managed during the temporary road closure within Merton Street;

- Impacts to adjacent developments, including consultation with affected property owners and tenants..

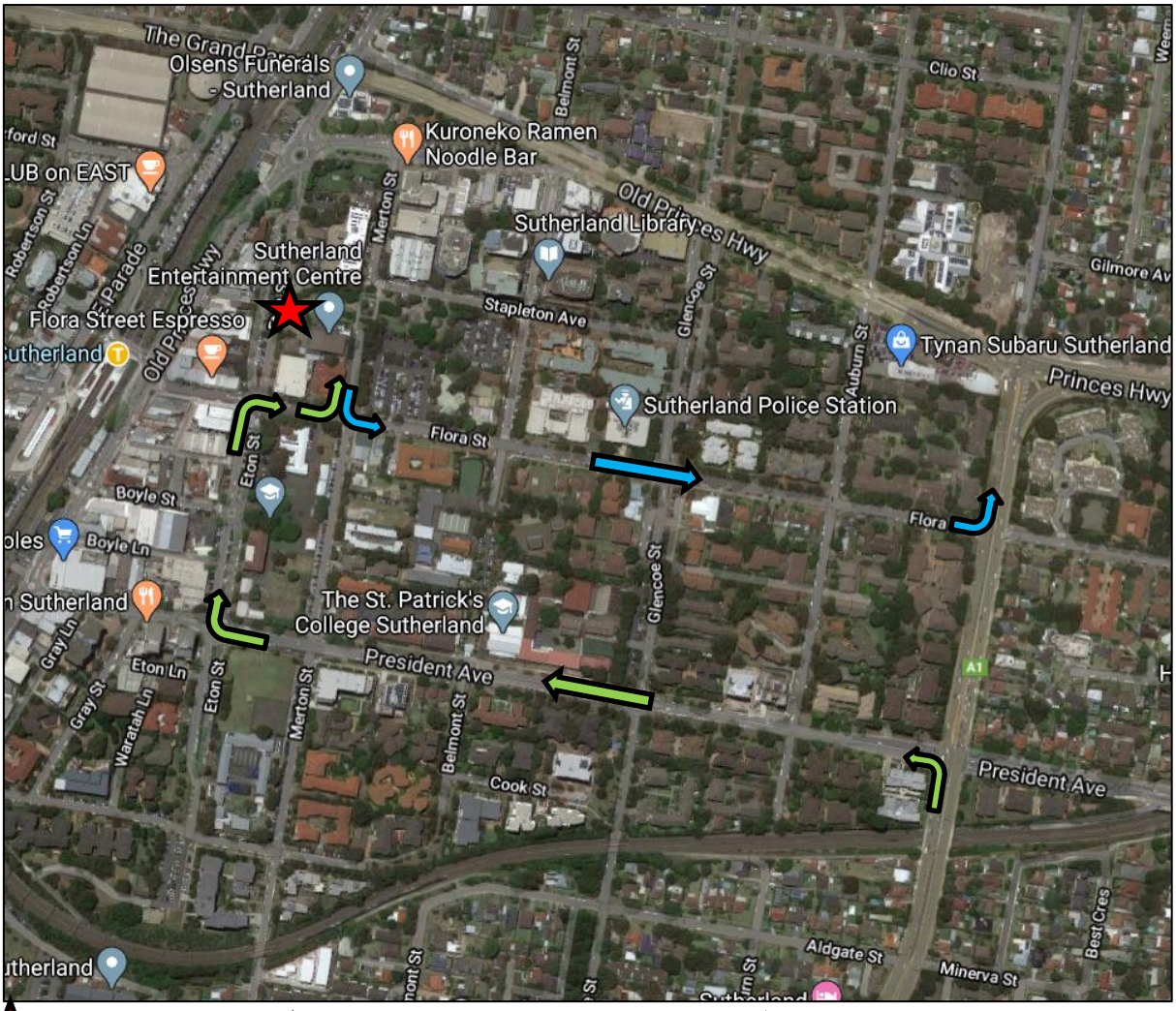
The Special Event Management Plan will need to be updated to reflect new Special Events held each Year, with each new event required to be approved by Council.

Whilst the existing SEC currently operates by providing access to 19m length AV, it is unclear if this is an existing approved operation. Considering this, the haulage route for access to Merton Street has been assessed for a 20m length AV as defined by AS2890.2:2018, to ensure that it is physically possible for the existing road network to provide access to Merton Street. The swept paths for the haulage route are shown in **Annexure G** for reference.

The results of the swept path testing indicate that it is not possible for the existing road network to provide access to the site by a 20m length AV. Modifications will be required to facilitate the access and egress of a 20m length AV as defined by AS2890.2:2018:

- Modifications to the roundabout intersection of Flora Street / Eton Street to allow a greater mountable central island area;
- Modifications to the Merton Street driveway, including a larger driveway splay to facilitate the left turn egress of 20m AV onto Flora Street.

The haulage route for access to and from the site for up to a 20m AV is shown in **Figure 10** below, with detailed modifications required to the road network shown in **Annexure G** for reference.



Site → AV Inbound Route → AV Outbound Route

FIGURE 10: HAULAGE ROUTE FOR 20M LENGTH ARTICULATED VEHICLES

It should be noted that the entry into Merton Street is required to be undertaken as a reverse movement under an appropriate and approved traffic control plan. The egress haulage route of Merton Street onto President Avenue was assessed as a potential route, but was considered to be unacceptable as the 20m length AV is required to utilise all three (3) traffic lanes along President Avenue to turn left onto Acacia Road, which is unacceptable.

Due to the unacceptable movement at the intersection of President Avenue / Acacia Road, the egress traffic route will continue along Flora Street and turn left onto Acacia Road.

3.5 Loading Bay Design & Compliance

The proposed loading bays have been assessed against the relevant clauses of AS2890.2:2018 and AS2890.1:2004 and are deemed to comply. The following are relevant to note:

- 4m wide garage door opening for MRV access;
- Minimum of 3.5m in width by 8.8m in length parking space for a MRV;
- Minimum of 4.5m headroom within the MRV loading bay;
- Garage door opening of 3.1m between walls for access by a B99 design vehicle / car / van;
- Minimum width of 3.1m between walls and 5.4m in length parking space for a B99 design vehicle / car / van;
- Minimum of 2.2m headroom within the B99 loading bay.

Whilst the plans have been assessed to comply with the relevant standards, it is usual and expected that a design certificate be required at the Construction Certificate stage to account for any changes following the development application.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 Traffic Generation

The *Roads and Maritime Services (now TfNSW) Guide to Traffic Generating Developments (2002)* and recent supplements do not provide specific rates for a Place of Assembly or similar. Therefore, the traffic generation is to be based upon a first principles assessment taking into account the proposed patronage numbers of the development.

The estimated traffic generation of the peak operation of the site will be based upon the following assumptions:

- A maximum of 700 patrons for an individual peak event
- A maximum of 1,200 patrons (accumulative impact of worst case scenario of Friday outdoor music and theatre use);
- A trip generation rate of 1 trip per 4 patrons.

Based upon the above, the expected peak traffic generation of the site is expected to be 300 vehicle trips, which occurs on a Friday afternoon. This estimated traffic generation is expected to occur as 300 inbound vehicle trips. Outside Friday afternoon, there is potential for 175 peak hour vehicle trips which could occur at any time throughout the day. Considering this, as a worst case it will be assumed that during the AM network peak hour period all trips will be inbound to the site with a traffic generation of 175 vehicle trips and during the PM network peak hour period all trips will also be inbound to the site and assessed as 300 inbound vehicle trips. The arrival rate of guests travelling to the site will be based upon 30 minutes, over the typically adopted 1-hour period due to the nature of the development.

Daily vehicular traffic generation of the site is largely variable and would not be consistent on a day to day basis as it is based upon events held. In view of this, if one event was held the daily traffic generation would equate to some 350 vehicle trips (175 inbound and 175 outbound) plus staff movements per day. If four events were held in one day, with maximum capacities the daily vehicle trips would be 1,400 trips plus staff movements per day. Although this can dramatically reduce depending on the reliance of bus and train facilities.

There is no one area that visitors will be travelling to and from the site considering the parking conditions during peak commuter periods. Rather the traffic generated from the proposed development will be spread throughout the town centre. The trip distribution that will be assessed for inbound / outbound traffic is expected to be as following:

- 25% to / from the east from the intersection of Acacia Road / President Avenue and then right onto Glencoe Street;
- 25% to / from the south from the intersection of the Old Princes Highway / Princes Highway and then onto President Avenue and onto Eton Street.

- 25% to / from the north-east onto the off-ramp from the Old Princes Highway and then onto Eton Street at the roundabout intersection of Old Princes Highway / Toronto Parade / Eton Street;

- 25% to / from the west via the Grand Parade onto Glencoe Street and then right onto either Stapleton Avenue or Flora Street.

Figure 11 below shows the assessed trip distributions.

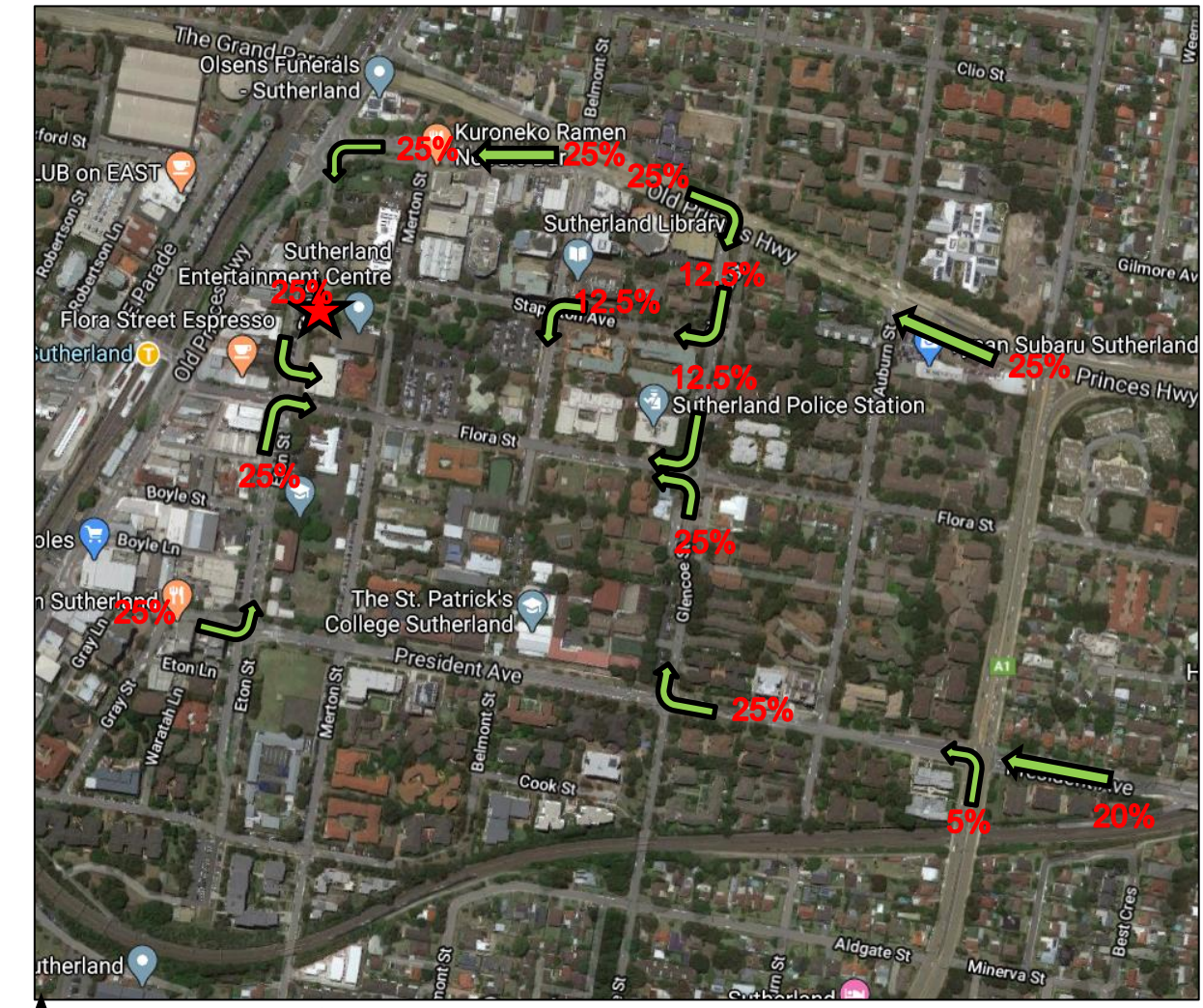


FIGURE 11: ASSESSED TRIP DISTRIBUTION

It is expected that the existing pedestrian facilities (i.e. footpaths and pedestrian crossing facilities) from on-street car parking spaces are more than adequate to service the pedestrian demand generated from parked vehicles.

4.2 Traffic Impact

The traffic generation outlined in **Section 4.1** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 8.0 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 7**, with detailed SIDRA outputs reproduced in **Annexure E**.

TABLE 7: INTERSECTION PERFORMANCE (SIDRA INTERSECTION 8.0)

Intersection	Peak Hour	Degree of Saturation(1)	Average Delay(2) (sec/vehicle)	Level of Service(3)(4)	Control Type	Worst Movement
EXISTING PERFORMANCE						
Eton Street / Flora Street	AM	0.41	8.2 (Worst: 13.2)	**A** (Worst: A)	Roundabout	U-turn From Flora Street (W)
	PM	0.49	7.1 (Worst: 13.6)	**A** (Worst: A)		U-turn From Flora Street (E)
Eton Street / Old Princes Highway / Toronto Parade	AM	0.62	8.7 (Worst: 16.7)	**A** (Worst: B)	Roundabout	U-turn From Old Princes Highway (W)
	PM	0.64	9.2 (Worst: 20.6)	**A** (Worst: B)		U-turn From Old Princes Highway (E)
Flora Street / Belmont Street	AM	0.23	4.7 (Worst: 13.4)	**N/A** (Worst: A)	STOP	RT from Belmont Street (N)
	PM	0.20	4.5 (Worst: 11.9)	**N/A** (Worst: A)		RT from Belmont Street (N)
Belmont Street / Stapleton Avenue	AM	0.12	4.3 (Worst: 7.6)	**N/A** (Worst: A)	Give Way	RT from Belmont Street (N & S)
	PM	0.12	4.5 (Worst: 7.4)	**N/A** (Worst: A)		RT from Belmont Street (N & S)
FUTURE PERFORMANCE						
Eton Street / Flora Street	AM	0.54	9 (Worst: 15)	**A** (Worst: B)	Roundabout	U-turn From Eton Street (N)
	PM	0.71	9.4 (Worst: 16.7)	**A** (Worst: B)		U-turn From Eton Street (N)
Eton Street / Old Princes Highway / Toronto Parade	AM	0.62	9.1 (Worst: 16.7)	**A** (Worst: B)	Roundabout	U-turn From Old Princes Highway (W)
	PM	0.84	12.7 (Worst: 31.3)	**A** (Worst: C)		U-turn From Old Princes Highway (E)
Flora Street / Belmont Street	AM	0.29	5.3 (Worst: 16.3)	**N/A** (Worst: B)	STOP	RT from Belmont Street (N)
	PM	0.42	5.7 (Worst: 17.4)	**N/A** (Worst: A)		RT from Belmont Street (N)
Belmont Street / Stapleton Avenue	AM	0.13	4.4 (Worst: 7.7)	**N/A** (Worst: A)	Give Way	RT from Belmont Street (S)
	PM	0.12	4.8 (Worst: 7.7)	**N/A** (Worst: A)		RT from Belmont Street (S)

NOTES:

(1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

(4) Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movement

As shown above, under future worse-case scenarios assessed over a 30-minute period for arrival vehicles, all intersections are operating at LoS “A” or “B” conditions. This indicates acceptable delays and additional spare capacity maintained.

As noted in **Section 2.4.1** each intersection has been assessed independently of one another and from the town centre. The actual performance of the interactions may be worse when considering the site context, being within a town centre, whereby *SIDRA Intersection* cannot simulate high turnover parking conditions as a result of time restricted parking areas and also school pick-up and drop-off conditions. Considering this the operation of the SEC should seek to minimise its traffic impacts during the school pick-up and drop-off periods as this is one of the highest peak traffic flow conditions within the town centre. To reduce traffic flow from the proposed SEC, SEC management should seek to utilise bus services during peak school pick-up and drop-off periods and also promote the use of train services.

It should be noted that the peak events of the SEC is reducing. That is the estimated traffic generation or a single event under exiting conditions is 375 vehicle trips, whilst the accumulative traffic generation for the peak event (Friday outdoor music and theatre use) in the existing conditions is 346 vehicle trips. This reflects a reduction of 200 vehicle trips for single events and a reduction of 46 vehicle trips for accumulative events such that compared to existing operations the performance of the surrounding road network will improve in the future, compared to existing conditions.

5 CONSTRUCTION TRAFFIC

Typically, after the development application stage a detailed Construction Traffic Management Plan is provided at the construction certificate stage prior to construction and as part of a consent condition, to be approved by Council. Once a builder has been engaged, confirmation of the number of staff and construction vehicles can be provided and assessed (if required). Construction vehicular traffic is temporary in nature and is not expected to exceed the operating capacities of nearby intersections or be substantially greater than the assessed operation of the proposed development as detailed within this report.

Generally during construction, staff traffic will arrive to the site around 7:00am and depart the site around 5:00pm (or earlier), Monday to Saturday, with construction deliveries provided throughout the day. Considering the location and constraint of the site and surrounding environs, it is expected that all staff car parking will need to park on-street within the available unrestricted parking areas, whilst all construction vehicular traffic will require Works Zone from Eton Street, Merton Street or both. The site manager is to promote the use of carpooling amongst staff and public transport usage to reduce the construction staff on-street car parking demand. It is highly unlikely that heavy construction traffic in conjunction with staff traffic will exceed the assessed 175 peak hour movements.

Once a builder is engaged, the methodology of the build will be detailed within a detailed Construction Traffic Management Plan (CTMP), to be approved by Council. One methodology that may be adopted is that Merton Street will be used for all construction traffic (including emergency vehicles) and temporarily be closed to the public, unless it can be shown that construction does not require the full length of Merton Street. Appropriate Type A & B hoarding will be implemented where required, with pedestrians detoured away from the construction site / construction vehicles within Merton Street. Small vehicles (up to 8.8m length Medium Rigid Vehicles) will be able to forward in / forward out onto Flora Street from Merton Street, with larger vehicles being required to reverse into Merton Street / forward out onto Merton Street under the appropriate traffic control plan.

Considering Eton Street is a highly pedestrianised area, construction activity should be limited from Eton Street and should be undertaken only if required. Suitable hoarding will need to be installed along pedestrian paths to maintain pedestrian routes or detours provided. Further, it is recommended that all construction vehicular traffic be restricted to occur outside of peak school drop-off and pick-up periods.

Based upon the above methodology there will be no impact to existing public transport facilities, namely bus and train facilities. Temporary loss of parking would occur to Merton Street and there will be no major detours for pedestrians or cyclists.

In the event that a mobile crane / tower crane is required for the site, it is expected that this will be delivered to the site outside of peak operating hours of the town centre (i.e. after 9:00pm), such that it can be installed from Eton Street. If this is not possible a mobile crane / tower crane will need to rely upon Merton Street, such that there may be the need for the existing planter box fronting Flora Street to be temporarily removed (or permanently

removed) to facilitate access. The planter box can be restored once construction is complete, or alternatively modified to allow a smaller planter box and a two-way driveway into Merton Street. The delivery and approval of mobile crane / tower crane is subject to a separate application to Council as part of the Construction Traffic Management Plan.

Clarification on construction vehicle movements, staff numbers and methodology will need to be confirmed with the builder during the submission of a detailed construction traffic management plan during the construction certificate stage as part of a consent condition as mentioned previously.

It is expected that site amenities will be located in either Peace Park or at the northern end of Merton Street. All persons entering the site must report to the site office and be inducted into the site prior to entering the construction site as per standard OH&S requirements.

The public can notify Council of any incidents or complaints through Council's "Report an Issue" process. Council can then make direct contact with the Contractor responsible for the site under legislation. The Contractor will be required to maintain a register of all incidents and complaints, their status, actions and resolution.

It is noted that vehicles of up to a 20m length AV can access site using the existing road network, subject to the recommended modifications in **Section 3.4**, which will be required infrastructure works for the development, such that construction of the development should occur after road infrastructure works are completed, unless smaller construction vehicles are used. The haulage route for construction vehicles is shown in **Figure 10**. Swept path testing for the construction vehicle haulage route has been undertaken and is reproduced in **Annexure G**, in order to depict construction vehicle access and egress to and from the site between the nearest RMS classified road. Considering the use of the local road network of speeds limited to 50km/h and the use of signalised intersections there are not expected to be any safety issues associated with truck movements to and from the site. The existing town centre has existing 10km/h speed limits in areas of high pedestrian areas which are required to be followed by all motorists.

Heavy vehicles exiting the site will pass over cattle grids installed within the site and tyres will be washed down to remove any excess sediment. Roads will be swept and cleared where spoil has been tracked out as required. Silt protection and / or bund walls will be installed along the perimeter fencing and to all stormwater drains and pits.

6 CONCLUSION

In view of the foregoing, the subject Proposed Alteration and Additions to the Sutherland Entertainment Centre at 30 Eton Street, Sutherland (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic impact assessment are relevant to note:

- The redevelopment of the centre is reducing in its scale from **884** patrons to a maximum of **700** patrons (plus staff), such that the parking impacts of the development are reducing.

- Based upon a first principles parking assessment the redevelopment is expected to demand between **44** to **183** car parking spaces depending on the event type. The existing operation of the site is expected to demand between **44** to **394** car parking spaces depending on the event type which is a reduction of **211** (394 less 183) car parking spaces in future conditions. There is ample on-street parking available of 2 hours or greater for the peak operation of the site during peak parking periods of the town centre.

- While there is sufficient on-street capacity during peak parking periods within the town centre, it is recommended that the SEC management should seek to reduce the reliance of on-street parking by promoting the use of alternative transport modes, namely buses and trains, through a Green Travel Plan, available to the public. The promotion of public transport can be provided via public website notices and ticket sales through confirmation emails. In addition, SEC management should provide an Operational Plan of Management so to reduce its accumulative parking impacts by limiting back to back events during peak parking periods within the town centre.

