APPENDIX A – URBAN DESIGN STUDY PREPARED BY BATES SMART

ATTACHMENT A

PLANNING PROPOSAL
DESIGN REPORT

12-40 ROSEBERY AVENUE
ROSEBERY
S11776

PROJECT NUMBER
S11776

BATESSMART.

ARCHITECTURE
INTERIOR DESIGN
URBAN DESIGN
STRATEGY

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LOCATION

12-40 ROSEBERY AVENUE, ROSEBERY

The site in Rosebery is 4km South of Sydney CBD, and is part an area undergoing rapid transformation from industrial to residential. Alexandria is to the West, Zetland to the North and Green Square Station 1.5km North-West. The site is also conveniently located near Southern Cross Drive (M1) and the Australian Golf Club.

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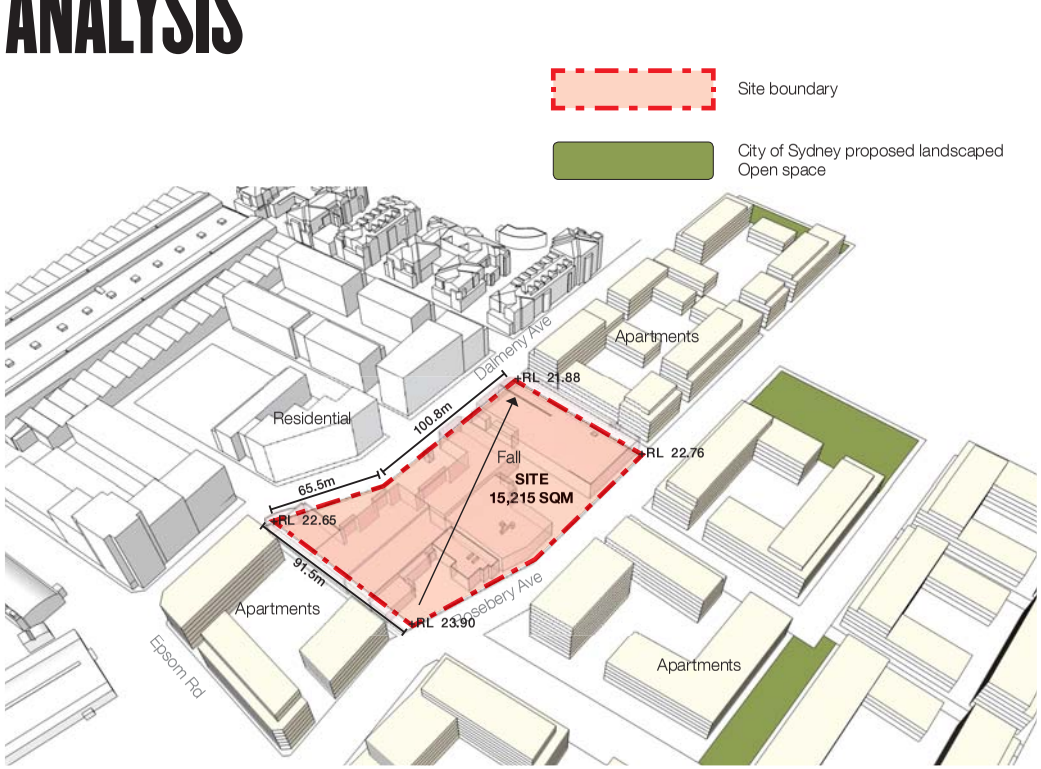
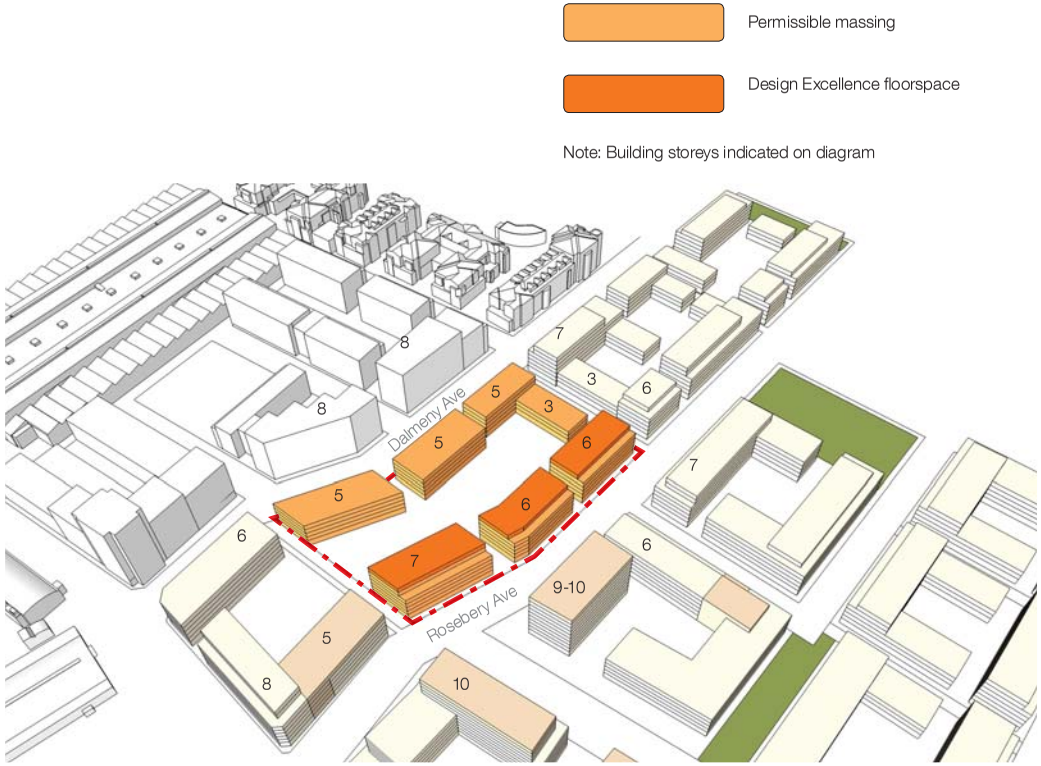
SITE & CONTEXT ANALYSIS





SITE & DCP MASTERPLAN CONTEXT

The site occupies a large area of 15,215sqm with a width of 91.5m and a length of approximately 165m. It currently features several large 1 to 2 storey industrial/warehouse/office buildings.

The surrounding massing depicts the future context of the site according to the Sydney Development Control Plan 2012, indicating a transformation of the area from industrial to predominately multi-residential apartments.

The topography features a gentle fall of 2m across the site from North to South

DCP PROPOSED MASSING

The permissible building heights on site, when compared with that of the surrounding context are low.

Within the site the DCP allows 5 storey buildings along Dalmeny Ave. The surrounding building forms on Dalemeny Ave feature:

/ 8 storey buildings across the road to the East

/ 6 to 7 storey buildings to the North and South of the site.

The DCP allows 6 and 7 storey buildings (with Design Excellence bonus) along Rosebery Ave. The context of surrounding building forms on Rosebery Ave feature:

/ 9-10 storey buildings across the road to the West

/ 6 and 7 storey buildings to the West

/ 5 and 6 stoery buildings to the North and South

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Existing road layout

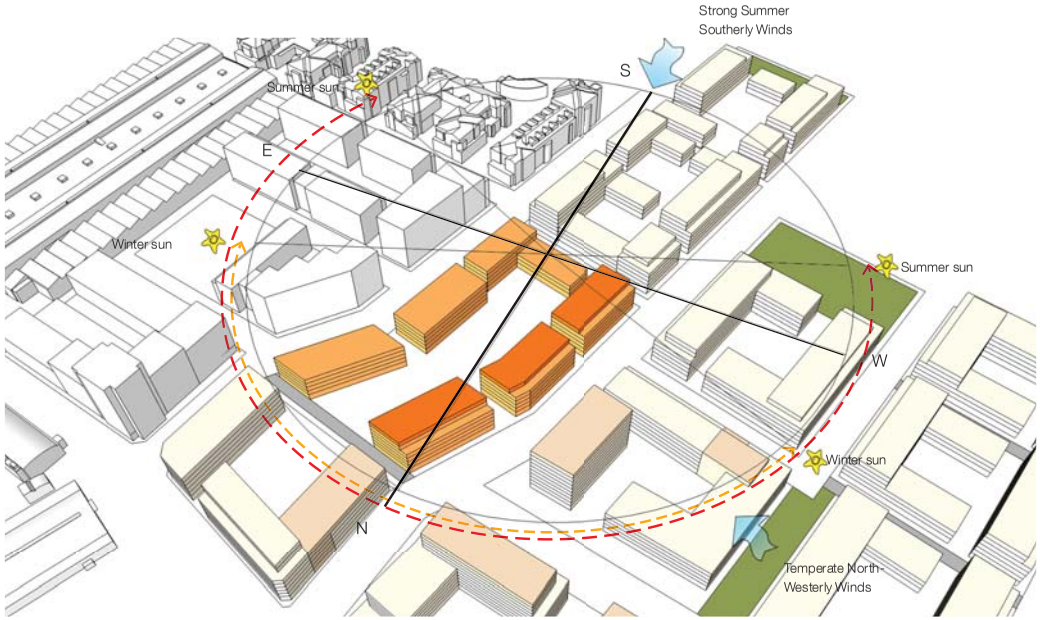
Future road layout (COS DCP 2012)

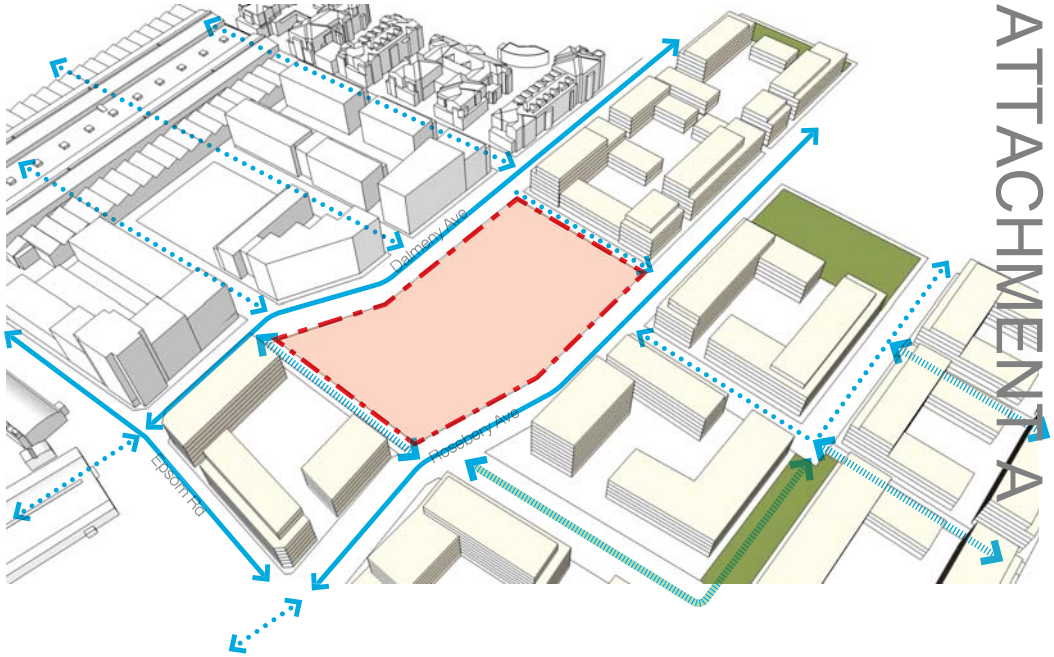
Existing roads

City of Sydney future new roads

City of Sydney future pedestrian streets

City of Sydney future pedestrian & bike green link





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ENVIRONMENTAL CONDITIONS

The site provides excellent oppurtunities for solar access across the entire site with only minor late afternoon overshadowing from future apartment buildings to the West. The generous width of the site (91.5m) will also provide excellent building seperation and solar access to landscaped communal courtyards.