- The operation of the SEC on a Friday afternoon period when events can overlap (Friday outdoor music and theatre use) will result in an anticipated parking demand of **324** parking spaces (**370** spaces during existing operations) for up to 1,200 patrons. At the time of the event which can occur there is a unrestricted availability of **847** spaces within 400m walking distance of the site. As such there is ample spare on-street parking availability for the proposed operation of the site. Although it is reiterated that overall the peak parking demand of the proposal is reducing in comparison to the existing operation of the site.

- The estimated number of buses required to fill the proposed SEC is **14** buses, reduced from **18**. Considering the existing bus stop facilities having a capacity of three (3) buses at any one time a Management Plan will be required to manage the arrival and departure rates of buses. This will need to be enforced by the operator, who will also be required to inform bus operators and schools of the processes. School presentations should be offset by at least one hour between events to allow for the arrival and departure of buses with minimal queuing impacts along Eton Street.

- The future loading facilities for the proposed development will not substantially change, the proposed development relocates the loading dock, providing a loading

dock capable of servicing an 8.8m length Medium Rigid Vehicle and a single car parking space / loading area capable of provide access to a B99 design vehicle for deliveries. All movements into and out of the loading areas are required to be undertaken as a reverse entry movement and forward exit movement, resulting in no change from existing conditions. Swept path testing has been undertaken and is reproduced in **Annexure G** for reference, demonstrating success entry and exit.

- Modifications will be required at the northern end of Merton Street to allow for Council's largest waste collection vehicle and the general NSW Fire Brigade vehicle to turn around within a three-point turn. Swept path testing has been undertaken and is reproduced in **Annexure G** showing that six (6) car parking spaces are required to be removed, plus works to the verge of Merton Street on the western side of the road to allow a mountable kerb for vehicles to rely upon to turn around.

- The existing and future SEC does not provide on-site loading facilities or vehicle access to be serviced by an AV as evident from the existing operation of 19m AV reversing down Merton Street. Considering this, it is recommended that any deliveries by vehicles in excess of an 8.8m length Medium Rigid Vehicle (i.e. Heavy Rigid Vehicles and Articulated Vehicles) be subject to a temporary road closure of Merton Street between Flora Street and Peace Park, such that delivery vehicles can be stored within Merton Street during special events and unloading / loading can take place. This operation should be detailed within a Special Event Management Plan, which should be updated yearly to reflect any new Special Events held each year and are to be approved by Council.

- Swept path testing has been undertaken for the haulage route of a 20m length Articulated Vehicle as defined by AS2890.2:2018 and are reproduced in **Annexure G** for reference. The results of the swept paths testing indicate that it is not possible for the existing road network to provide access to the site by a 20m length AV. Modifications will be required to facilitate the access and egress of a 20m length AV which are summarised below:

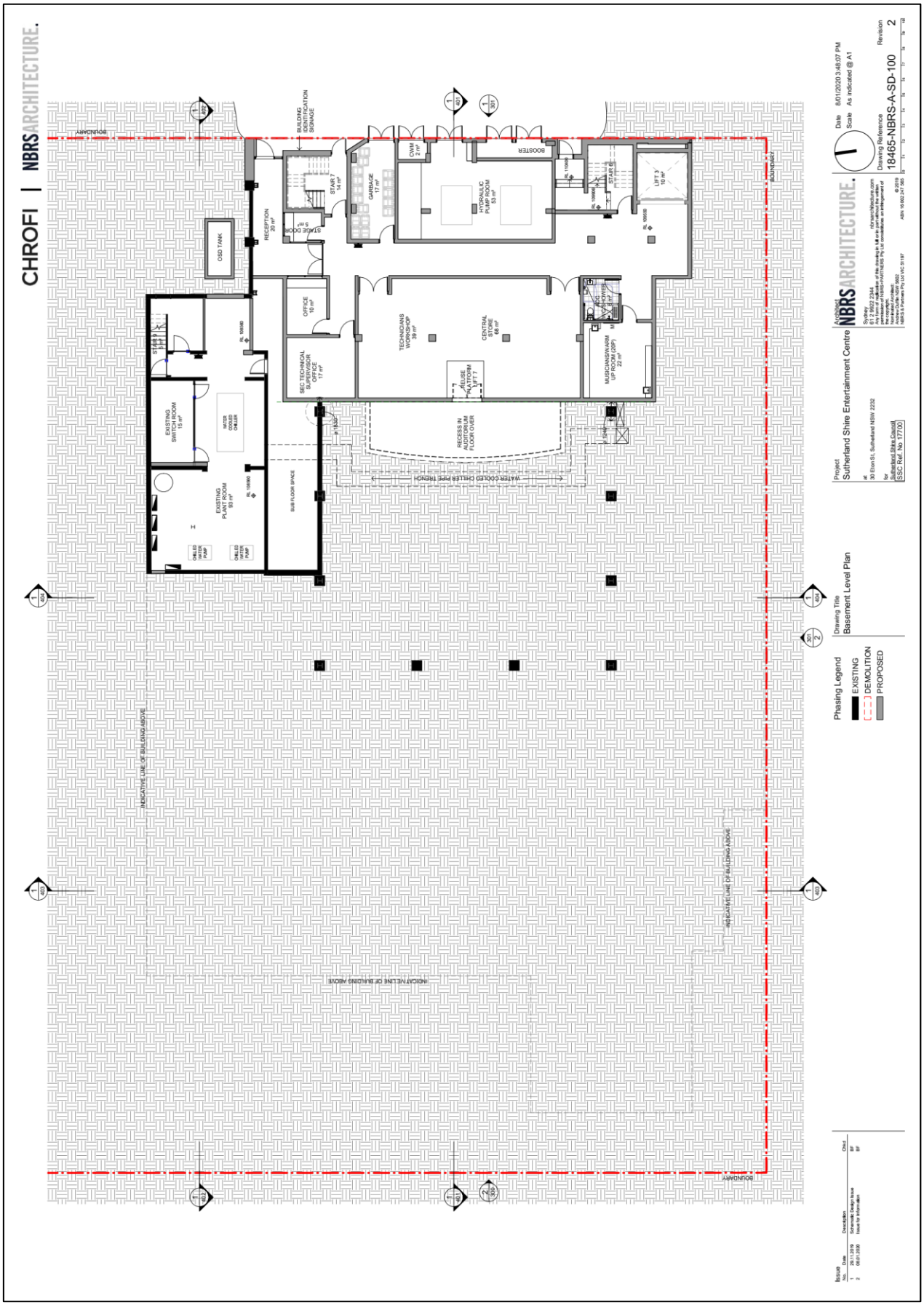
    - Modifications to the roundabout intersection of Flora Street / Eton Street to allow a greater mountable central island area;
    - Modifications to the Merton Street driveway, including a larger driveway splay to facilitate the left turn egress of 20m AV onto Flora Street.

- The peak traffic generation of the proposed development has been estimated to be some **175** trips for single events and **300** vehicle trips for accumulative events. The impacts of the traffic generation have been modelled using SIDRA INTERSECTION 8.0, indicating that there will be no detrimental impact to the performance of the intersections surrounding the site as a result of the proposal.

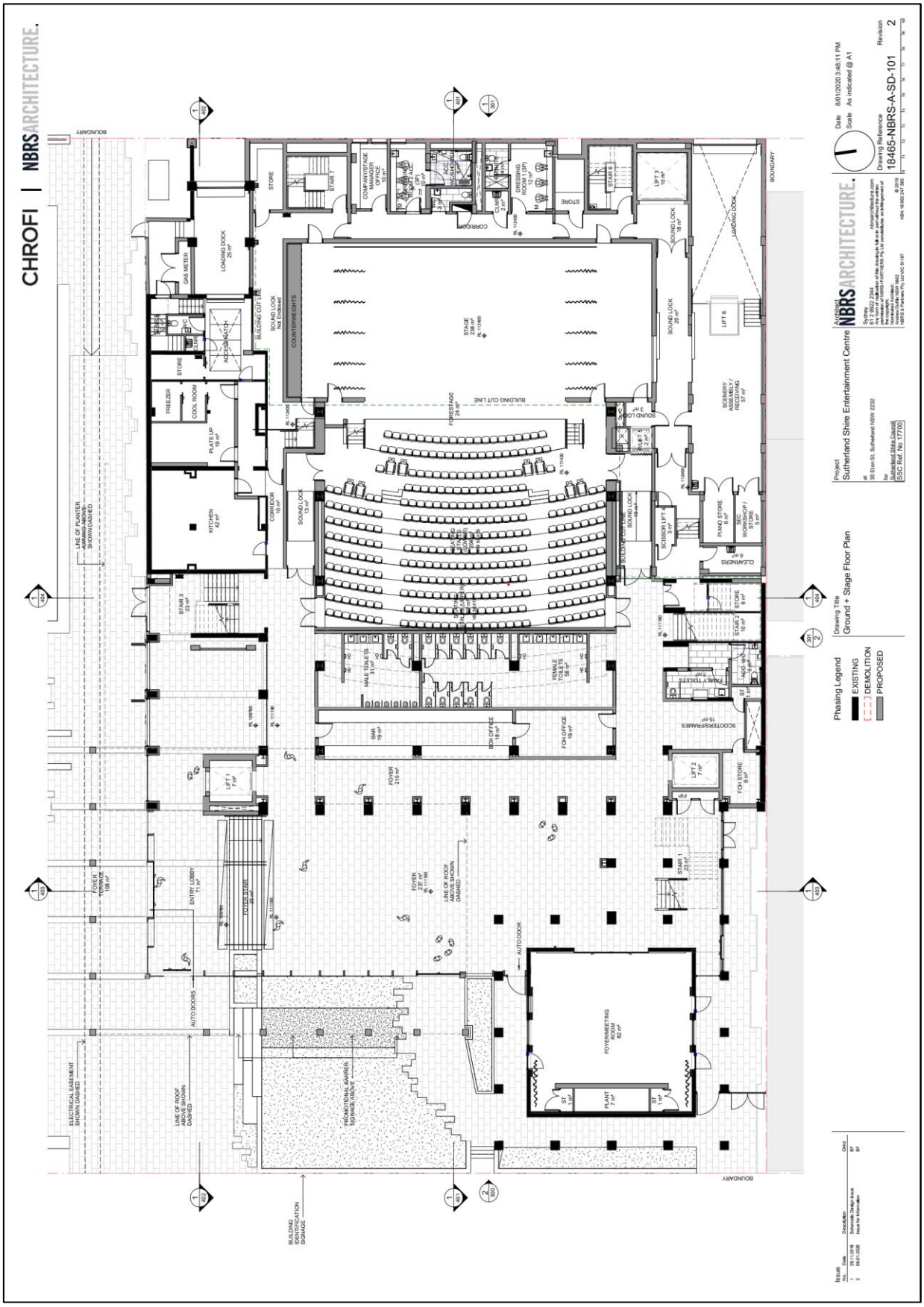
- The peak event of the SEC is reducing, such that the traffic impact of the future redevelopment compared to existing operations will improve existing road conditions. Regardless of this the SEC management should seek to minimise its traffic impacts

during the school pick-up and drop-off periods as this is one of the highest peak traffic flow conditions within the town centre. To reduce traffic flow from the proposed SEC, SEC management should seek to utilise bus services during peak school pick-up and drop-off periods and also promote the use of train services.

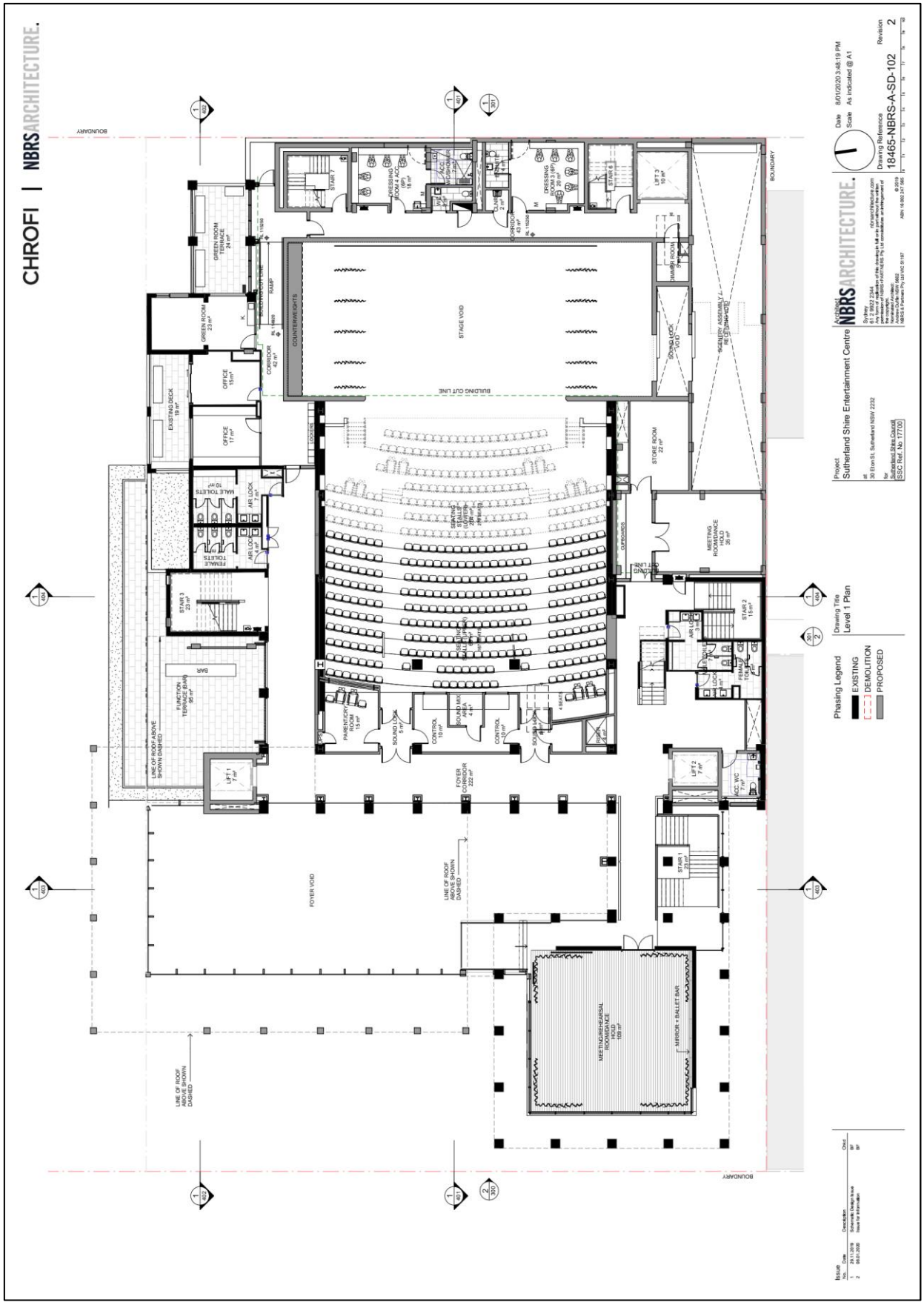
ANNEXURE A: PROPOSED PLANS
(Sheet 1 of 5)



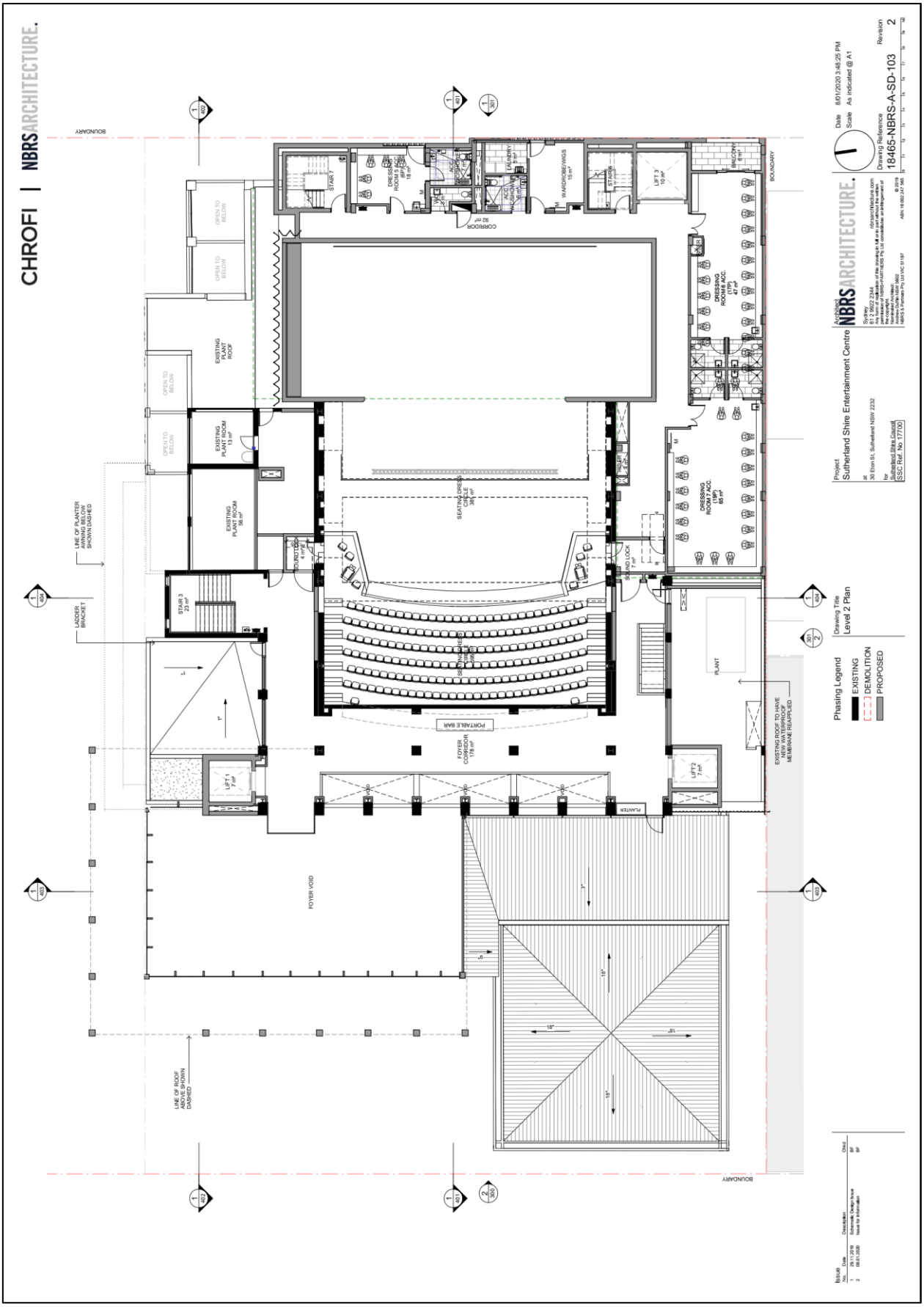
ANNEXURE A: PROPOSED PLANS
(Sheet 2 of 5)



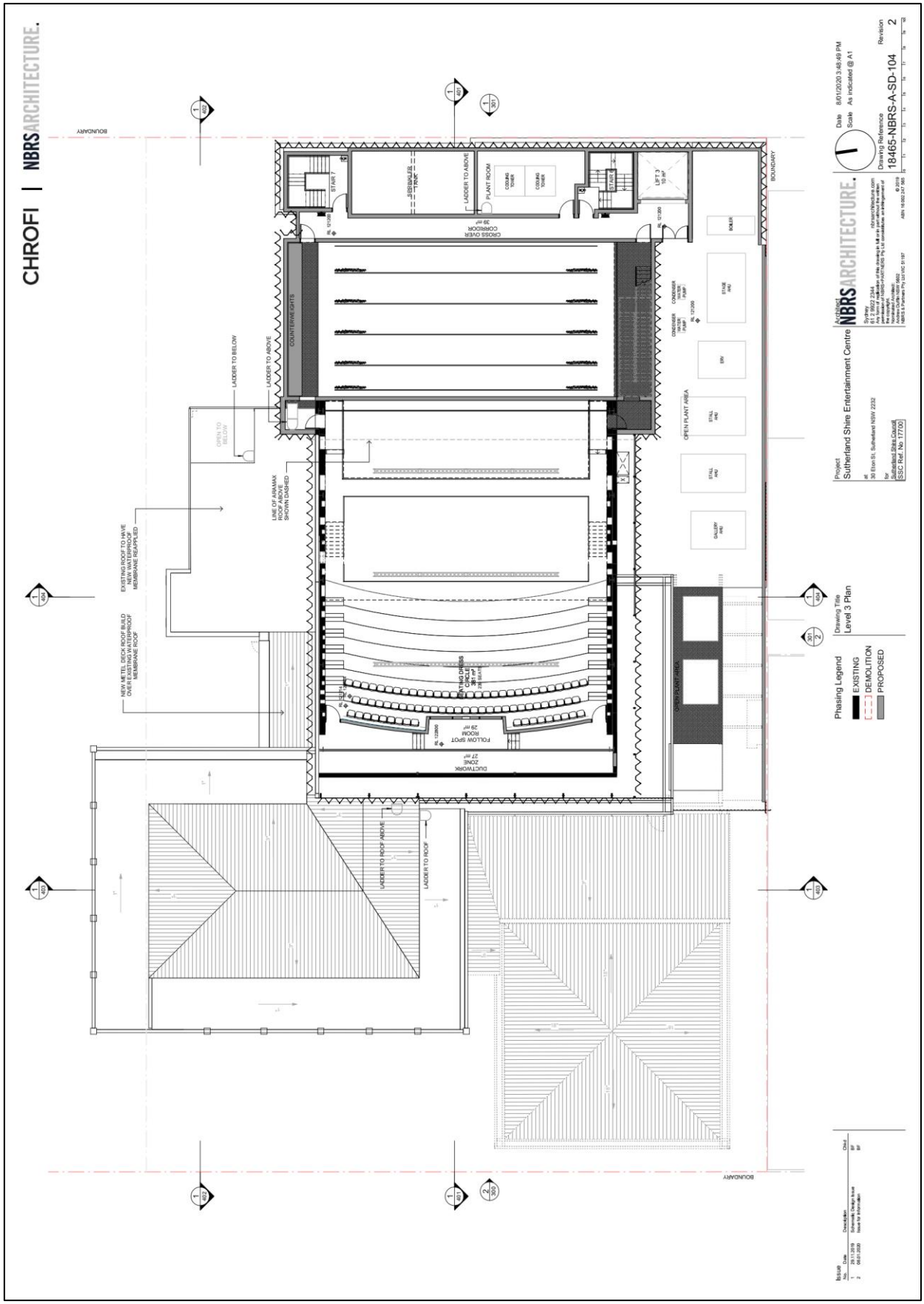
ANNEXURE A: PROPOSED PLANS
(Sheet 3 of 5)