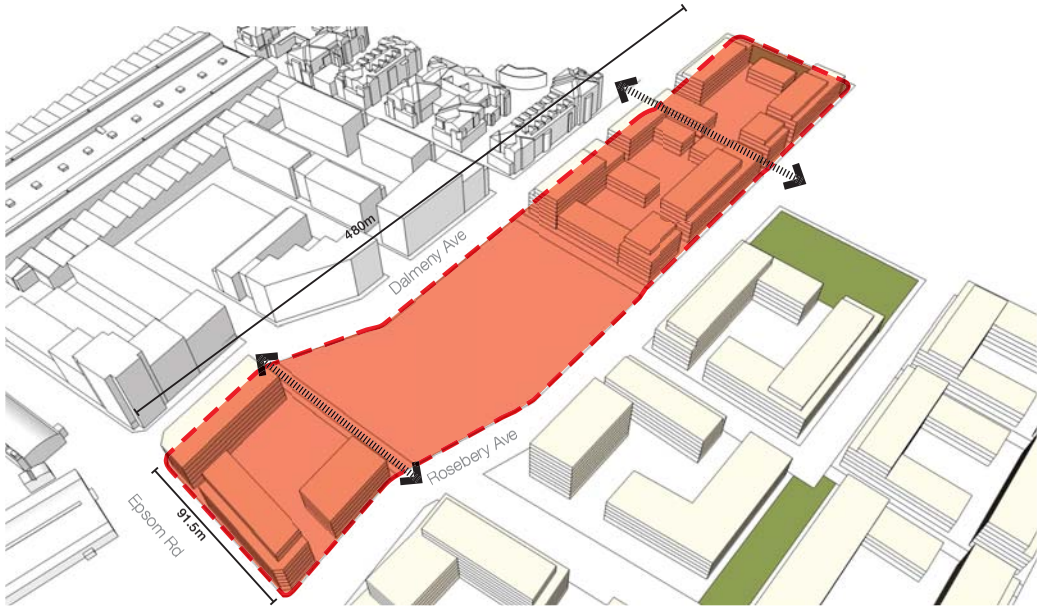
ACCESS & PEDESTRIAN CONNECTIONS

According the COS DCP the site will become further integrated into a future road/pedestrian/park system, which will create permeable residential scale blocks and improve connectivity across Rosebery and to public parks . There will be good access to the site with the extension of Rosebery and Dalmeny Avenues towards a new East-West arterial road North of the site.

The site currently makes no contribution to East-West connections across the site between Rosebery Ave and Dalmeny Ave. East-West permeability would provide opportunities to create neighbourhood connectivity and connect green park spaces.

URBAN DESIGN STRATEGY

Pedestrian access (COS DCP 2012)

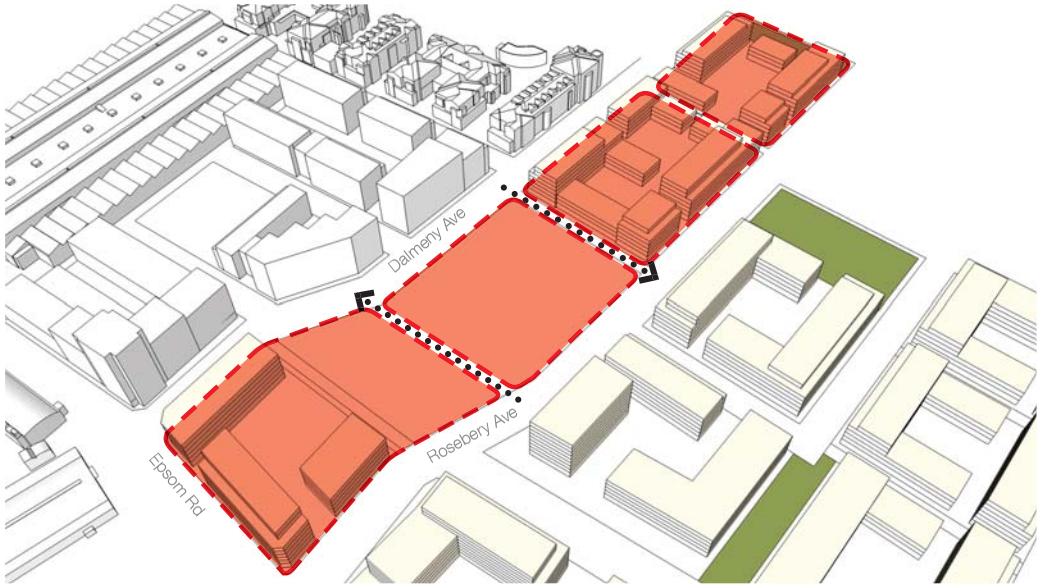


EXISTING BLOCK SCALE

The immediate block in which the site sits currently is very large and demonstrates no permeability nor articulation of scale suitable for residential use.

COS has described future pedestrian access across the site to articulate the scale of the block.

Shared Zone



RESIDENTIAL BLOCK SCALE

Shared zones further articulate the scale of the block by providing pedestrian / bicycle /vehicle access across the development parcels. They can further provide access to development parcels off the major roadways Dalemeny Ave and Rosebery Ave.

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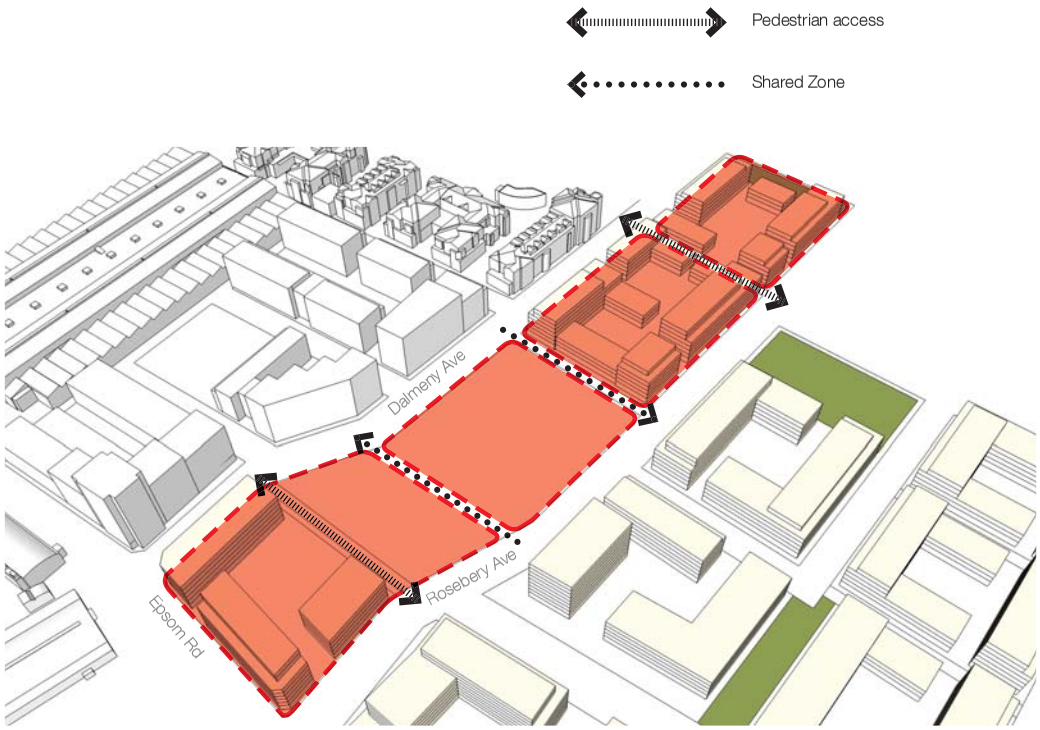
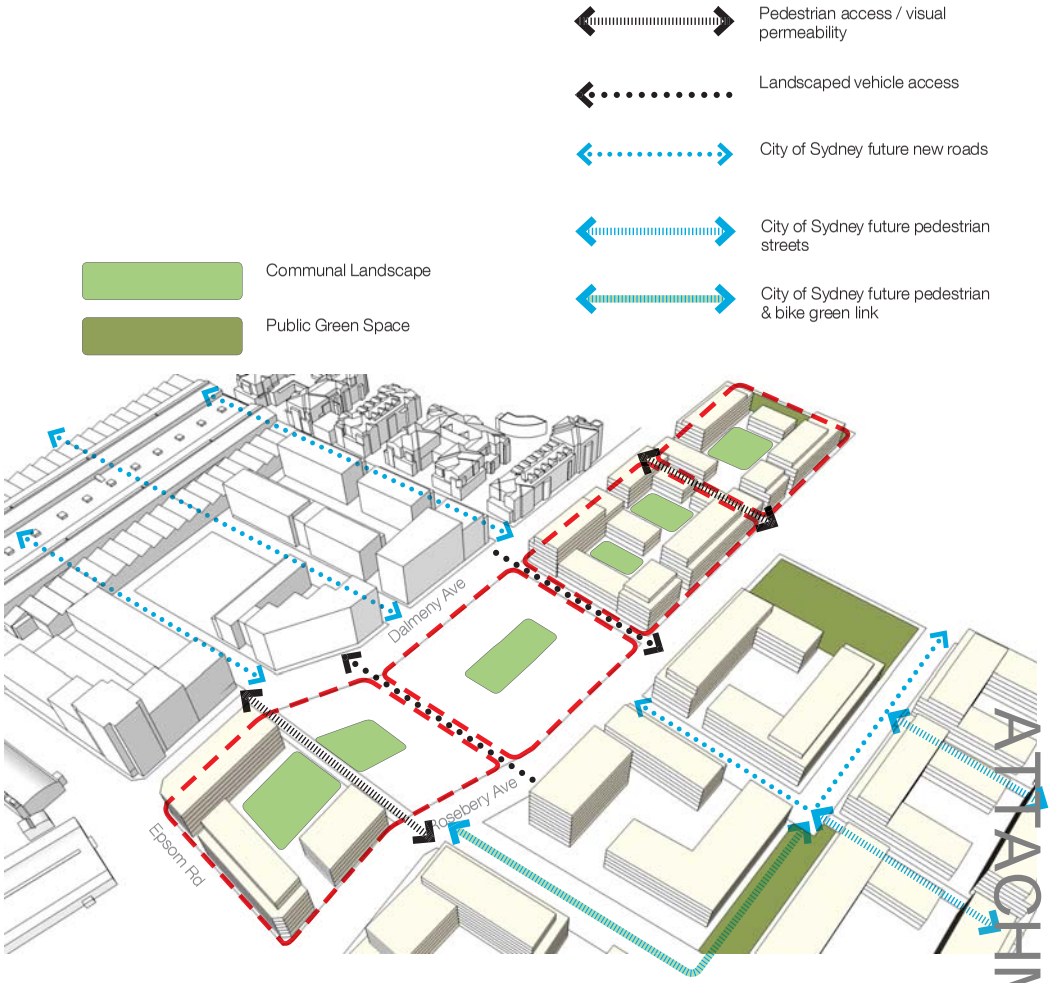


PERMEABILITY

A combination of pathways will create a sense of scale whilst providing regular East-West permeability and connectivity through the site and to the wider neighbourhood.