ANNEXURE A: PROPOSED PLANS
(Sheet 4 of 5)



ANNEXURE A: PROPOSED PLANS
(Sheet 5 of 5)



	The EIS shall include a Traffic and Transport Impact Assessment that includes, but is not limited to the following: • analysis of the future daily and peak hour vehicle, public transport, pedestrian and bicycle movements likely to be generated by the proposed development and assessment of the impacts on the local road network, including key intersection capacity and any potential need for upgrading or road works (if required) • measures, to promote travel choices for employees and visitors, that support the achievement of State Plan targets, such as implementing a location-specific sustainable travel plan and provision of end of trip facilities for staff. • details of the proposed access, bicycle and car parking provision and end of trip facilities associated with the proposed development including compliance with the relevant parking codes and Australian Standards • details of servicing vehicle movements and site access arrangements including vehicle types and likely arrival and departure times of service vehicles, loading dock provision and access. **12. Construction** The EIS shall include a Construction and Pedestrian and Traffic Management Plan addressing: • details of peak hour and daily construction and servicing vehicle movements and access arrangements and cumulative impact from surrounding development sites, on the local road network, public transport services and parking (including the temporary loss of parking on the site) • road safety at key intersections and locations subject to heavy vehicle movements and high pedestrian activity • details of access arrangements for workers to/from the site, emergency vehicles and service vehicle movements • details of temporary cycling and pedestrian access during construction demonstrating that pedestrian and bicycle rider movements along footways and cycleways are maintained at all times during construction activities. Should the development require closure of either facility, adequate safety measures and diversion measures to limit time delay and detour distances should be detailed. • assessment of traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrians, cyclists and public transport operations - • potential impacts of the construction on surrounding areas including the public realm with respect to noise and vibration, air quality and odour impacts, dust and particle emissions, water quality, storm water runoff, groundwater seepage, soil pollution and construction waste. **13. Servicing and Waste** The EIS shall: • identify, quantify and classify the likely waste streams to be generated during construction and operation of the development and describe the measures to be implemented to minimise, manage, reuse, recycle and safely dispose of this waste with reference to relevant guidelines • identify appropriate servicing arrangements (including but not limited to, waste management, loading zones and mechanical plant) for the site. **14. Heritage (including Aboriginal Heritage)** The EIS shall: • include a Heritage Impact Statement (HIS), prepared by a suitably qualified Heritage Consultant identifying any state and local heritage items and conservation areas within the site and vicinity, documenting any impacts and proposed mitigation measures **15. Utilities**

Transport Roads & Maritime Services

30 October 2019

Our Ref: SYD19/01397
DP&E Ref: SSD 10379

The Executive Director
Department of Planning, Industry & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: David Glasgow

Dear Sir/Madam,

REQUEST FOR SEARS FOR SUTHERLAND ENTERTAINMENT CENTRE
30 ETON STREET, SUTHERLAND

Reference is made to your correspondence dated 21 October 2019, requesting Roads and Maritime Services (Roads and Maritime) to provide details of key issues and assessment requirements regarding the abovementioned development for inclusion in the Secretary's Environmental Assessment Requirements (SEARs).

Roads and Maritime has reviewed the submitted draft SEARs and request the following issues to be addressed as part of the traffic and transport impact assessment of the proposed development:

1. Daily and peak traffic movements likely to be generated by the proposed development including the impact on surrounding road network intersections and the need/associated funding for upgrading or road improvement works (if required).

2. Details of the proposed site access and parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards (i.e. turn paths, sight distance requirements, aisle widths, etc).

3. Detailing vehicle circulation, proposed number of car parking spaces and compliance with the appropriate parking codes.

4. Details of the light and heavy vehicle movements (including vehicle type and likely arrival and departure times), including service vehicle movements both for construction and for events.

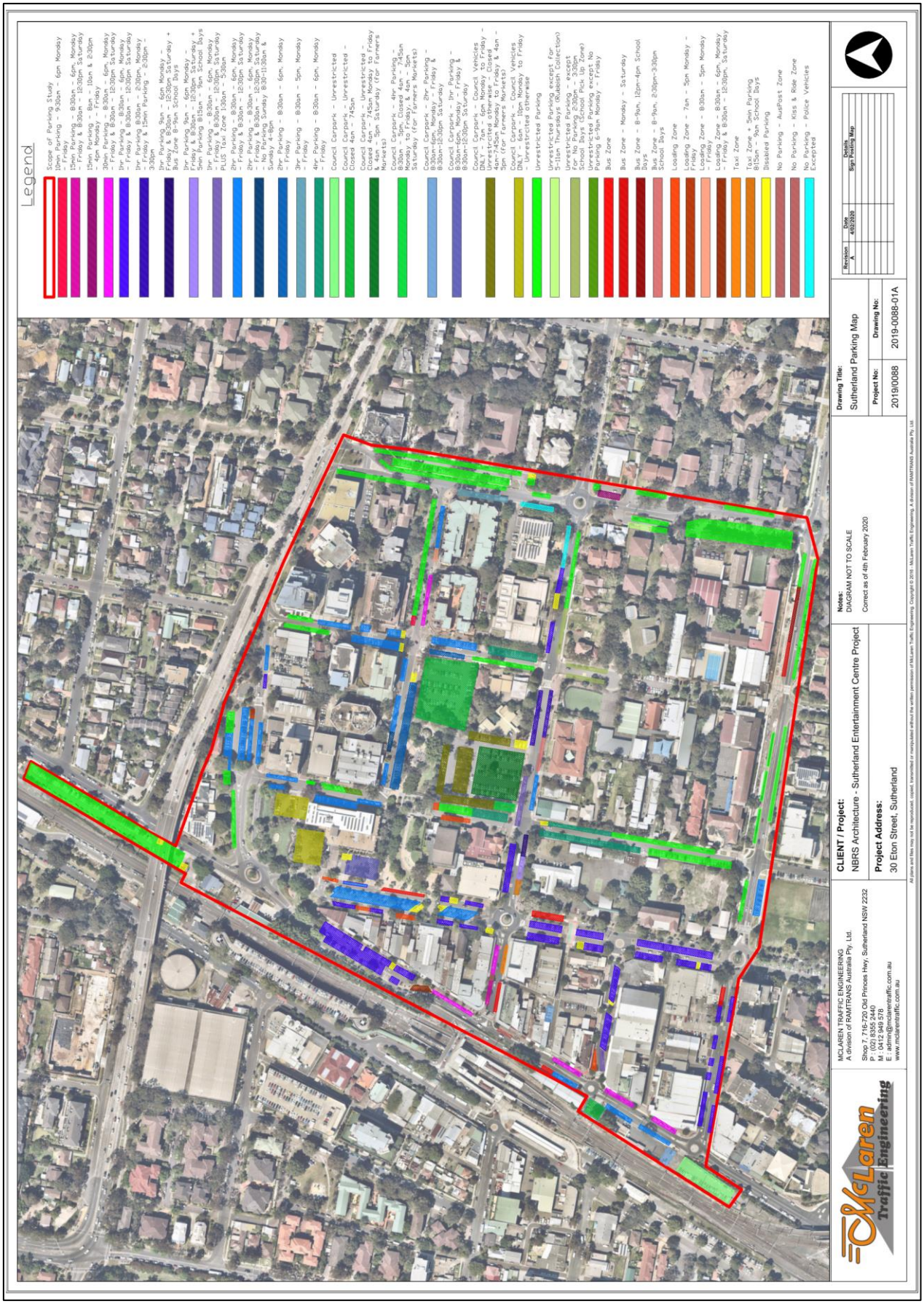
5. An assessment of the accessibility of the development by public and active transport.

Roads and Maritime Services

27-31 Argyle Street, Parramatta NSW 2150 |
PO Box 973 Parramatta NSW 2150 |
www.rms.nsw.gov.au | 13 22 13

ANNEXURE C: SIGNAGE & PARKING RESTRICTION MAP

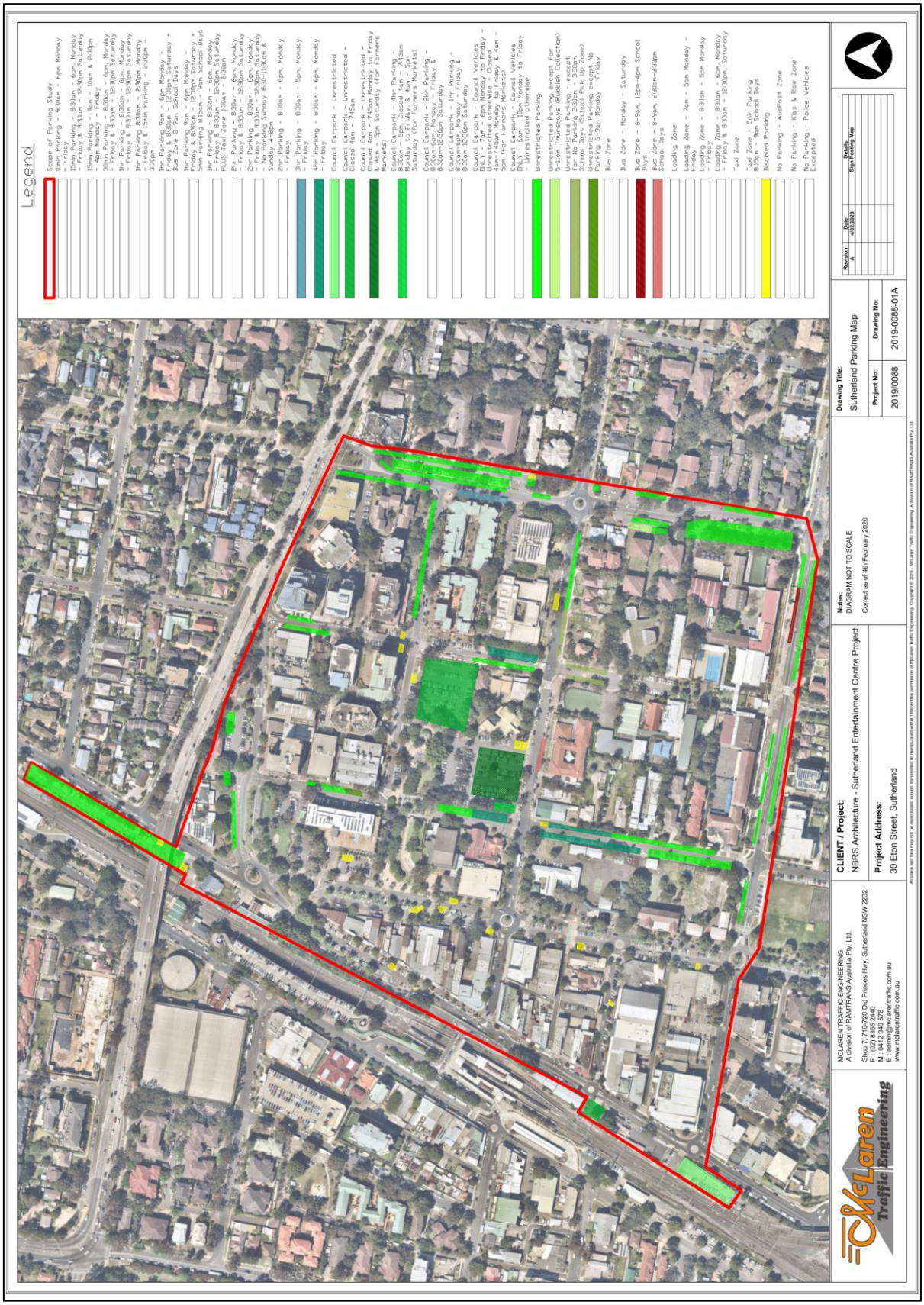
(Sheet 1 of 3)



ANNEXURE C: SIGNAGE & PARKING RESTRICTION MAP

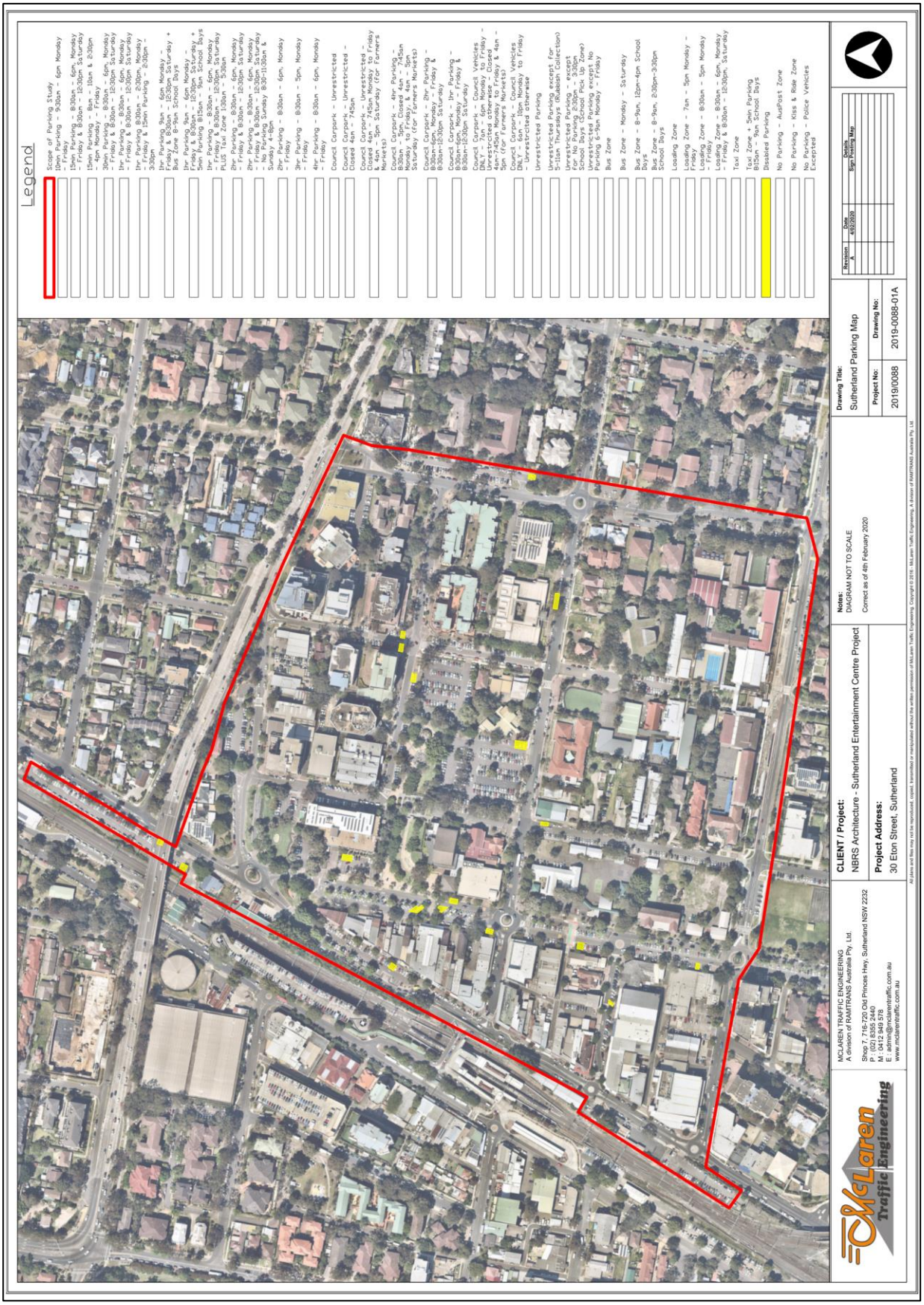
(Sheet 2 of 3)

Parking Areas of 2-hours or greater



ANNEXURE C: SIGNAGE & PARKING RESTRICTION MAP

(Sheet 3 of 3)



ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 1 of 7)

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Old Princes Hwy and Toronto Parade, Sutherland

GPS	*-34.029734, 151.059266*						
Date:	Mon 03/02/20	*North:*	Toronto Parade	*Survey*	AM:	6:30 AM-10:00 AM
Weather:	Overcast	*East:*	Old Princes Hwy	*Period*	PM:	2:30 PM-7:00 PM
Suburban	Sutherland	*South:*	Eton St	*Traffic*	AM:	8:15 AM-9:15 AM
Customer:	McLaren	*West:*	Old Princes Hwy	*Peak*	PM:	3:15 PM-4:15 PM

All Vehicles

Time		North Approach Toronto Parade				East Approach Old Princes Hwy				South Approach Eton St				West Approach Old Princes Hwy				Hourly Total	
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	1	32	25	12	1	15	17	9	0	0	37	2	0	2	5	92	1117	
6:45	7:00	2	50	23	9	1	15	25	8	1	0	42	2	0	2	8	94	1212	
7:00	7:15	2	36	25	17	1	14	14	10	0	1	34	3	1	2	4	99	1303	
7:15	7:30	1	50	40	14	0	25	27	13	0	2	39	1	0	4	8	98	1420	
7:30	7:45	3	52	42	12	0	27	23	4	0	5	49	2	0	6	9	111	1546	
7:45	8:00	1	59	43	19	0	26	16	18	0	1	48	6	0	4	14	118	1737	
8:00	8:15	1	56	59	24	0	16	18	22	1	2	64	5	0	7	11	94	1868	
8:15	8:30	0	63	64	47	0	35	27	15	0	4	70	2	0	2	12	107	1944	Peak
8:30	8:45	1	59	60	40	0	62	32	27	1	10	100	8	0	8	16	112	1878	
8:45	9:00	2	59	61	25	0	45	36	34	0	3	72	17	0	12	20	118	1692	
9:00	9:15	2	67	68	13	0	34	44	23	0	4	65	14	0	11	13	98	1581	
9:15	9:30	1	46	68	11	0	31	35	26	1	1	61	9	0	7	5	80		
9:30	9:45	0	54	48	15	0	27	22	22	0	3	60	11	0	9	9	70		
9:45	10:00	0	63	57	18	0	34	37	23	1	1	57	15	0	6	4	77		
14:30	14:45	1	52	75	20	0	34	45	29	0	2	57	10	0	2	8	62	1818	
14:45	15:00	0	60	50	29	0	40	46	45	0	1	60	9	0	5	8	83	1903	
15:00	15:15	2	71	66	40	0	37	36	35	0	0	68	7	0	5	11	89	1942	
15:15	15:30	5	73	80	22	0	66	51	32	0	4	87	11	0	5	16	66	1957	Peak
15:30	15:45	0	81	89	25	0	31	53	26	0	2	53	9	0	4	15	94	1874	
15:45	16:00	0	86	113	17	0	31	48	28	0	1	55	6	0	6	6	78	1804	
16:00	16:15	3	77	81	23	0	33	41	33	0	3	64	8	0	5	8	103	1799	
16:15	16:30	0	71	96	29	0	36	37	21	0	5	58	3	0	9	8	62	1774	
16:30	16:45	1	92	88	19	0	26	31	16	0	1	46	7	0	6	8	71	1778	
16:45	17:00	2	72	115	20	0	35	38	28	1	2	57	3	0	8	7	82	1822	
17:00	17:15	5	75	103	24	0	33	32	25	0	0	61	1	0	7	5	86	1777	
17:15	17:30	1	78	94	13	0	30	35	28	0	1	60	6	0	6	4	83	1671	
17:30	17:45	1	77	103	23	0	30	43	16	0	0	76	9	0	1	8	69	1575	
17:45	18:00	1	56	96	21	0	17	37	20	0	0	69	7	0	9	9	83	1409	
18:00	18:15	1	58	58	10	0	19	22	8	0	1	76	8	1	5	4	80	1244	
18:15	18:30	1	43	55	11	0	18	42	15	0	3	46	7	1	5	6	90		
18:30	18:45	0	56	46	9	0	18	35	13	0	1	38	9	0	2	5	58		
18:45	19:00	0	45	36	9	0	21	20	16	0	0	29	6	0	0	5	73		

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Flora St and Eton St, Sutherland

GPS	*-34.031937, 151.058771*						
Date:	Mon 03/02/20	*North:*	Eton St	*Survey*	AM:	6:30 AM-10:00 AM
Weather:	Overcast	*East:*	Flora St	*Period*	PM:	2:30 PM-7:00 PM
Suburban	Sutherland	*South:*	Eton St	*Traffic*	AM:	8:15 AM-9:15 AM
Customer:	McLaren	*West:*	Flora St	*Peak*	PM:	4:45 PM-5:45 PM

All Vehicles

Time		North Approach Eton St				East Approach Flora St				South Approach Eton St				West Approach Flora St				Hourly Total	
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	7	3	18	8	4	4	2	4	1	7	15	4	1	4	9	13	489	
6:45	7:00	3	2	17	12	1	6	2	5	1	9	24	0	2	8	8	12	577	
7:00	7:15	4	4	21	8	3	2	2	4	2	3	23	2	1	1	14	9	701	
7:15	7:30	1	4	31	21	0	14	7	8	1	8	18	6	0	12	30	9	878	
7:30	7:45	1	3	25	23	0	10	8	6	4	26	27	2	2	15	22	18	1016	
7:45	8:00	3	5	32	25	0	15	4	6	2	41	27	5	2	17	42	10	1196	
8:00	8:15	4	8	46	31	0	14	15	8	3	28	39	3	1	9	56	15	1270	
8:15	8:30	1	0	48	32	3	27	12	14	2	37	37	5	0	11	68	11	1274	Peak
8:30	8:45	2	10	49	35	4	42	17	31	2	32	60	5	0	19	49	15	1219	
8:45	9:00	15	10	53	29	7	27	12	18	3	27	32	6	2	23	28	18	1066	
9:00	9:15	12	10	46	34	5	13	7	14	10	21	39	3	3	18	30	19	999	
9:15	9:30	14	7	58	23	6	14	5	18	11	10	29	3	3	18	19	15		
9:30	9:45	17	2	44	16	4	7	5	12	4	16	38	9	3	17	13	12		
9:45	10:00	11	8	51	17	3	11	4	16	11	14	41	8	1	7	29	11		
14:30	14:45	11	6	63	26	4	13	8	28	6	16	37	1	1	17	27	8	1199	
14:45	15:00	6	6	68	20	7	16	6	22	21	16	40	6	2	18	32	8	1204	
15:00	15:15	7	9	61	29	10	21	15	10	8	26	41	8	2	14	31	6	1192	
15:15	15:30	7	6	85	19	2	29	23	32	5	17	56	4	0	11	29	10	1181	
15:30	15:45	10	2	83	24	0	10	8	19	9	16	37	6	3	19	24	7	1154	
15:45	16:00	7	5	91	44	0	12	3	14	8	14	36	6	1	9	25	7	1139	
16:00	16:15	4	7	90	18	1	9	4	27	6	10	49	3	1	17	28	13	1170	
16:15	16:30	6	5	93	22	0	11	7	27	5	23	40	4	1	29	26	9	1168	
16:30	16:45	1	1	81	27	5	15	7	15	8	9	31	5	2	19	29	7	1181	
16:45	17:00	4	4	118	26	2	11	8	23	5	8	42	7	1	22	26	6	1233	Peak
17:00	17:15	5	5	102	23	1	7	7	37	6	12	43	5	0	8	17	7	1202	
17:15	17:30	6	3	104	15	0	8	9	29	2	20	48	8	0	29	35	5	1165	
17:30	17:45	5	5	92	18	2	17	9	34	7	15	56	7	0	17	23	7	1056	
17:45	18:00	4	7	91	23	0	13	5	26	3	6	55	4	2	20	19	4	922	
18:00	18:15	4	2	53	12	2	10	7	18	4	11	64	4	3	22	25	7	788	
18:15	18:30	3	1	58	13	2	3	8	13	4	14	43	2	1	21	19	7		

ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 3 of 7)

TURNING MOVEMENT SURVEY

Intersection of Flora St and Belmont St, Sutherland

GPS	*-34.032317, 151.061442*						
Date:	Mon 03/02/20	***North:***	Belmont St	***Survey***	AM:	6:30 AM-10:00 AM
Weather:	Overcast	***East:***	Flora St	***Period***	PM:	2:30 PM-7:00 PM
Suburban.	Sutherland	***South:***	Belmont St	***Traffic***	AM:	8:15 AM-9:15 AM
Customer:	McLaren	***West:***	Flora St	***Peak***	PM:	2:30 PM-3:30 PM

All Vehicles

Time		North Approach Belmont St				East Approach Flora St				South Approach Belmont St				West Approach Flora St				Hourly Total	
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	0	0	0	2	1	0	11	0	0	0	0	0	0	0	23	4	237	
6:45	7:00	0	1	2	3	0	3	8	3	0	0	0	0	0	1	25	2	331	
7:00	7:15	0	3	1	5	0	1	11	4	0	1	0	2	0	2	22	5	440	
7:15	7:30	0	1	0	2	1	5	21	5	0	2	1	4	0	11	33	5	542	
7:30	7:45	0	2	1	5	0	7	36	9	0	2	0	8	0	10	48	7	693	
7:45	8:00	0	2	0	7	0	21	38	13	0	6	0	3	0	10	41	16	874	
8:00	8:15	0	4	1	11	0	6	24	5	0	12	0	6	0	14	61	15	966	
8:15	8:30	0	7	4	22	0	1	56	5	0	23	5	27	1	22	51	18	973	Peak
8:30	8:45	0	5	5	32	0	6	54	53	0	12	5	43	0	4	73	24	875	
8:45	9:00	0	7	6	13	0	6	36	33	0	15	4	29	0	7	63	30	672	
9:00	9:15	0	5	1	23	2	10	25	5	0	4	1	6	0	5	63	16	564	
9:15	9:30	0	3	2	19	1	9	30	6	0	6	2	3	0	1	46	16		
9:30	9:45	0	10	1	13	1	6	20	3	0	1	1	3	0	4	39	11		
9:45	10:00	0	9	2	14	2	4	32	4	0	4	4	3	0	3	44	16		
14:30	14:45	0	19	2	25	0	3	35	4	0	3	1	5	1	2	49	14	834	Peak
14:45	15:00	0	17	1	19	0	5	35	1	0	1	0	3	0	3	56	17	799	
15:00	15:15	0	6	0	32	0	10	26	36	0	6	5	22	0	2	85	8	767	
15:15	15:30	0	8	2	33	0	1	13	52	0	17	8	47	0	2	67	25	643	
15:30	15:45	0	9	0	24	0	3	23	2	0	3	0	3	0	2	51	8	513	
15:45	16:00	0	11	0	17	0	4	20	2	0	4	1	2	0	1	55	9	523	
16:00	16:15	0	7	0	22	0	0	17	1	0	1	1	1	0	1	51	12	535	
16:15	16:30	0	13	3	19	0	6	20	3	0	4	0	8	0	3	58	8	577	
16:30	16:45	0	8	0	23	0	4	19	4	0	4	1	2	0	2	66	5	590	
16:45	17:00	0	13	1	21	0	3	21	2	0	9	1	3	0	0	51	13	600	
17:00	17:15	0	26	0	33	1	2	20	0	0	1	0	5	0	4	57	7	573	
17:15	17:30	0	15	0	27	1	1	29	3	0	3	0	2	0	2	67	8	526	
17:30	17:45	0	14	0	18	1	1	29	2	0	6	1	4	0	2	61	9	435	
17:45	18:00	0	13	0	15	0	0	24	5	0	4	1	1	0	0	44	4	376	
18:00	18:15	0	6	0	15	3	2	20	1	0	4	0	0	0	0	51	7	333	
18:15	18:30	0	7	0	9	1	1	8	1	0	0	0	0	0	0	37	3		
18:30	18:45	0	7	0	9	0	3	26	0	0	0	0	0	1	0	32	11		
18:45	19:00	0	4	0	8	0	3	12	2	0	1	0	1	0	0	33	4		

ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 4 of 7)

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Stapleton St and Belmont St, Sutherland

GPS	*-34.031147, 151.061678*						
Date:	Mon 03/02/20	*North:*	Belmont St	*Survey*	AM:	6:30 AM-10:00 AM
Weather:	Overcast	*East:*	Stapleton St	*Period*	PM:	2:30 PM-7:00 PM
Suburban	Sutherland	*South:*	Belmont St	*Traffic*	AM:	8:15 AM-9:15 AM
Customer:	McLaren	*West:*	Stapleton St	*Peak*	PM:	2:30 PM-3:30 PM

All Vehicles

Time		North Approach Belmont St				East Approach Stapleton St				South Approach Belmont St				West Approach Stapleton St				Hourly Total	
Period Star	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
6:30	6:45	0	0	0	2	0	0	5	1	0	1	1	1	0	1	13	1	150	
6:45	7:00	0	0	5	2	0	2	10	0	0	2	1	2	0	0	12	2	182	
7:00	7:15	0	0	5	1	0	2	6	3	0	1	3	2	0	2	15	2	249	
7:15	7:30	0	0	3	2	0	2	7	3	0	1	3	2	0	2	18	1	304	
7:30	7:45	0	3	4	4	0	8	4	7	0	2	1	1	0	3	17	4	384	
7:45	8:00	0	2	7	7	0	4	6	26	0	3	4	3	0	21	15	7	525	
8:00	8:15	0	0	8	8	1	3	13	12	0	3	7	4	0	10	23	5	563	
8:15	8:30	0	3	10	3	0	6	13	18	0	7	7	8	0	22	22	5	576	Peak
8:30	8:45	0	4	5	7	0	10	41	17	0	8	14	18	0	32	31	12	542	
8:45	9:00	0	1	7	6	0	8	30	16	0	10	15	14	0	8	15	13	463	
9:00	9:15	0	2	4	3	0	9	14	14	0	10	7	8	0	15	12	12	442	
9:15	9:30	0	1	8	5	0	7	12	10	0	6	9	7	0	5	10	10		
9:30	9:45	0	0	14	4	0	9	9	7	0	4	13	7	0	13	15	25		
9:45	10:00	0	1	12	9	2	6	11	7	0	4	12	12	0	9	24	13		
14:30	14:45	0	3	11	3	0	10	12	22	0	5	5	7	0	12	22	10	558	Peak
14:45	15:00	0	3	7	8	0	10	9	18	0	10	8	8	1	17	18	7	533	
15:00	15:15	0	4	9	9	0	11	20	14	0	14	5	10	0	31	26	16	474	
15:15	15:30	0	0	11	12	0	5	10	6	0	13	16	18	0	12	24	16	404	
15:30	15:45	0	1	8	4	0	6	8	6	0	5	4	4	0	15	23	13	363	
15:45	16:00	0	0	5	4	0	2	4	7	0	5	7	3	0	10	10	8	343	
16:00	16:15	0	1	7	7	0	7	7	7	0	4	9	1	0	13	27	9	371	
16:15	16:30	0	1	16	1	0	4	5	6	0	5	8	8	0	10	29	9	389	
16:30	16:45	0	1	7	6	0	3	5	5	0	8	2	7	0	12	14	7	367	
16:45	17:00	0	0	10	3	0	1	7	4	0	6	7	11	0	14	25	5	377	
17:00	17:15	0	1	15	9	0	3	9	6	0	6	11	6	0	22	26	3	351	
17:15	17:30	0	0	14	8	0	2	6	6	0	3	5	3	0	15	15	3	294	
17:30	17:45	0	0	7	5	0	4	2	8	0	6	10	5	0	10	25	5	260	
17:45	18:00	0	0	9	3	0	4	4	5	0	5	0	5	0	10	18	4	223	
18:00	18:15	0	0	5	4	0	2	7	1	0	4	7	1	0	8	17	4	202	
18:15	18:30	0	1	3	4	0	5	4	4	0	2	2	0	0	5	14	2		

ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 5 of 7)

Curtis Traffic Surveys

Job:	200204mcl (19_0088)
Client:	McLaren Traffic Engineering
Day, date	3/02/20
Location:	Sutherland
Weather:	Fine
Surveyor	MC

							Parking round commencing...						
Zone	Street	From	To	Side of Street	Capacity	Restriction	6:30	7:00	7:30	8:00	8:30	9:00	9:30
a	Toronto Pd	railway parking			77	75u+2dis	15	32	42	59	71	75	76
b	Old Prince's H	Toronto Pd	Merton St	north	13	u, inc 4 a	12	12	13	14	15	15	15
c	Merton St	Old Prince's H	Stapleton Av	east	18	4*2p(std)+	9	9	10	11	12	13	14
d	Merton St	Stapleton Av	Old Prince's H	west	18	2p(std) m	3	4	8	10	12	16	15
e	off street spaces west of Merton St				21	res2	9	10	13	15	16	16	17
f	Old Prince's H	angled spaces to north			40	1p(std), in	8	8	8	15	21	26	30
g	Old Prince's H	Merton St	Belmont St	north	10	7*2p(std)+	0	1	0	0	3	5	6
h	Old Prince's H	Merton St	Belmont St	south	9	7*2p(std)+	2	3	6	8	9	11	10
I	Belmont St	Old Prince's H	Stapleton Av	east	14	3u+10*2p	5	5	6	7	9	9	9
j	Belmont St	Old Prince's H	Stapleton Av	west	14	1dis+10*2	7	7	8	10	11	14	13
k	Stapleton Av	Belmont St	Merton St	south	27	26*2p3+1	2	2	2	3	10	13	13
l	Stapleton Av	Merton St	Belmont St	north	10	8*2p(std)+	1	3	5	6	6	7	7
m	Stapleton Av	Belmont St	Glencoe St	north	20	1*p5+19u	19	18	21	20	20	19	20
n	Glencoe St	Stapleton Av	Old Prince's H	west kerb	8	u	8	8	8	7	6	7	7
o	Glencoe St	Stapleton Av	Old Prince's H	west medi	11	u	8	9	12	12	12	12	12
p	Glencoe St	Old Prince's H	Stapleton Av	east medi	16	u	14	14	14	14	15	17	17
q	Glencoe St	Old Prince's H	Stapleton Av	east kerb	11	4*w6+7u	10	12	12	12	12	12	12
r	Glencoe St	Stapleton Av	Flora St	east kerb	11	10u+1dis	10	10	11	11	11	12	12
s	Glencoe St	Stapleton Av	Flora St	east medi	15	u	12	11	9	9	10	10	11
t	Glencoe St	Flora St	Stapleton Av	west medi	10	u	9	9	9	10	11	12	10
u	Glencoe St	Flora St	Stapleton Av	west kerb	7	7*3p7	9	9	9	9	9	9	9
v	Stapleton Av	Glencoe St	Belmont St	south	15	7*2p(std)+	6	7	7	10	11	14	14
w	Belmont St	Stapleton Av	Flora St	east	31	15*2p(std	2	3	8	12	27	31	29
x	off street west of Belmont St		*chained shut till 7:30*		89	ux	9	9	9	75	82	88	87
y	Belmont St	Flora St	Stapleton Av	west	15	10u+5*2p	14	12	12	10	14	15	15
z	Flora St	Belmont St	Glencoe St	north	20	17*1p(std	13	12	11	7	11	14	15
aa	Glencoe St	Flora St	President Av	east kerb	13	u	9	10	11	11	14	14	12
ab	Glencoe St	Flora St	President Av	east medi	10	10*1/4p+	5	4	3	3	6	8	8
ac	Glencoe St	President Av	Flora St	west medi	29	u	20	20	20	21	23	26	27
ad	Glencoe St	President Av	Flora St	west kerb	36	34u+2*np	21	21	18	19	18	18	17
ae	Flora St	Glencoe St	Belmont St	south	16	11u+5*np	13	12	15	16	16	16	16
af	Belmont St	Flora St	end	east	6	np11	4	4	4	4	4	4	4
ag	Belmont St	end	Flora St	west	6	np11	4	4	5	5	5	6	6
ah	Flora St	Belmont St	Merton St	south	18	8*1p12+5	2	3	4	8	16	16	15
ai	Flora St	Belmont St	Merton St	north	14	1p(std)	11	10	7	2	11	12	12
aj	off street nth Flora				164	79*c12*8	2	4	42	84	93	105	103
ak	Merton St	Flora St	President Av	east	22	1dis+8*4p	18	18	16	19	19	19	20
aL	Merton St	President Av	Flora St	west	60	28u+32*4	23	22	25	29	36	40	42
am	Merton St	Flora St	end	west		np	0	0	0	0	0	0	0
an	Merton St	end	Flora St	east	25	4p14	4	4	10	16	17	12	5
ao	Flora St	Merton St	Eton St	south	6	3*1p(std)+	3	2	1	0	3	5	5
ap	Flora St	Merton St	Eton St	north	16	4p7	8	8	8	8	7	8	6
aq	Eton St	Flora St	President Av	east kerb		bike lane	0	0	0	0	0	0	0
ar	Eton St	Flora St	President Av	east medi		none prov	0	0	0	0	0	0	0
as	President Av	Eton St	Merton St	north	5	u	0	0	0	0	1	1	0
at	President Av	Merton St	Glencoe St	north	34	14u+4*bz	2	3	3	4	4	4	5
au	President Av	Glencoe St	Belmont St	south	17	15u+2*np	6	6	6	6	6	7	7
av	President Av	Belmont St	Merton St	south	15	u	7	6	6	11	12	12	13
aw	President Av	Merton St	Eton St	south	14	2p(std) m	0	0	0	1	3	9	8
ax	President Av	Eton St	Gray St	south	4	1p(std)	0	0	1	3	4	3	4
ay	President Av	Gray St	Old Prince's H	south	10	1p(std)	3	6	4	3	5	5	5
az	President Av	Old Prince's H	Eton St	north	11	1p(std)	4	5	5	6	6	8	7
ba	Eton St	President Av	Boyle St	west kerb	21	1dis+20*1	3	4	5	10	11	9	16
bb	Eton St	President Av	Boyle St	west medi	28	1p(std)	3	5	3	9	8	18	26
bc	Boyle St	Eton St	Old Prince's H	south	26	22*1p(std	12	14	15	16	18	18	19
bd	Boyle St	Old Prince's H	Eton St	north		1lz	0	0	0	0	0	1	1
be	Eton St	Boyle St	Flora St	west kerb	20	1dis+19*1	5	6	5	8	8	12	13
bf	Eton St	Boyle St	Flora St	west medi	21	1p(std)	4	5	6	12	15	16	18
bg	Flora St	Eton St	Old Prince's H	south		ns, tz	0	0	0	0	0	0	1
bh	Old Prince's H	Flora St	Boyle St	east	5	1/2p(std)	1	2	2	3	5	4	4
bi	Old Prince's H	Boyle St	President Av	east	9	1/2p(std)	2	4	3	3	3	5	6
bj	Old Prince's H	President Av	Flora St	west	12	1dis+11*2	3	6	5	8	10	10	9
bk	Old Prince's H	Flora St	Toronto Pd	west park	27	1p(std)	3	4	3	7	9	12	15
bL	Old Prince's H	Eton St	Flora St	east parki	42	7*1/2p(st	4	4	6	15	24	23	27
bm	Flora St	Old Prince's H	Eton St	north	14	7*1p(std)+	6	7	6	6	7	7	7
bn	Eton St	Flora St	Old Prince's H	west kerb	10	1dis+9*1p	5	7	8	8	10	10	11
bo	Eton St	Flora St	Old Prince's H	west medi	29	2dis+27*2	9	11	12	12	19	24	21
bp	Eton St	Old Prince's H	Flora St	east medi	34	2dis+32*2	6	8	9	12	21	22	24
bq	Eton St	Old Prince's H	Flora St	east kerb	9	1dis+8*1p	2	3	3	3	7	8	9
br	off street east Eton				20	2dis+1*10	0	0	1	3	10	13	14
bs	another off st just north of "br"				16	res2	0	4	4	6	9	10	11

ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 6 of 7)

Curtis Traffic Surveys

Job:	200204mcl (19_0088)
Client:	McLaren Traffic Engineering
Day, date	3/02/20
Location:	Sutherland
Weather:	Fine
Surveyor	MC