GREEN SPACE

Green spaces in the form of landscaped pedestrian paths/shared zones and courtyards will provide increased public and residential amenity and broader connectivity to surroundings.

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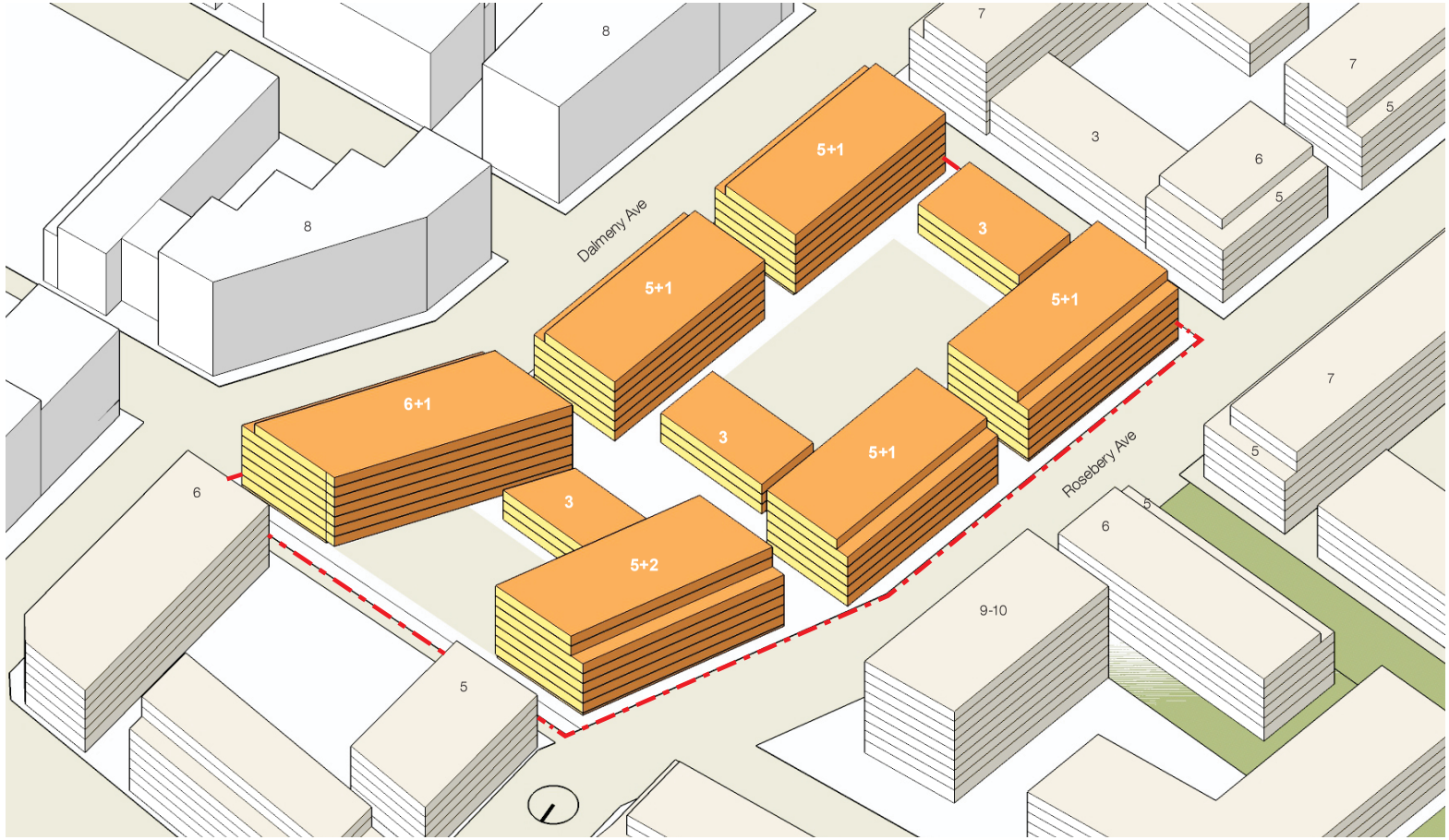
SITE MASSING
2:1 SCHEME

SITE AREA: **15215 SQM**

BLOCK PLAN MASSING

TOTAL GEA: 40350 SQM
TOTAL GFA: 30260 SQM (75% EFFICIENCY)

FSR **2.0:1**



BLOCK MASSING DIAGRAM

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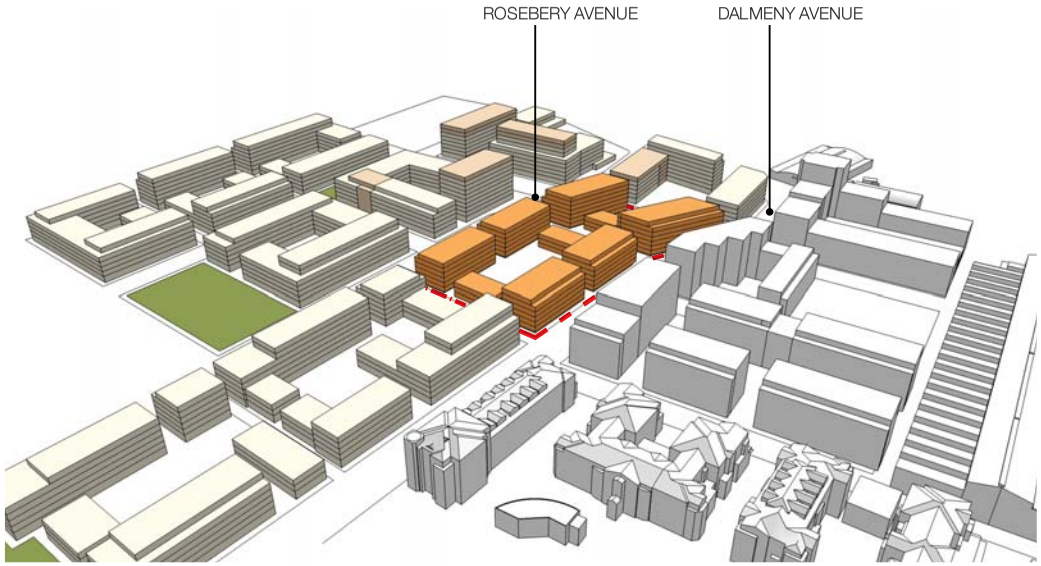
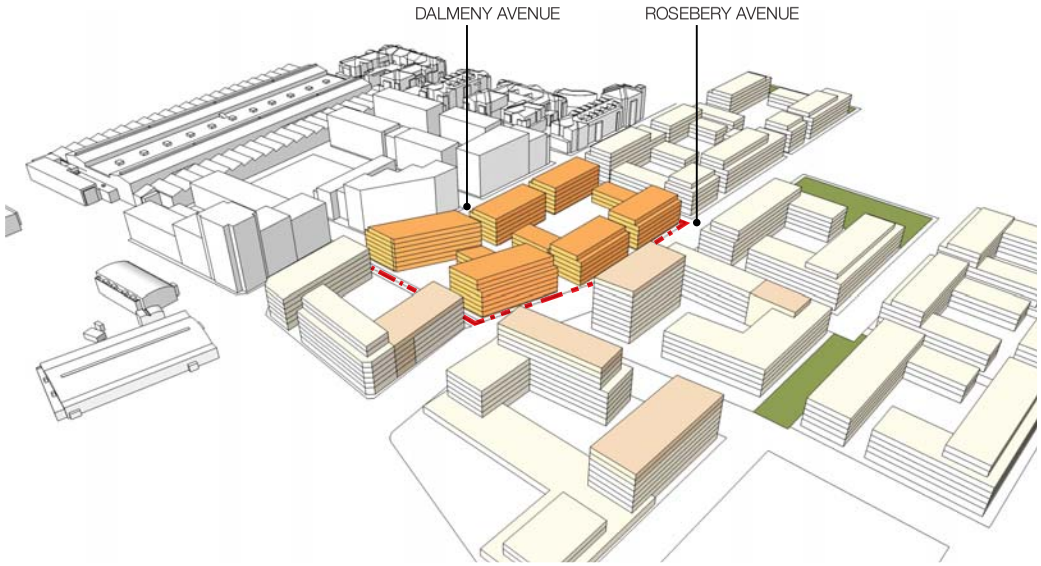
SITE MASSING
2:1 SCHEME



VIEW FROM SOUTH-EAST



VIEW FROM NORTH-WEST

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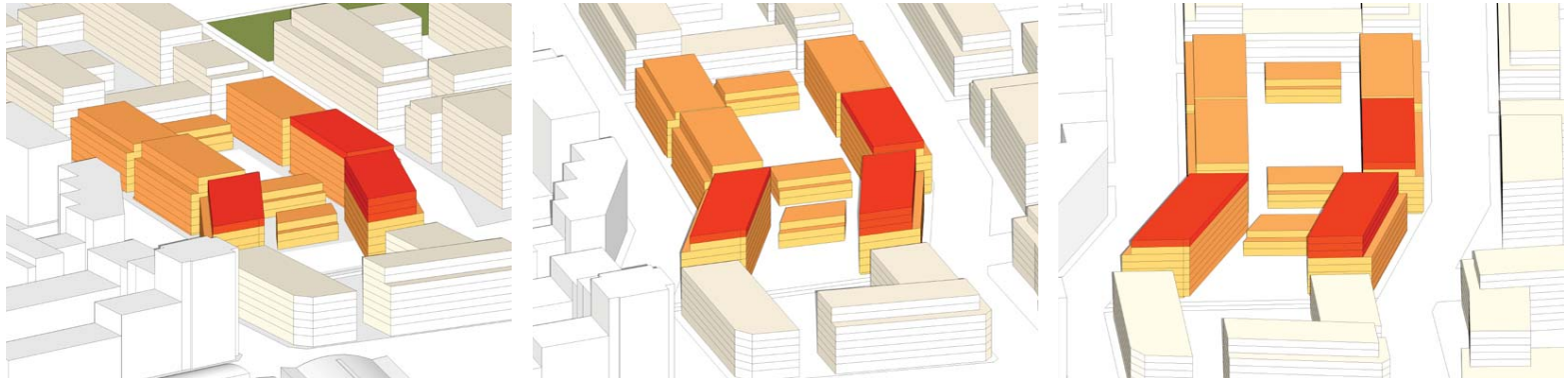
INSOLATION DIAGRAMS



VIEW FROM THE SUN DIAGRAMS - MID WINTER 21 JUNE

The proposal demonstrates excellent solar access to the apartments, and communal open space, whilst minimising overshadowing to neighbouring buildings.