							Parking round commencing…								
Zone	Street	From	To	Side of Street	Capacity	Restriction	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30
a	Toronto Pd	railway parking			77	75u+2dis	76	76	65	58	51	45	38	22	19
b	Old Prince's H	Toronto Pd	Merton St	north	13	u, inc 4 angl	13	13	12	11	11	8	6	4	1
c	Merton St	Old Prince's H	Stapleton Av	east	18	4*2p(std)+1	14	14	12	11	11	10	9	8	9
d	Merton St	Stapleton Av	Old Prince's H	west	18	2p(std) mark	14	15	16	15	14	11	9	8	5
e	off street spaces west of Merton St				21	res2	11	11	12	13	12	12	14	14	15
f	Old Prince's H	angled spaces to north			40	2p(std), inc 2	30	31	25	19	16	16	15	15	11
g	Old Prince's H	Merton St	Belmont St	north	10	7*2p(std)+3*	6	5	6	6	5	4	3	3	2
h	Old Prince's H	Merton St	Belmont St	south	9	7*2p(std)+2*	10	10	10	11	10	8	7	7	7
i	Belmont St	Old Prince's H	Stapleton Av	east	14	3u+10*2p(st	9	10	10	11	9	9	6	6	4
j	Belmont St	Old Prince's H	Stapleton Av	west	14	1dis+10*2p(	15	15	14	10	11	10	9	9	9
k	Stapleton Av	Belmont St	Merton St	south	27	26*2p3+1dis	18	19	16	14	13	13	10	10	11
l	Stapleton Av	Merton St	Belmont St	north	10	8*2p(std)+2*	8	9	7	6	5	5	5	6	6
m	Stapleton Av	Belmont St	Glencoe St	north	20	1*p5+19u	20	18	18	19	19	17	13	12	12
n	Glencoe St	Stapleton Av	Old Prince's H	west kerb	8	u	7	7	7	7	7	5	5	6	7
o	Glencoe St	Stapleton Av	Old Prince's H	west medi	11	u	11	11	10	10	8	8	7	7	6
p	Glencoe St	Old Prince's H	Stapleton Av	east media	16	u	15	16	14	13	12	12	12	13	14
q	Glencoe St	Old Prince's H	Stapleton Av	east kerb	11	4*w6+7u	11	10	10	7	5	5	5	4	4
r	Glencoe St	Stapleton Av	Flora St	east kerb	11	10u+1dis	11	10	11	10	10	10	9	9	9
s	Glencoe St	Stapleton Av	Flora St	east media	15	u	13	13	13	10	10	8	8	10	11
t	Glencoe St	Flora St	Stapleton Av	west medi	10	u	11	10	11	9	9	8	8	7	8
u	Glencoe St	Flora St	Stapleton Av	west kerb	7	7*3p7	7	6	6	6	6	7	8	8	8
v	Stapleton Av	Glencoe St	Belmont St	south	15	7*2p(std)+1*	16	15	11	8	8	7	8	7	7
w	Belmont St	Stapleton Av	Flora St	east	31	15*2p(std)+	24	25	22	20	18	15	6	4	4
x	off street west				89	ux	72	74	71	75	54	42	23	18	15
y	Belmont St	Flora St	Stapleton Av	west	15	10u+5*2p3	8	9	9	10	9	10	10	10	12
z	Flora St	Belmont St	Glencoe St	north	20	17*1p(std)+	4	6	6	7	10	9	8	9	10
aa	Glencoe St	Flora St	President Av	east kerb	13	u	10	11	10	11	9	8	7	7	7
ab	Glencoe St	Flora St	President Av	east media	10	10*1/4p+5n	2	3	4	3	2	3	3	4	4
ac	Glencoe St	President Av	Flora St	west medi	29	u	15	15	16	17	20	18	18	18	18
ad	Glencoe St	President Av	Flora St	west kerb	36	34u+2*np10	10	11	14	19	19	19	18	18	18
ae	Flora St	Glencoe St	Belmont St	south	16	11u+5*np11	7	10	12	16	12	10	4	5	2
af	Belmont St	Flora St	end	east	6	np11	3	2	4	4	4	4	3	4	4
ag	Belmont St	end	Flora St	west	6	np11	0	1	0	5	4	3	3	3	3
ah	Flora St	Belmont St	Merton St	south	18	8*1p12+5*b	0	2	1	8	6	5	4	3	4
ai	Flora St	Belmont St	Merton St	north	14	1p(std)	11	12	12	12	10	8	8	6	4
aj	off street nth Flora				164	79*c12*82u+	97	102	92	84	71	54	45	22	9
ak	Merton St	Flora St	President Av	east	22	1dis+8*4p14	20	21	18	19	17	12	10	10	9
aL	Merton St	President Av	Flora St	west	60	28u+32*4p1	27	27	28	29	29	29	24	19	20
am	Merton St	Flora St	end	west		np	0	0	0	0	0	0	0	0	0
an	Merton St	end	Flora St	east	25	4p14	21	23	17	16	14	5	3	0	0
ao	Flora St	Merton St	Eton St	south	6	3*1p(std)+3*	3	6	3	0	2	2	3	2	2
ap	Flora St	Merton St	Eton St	north	16	4p7	8	9	7	8	8	6	5	4	4
aq	Eton St	Flora St	President Av	east kerb		bike lane	0	0	0	0	0	0	0	0	0
ar	Eton St	Flora St	President Av	east media		none provide	0	0	0	0	0	0	0	0	0
as	President Av	Eton St	Merton St	north	5	u	0	0	0	0	0	0	0	1	0
at	President Av	Merton St	Glencoe St	north	34	14u+4*bz M	5	6	4	4	4	4	4	4	4
au	President Av	Glencoe St	Belmont St	south	17	15u+2*np16	4	5	3	3	5	8	12	12	14
av	President Av	Belmont St	Merton St	south	15	u	8	8	8	8	7	7	7	7	8
aw	President Av	Merton St	Eton St	south	14	2p(std) mark	3	2	2	1	3	4	3	2	0
ax	President Av	Eton St	Gray St	south	4	1p(std)	4	4	3	4	4	4	3	3	4
ay	President Av	Gray St	Old Prince's H	south	10	1p(std)	6	7	7	8	7	8	8	7	5
az	President Av	Old Prince's H	Eton St	north	11	1p(std)	10	9	10	8	9	10	9	8	8
ba	Eton St	President Av	Boyle St	west kerb	21	1dis+20*1p(	12	11	11	12	13	12	15	14	13
bb	Eton St	President Av	Boyle St	west medi	28	1p(std)	8	7	8	12	13	15	15	18	16
bc	Boyle St	Eton St	Old Prince's H	south	26	22*1p(std)+	19	19	16	18	15	18	15	7	9
bd	Boyle St	Old Prince's H	Eton St	north		1lz	0	1	1	0	0	0	0	0	0
be	Eton St	Boyle St	Flora St	west kerb	20	1dis+19*1p(	16	16	15	15	14	15	15	16	14
bf	Eton St	Boyle St	Flora St	west medi	21	1p(std)	15	16	13	15	16	18	16	17	15
bg	Flora St	Eton St	Old Prince's H	south		ns, tz	0	0	0	0	0	0	0	0	0
bh	Old Prince's H	Flora St	Boyle St	east	5	1/2p(std)	5	4	5	5	4	5	4	4	3
bi	Old Prince's H	Boyle St	President Av	east	9	1/2p(std)	8	7	6	8	7	6	7	7	6
bj	Old Prince's H	President Av	Flora St	west	12	1dis+11*2p(	11	11	11	10	11	10	11	12	10
bk	Old Prince's H	Flora St	Toronto Pd	west park	27	1p(std)	15	15	12	12	14	13	10	11	8
bL	Old Prince's H	Eton St	Flora St	east parki	42	7*1/2p(std)+	28	24	23	23	24	22	22	21	19
bm	Flora St	Old Prince's H	Eton St	north	14	7*1p(std)+7*	8	8	5	7	6	5	4	3	3
bn	Eton St	Flora St	Old Prince's H	west kerb	10	1dis+9*1p(st	8	8	7	6	7	7	6	2	2
bo	Eton St	Flora St	Old Prince's H	west medi	29	2dis+27*2p(	15	16	17	16	15	12	11	7	6
bp	Eton St	Old Prince's H	Flora St	east media	34	2dis+32*2p(	22	25	24	21	20	22	16	13	12
bq	Eton St	Old Prince's H	Flora St	east kerb	9	1dis+8*1p(st	5	5	5	4	5	6	4	2	2
br	off street east Eton				20	2dis+1*10mi	8	8	8	7	3	4	5	6	5
bs	another off st just north of "br"				16	res2	12	11	11	10	6	6	4	3	3

ANNEXURE D: PARKING AND INTERSECTION SURVEY RESULTS

(Sheet 7 of 7)

Curtis Traffic Surveys

Job:	200204mcl (19_0088)
Client:	McLaren Traffic Engineering
Day, date	1/02/20
Location:	Sutherland
Weather:	Fine
Surveyor	MC

							Parking round commencing…							
Zone	Street	From	To	Side of Street	Capacity	Restriction	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30
a	Toronto Pd	railway parking			77	75u+2dis	11	11	13	14	13	12	12	11
b	Old Prince's H	Toronto Pd	Merton St	north	13	u, inc 4 a	8	9	9	10	9	8	9	7
c	Merton St	Old Prince's H	Stapleton Av	east	18	4*2p(std)+	8	9	9	10	10	8	7	7
d	Merton St	Stapleton Av	Old Prince's H	west	18	2p(std) m	6	6	7	7	7	6	5	5
e	off street spaces west of Merton St				21	res2	10	11	11	12	11	11	11	10
f	Old Prince's H	angled spaces to north			40	2p(std), in	16	17	17	19	22	19	16	14
g	Old Prince's H	Merton St	Belmont St	north	10	7*2p(std)+	5	5	5	6	7	6	5	5
h	Old Prince's H	Merton St	Belmont St	south	9	7*2p(std)+	8	8	9	10	11	11	12	11
I	Belmont St	Old Prince's H	Stapleton Av	east	14	3u+10*2p	10	9	10	11	11	11	11	9
j	Belmont St	Old Prince's H	Stapleton Av	west	14	1dis+10*2	10	11	11	12	12	12	11	11
k	Stapleton Av	Belmont St	Merton St	south	27	26*2p3+1	9	10	11	11	10	9	5	5
l	Stapleton Av	Merton St	Belmont St	north	10	8*2p(std)+	5	5	5	6	6	6	5	5
m	Stapleton Av	Belmont St	Glencoe St	north	20	1*p5+19u	17	17	17	19	19	19	18	17
n	Glencoe St	Stapleton Av	Old Prince's H	west kerb	8	u	7	8	8	8	8	8	8	8
o	Glencoe St	Stapleton Av	Old Prince's H	west medi	11	u	11	11	11	9	8	7	7	7
p	Glencoe St	Old Prince's H	Stapleton Av	east media	16	u	13	15	15	16	16	14	15	14
q	Glencoe St	Old Prince's H	Stapleton Av	east kerb	11	4*w6+7u	11	11	11	11	10	10	7	7
r	Glencoe St	Stapleton Av	Flora St	east kerb	11	10u+1dis	10	11	12	16	15	10	9	9
s	Glencoe St	Stapleton Av	Flora St	east media	15	u	14	13	13	13	14	13	14	14
t	Glencoe St	Flora St	Stapleton Av	west medi	10	u	12	12	12	12	10	10	9	9
u	Glencoe St	Flora St	Stapleton Av	west kerb	7	7*3p7	9	9	9	8	8	7	6	6
v	Stapleton Av	Glencoe St	Belmont St	south	15	7*2p(std)+	11	11	11	11	11	10	10	10
w	Belmont St	Stapleton Av	Flora St	east	31	15*2p(std	29	29	28	22	20	16	14	14
x	off street west of Belmont St				89	ux	56	53	53	34	31	25	16	13
y	Belmont St	Flora St	Stapleton Av	west	15	10u+5*2p	13	12	12	11	11	9	8	8
z	Flora St	Belmont St	Glencoe St	north	20	17*1p(std	6	5	5	4	5	6	8	7
aa	Glencoe St	Flora St	President Av	east kerb	13	u	5	6	7	8	9	9	9	8
ab	Glencoe St	Flora St	President Av	east media	10	10*1/4p+	7	5	5	3	3	2	0	0
ac	Glencoe St	President Av	Flora St	west medi	29	u	12	13	13	14	13	8	6	6
ad	Glencoe St	President Av	Flora St	west kerb	36	34u+2*np	17	16	16	15	15	15	14	14
ae	Flora St	Glencoe St	Belmont St	south	16	11u+5*np	13	13	12	9	10	11	11	10
af	Belmont St	Flora St	end	east	6	np11	3	3	3	0	0	0	0	0
ag	Belmont St	end	Flora St	west	6	np11	4	4	3	3	3	1	0	0
ah	Flora St	Belmont St	Merton St	south	18	8*1p12+5	15	15	14	7	6	7	2	3
ai	Flora St	Belmont St	Merton St	north	14	1p(std)	11	11	10	3	3	2	0	0
aj	off street nth Flora				164	79*c12*8	51	48	50	27	20	14	6	4
ak	Merton St	Flora St	President Av	east	22	1dis+8*4p	19	19	18	15	16	11	8	7
aL	Merton St	President Av	Flora St	west	60	28u+32*4	36	37	37	38	34	31	27	26
am	Merton St	Flora St	end	west		np	0	0	0	0	0	0	0	0
an	Merton St	end	Flora St	east	25	4p14	21	21	22	17	12	11	10	10
ao	Flora St	Merton St	Eton St	south	6	3*1p(std)+	6	6	5	2	2	3	2	5
ap	Flora St	Merton St	Eton St	north	16	4p7	9	8	7	6	6	5	5	5
aq	Eton St	Flora St	President Av	east kerb		bike lane	0	0	0	0	0	0	0	0
ar	Eton St	Flora St	President Av	east media		none prov	0	0	0	0	0	0	0	0
as	President Av	Eton St	Merton St	north	5	u	0	0	1	2	2	1	0	0
at	President Av	Merton St	Glencoe St	north	34	14u+4*bz	4	4	2	2	1	1	1	1
au	President Av	Glencoe St	Belmont St	south	17	15u+2*np	5	5	6	6	7	5	5	5
av	President Av	Belmont St	Merton St	south	15	u	9	9	4	6	11	8	7	7
aw	President Av	Merton St	Eton St	south	14	2p(std) m	2	2	2	2	3	3	3	3
ax	President Av	Eton St	Gray St	south	4	1p(std)	4	4	4	4	4	4	4	4
ay	President Av	Gray St	Old Prince's H	south	10	1p(std)	8	8	8	7	8	7	8	8
az	President Av	Old Prince's H	Eton St	north	11	1p(std)	10	11	10	10	9	9	9	9
ba	Eton St	President Av	Boyle St	west kerb	21	1dis+20*1	12	13	14	15	15	15	15	15
bb	Eton St	President Av	Boyle St	west medi	28	1p(std)	20	24	24	20	18	19	18	16
bc	Boyle St	Eton St	Old Prince's H	south	26	22*1p(std	21	21	20	20	20	20	19	19
bd	Boyle St	Old Prince's H	Eton St	north		1lz	1	1	0	1	1	1	0	0
be	Eton St	Boyle St	Flora St	west kerb	20	1dis+19*1	14	14	14	14	14	13	12	11
bf	Eton St	Boyle St	Flora St	west medi	21	1p(std)	19	19	18	18	17	11	5	6
bg	Flora St	Eton St	Old Prince's H	south		ns, tz	1	1	1	1	1	0	0	0
bh	Old Prince's H	Flora St	Boyle St	east	5	1/2p(std)	4	3	4	4	4	4	5	4
bi	Old Prince's H	Boyle St	President Av	east	9	1/2p(std)	5	6	6	7	7	7	7	7
bj	Old Prince's H	President Av	Flora St	west	12	1dis+11*2	8	9	9	8	7	9	10	8
bk	Old Prince's H	Flora St	Toronto Pd	west park	27	1p(std)	15	16	18	19	20	19	18	18
bL	Old Prince's H	Eton St	Flora St	east parki	42	7*1/2p(st	24	26	25	26	27	26	25	24
bm	Flora St	Old Prince's H	Eton St	north	14	7*1p(std)+	8	8	8	7	7	8	8	8
bn	Eton St	Flora St	Old Prince's H	west kerb	10	1dis+9*1p	2	2	6	8	9	11	9	7
bo	Eton St	Flora St	Old Prince's H	west medi	29	2dis+27*2	15	19	20	20	19	17	18	18
bp	Eton St	Old Prince's H	Flora St	east media	34	2dis+32*2	20	22	23	22	22	16	10	6
bq	Eton St	Old Prince's H	Flora St	east kerb	9	1dis+8*1p	5	6	6	7	7	8	6	2
br	off street east Eton				20	2dis+1*10	8	8	8	8	1	1	1	0
bs	another off st just north of "br"				16	res2	5	5	4	3	0	0	0	0

MOVEMENT SUMMARY

Site: 101 [AM EX - Eton Street / Flora Street]

Roundabout Intersection of Eton Street / Flora Street
Existing Conditions
AM Peak Hour
Site Category: (None)
Roundabout

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: Eton St (S)												
1	L2	19	0.0	0.298	5.8	LOS A	1.9	13.0	0.49	0.63	0.49	51.8
2	T1	168	0.0	0.298	6.0	LOS A	1.9	13.0	0.49	0.63	0.49	52.8
3	R2	117	0.0	0.298	9.8	LOS A	1.9	13.0	0.49	0.63	0.49	52.6
3u	U	17	0.0	0.298	11.6	LOS A	1.9	13.0	0.49	0.63	0.49	53.3
Approach		321	0.0	0.298	7.7	LOS A	1.9	13.0	0.49	0.63	0.49	52.7
East: Flora St (E)												
4	L2	77	0.0	0.258	6.4	LOS A	1.6	11.1	0.57	0.70	0.57	51.4
5	T1	48	0.0	0.258	6.6	LOS A	1.6	11.1	0.57	0.70	0.57	52.5
6	R2	109	0.0	0.258	10.4	LOS A	1.6	11.1	0.57	0.70	0.57	52.2
6u	U	19	0.0	0.258	12.2	LOS A	1.6	11.1	0.57	0.70	0.57	52.9
Approach		253	0.0	0.258	8.6	LOS A	1.6	11.1	0.57	0.70	0.57	52.1
North: Eton St (N)												
7	L2	130	0.0	0.409	7.1	LOS A	2.8	19.4	0.67	0.73	0.67	51.7
8	T1	196	0.0	0.409	7.4	LOS A	2.8	19.4	0.67	0.73	0.67	52.7
9	R2	30	0.0	0.409	11.1	LOS A	2.8	19.4	0.67	0.73	0.67	52.5
9u	U	30	0.0	0.409	13.0	LOS A	2.8	19.4	0.67	0.73	0.67	53.2
Approach		386	0.0	0.409	8.0	LOS A	2.8	19.4	0.67	0.73	0.67	52.4
West: Flora St (W)												
10	L2	63	0.0	0.345	7.3	LOS A	2.2	15.4	0.66	0.74	0.66	51.5
11	T1	175	0.0	0.345	7.6	LOS A	2.2	15.4	0.66	0.74	0.66	52.5
12	R2	71	0.0	0.345	11.3	LOS A	2.2	15.4	0.66	0.74	0.66	52.2
12u	U	5	0.0	0.345	13.2	LOS A	2.2	15.4	0.66	0.74	0.66	52.9
Approach		314	0.0	0.345	8.5	LOS A	2.2	15.4	0.66	0.74	0.66	52.2
All Vehicles		1274	0.0	0.409	8.2	LOS A	2.8	19.4	0.60	0.70	0.60	52.4

MOVEMENT SUMMARY

Site: 101 [PM EX - Eton Street / Flora Street]

Roundabout Intersection of Eton Street / Flora Street
Existing Conditions
PM Peak Hour
Site Category: (None)
Roundabout

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: Eton St (S)												
1	L2	27	0.0	0.235	4.9	LOS A	1.4	10.0	0.34	0.54	0.34	52.7
2	T1	189	0.0	0.235	5.2	LOS A	1.4	10.0	0.34	0.54	0.34	53.7
3	R2	55	0.0	0.235	8.9	LOS A	1.4	10.0	0.34	0.54	0.34	53.5
3u	U	20	0.0	0.235	10.8	LOS A	1.4	10.0	0.34	0.54	0.34	54.2
Approach		291	0.0	0.235	6.3	LOS A	1.4	10.0	0.34	0.54	0.34	53.6
East: Flora St (E)												
4	L2	123	0.0	0.249	7.7	LOS A	1.6	10.9	0.69	0.76	0.69	51.4
5	T1	33	0.0	0.249	8.0	LOS A	1.6	10.9	0.69	0.76	0.69	52.4
6	R2	43	0.0	0.249	11.7	LOS A	1.6	10.9	0.69	0.76	0.69	52.2
6u	U	5	0.0	0.249	13.6	LOS A	1.6	10.9	0.69	0.76	0.69	52.9
Approach		204	0.0	0.249	8.7	LOS A	1.6	10.9	0.69	0.76	0.69	51.8
North: Eton St (N)												
7	L2	82	0.0	0.485	6.2	LOS A	3.6	25.3	0.59	0.63	0.59	52.1
8	T1	416	0.0	0.485	6.5	LOS A	3.6	25.3	0.59	0.63	0.59	53.2
9	R2	17	0.0	0.485	10.2	LOS A	3.6	25.3	0.59	0.63	0.59	52.9
9u	U	20	0.0	0.485	12.0	LOS A	3.6	25.3	0.59	0.63	0.59	53.6
Approach		535	0.0	0.485	6.8	LOS A	3.6	25.3	0.59	0.63	0.59	53.0
West: Flora St (W)												
10	L2	25	0.0	0.201	6.2	LOS A	1.1	7.9	0.51	0.65	0.51	51.8
11	T1	101	0.0	0.201	6.4	LOS A	1.1	7.9	0.51	0.65	0.51	52.9
12	R2	76	0.0	0.201	10.2	LOS A	1.1	7.9	0.51	0.65	0.51	52.6
12u	U	1	0.0	0.201	12.0	LOS A	1.1	7.9	0.51	0.65	0.51	53.3
Approach		203	0.0	0.201	7.8	LOS A	1.1	7.9	0.51	0.65	0.51	52.6
All Vehicles		1233	0.0	0.485	7.1	LOS A	3.6	25.3	0.54	0.64	0.54	52.9

MOVEMENT SUMMARY

Site: 101 [AM EX - Eton Street / Old Princes Highway / Toronto Parade]

Roundabout Intersection of Eton Street / Old Princes Highway / Toronto Parade
Existing Conditions
AM Peak Hour
Site Category: (None)
Roundabout

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: Eton Street												
1	L2	41	0.0	0.033	5.3	LOS A	0.2	1.2	0.47	0.54	0.47	54.0
2	T1	307	0.0	0.310	7.2	LOS A	2.2	15.2	0.71	0.71	0.71	52.9
3	R2	21	0.0	0.310	11.4	LOS A	2.2	15.2	0.71	0.71	0.71	52.8
3u	U	1	0.0	0.310	13.3	LOS A	2.2	15.2	0.71	0.71	0.71	53.6
Approach		370	0.0	0.310	7.2	LOS A	2.2	15.2	0.68	0.69	0.68	53.0
East: Old Princes Highway (E)												
4	L2	99	0.0	0.486	8.9	LOS A	3.7	26.0	0.77	0.86	0.84	50.2
5	T1	139	0.0	0.486	9.0	LOS A	3.7	26.0	0.77	0.86	0.84	51.4
6	R2	176	0.0	0.486	13.1	LOS A	3.7	26.0	0.77	0.86	0.84	51.1
6u	U	1	0.0	0.486	15.1	LOS B	3.7	26.0	0.77	0.86	0.84	52.0
Approach		415	0.0	0.486	10.7	LOS A	3.7	26.0	0.77	0.86	0.84	51.0
North: Toronto Parade												
7	L2	125	0.0	0.083	4.2	LOS A	0.5	3.3	0.24	0.47	0.24	54.7
8	T1	253	0.0	0.334	4.9	LOS A	2.5	17.4	0.36	0.55	0.36	53.4
9	R2	248	0.0	0.334	9.1	LOS A	2.5	17.4	0.36	0.55	0.36	53.3
9u	U	5	0.0	0.334	11.0	LOS A	2.5	17.4	0.36	0.55	0.36	54.0
Approach		631	0.0	0.334	6.4	LOS A	2.5	17.4	0.34	0.54	0.34	53.6
West: Old Princes Highway (W)												
10	L2	435	0.0	0.615	10.5	LOS A	6.1	42.7	0.85	0.93	1.03	50.0
11	T1	61	0.0	0.615	10.6	LOS A	6.1	42.7	0.85	0.93	1.03	51.2
12	R2	33	0.0	0.615	14.7	LOS B	6.1	42.7	0.85	0.93	1.03	51.0
12u	U	1	0.0	0.615	16.7	LOS B	6.1	42.7	0.85	0.93	1.03	51.8
Approach		530	0.0	0.615	10.8	LOS A	6.1	42.7	0.85	0.93	1.03	50.2
All Vehicles		1946	0.0	0.615	8.7	LOS A	6.1	42.7	0.63	0.74	0.70	52.0

MOVEMENT SUMMARY

Site: 101 [PM EX - Eton Street / Old Princes Highway / Toronto Parade]

Roundabout Intersection of Eton Street / Old Princes Highway / Toronto Parade
Existing Conditions
PM Peak Hour
Site Category: (None)
Roundabout