SOLAR DIAGRAMS

The following diagrams demonstrate insolation and overshadowing based on the shadows cast by the block massing diagrams.

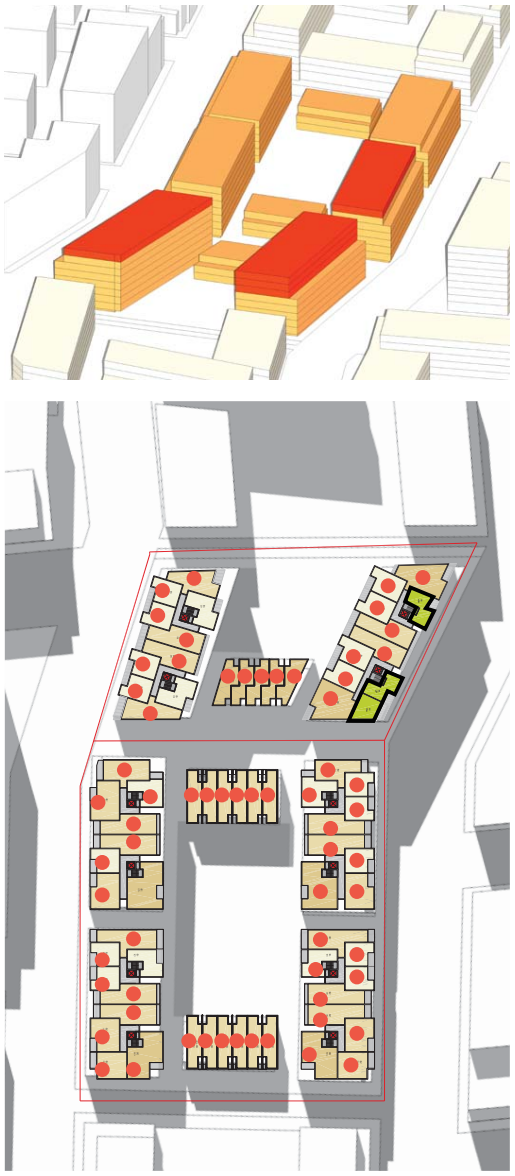
- 3 out of 73 Apartments on a Typical floor receive no direct sunlight (4%) between 9am & 3pm on 21st June (Winter Solstice)

Apartments which do not receive direct sunlight between 9am and 3pm

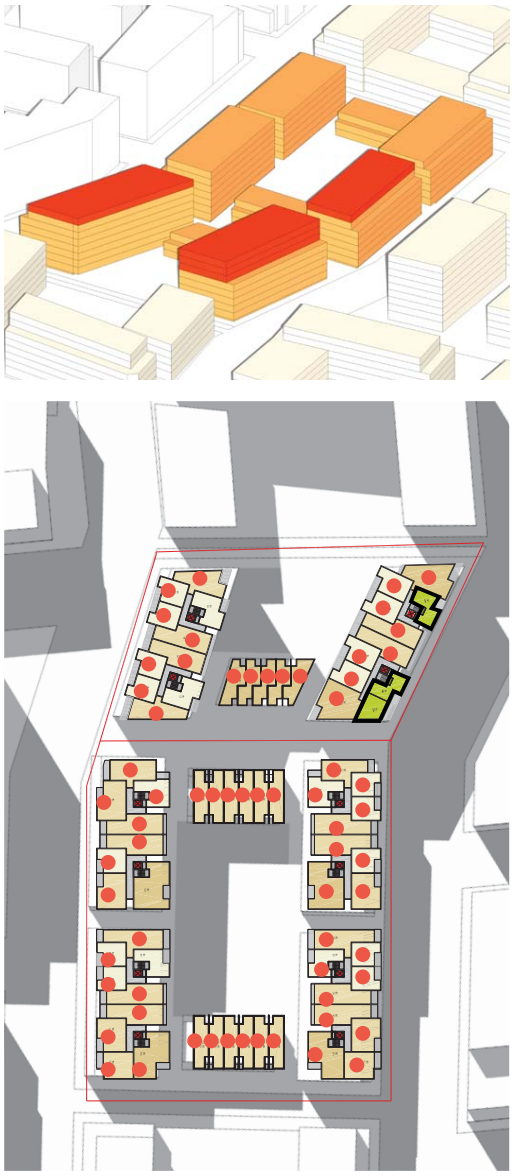
Apartments which receive a minimum of 2 hours direct sunlight

9am 10am 11am

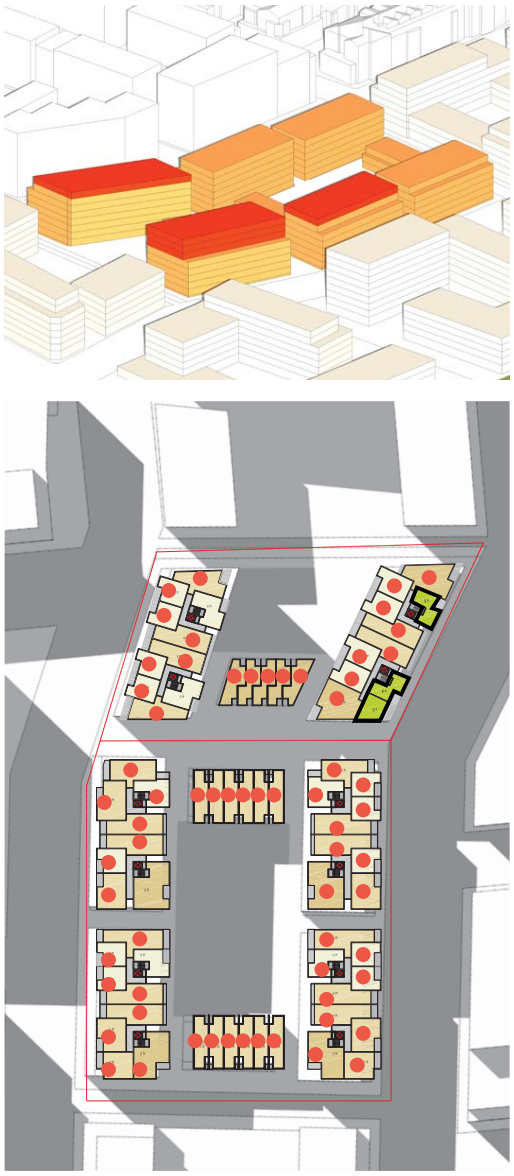
ATTACHMENT A



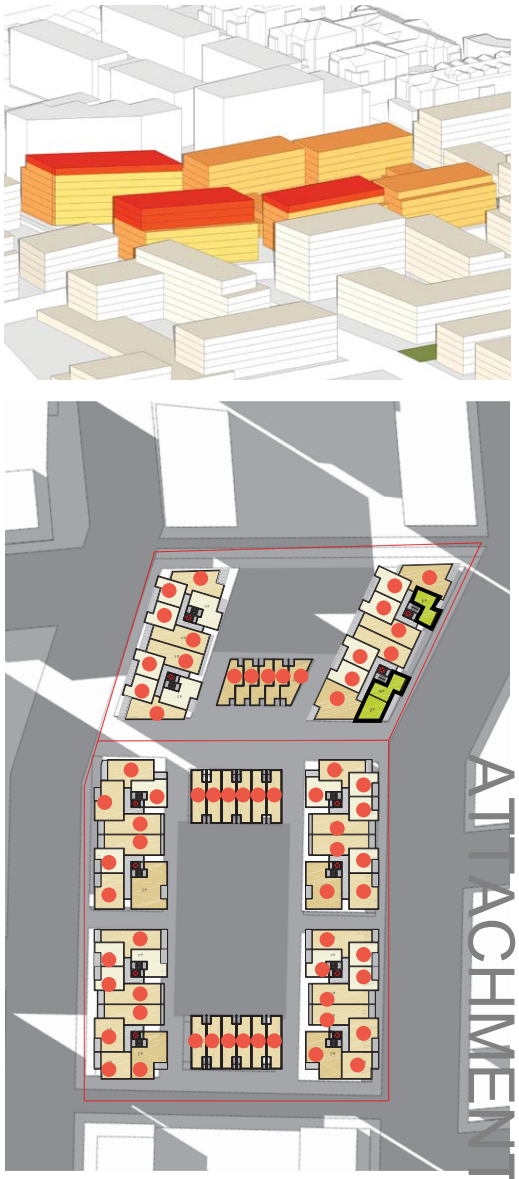
12pm



1pm



2pm



3pm

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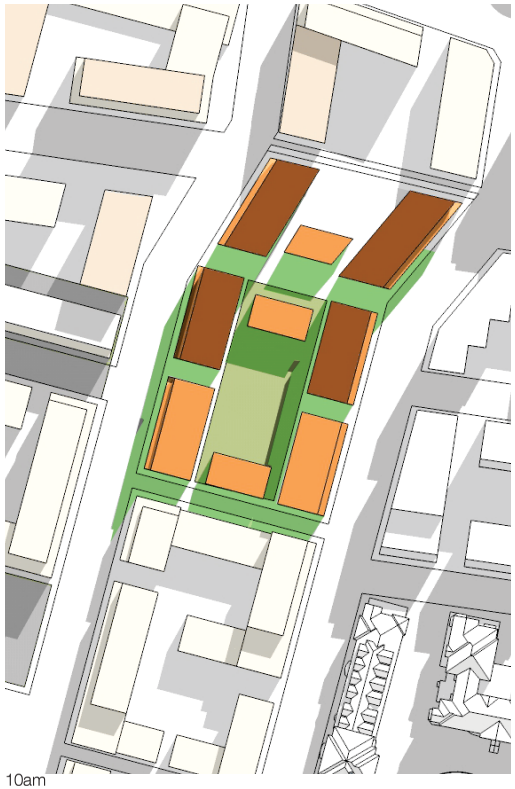
SHADOW DIAGRAMS

SHADOW IMPACT ANALYSIS - MID WINTER 21 JUNE


9am


10am


11am

Note: Any other shadows are casted by neighbouring permissable form as specified by the COS DCP height and setbacks.