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: Eton Street												
1	L2	34	0.0	0.030	5.8	LOS A	0.2	1.2	0.56	0.57	0.56	53.7
2	T1	259	0.0	0.282	7.9	LOS A	2.0	14.3	0.77	0.75	0.77	52.7
3	R2	10	0.0	0.282	12.1	LOS A	2.0	14.3	0.77	0.75	0.77	52.6
3u	U	1	0.0	0.282	14.0	LOS A	2.0	14.3	0.77	0.75	0.77	53.3
Approach		304	0.0	0.282	7.8	LOS A	2.0	14.3	0.75	0.73	0.75	52.8
East: Old Princes Highway (E)												
4	L2	119	0.0	0.640	14.4	LOS A	6.7	47.1	0.92	1.09	1.27	46.9
5	T1	193	0.0	0.640	14.6	LOS B	6.7	47.1	0.92	1.09	1.27	47.9
6	R2	161	0.0	0.640	18.6	LOS B	6.7	47.1	0.92	1.09	1.27	47.7
6u	U	1	0.0	0.640	20.6	LOS B	6.7	47.1	0.92	1.09	1.27	48.4
Approach		474	0.0	0.640	15.9	LOS B	6.7	47.1	0.92	1.09	1.27	47.6
North: Toronto Parade												
7	L2	87	0.0	0.056	4.1	LOS A	0.3	2.2	0.19	0.46	0.19	54.9
8	T1	363	0.0	0.428	4.7	LOS A	3.6	24.9	0.32	0.53	0.32	53.6
9	R2	317	0.0	0.428	8.9	LOS A	3.6	24.9	0.32	0.53	0.32	53.5
9u	U	8	0.0	0.428	10.8	LOS A	3.6	24.9	0.32	0.53	0.32	54.2
Approach		775	0.0	0.428	6.4	LOS A	3.6	24.9	0.30	0.52	0.30	53.7
West: Old Princes Highway (W)												
10	L2	341	0.0	0.445	7.4	LOS A	3.1	22.0	0.71	0.76	0.71	52.2
11	T1	45	0.0	0.445	7.5	LOS A	3.1	22.0	0.71	0.76	0.71	53.5
12	R2	20	0.0	0.445	11.6	LOS A	3.1	22.0	0.71	0.76	0.71	53.3
12u	U	1	0.0	0.445	13.6	LOS A	3.1	22.0	0.71	0.76	0.71	54.2
Approach		407	0.0	0.445	7.6	LOS A	3.1	22.0	0.71	0.76	0.71	52.4
All Vehicles		1960	0.0	0.640	9.2	LOS A	6.7	47.1	0.61	0.74	0.69	51.7

MOVEMENT SUMMARY

Site: 101 [AM EX - Flora Street / Belmont Street]

Stop Controlled Intersection of Flora Street / Belmont Street
Existing Conditions
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont Street (S)												
1	L2	105	0.0	0.227	7.5	LOS A	0.9	6.2	0.37	0.92	0.37	46.3
2	T1	15	0.0	0.227	11.3	LOS A	0.9	6.2	0.37	0.92	0.37	45.9
3	R2	54	0.0	0.227	12.2	LOS A	0.9	6.2	0.37	0.92	0.37	45.6
Approach		174	0.0	0.227	9.3	LOS A	0.9	6.2	0.37	0.92	0.37	46.0
East: Flora Street (E)												
4	L2	96	0.0	0.159	5.9	LOS A	0.3	2.1	0.13	0.22	0.13	52.0
5	T1	171	0.0	0.159	0.2	LOS A	0.3	2.1	0.13	0.22	0.13	57.3
6	R2	25	0.0	0.159	6.8	LOS A	0.3	2.1	0.13	0.22	0.13	55.3
Approach		292	0.0	0.159	2.7	NA	0.3	2.1	0.13	0.22	0.13	55.9
North: Belmont Street (N)												
7	L2	90	0.0	0.160	9.1	LOS A	0.6	4.3	0.42	0.92	0.42	50.7
8	T1	16	0.0	0.160	12.3	LOS A	0.6	4.3	0.42	0.92	0.42	44.5
9	R2	24	0.0	0.160	13.4	LOS A	0.6	4.3	0.42	0.92	0.42	50.2
Approach		130	0.0	0.160	10.3	LOS A	0.6	4.3	0.42	0.92	0.42	50.1
West: Flora Street (W)												
10	L2	88	0.0	0.204	5.9	LOS A	0.4	3.0	0.13	0.18	0.13	56.2
11	T1	250	0.0	0.204	0.2	LOS A	0.4	3.0	0.13	0.18	0.13	57.7
12	R2	39	0.0	0.204	6.5	LOS A	0.4	3.0	0.13	0.18	0.13	52.0
Approach		377	0.0	0.204	2.2	NA	0.4	3.0	0.13	0.18	0.13	57.0
All Vehicles		973	0.0	0.227	4.7	NA	0.9	6.2	0.21	0.43	0.21	54.0

MOVEMENT SUMMARY

Site: 101 [SCH PM EX - Flora Street / Belmont Street]

Stop Controlled Intersection of Flora Street / Belmont Street
Existing Conditions
School PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont Street (S)												
1	L2	77	0.0	0.131	7.1	LOS A	0.5	3.5	0.25	0.92	0.25	47.1
2	T1	14	0.0	0.131	9.7	LOS A	0.5	3.5	0.25	0.92	0.25	46.7
3	R2	27	0.0	0.131	10.8	LOS A	0.5	3.5	0.25	0.92	0.25	46.4
Approach		118	0.0	0.131	8.3	LOS A	0.5	3.5	0.25	0.92	0.25	46.9
East: Flora Street (E)												
4	L2	93	0.0	0.121	5.8	LOS A	0.2	1.5	0.12	0.27	0.12	51.3
5	T1	109	0.0	0.121	0.2	LOS A	0.2	1.5	0.12	0.27	0.12	56.9
6	R2	19	0.0	0.121	6.7	LOS A	0.2	1.5	0.12	0.27	0.12	54.9
Approach		221	0.0	0.121	3.1	NA	0.2	1.5	0.12	0.27	0.12	55.0
North: Belmont Street (N)												
7	L2	109	0.0	0.196	9.2	LOS A	0.8	5.4	0.43	0.92	0.43	50.9
8	T1	5	0.0	0.196	11.3	LOS A	0.8	5.4	0.43	0.92	0.43	44.7
9	R2	50	0.0	0.196	11.9	LOS A	0.8	5.4	0.43	0.92	0.43	50.4
Approach		164	0.0	0.196	10.1	LOS A	0.8	5.4	0.43	0.92	0.43	50.6
West: Flora Street (W)												
10	L2	64	0.0	0.173	5.6	LOS A	0.1	0.8	0.03	0.13	0.03	57.1
11	T1	257	0.0	0.173	0.0	LOS A	0.1	0.8	0.03	0.13	0.03	58.7
12	R2	10	0.0	0.173	6.2	LOS A	0.1	0.8	0.03	0.13	0.03	53.4
Approach		331	0.0	0.173	1.3	NA	0.1	0.8	0.03	0.13	0.03	58.3
All Vehicles		834	0.0	0.196	4.5	NA	0.8	5.4	0.16	0.43	0.16	54.4

MOVEMENT SUMMARY

Site: 101 [AM EX - Belmont Street / Stapleton Avenue]

Give-way Controlled Intersection of Flora Street / Belmont Street
Existing Conditions
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont St (S)												
1	L2	48	0.0	0.123	5.8	LOS A	0.5	3.2	0.26	0.59	0.26	53.0
2	T1	43	0.0	0.123	5.8	LOS A	0.5	3.2	0.26	0.59	0.26	53.2
3	R2	35	0.0	0.123	7.6	LOS A	0.5	3.2	0.26	0.59	0.26	52.5
Approach		126	0.0	0.123	6.3	LOS A	0.5	3.2	0.26	0.59	0.26	52.9
East: Stapleton Ave (E)												
4	L2	65	0.0	0.106	5.7	LOS A	0.3	1.9	0.11	0.27	0.11	55.5
5	T1	98	0.0	0.106	0.1	LOS A	0.3	1.9	0.11	0.27	0.11	57.0
6	R2	33	0.0	0.106	5.8	LOS A	0.3	1.9	0.11	0.27	0.11	54.9
Approach		196	0.0	0.106	2.9	NA	0.3	1.9	0.11	0.27	0.11	56.1
North: Belmont St (N)												
7	L2	19	0.0	0.054	5.8	LOS A	0.2	1.4	0.23	0.57	0.23	53.2
8	T1	26	0.0	0.054	5.8	LOS A	0.2	1.4	0.23	0.57	0.23	53.3
9	R2	10	0.0	0.054	7.6	LOS A	0.2	1.4	0.23	0.57	0.23	52.7
Approach		55	0.0	0.054	6.1	LOS A	0.2	1.4	0.23	0.57	0.23	53.2
West: Stapleton Ave (W)												
10	L2	42	0.0	0.114	6.0	LOS A	0.5	3.6	0.24	0.32	0.24	54.7
11	T1	80	0.0	0.114	0.4	LOS A	0.5	3.6	0.24	0.32	0.24	56.1
12	R2	77	0.0	0.114	6.0	LOS A	0.5	3.6	0.24	0.32	0.24	54.1
Approach		199	0.0	0.114	3.7	NA	0.5	3.6	0.24	0.32	0.24	55.0
All Vehicles		576	0.0	0.123	4.3	NA	0.5	3.6	0.20	0.39	0.20	54.7

MOVEMENT SUMMARY

Site: 101 [SCH PM EX - Belmont Street / Stapleton Avenue]

Give-way Controlled Intersection of Flora Street / Belmont Street
Existing Conditions
SCH PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont St (S)												
1	L2	43	0.0	0.116	5.7	LOS A	0.4	3.0	0.18	0.58	0.18	53.0
2	T1	34	0.0	0.116	5.6	LOS A	0.4	3.0	0.18	0.58	0.18	53.2
3	R2	42	0.0	0.116	7.4	LOS A	0.4	3.0	0.18	0.58	0.18	52.5
Approach		119	0.0	0.116	6.3	LOS A	0.4	3.0	0.18	0.58	0.18	52.9
East: Stapleton Ave (E)												
4	L2	60	0.0	0.081	5.8	LOS A	0.3	1.9	0.16	0.34	0.16	54.7
5	T1	51	0.0	0.081	0.2	LOS A	0.3	1.9	0.16	0.34	0.16	56.1
6	R2	36	0.0	0.081	5.9	LOS A	0.3	1.9	0.16	0.34	0.16	54.1
Approach		147	0.0	0.081	3.9	NA	0.3	1.9	0.16	0.34	0.16	55.0
North: Belmont St (N)												
7	L2	32	0.0	0.073	5.8	LOS A	0.3	1.9	0.23	0.57	0.23	53.3
8	T1	38	0.0	0.073	5.6	LOS A	0.3	1.9	0.23	0.57	0.23	53.5
9	R2	10	0.0	0.073	7.4	LOS A	0.3	1.9	0.23	0.57	0.23	52.8
Approach		80	0.0	0.073	5.9	LOS A	0.3	1.9	0.23	0.57	0.23	53.3
West: Stapleton Ave (W)												
10	L2	49	0.0	0.118	5.8	LOS A	0.5	3.4	0.18	0.31	0.18	55.0
11	T1	90	0.0	0.118	0.2	LOS A	0.5	3.4	0.18	0.31	0.18	56.4
12	R2	73	0.0	0.118	5.8	LOS A	0.5	3.4	0.18	0.31	0.18	54.4
Approach		212	0.0	0.118	3.4	NA	0.5	3.4	0.18	0.31	0.18	55.4
All Vehicles		558	0.0	0.118	4.5	NA	0.5	3.4	0.18	0.41	0.18	54.4

MOVEMENT SUMMARY

Site: 101 [AM FU - Eton Street / Flora Street]

Roundabout Intersection of Eton Street / Flora Street
Future Conditions
AM Peak Hour
Site Category: (None)
Roundabout

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: Eton St (S)												
1	L2	19	0.0	0.374	5.9	LOS A	2.5	17.5	0.53	0.66	0.53	51.5
2	T1	168	0.0	0.374	6.1	LOS A	2.5	17.5	0.53	0.66	0.53	52.5
3	R2	205	0.0	0.374	9.9	LOS A	2.5	17.5	0.53	0.66	0.53	52.2
3u	U	17	0.0	0.374	11.7	LOS A	2.5	17.5	0.53	0.66	0.53	52.9
Approach		409	0.0	0.374	8.2	LOS A	2.5	17.5	0.53	0.66	0.53	52.3
East: Flora St (E)												
4	L2	77	0.0	0.260	6.4	LOS A	1.6	11.4	0.58	0.70	0.58	51.4
5	T1	48	0.0	0.260	6.6	LOS A	1.6	11.4	0.58	0.70	0.58	52.5
6	R2	109	0.0	0.260	10.4	LOS A	1.6	11.4	0.58	0.70	0.58	52.2
6u	U	19	0.0	0.260	12.2	LOS A	1.6	11.4	0.58	0.70	0.58	52.9
Approach		253	0.0	0.260	8.6	LOS A	1.6	11.4	0.58	0.70	0.58	52.1
North: Eton St (N)												
7	L2	218	0.0	0.538	9.1	LOS A	4.5	31.7	0.78	0.86	0.88	50.7
8	T1	196	0.0	0.538	9.4	LOS A	4.5	31.7	0.78	0.86	0.88	51.7
9	R2	30	0.0	0.538	13.1	LOS A	4.5	31.7	0.78	0.86	0.88	51.4
9u	U	30	0.0	0.538	15.0	LOS B	4.5	31.7	0.78	0.86	0.88	52.1
Approach		474	0.0	0.538	9.9	LOS A	4.5	31.7	0.78	0.86	0.88	51.2
West: Flora St (W)												
10	L2	63	0.0	0.374	8.1	LOS A	2.5	17.3	0.73	0.79	0.73	51.1
11	T1	175	0.0	0.374	8.4	LOS A	2.5	17.3	0.73	0.79	0.73	52.1
12	R2	71	0.0	0.374	12.1	LOS A	2.5	17.3	0.73	0.79	0.73	51.8
12u	U	5	0.0	0.374	13.9	LOS A	2.5	17.3	0.73	0.79	0.73	52.5
Approach		314	0.0	0.374	9.2	LOS A	2.5	17.3	0.73	0.79	0.73	51.8
All Vehicles		1450	0.0	0.538	9.0	LOS A	4.5	31.7	0.66	0.76	0.69	51.8

MOVEMENT SUMMARY

Site: 101 [PM FU - Eton Street / Flora Street]

Roundabout Intersection of Eton Street / Flora Street
Future Conditions
PM Peak Hour
Site Category: (None)
Roundabout

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: Eton St (S)												
1	L2	27	0.0	0.347	5.0	LOS A	2.4	16.8	0.37	0.58	0.37	52.0
2	T1	189	0.0	0.347	5.3	LOS A	2.4	16.8	0.37	0.58	0.37	53.0
3	R2	205	0.0	0.347	9.0	LOS A	2.4	16.8	0.37	0.58	0.37	52.8
3u	U	20	0.0	0.347	10.8	LOS A	2.4	16.8	0.37	0.58	0.37	53.5
Approach		441	0.0	0.347	7.2	LOS A	2.4	16.8	0.37	0.58	0.37	52.9
East: Flora St (E)												
4	L2	123	0.0	0.257	7.7	LOS A	1.7	11.8	0.72	0.77	0.72	51.4
5	T1	33	0.0	0.257	8.0	LOS A	1.7	11.8	0.72	0.77	0.72	52.4
6	R2	43	0.0	0.257	11.7	LOS A	1.7	11.8	0.72	0.77	0.72	52.2
6u	U	5	0.0	0.257	13.6	LOS A	1.7	11.8	0.72	0.77	0.72	52.8
Approach		204	0.0	0.257	8.7	LOS A	1.7	11.8	0.72	0.77	0.72	51.7
North: Eton St (N)												
7	L2	232	0.0	0.706	10.8	LOS A	8.4	58.9	0.85	0.92	1.08	49.7
8	T1	416	0.0	0.706	11.1	LOS A	8.4	58.9	0.85	0.92	1.08	50.7
9	R2	17	0.0	0.706	14.8	LOS B	8.4	58.9	0.85	0.92	1.08	50.4
9u	U	20	0.0	0.706	16.7	LOS B	8.4	58.9	0.85	0.92	1.08	51.1
Approach		685	0.0	0.706	11.2	LOS A	8.4	58.9	0.85	0.92	1.08	50.4
West: Flora St (W)												
10	L2	25	0.0	0.228	7.2	LOS A	1.3	9.4	0.62	0.72	0.62	51.3
11	T1	101	0.0	0.228	7.5	LOS A	1.3	9.4	0.62	0.72	0.62	52.3
12	R2	76	0.0	0.228	11.2	LOS A	1.3	9.4	0.62	0.72	0.62	52.0
12u	U	1	0.0	0.228	13.0	LOS A	1.3	9.4	0.62	0.72	0.62	52.7
Approach		203	0.0	0.228	8.8	LOS A	1.3	9.4	0.62	0.72	0.62	52.1
All Vehicles		1533	0.0	0.706	9.4	LOS A	8.4	58.9	0.67	0.78	0.77	51.5

MOVEMENT SUMMARY

Site: 101 [AM FU - Eton Street / Old Princes Highway / Toronto Parade]

Roundabout Intersection of Eton Street / Old Princes Highway / Toronto Parade
Future Conditions
AM Peak Hour
Site Category: (None)
Roundabout

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: Eton Street												
1	L2	41	0.0	0.033	5.3	LOS A	0.2	1.3	0.48	0.54	0.48	53.9
2	T1	307	0.0	0.311	7.2	LOS A	2.2	15.4	0.71	0.71	0.71	52.9
3	R2	21	0.0	0.311	11.4	LOS A	2.2	15.4	0.71	0.71	0.71	52.8
3u	U	1	0.0	0.311	13.3	LOS A	2.2	15.4	0.71	0.71	0.71	53.5
Approach		370	0.0	0.311	7.2	LOS A	2.2	15.4	0.69	0.69	0.69	53.0
East: Old Princes Highway (E)												
4	L2	187	0.0	0.589	10.5	LOS A	5.5	38.5	0.83	0.93	1.01	49.3
5	T1	139	0.0	0.589	10.6	LOS A	5.5	38.5	0.83	0.93	1.01	50.4
6	R2	176	0.0	0.589	14.7	LOS B	5.5	38.5	0.83	0.93	1.01	50.2
6u	U	1	0.0	0.589	16.7	LOS B	5.5	38.5	0.83	0.93	1.01	51.0
Approach		503	0.0	0.589	12.0	LOS A	5.5	38.5	0.83	0.93	1.01	49.9
North: Toronto Parade												
7	L2	125	0.0	0.083	4.2	LOS A	0.5	3.3	0.24	0.47	0.24	54.7
8	T1	253	0.0	0.334	4.9	LOS A	2.5	17.4	0.36	0.55	0.36	53.4
9	R2	248	0.0	0.334	9.1	LOS A	2.5	17.4	0.36	0.55	0.36	53.3
9u	U	5	0.0	0.334	11.0	LOS A	2.5	17.4	0.36	0.55	0.36	54.0
Approach		631	0.0	0.334	6.4	LOS A	2.5	17.4	0.34	0.54	0.34	53.6
West: Old Princes Highway (W)												
10	L2	435	0.0	0.616	10.5	LOS A	6.1	42.7	0.85	0.93	1.04	50.0
11	T1	61	0.0	0.616	10.6	LOS A	6.1	42.7	0.85	0.93	1.04	51.2
12	R2	33	0.0	0.616	14.7	LOS B	6.1	42.7	0.85	0.93	1.04	51.0
12u	U	1	0.0	0.616	16.7	LOS B	6.1	42.7	0.85	0.93	1.04	51.8
Approach		530	0.0	0.616	10.8	LOS A	6.1	42.7	0.85	0.93	1.04	50.2
All Vehicles		2034	0.0	0.616	9.1	LOS A	6.1	42.7	0.66	0.77	0.75	51.7

MOVEMENT SUMMARY

Site: 101 [PM FU - Eton Street / Old Princes Highway / Toronto Parade]

Roundabout Intersection of Eton Street / Old Princes Highway / Toronto Parade
Future Conditions
PM Peak Hour
Site Category: (None)
Roundabout

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: Eton Street												
1	L2	34	0.0	0.030	5.8	LOS A	0.2	1.2	0.56	0.57	0.56	53.7
2	T1	259	0.0	0.285	7.9	LOS A	2.1	14.6	0.78	0.75	0.78	52.7
3	R2	10	0.0	0.285	12.1	LOS A	2.1	14.6	0.78	0.75	0.78	52.6
3u	U	1	0.0	0.285	14.0	LOS A	2.1	14.6	0.78	0.75	0.78	53.3
Approach		304	0.0	0.285	7.8	LOS A	2.1	14.6	0.75	0.73	0.75	52.8
East: Old Princes Highway (E)												
4	L2	269	0.0	0.843	25.1	LOS B	15.1	105.9	1.00	1.41	2.03	41.4
5	T1	193	0.0	0.843	25.3	LOS B	15.1	105.9	1.00	1.41	2.03	42.2
6	R2	161	0.0	0.843	29.3	LOS C	15.1	105.9	1.00	1.41	2.03	42.1
6u	U	1	0.0	0.843	31.3	LOS C	15.1	105.9	1.00	1.41	2.03	42.6
Approach		624	0.0	0.843	26.2	LOS B	15.1	105.9	1.00	1.41	2.03	41.8
North: Toronto Parade												
7	L2	87	0.0	0.056	4.1	LOS A	0.3	2.2	0.19	0.46	0.19	54.9
8	T1	363	0.0	0.428	4.7	LOS A	3.6	24.9	0.32	0.53	0.32	53.6
9	R2	317	0.0	0.428	8.9	LOS A	3.6	24.9	0.32	0.53	0.32	53.5
9u	U	8	0.0	0.428	10.8	LOS A	3.6	24.9	0.32	0.53	0.32	54.2
Approach		775	0.0	0.428	6.4	LOS A	3.6	24.9	0.30	0.52	0.30	53.7
West: Old Princes Highway (W)												
10	L2	341	0.0	0.446	7.4	LOS A	3.1	22.0	0.71	0.76	0.71	52.2
11	T1	45	0.0	0.446	7.5	LOS A	3.1	22.0	0.71	0.76	0.71	53.5
12	R2	20	0.0	0.446	11.6	LOS A	3.1	22.0	0.71	0.76	0.71	53.3
12u	U	1	0.0	0.446	13.6	LOS A	3.1	22.0	0.71	0.76	0.71	54.2
Approach		407	0.0	0.446	7.6	LOS A	3.1	22.0	0.71	0.76	0.71	52.4
All Vehicles		2110	0.0	0.843	12.7	LOS A	15.1	105.9	0.65	0.86	0.96	49.2

MOVEMENT SUMMARY

Site: 101 [AM FU - Flora Street / Belmont Street]