Shadow cast by 2.0:1 Scheme

Additional shadow cast by 2.16:1 Design Excellence bonus scheme

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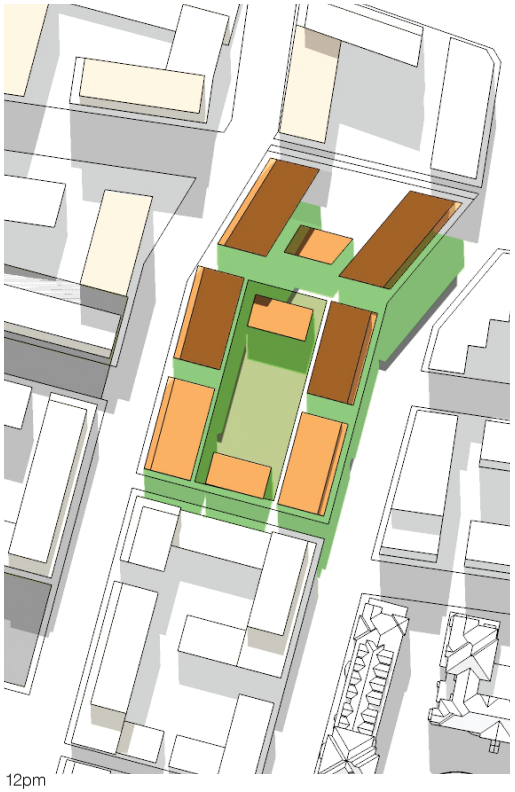

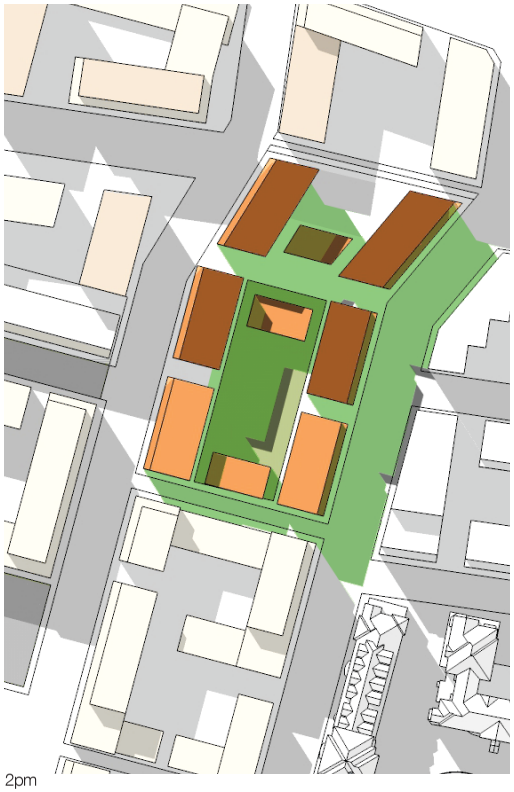

PUBLIC DOMAIN AND USES

BUILT FORM

Public domain combined area is approximately 2200sqm as notated in the adjacent diagram, which equates to roughly 14% of the total site area of 15,215sqm.

There is an allocated non-residential area at the south corner of the north-western block adjacent to the main road, and allows for drop-off on the side of the through-site link if required.

All ground level apartments will have east and west orientation, and can be accessed from their individual private courtyards as well as the shared lift lobbies.

NTS

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BASEMENT CARPARK

SUMMARY

Vehicle access along Dalmeny Ave provides two convenient entries for resident parking and garbage collection to the southern entry.

An efficient car park is provided with enough car spaces, storage and deepsoil planting over one basement level.

Terraces will each have lockup carparking with private storage and direct private access to units.

NTS

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ATTACHMENT A

APPENDIX B – TRAFFIC AND PARKING ASSESSMENT PREPARED BY PARKING AND TRAFFIC CONSULTANTS

ATTACHMENT A

PARKING & TRAFFIC
CONSULTANTS

Driving success through valuable advice

12-40 Rosebery Avenue, Rosebery

For Filetron Pty Ltd

Planning Proposal

For the attention of: Tim Bainbridge

7 April 2015

PARKING & TRAFFIC CONSULTANTS

Driving success through valuable advice

Document Control

Our Reference: T2-1276, 12-40 Rosebery Avenue, Rosebery, Planning Proposal

ISSUE	DATE	ISSUE DETAILS	AUTHOR	REVIEWED
1	11 Mar 2015	Draft Review for Client	M. Yee	S. Wellman
2	13 Mar 2015	Draft Final for Client	M. Yee	S. Wellman
3	31 Mar 2015	Final	M. Yee	C. Lynn
4	07 Apr 2015	Final with minor changes	M. Yee	S. Wellman

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PARKING & TRAFFIC CONSULTANTS

Driving success through valuable advice

Contents

1 Introduction

1.1 Project Summary

Parking and Traffic Consultants (PTC) have been engaged by Filetron Pty Ltd to prepare a Traffic and Parking Assessment to accompany a Planning Proposal application to City of Sydney Council (Council). The Planning Proposal seeks to increase the overall floor space ratio (FSR) allowable on site from 1.5:1 to 2.0:1 at 12-40 Rosebery Avenue, Rosebery as shown in Figure 1. Following approval of the Planning Proposal a Development Application (DA) will be prepared for a potential 5 to 7 storey residential development, 2.5 storey terraces and one level of basement car parking.

Figure 1 – Site Location (Source: BateSMART, 2015)

1.2 Purpose of this Report

This report presents the following considerations in relation to this planning proposal:

- Section 2 - A description of the project,
- Section 3 - A description of the road network serving the development property,
- Section 4 - Determination of the traffic activity associated with the planning proposal,
- Section 5 - Assessment of the proposed access arrangements, and
- Section 6 - Conclusion

2 Proposal

2.1 Development Site

The subject site occupies an area of approximately 15,215 sqm[i] which accommodates several large 1 to 2 storey industrial warehouse/office buildings that has an approximate Gross Floor Area (GFA) of 9,800 sqm. The site is approximately 91.5m in width and approximately 165m in length as shown in Figure 2.

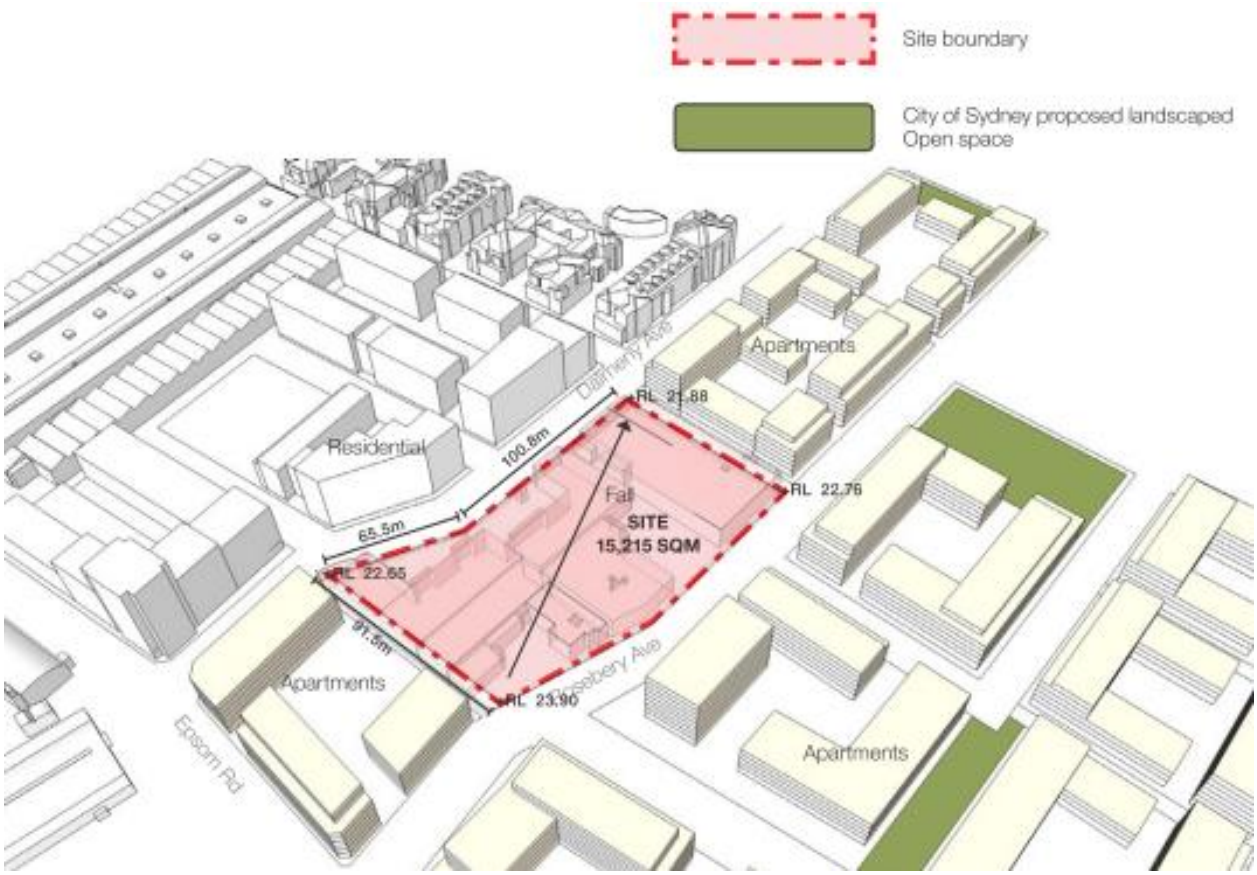


Figure 2 – Site Location

As shown in Figure 3 below, the land is zoned B4 Mixed Use under the City of Sydney Local Environmental Plan 2012 (the LEP) which enables a *"suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling".* The area surrounding the site is presently transforming from predominantly industrial to multi-storey residential apartments.

[i] *Sourced from BateSmart*

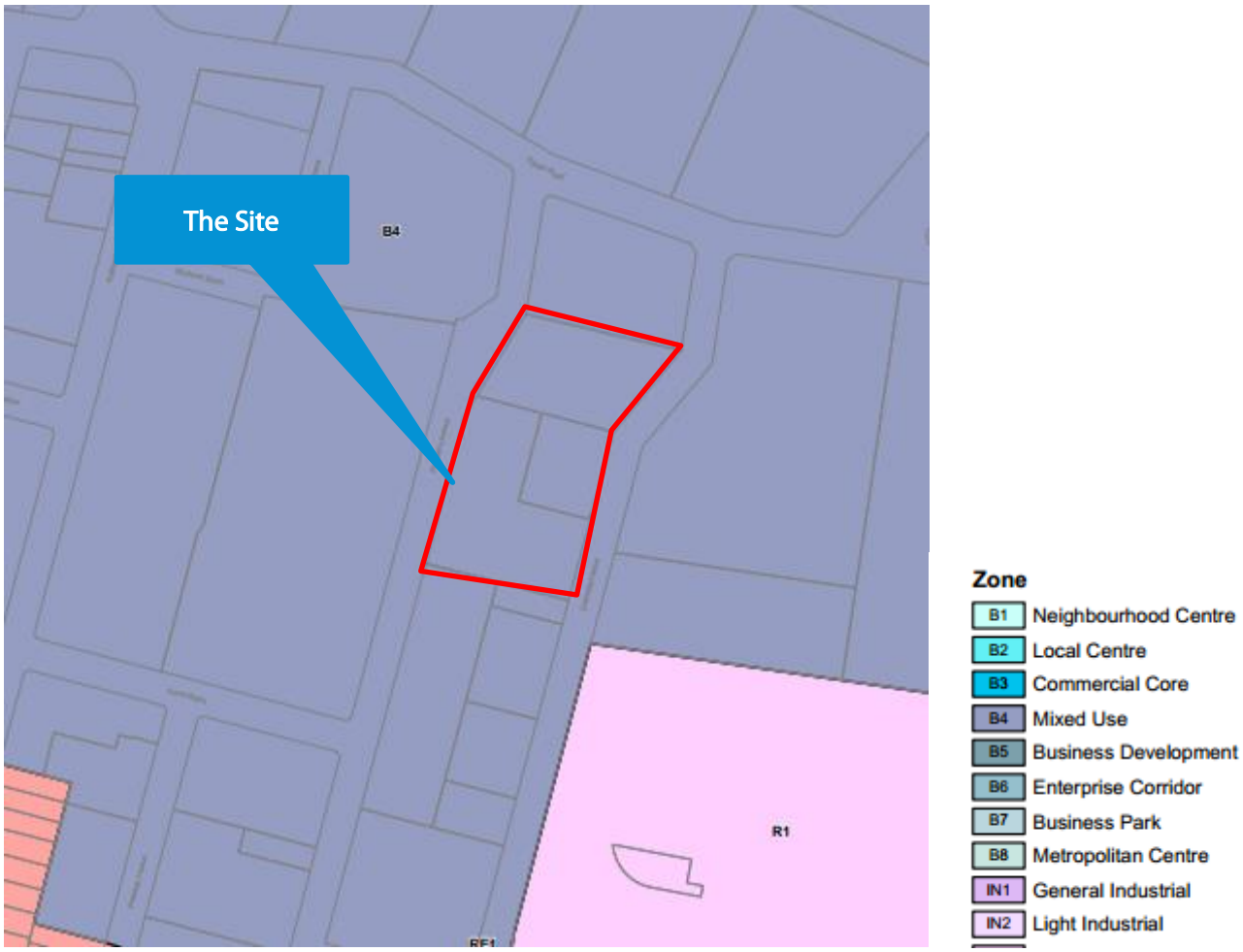


Figure 3 – Land Use surrounding the site (Source: 2012 Sydney LEP, Accessed 2 Mar 2015)

Within the City of Sydney DCP, Council have defined a number of future roads, pedestrian and bike green links surrounding the site to create permeable residential scale blocks. This would supplement an improvement in connectivity across Rosebery to public parks by way of creating an east-west connector route between Rosebery Avenue and Dalmeny Ave which currently does not exist.

2.2 Planning Proposal

The site presently has a base FSR of 1:1 with an allowable additional 0.5:1 available under clause 6.14 of the Sydney LEP 2012. The Planning Proposal seeks to retain the base FSR of 1:1, however seeks to alter the additional FSR under clause 6.14 from 0.5:1 to 1:1. As such the Proposal seeks a total FSR of 2:1, and envisages approximately 365 units and 18 terrace dwellings.

This Planning Proposal also considers the introduction of three new east-west links between Rosebery Avenue and Dalmeny Avenue (two public roadways and one public pedestrian pathway) which support the design intent outlined within the DCP. Therefore this proposal would facilitate the re-activation of the street scape by way of improving safety and pedestrian amenity. It also considers removing all existing driveway access points to the existing industrial site from Rosebery Avenue by way of providing two (2) separate driveways accessed

off Dalmeny and Rosebery Avenue. This would result in an increase of on-street parking along Rosebery Avenue.

Details of the proposal are presented on the architectural drawings prepared by BateSMART which are included as **Attachment 1**.

3 Existing Transport Facilities

3.1 Road Hierarchy

The subject development site is located in the suburb of Rosebery and is primarily serviced by Dalmeny Avenue and Rosebery Avenue, which are classified as Local Roads. The road network servicing the area comprises a number of State Roads, making the site easily accessible from different regions of the metropolitan area. The road network in this area also comprises local streets providing direct access to the surrounding retail, commercial and residential land-uses as presented in Figure 4.

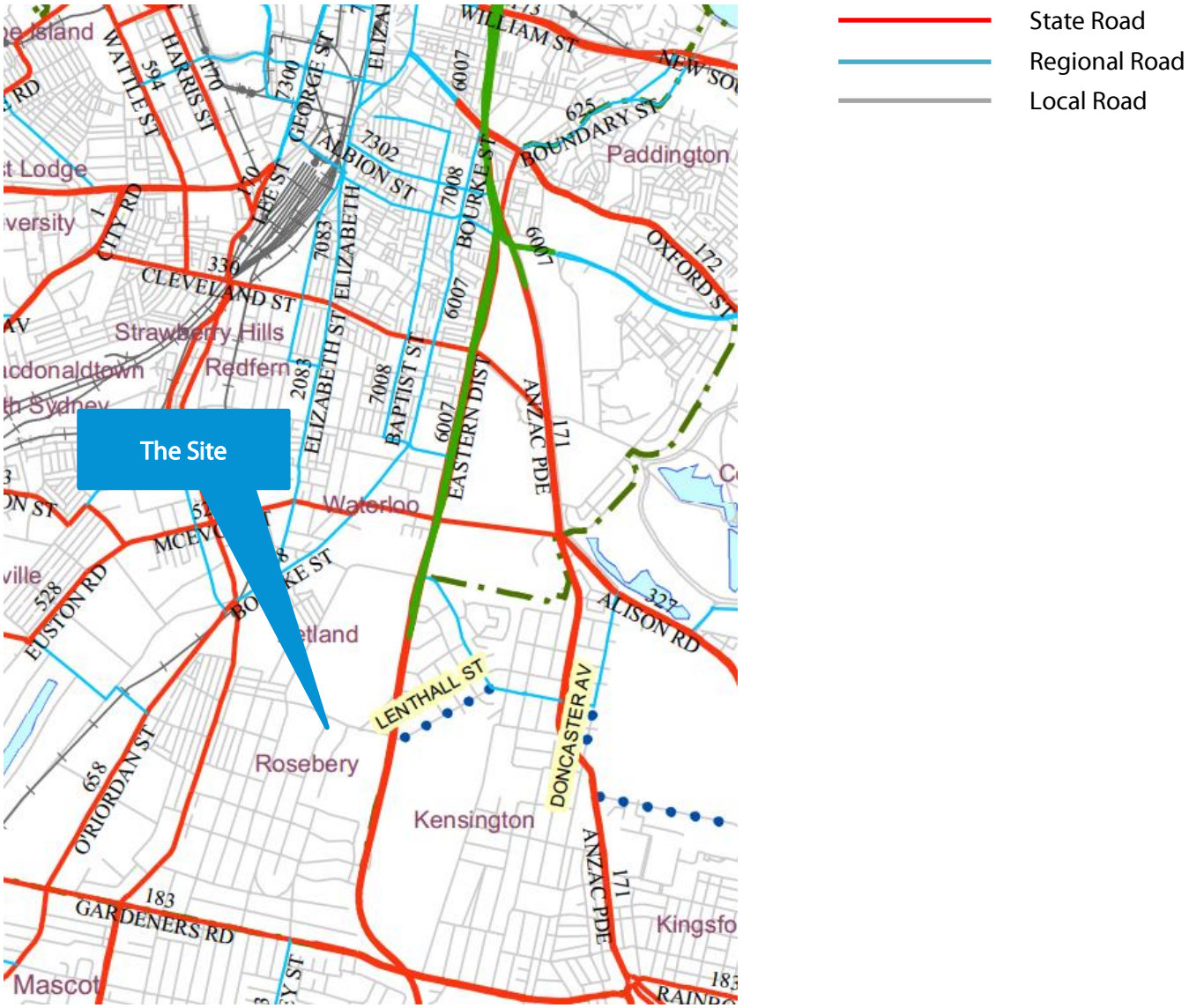


Figure 4 - RMS Road Hierarchy network surrounding the site

The road network serving the site includes:

The Eastern Distributor is a toll road which connects from the Sydney Harbour Tunnel to areas north of Sydney, and from Southern Cross Drive in the south to areas between Rosebery, Kensington and Port Botany including Sydney Airport and the region to the west of the Airport. The Highway is aligned north-south and forms the eastern border of Rosebery and operates as a State Road, and an alternative route to Anzac Parade. For much of its length, the Highway carries 3 lanes in each direction, and provides connectivity to the local road network via a Link Road to Epsom Road.

Rosebery Avenue is classified as a Local Road within the vicinity of the development site. The road is sign posted 40km/hr in both directions. The carriageway generally carries one lane of travel in each direction, with an unrestricted parking provision on both sides of the road.

Dalmeny Avenue is classified as a Local Road within the vicinity of the development site. The road is sign posted as 40kph in both directions. The carriageway generally carries one lane of travel in each direction with unrestricted parking provision on both sides of the road.

Epsom Road is a regional road that provides east-west movement on the adjacent road network. The road is sign posted as a 50km/hr road providing one lane of travel in each direction. Restricted on-street parking is provided on both sides of the road, between 8:30am to 6:00pm Monday to Friday.

3.2 Public Transport

The site is within a highly accessible location with access to Green Square Railway Station and several local bus stops. The NSW Planning Guidelines for Walking and Cycling (2004), suggests a distance of 400m is a walkable catchment for accessibility to off-site parking provisions and local amenities. Furthermore the guide also recommends that an 800m catchment is an acceptable, walkable distance if the development is within an area with public transport links. The following subsection assesses the development's accessibility to existing public transport surrounding the site.