Stop Controlled Intersection of Flora Street / Belmont Street
Future Conditions
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont Street (S)												
1	L2	105	0.0	0.266	8.0	LOS A	1.0	7.3	0.48	0.93	0.50	45.3
2	T1	15	0.0	0.266	13.0	LOS A	1.0	7.3	0.48	0.93	0.50	44.9
3	R2	54	0.0	0.266	14.6	LOS B	1.0	7.3	0.48	0.93	0.50	44.6
Approach		174	0.0	0.266	10.5	LOS A	1.0	7.3	0.48	0.93	0.50	45.0
East: Flora Street (E)												
4	L2	96	0.0	0.238	6.4	LOS A	0.8	5.6	0.23	0.21	0.23	51.6
5	T1	259	0.0	0.238	0.5	LOS A	0.8	5.6	0.23	0.21	0.23	57.1
6	R2	69	0.0	0.238	7.0	LOS A	0.8	5.6	0.23	0.21	0.23	55.0
Approach		424	0.0	0.238	2.9	NA	0.8	5.6	0.23	0.21	0.23	55.9
North: Belmont Street (N)												
7	L2	90	0.0	0.291	9.5	LOS A	1.2	8.4	0.50	0.95	0.56	49.2
8	T1	16	0.0	0.291	14.8	LOS B	1.2	8.4	0.50	0.95	0.56	42.5
9	R2	68	0.0	0.291	16.3	LOS B	1.2	8.4	0.50	0.95	0.56	48.8
Approach		174	0.0	0.291	12.7	LOS A	1.2	8.4	0.50	0.95	0.56	48.6
West: Flora Street (W)												
10	L2	88	0.0	0.207	6.1	LOS A	0.5	3.4	0.16	0.18	0.16	56.1
11	T1	250	0.0	0.207	0.3	LOS A	0.5	3.4	0.16	0.18	0.16	57.6
12	R2	39	0.0	0.207	7.0	LOS A	0.5	3.4	0.16	0.18	0.16	51.9
Approach		377	0.0	0.207	2.4	NA	0.5	3.4	0.16	0.18	0.16	56.8
All Vehicles		1149	0.0	0.291	5.3	NA	1.2	8.4	0.29	0.42	0.30	53.6

MOVEMENT SUMMARY

Site: 101 [SCH FU - Flora Street / Belmont Street]

Stop Controlled Intersection of Flora Street / Belmont Street
Future Conditions
School PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont Street (S)												
1	L2	77	0.0	0.169	7.9	LOS A	0.6	4.4	0.45	0.92	0.45	45.9
2	T1	14	0.0	0.169	12.3	LOS A	0.6	4.4	0.45	0.92	0.45	45.5
3	R2	27	0.0	0.169	14.2	LOS A	0.6	4.4	0.45	0.92	0.45	45.2
Approach		118	0.0	0.169	9.8	LOS A	0.6	4.4	0.45	0.92	0.45	45.7
East: Flora Street (E)												
4	L2	93	0.0	0.256	6.5	LOS A	1.0	7.2	0.28	0.23	0.28	51.1
5	T1	259	0.0	0.256	0.6	LOS A	1.0	7.2	0.28	0.23	0.28	56.8
6	R2	95	0.0	0.256	6.9	LOS A	1.0	7.2	0.28	0.23	0.28	54.7
Approach		447	0.0	0.256	3.1	NA	1.0	7.2	0.28	0.23	0.28	55.5
North: Belmont Street (N)												
7	L2	109	0.0	0.422	10.6	LOS A	2.2	15.3	0.56	1.01	0.77	48.2
8	T1	5	0.0	0.422	16.3	LOS B	2.2	15.3	0.56	1.01	0.77	41.2
9	R2	126	0.0	0.422	17.4	LOS B	2.2	15.3	0.56	1.01	0.77	47.8
Approach		240	0.0	0.422	14.3	LOS A	2.2	15.3	0.56	1.01	0.77	47.9
West: Flora Street (W)												
10	L2	64	0.0	0.174	5.8	LOS A	0.1	0.9	0.05	0.13	0.05	57.0
11	T1	257	0.0	0.174	0.1	LOS A	0.1	0.9	0.05	0.13	0.05	58.6
12	R2	10	0.0	0.174	6.9	LOS A	0.1	0.9	0.05	0.13	0.05	53.3
Approach		331	0.0	0.174	1.4	NA	0.1	0.9	0.05	0.13	0.05	58.2
All Vehicles		1136	0.0	0.422	5.7	NA	2.2	15.3	0.29	0.44	0.33	53.6

MOVEMENT SUMMARY

Site: 101 [AM FU - Belmont Street / Stapleton Avenue]

Give-way Controlled Intersection of Flora Street / Belmont Street
Future Conditions
AM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont St (S)												
1	L2	48	0.0	0.125	5.8	LOS A	0.5	3.3	0.26	0.60	0.26	52.9
2	T1	43	0.0	0.125	5.9	LOS A	0.5	3.3	0.26	0.60	0.26	53.1
3	R2	35	0.0	0.125	7.7	LOS A	0.5	3.3	0.26	0.60	0.26	52.4
Approach		126	0.0	0.125	6.4	LOS A	0.5	3.3	0.26	0.60	0.26	52.8
East: Stapleton Ave (E)												
4	L2	109	0.0	0.130	5.7	LOS A	0.3	2.0	0.10	0.32	0.10	55.1
5	T1	98	0.0	0.130	0.1	LOS A	0.3	2.0	0.10	0.32	0.10	56.6
6	R2	33	0.0	0.130	5.8	LOS A	0.3	2.0	0.10	0.32	0.10	54.6
Approach		240	0.0	0.130	3.4	NA	0.3	2.0	0.10	0.32	0.10	55.6
North: Belmont St (N)												
7	L2	19	0.0	0.055	5.8	LOS A	0.2	1.4	0.23	0.58	0.23	53.1
8	T1	26	0.0	0.055	6.0	LOS A	0.2	1.4	0.23	0.58	0.23	53.2
9	R2	10	0.0	0.055	7.6	LOS A	0.2	1.4	0.23	0.58	0.23	52.6
Approach		55	0.0	0.055	6.2	LOS A	0.2	1.4	0.23	0.58	0.23	53.1
West: Stapleton Ave (W)												
10	L2	42	0.0	0.116	6.1	LOS A	0.5	3.7	0.28	0.32	0.28	54.5
11	T1	80	0.0	0.116	0.5	LOS A	0.5	3.7	0.28	0.32	0.28	56.0
12	R2	77	0.0	0.116	6.2	LOS A	0.5	3.7	0.28	0.32	0.28	54.0
Approach		199	0.0	0.116	3.9	NA	0.5	3.7	0.28	0.32	0.28	54.9
All Vehicles		620	0.0	0.130	4.4	NA	0.5	3.7	0.20	0.40	0.20	54.6

MOVEMENT SUMMARY

Site: 101 [SCH PM FU - Belmont Street / Stapleton Avenue]

Give-way Controlled Intersection of Flora Street / Belmont Street
Future Conditions
SCH PM Peak Hour
Site Category: (None)
Giveway / Yield (Two-Way)

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: Belmont St (S)												
1	L2	43	0.0	0.120	5.7	LOS A	0.4	3.1	0.18	0.58	0.18	52.9
2	T1	34	0.0	0.120	5.8	LOS A	0.4	3.1	0.18	0.58	0.18	53.1
3	R2	42	0.0	0.120	7.7	LOS A	0.4	3.1	0.18	0.58	0.18	52.4
Approach		119	0.0	0.120	6.4	LOS A	0.4	3.1	0.18	0.58	0.18	52.8
East: Stapleton Ave (E)												
4	L2	136	0.0	0.122	5.7	LOS A	0.3	2.1	0.12	0.41	0.12	54.3
5	T1	51	0.0	0.122	0.2	LOS A	0.3	2.1	0.12	0.41	0.12	55.7
6	R2	36	0.0	0.122	5.9	LOS A	0.3	2.1	0.12	0.41	0.12	53.7
Approach		223	0.0	0.122	4.5	NA	0.3	2.1	0.12	0.41	0.12	54.5
North: Belmont St (N)												
7	L2	32	0.0	0.076	5.8	LOS A	0.3	2.0	0.24	0.57	0.24	53.2
8	T1	38	0.0	0.076	6.0	LOS A	0.3	2.0	0.24	0.57	0.24	53.3
9	R2	10	0.0	0.076	7.4	LOS A	0.3	2.0	0.24	0.57	0.24	52.7
Approach		80	0.0	0.076	6.1	LOS A	0.3	2.0	0.24	0.57	0.24	53.2
West: Stapleton Ave (W)												
10	L2	49	0.0	0.121	6.0	LOS A	0.5	3.7	0.25	0.31	0.25	54.7
11	T1	90	0.0	0.121	0.4	LOS A	0.5	3.7	0.25	0.31	0.25	56.2
12	R2	73	0.0	0.121	6.1	LOS A	0.5	3.7	0.25	0.31	0.25	54.2
Approach		212	0.0	0.121	3.7	NA	0.5	3.7	0.25	0.31	0.25	55.1
All Vehicles		634	0.0	0.122	4.8	NA	0.5	3.7	0.19	0.43	0.19	54.2

ANNEXURE F: JOURNEY TO WORK DATA
2016 Census Data

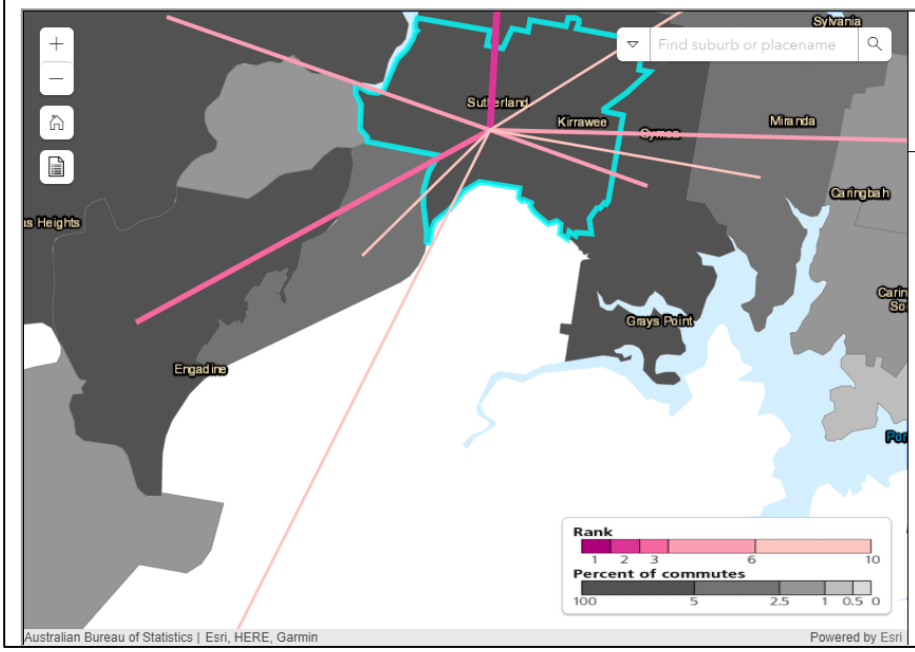
INTERACTIVE MAP

JOURNEY TO WORK TO PLACE OF WORK

Use the map below for more information on the journey to work that occurs between Statistical Area Level 2 (SA2) regions. To get started, use the search bar at the top of the map to search data for a specific town or address related to where people work (Place of Work).

Once prompted the map will display both lines and a choropleth map representing the numbers of people commuting between the selected region (Place of Work) and Place of Usual Residence. The lines represent the top commutes, while the choropleth map is generated across regions to provide a more complete picture of the journey to work.

- If the map below does not load successfully, please try refreshing this page.



Summary of persons commuting to the Sutherland - Kirrawee SA2

Travel Mode	Counts	%
Public Transport	769	7.30
Vehicle	8,090	76.76
Active Transport	328	3.11
Other Mode	27	0.26
Worked at home*	1,249	11.85
Mode not stated	80	0.76
Total	**10,540**	

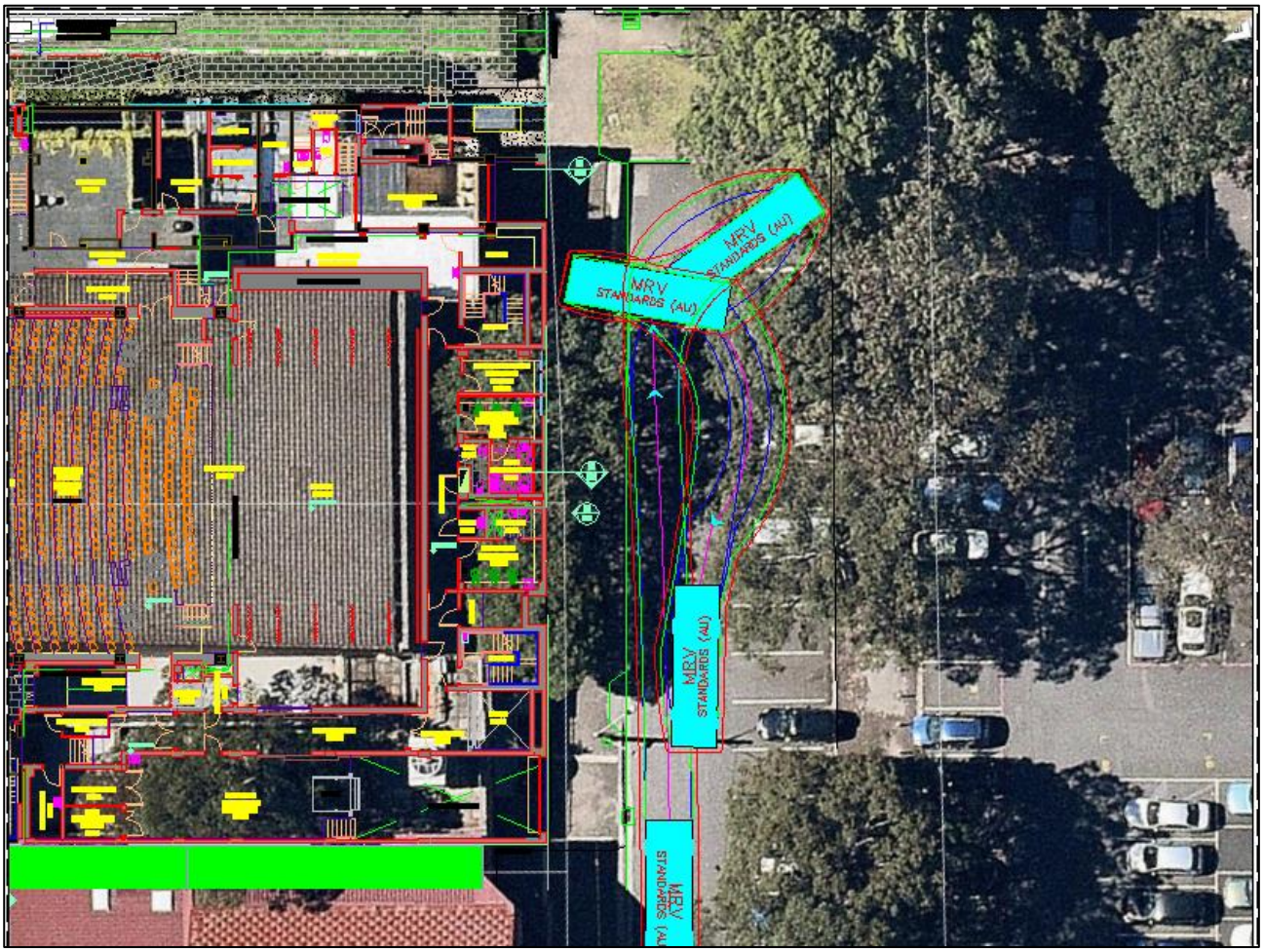
Notes:
Small random adjustments have been made to all cell values to protect the confidentiality of data. These adjustments may cause the sum of rows to differ by small amounts from the table totals.

** Includes persons who stated they 'Did not go to work'.*

Return to Sutherland - Kirrawee

Discounting "mode not stated" and "worked at home" results in a driver mode of 88% to the Sutherland / Kirrawee area.

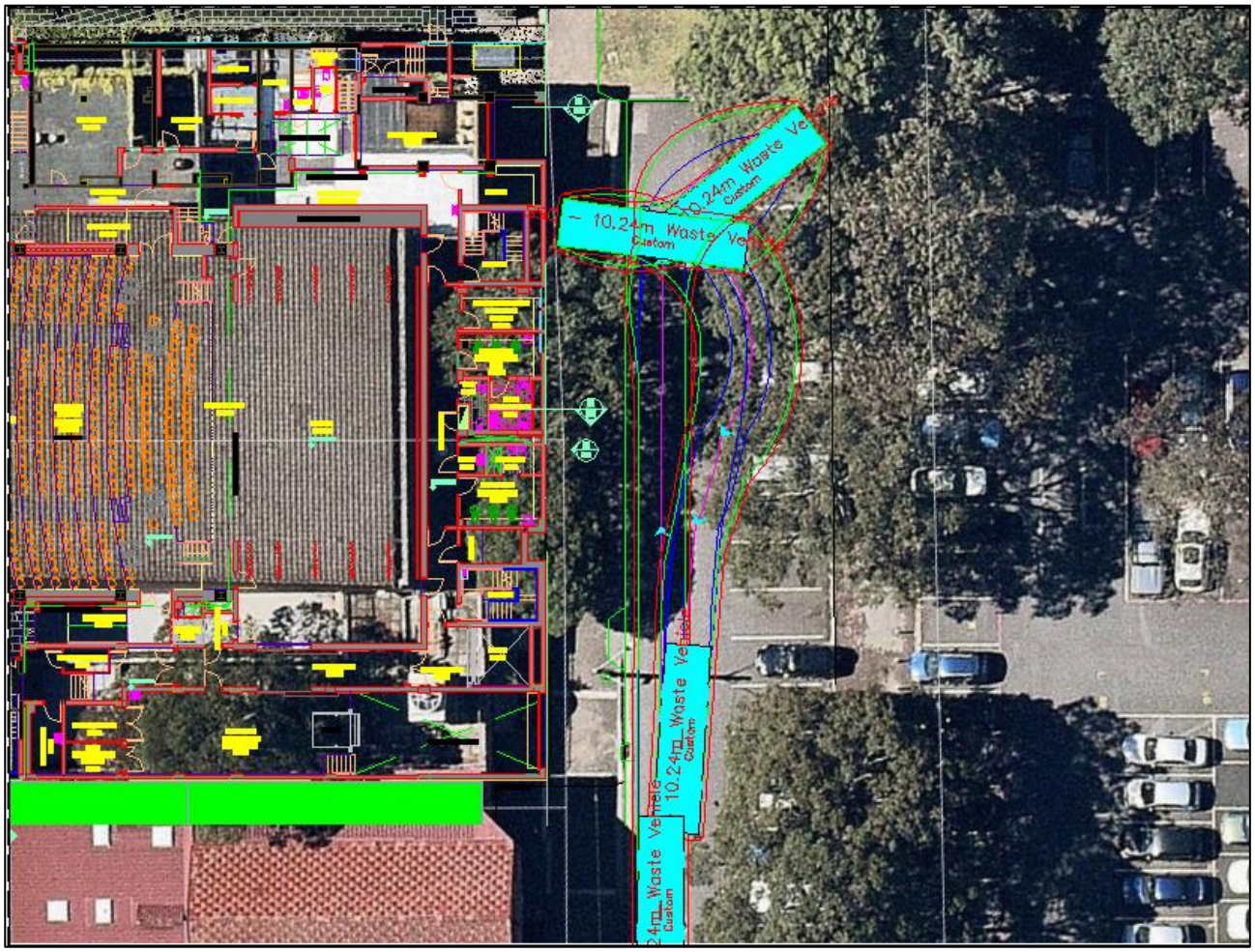
ANNEXURE G: SWEPT PATH TESTING
(Sheet 1 of 9)



8.8m length Medium Rigid Vehicle (Representing Standard Fire Appliance Vehicle) turning around within Merton Street
Tested @ 5km/h
Successful – subject to removal of five (5) car parking spaces and a mountable service provided within the verge

Blue – Vehicle Tyres
Green – Vehicle Body
Red – 300mm Clearance

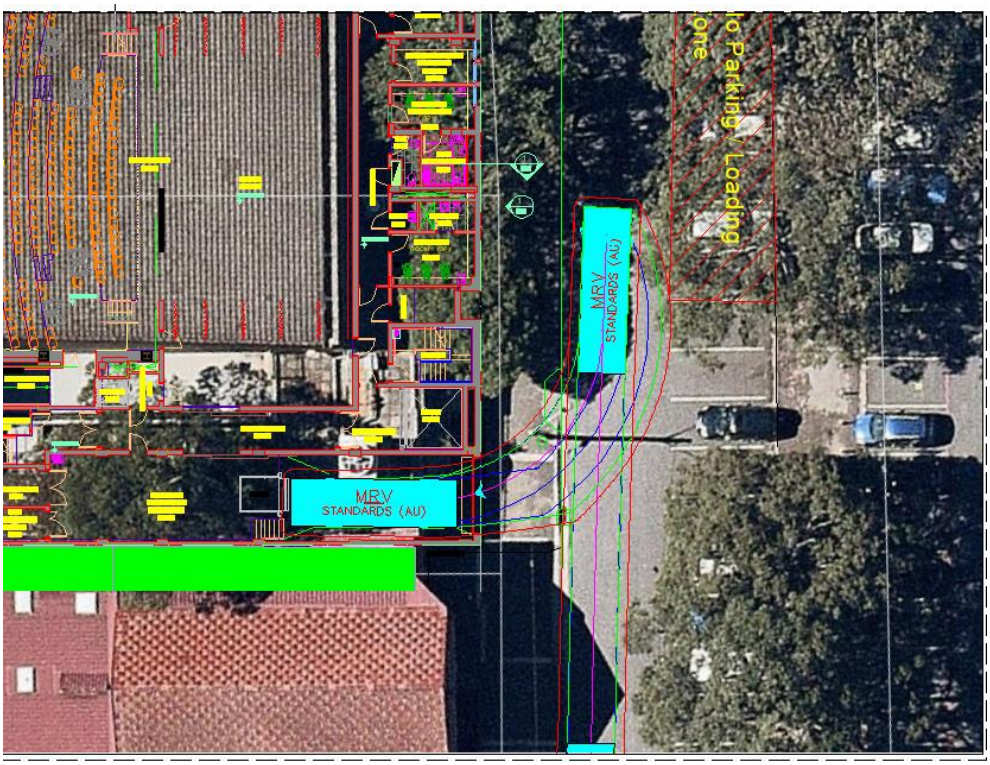
ANNEXURE G: SWEPT PATH TESTING
(Sheet 2 of 9)



10.24 Sutherland Shire Council Waste collection Vehicle turning around within Merton Street
Tested @ 5km/h
Successful – subject to removal of six (6) car parking spaces and a mountable service provided within the verge

Blue – Vehicle Tyres
Green – Vehicle Body
Red – 300mm Clearance

ANNEXURE G: SWEPT PATH TESTING
(Sheet 3 of 9)



8.8m length MRV into and out of loading dock

Tested @ 5km/h

Successful – subject to a 9.5m wide driveway entry at the connection to Merton Street and relocation of light pole

Blue – Vehicle Tyres

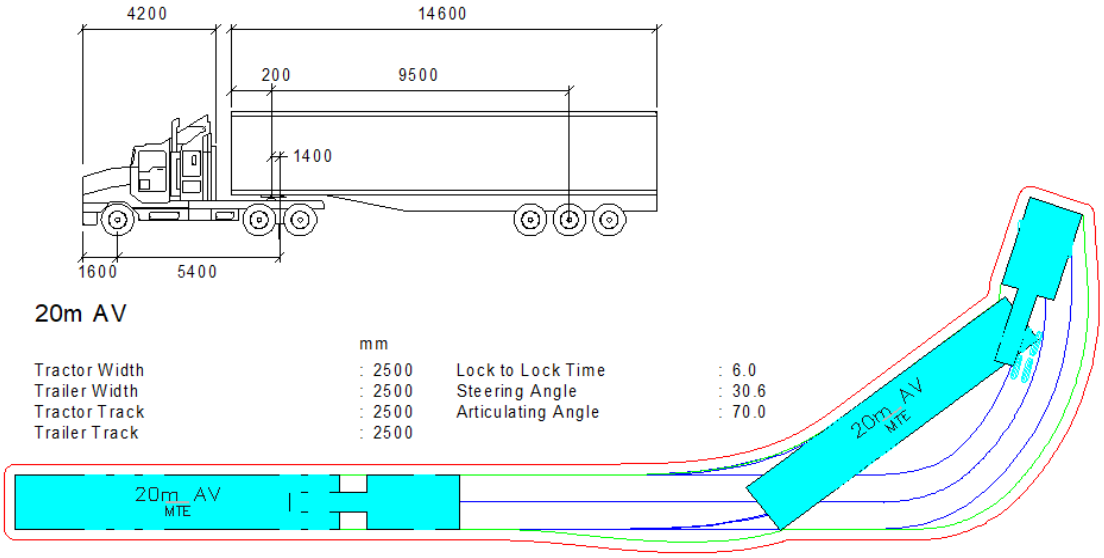
Green – Vehicle Body

Red – 500mm Clearance

ANNEXURE G: SWEPT PATH TESTING
(Sheet 4 of 9)

B99 into and out of loading bay
Tested @ 5km/h
Successful
Blue – Vehicle Tyres
Green – Vehicle Body
Red – 300mm Clearance

ANNEXURE G: SWEPT PATH TESTING
(Sheet 5 of 9)

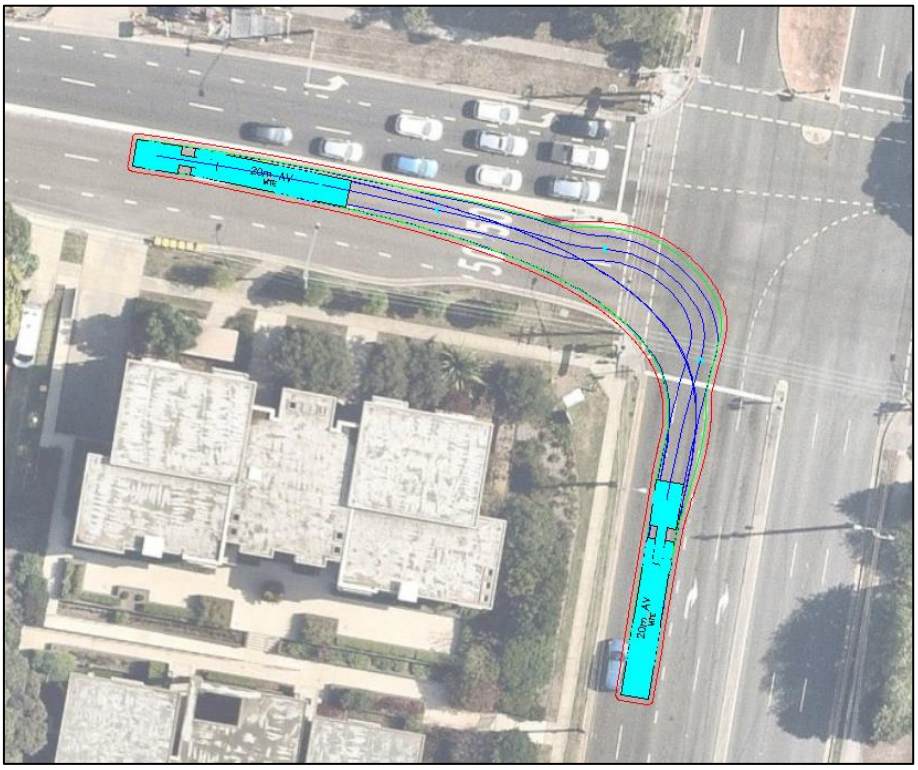


20M ARTICULATED VEHICLE (AV)

Blue – Vehicle Tyres
Green – Vehicle Body
Red – 500mm clearance

All tests performed at 5km/h forwards and backwards.

ANNEXURE G: SWEPT PATH TESTING
(Sheet 6 of 9)



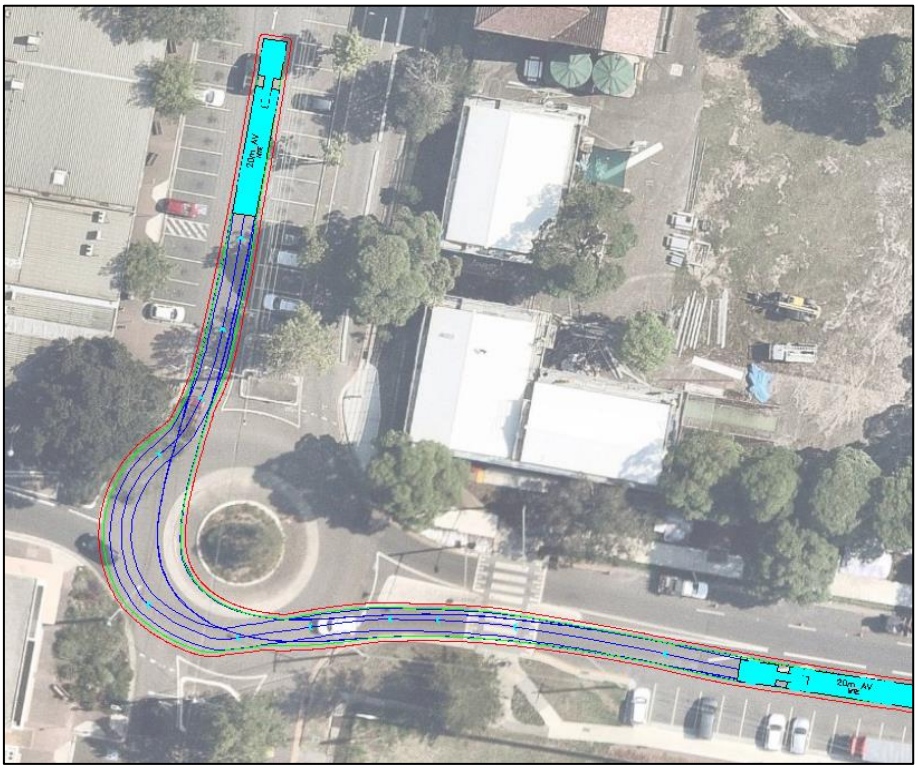
ENTRY - AV LEFT TURN ONTO PRESIDENT AVENUE FROM ACACIA ROAD

Successful

ENTRY - AV CONTINUING ALONG PRESIDENT AVENUE

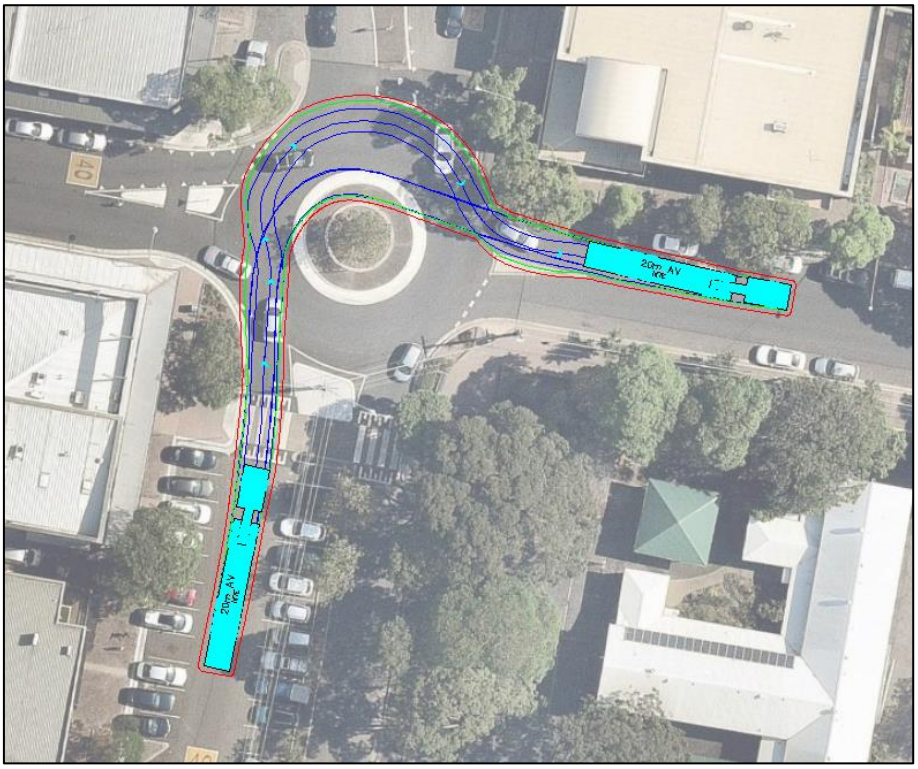
Successful

ANNEXURE G: SWEPT PATH TESTING
(Sheet 7 of 9)



ENTRY - AV RIGHT TURN ONTO ETON STREET FROM PRESIDENT AVENUE

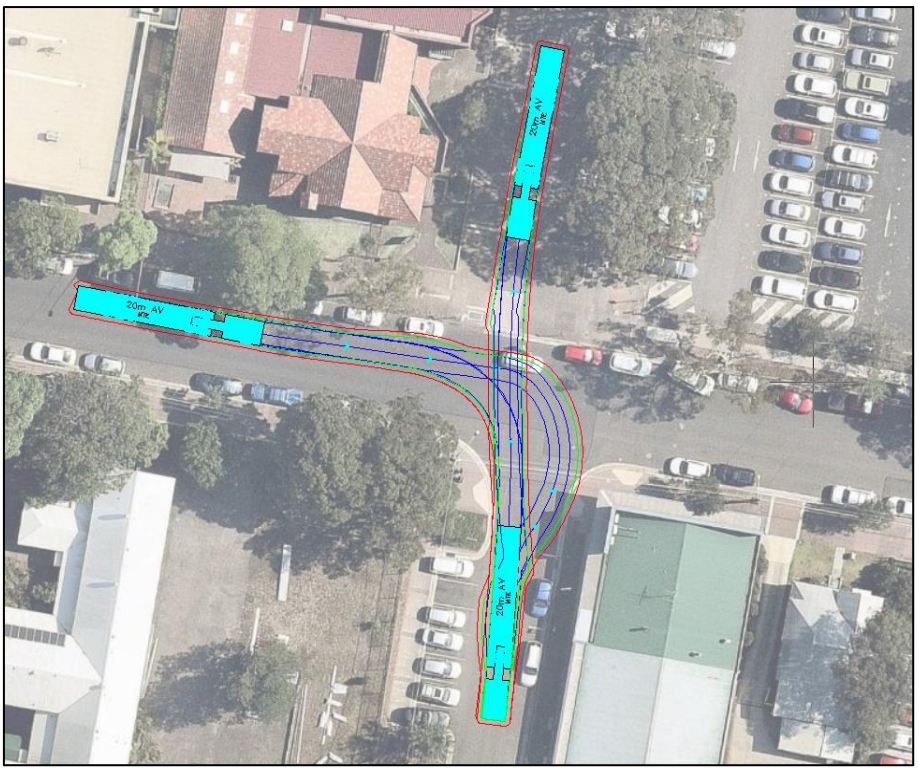
Successful



ENTRY - AV RIGHT TURN ONTO FLORA STREET FROM ETON STREET

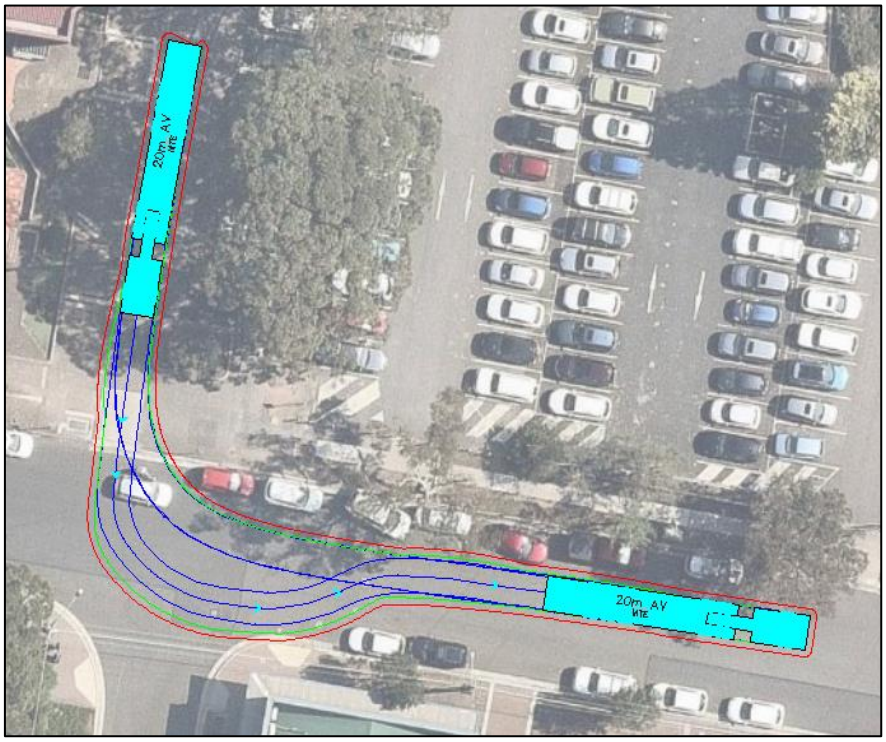
Unsuccessful – Modifications to the roundabout are required to allow for an improved mountable area. This modification is to be approved by Council's Local Traffic Committee

ANNEXURE G: SWEPT PATH TESTING
(Sheet 8 of 9)



ENTRY - AV REVERSE INTO MERTON STREET

Successful – All reverse movements are to be undertaken under appropriate traffic control



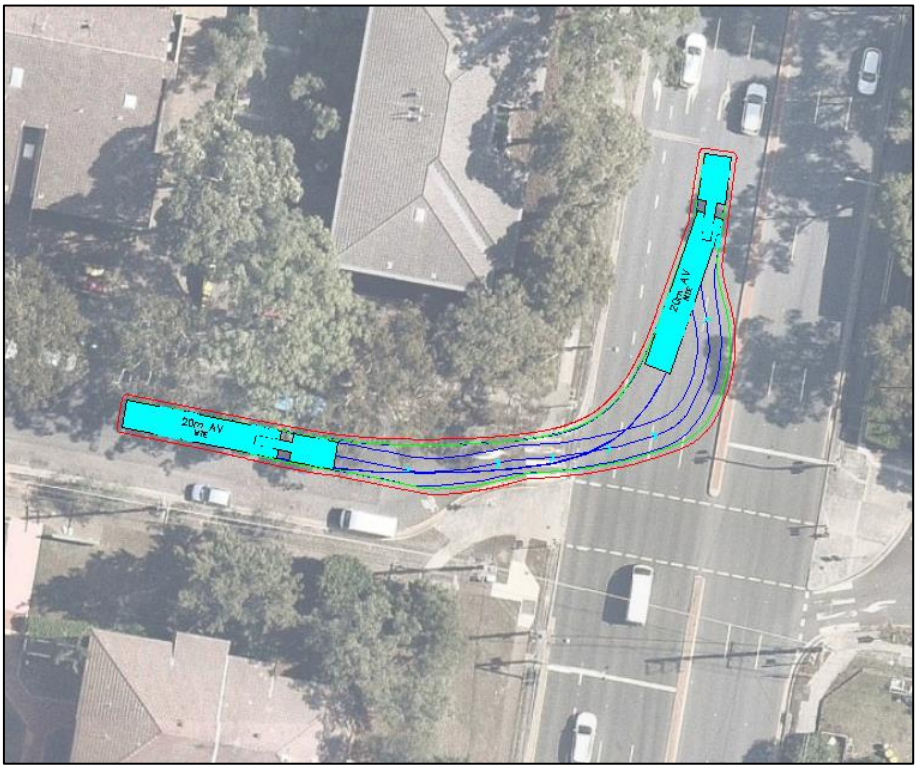
EXIT – AV LEFT TURN OUT OF MERTON STREET ONTO FLORA STREET

Unsuccessful – Widening of the driveway with Flora Street is required to facilitate the exit of 20m AV.

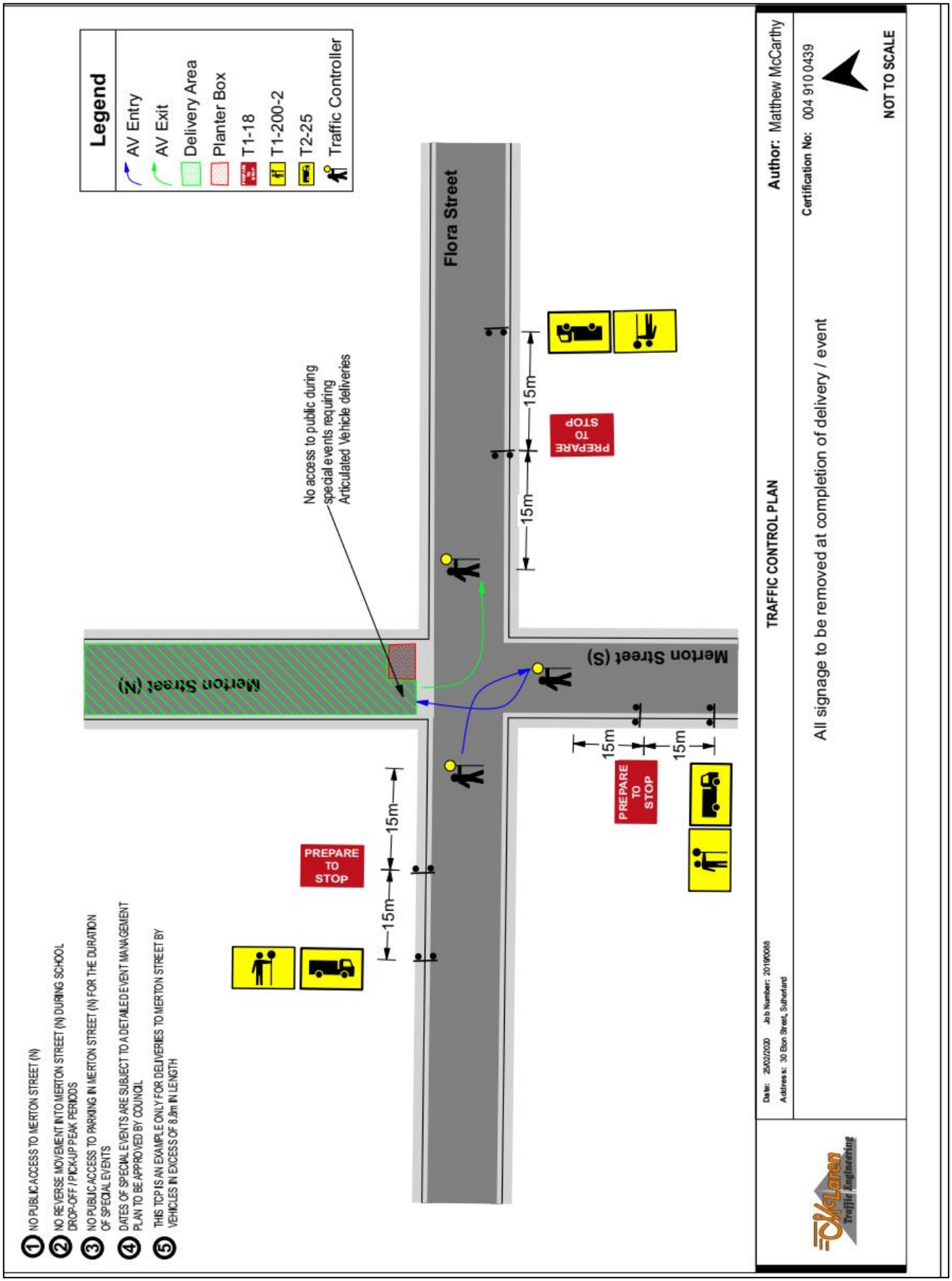
ANNEXURE G: SWEPT PATH TESTING
(Sheet 9 of 9)

EXIT – AV CONTINUING ON FLORA STREET

Successful



EXIT – AV LEFT TURN ONTO PRINCES HIGHWAY FROM FLORA STREET

Successful

ANNEXURE H: SAMPLE TRAFFIC CONTROL PLAN