3.2.1 Railway Station

Green Square Railway Station is located a distance of 1.4km from the site as shown in Figure 5. Green Square Railway Station is operated by Sydney Trains and operates services on the Airport line (T2). The T2 railway line operates between Macarthur and the City (via the airport) approximately every 10 minutes between 5.00am and midnight. Since the railway station is more than 800m away being the deemed acceptable walking distance to public transport links, the site is not readily accessible by Train.

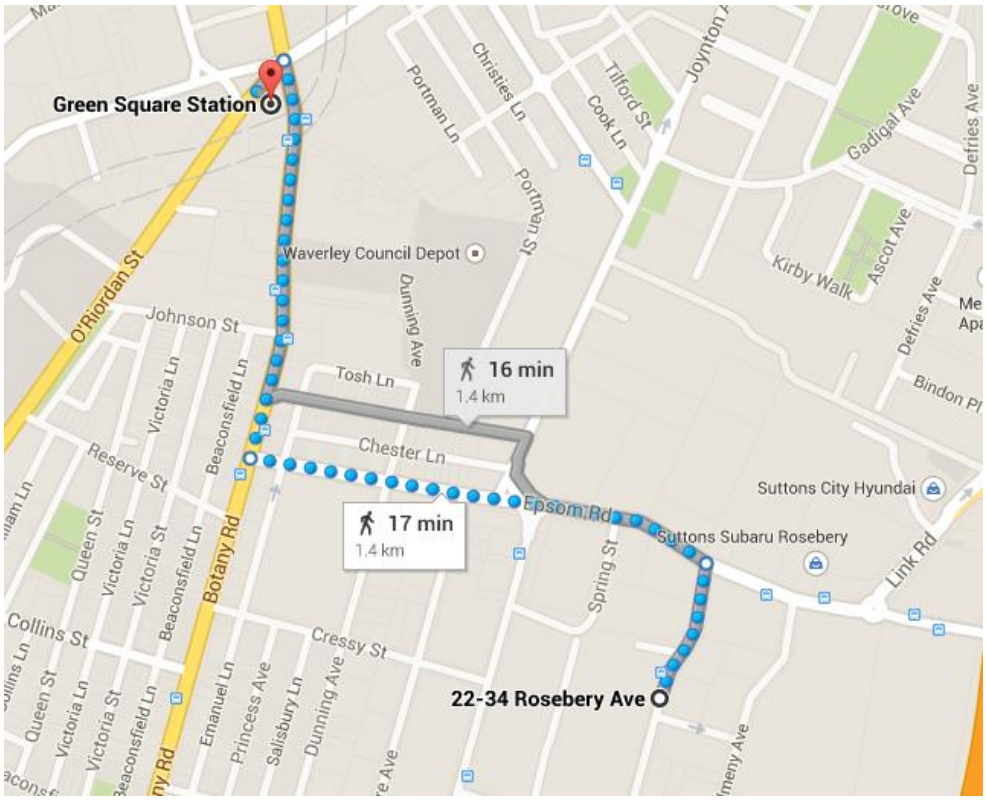


Figure 5 – Proximity of site from Green Square Railway Station

3.3 Buses

The site is serviced by buses that operate from two bus stops adjacent to the site on Rosebery Avenue, providing in/outbound movement every 30 minutes between the City and Mascot identified as bus route 301. An additional bus stop is located on Epsom Road which services bus routes 370 and 345 which provide bus access to Green Square Station every 15 minutes. It is noted that 301 also operates from this bus stop.

As mentioned previously, a distance of 400m is a walkable catchment to access local amenities. It is also suggested that an 800m catchment is an acceptable, walkable distance if the development is within an area with public transport links. Therefore, it has been assessed that the site is highly accessible by public transport given a bus stops are within 800m to the existing site.

Figure 6 below presents the bus routes servicing the site development.

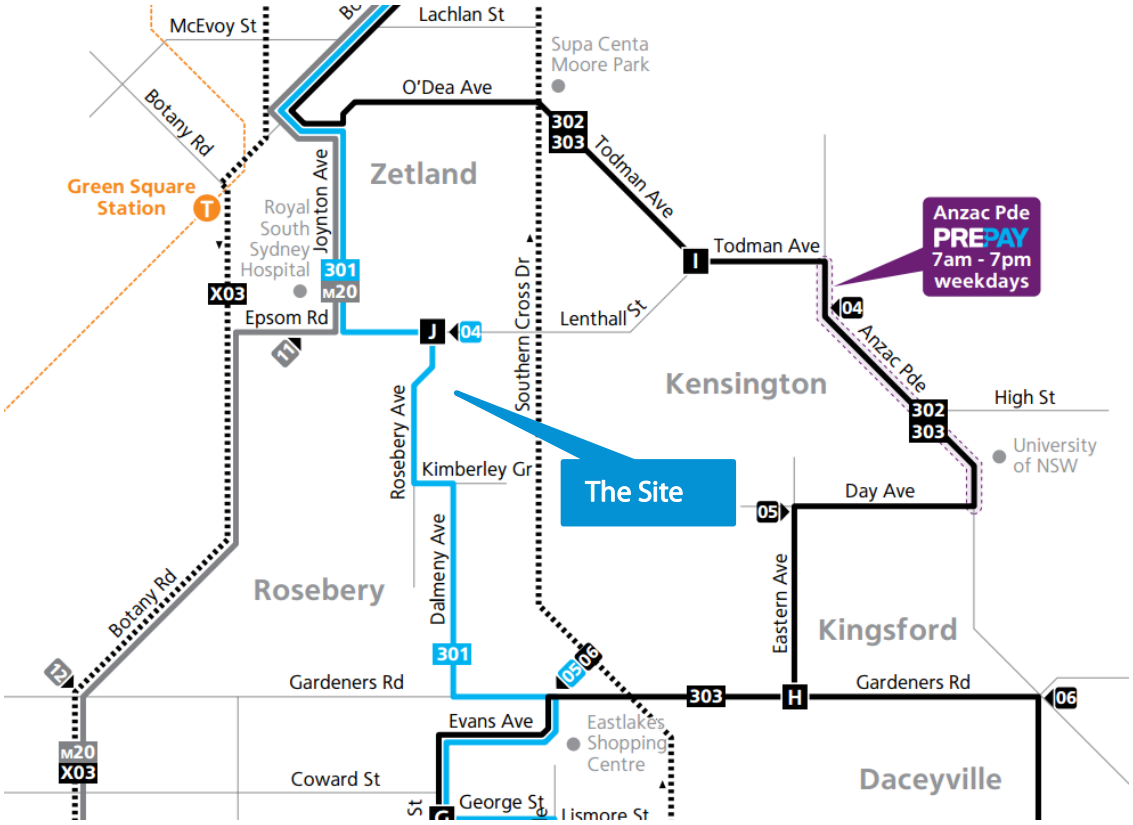


Figure 6 – Location of bus routes adjacent to development.

3.4 Bike Plan

The City of Sydney has prepared a bike plan to encourage cycling as a preferred transport choice for residents, workers and visitors. The plan identifies a number of on and off-road cycle paths and establishes a practical program for cycling infrastructure. Figure 7 shows available cycle facilities adjacent to the site.

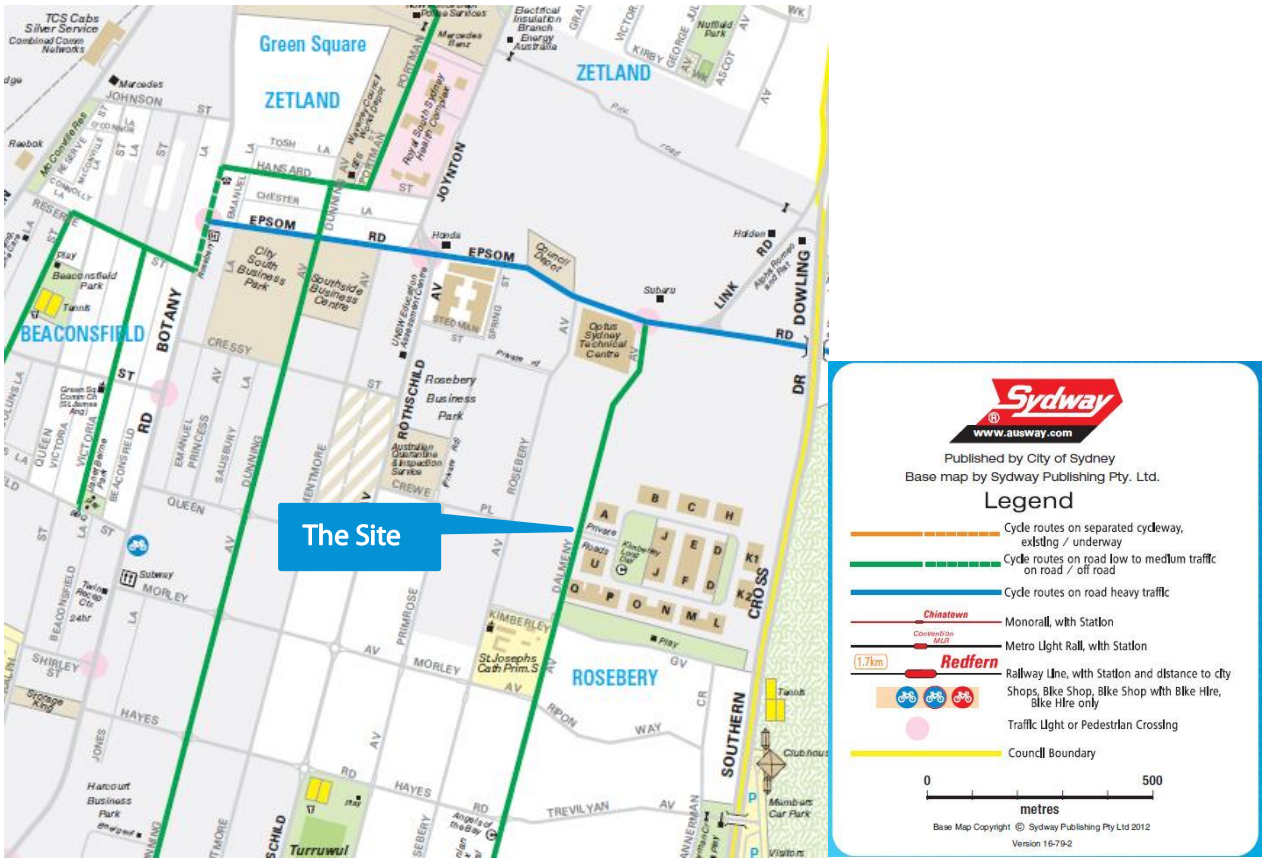


Figure 7 – Cycle pathways within approximate to site development (Source: SydneyCycleways, 2014)

As shown in Figure 7 above, the site is service by on-street cycle routes on Dalmeny Avenue and Epsom Road, which link directly to the site providing access to the greater Sydney cycle network.

The NSW Planning Guidelines for Walking and Cycling (2004) suggests a distance of 1500m is a suitable catchment for cycling for accessibility to public transport facilities and local amenities. As the development site is located within 1400m from Green Square Railway Station, it is considered to be highly accessible by public transport via cycling and walking.

3.5 Car Share

A car share space may be located within an existing development or on-street. It provides a more efficient use of parking space – a single car share vehicle can replace up to 12 private vehicles that would otherwise compete for local parking[ii]. Car share users are charged by time and distance, at a rate set by each operator. Costs associated with fuel, vehicle maintenance and insurance are usually included in the operator's hire fees.

Within proximity to the development, there are a number of existing on-street and off-street car share spaces available. As shown in Figure 8, within approximately 400m walking distance to the development, there are three Car Share locations, which are readily available to the general public.

[ii] *Source: City Of Sydney Council, 2015*

Car Share facilities provide;

- A more convenient solution than car rental; and
- A cheaper solution than owning a car, if usage is required infrequently.

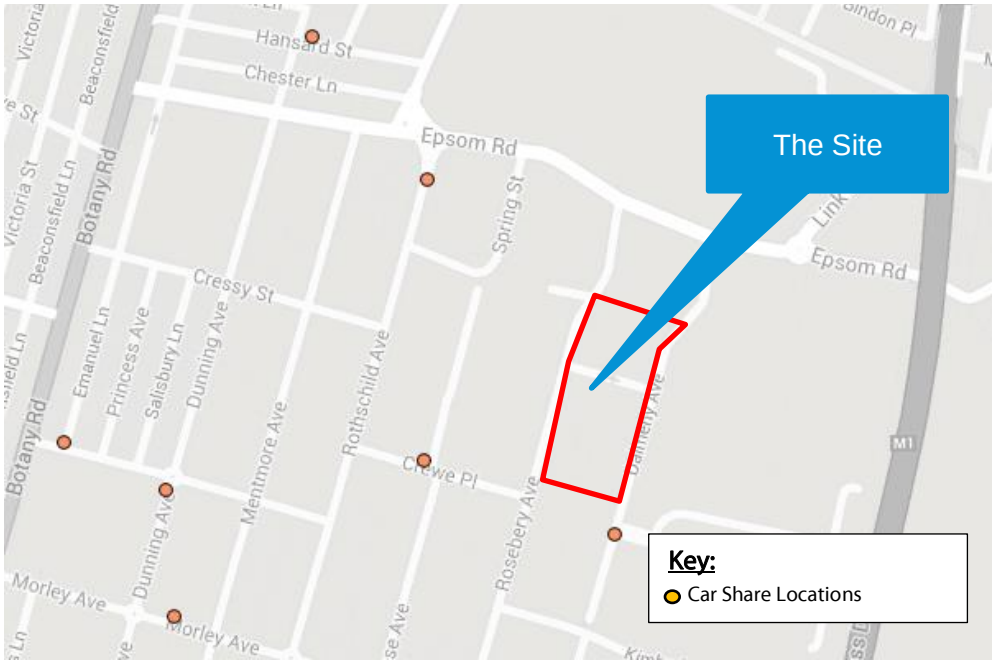


Figure 8 – Car Share facilities within direct access from the site (Source: City of Sydney, 2015)

3.6 Existing Traffic Generation

The development proposes to amalgamate three individual lots currently allocated to industrial facilities. The traffic generation of the existing site use has been established with reference to RMS Guide to Traffic Generating Developments (the RMS Guide). Section 5.11 defines the existing usage as 'Industry' which can be divided into factories and manufacturing. Section 3.10 provides the trip generation rates for such a site.

Based on a site inspection, it was observed the existing uses are predominantly warehouses associated with various manufacturing and goods storage.

The RMS Guide indicates that factories and manufacturing tend to have different peak access periods to the general network commuter access periods travelling to and from work. Traffic associated with industrial use tends to depend on working patterns of employees which can result in less people travelling in the peak hour. As such, the calculations of the existing trip generation related to the site presented in Table 1 adopt the following assumptions:

1) Daily vehicular trips for warehouses is 4 per 100 sqm Gross Floor Area (GFA),

In calculating the AM Peak hour and PM Peak hour vehicle trips associated with these developments, these have been calculated as representing 10% of the daily vehicle trips generated for the site during each peak hour. Based on extensive survey of traffic professionals throughout Australia in 1996[iii] the peak hour traffic

[iii] *DW Bennett*, Traffic Engineering Practice (4th Edition),*1996*

volume over a 24hour period is typically taken as 10%, for congested urban arterial road conditions. The remaining 80% of vehicular trips are spread through the remaining 22 hours in the day.

Table 1 – Existing Traffic Generation from Site

Usage	Weekday Peak	Assessment	Area GFA (sqm)	Daily Trips	Total Peak Trips (10% Daily Traffic)
Warehouse Development	AM Peak	4 vehicles per 100 sqm GFA	9,800	392	39.2
				AM Peak Trips	**39**
Warehouse Development	PM Peak	4 vehicles per 100 sqm GFA	9,800	392	39.2
				PM Peak Trips	**39**

The application of the RMS rates to the current use of the site has the potential to produce **39 vehicle trips** during the AM Peak and PM peak accessing from various access points on Rosebery Avenue and Dalmeny Avenue.

3.7 Existing Traffic Volumes

In order to assess the current traffic conditions in the vicinity of the development site, traffic surveys have been undertaken at the following intersections:

- Dalmeny Avenue and Epsom Road;
- Rosebery Avenue and Epsom Road; and
- Rosebery Avenue and Crewe Place.

These intersections were surveyed as it was assessed that these sites would experience the greatest impact from the proposed development.

The surveys were conducted on Wednesday 11 February 2015 between 7:30am and 9:30am and between 4:00pm and 6:00pm. These periods were selected as they reflect the typical peak access times across the road network within the area.

Figure 9 and Figure 10 provide a summary of the AM and PM Peak hour results.

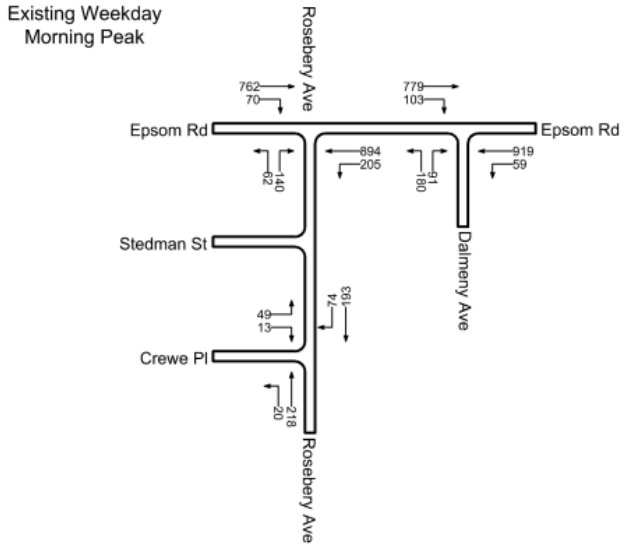


Figure 9 – Existing AM Peak Hour traffic counts

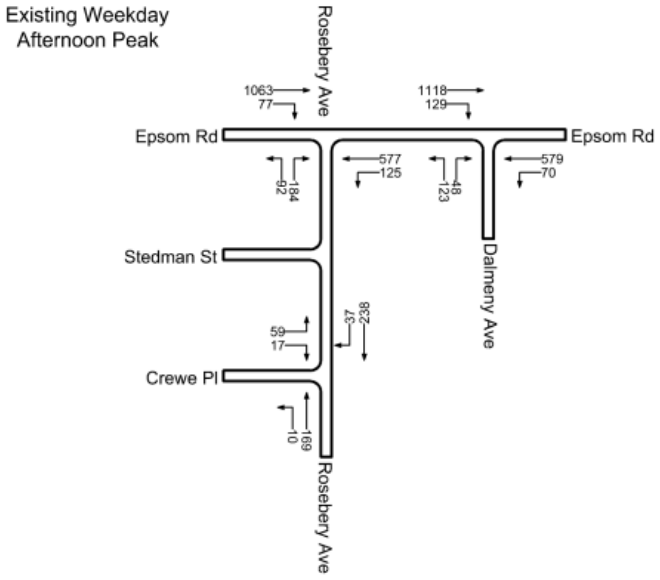


Figure 10 – Existing PM Peak Hour traffic counts

The results of the surveys indicate that generally the peak hour traffic occurs at the following times:

- AM Peak (08:00 to 09:00) and
- PM Peak (17:00 to 18:00).

3.8 Intersection Capacity Assessment (Existing Situation)

In order to confirm the current operation of the intersections servicing the site, an assessment has been undertaken using SIDRA Intersection modelling software for individual intersections analysed in isolation. The program presents a range of performance indicators (Level of Service, Average Delay, etc.).

Typically there are four performance indicators used to summarise the performance of an intersection, being:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay - The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- Back of Queue lengths (Q95) - is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measureable distance units.
- Level of Service - This is a categorisation of average delay, intended for simple reference. The RMS adopts the following bands:

Table 2 - SIDRA Intersection Performance Bands

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

A summary of the SIDRA results is presented in the following table, whilst SIDRA outputs are provided in **Attachment 2.**

Table 3 – SIDRA Intersection Modelling Results (Existing Situation)

Period	Intersection	Level of Service	Avg Delay	Deg. Of Sat.	Back of Queue (m)
AM Peak	Rosebery Ave – Crewe Pl	A*	4.5	0.056	0.2
	Rosebery Ave – Epsom Rd	A*	21.3	0.530	16.5
	Dalmeny Ave – Epsom Rd	B	22.6	0.638	108.6
PM Peak	Rosebery Ave – Crewe Pl	A*	4.3	0.066	1.7
	Rosebery Ave – Epsom Rd	A*	11.5	0.344	12.5
	Dalmeny Ave – Epsom Rd	B	22.4	0.777	126.3

*The results presented are based on the worse approach with the greatest average delay.

The SIDRA models were calibrated using vehicle queue data observed on each approach arm to reflect actual traffic conditions on site. The findings of the analysis indicate all intersections are operating well within the capacities and provide an acceptable level of service during the typical weekday peak periods.

4 Development Traffic Assessment

4.1 Traffic Generation

As discussed in Section 2.2, the site presently has a base FSR of 1.0:1.with the potential for an additional 0.5:1 should the site provide community based infrastructure which is being proposed. As such without this planning proposal the site has the potential to provide a development with a FSR of 1.5:1 under current planning controls.

This planning proposal proposes an amendment to the current development controls associated with this site to increase the developable FSR by 0.5:1 to 2.0:1. With an FSR of 2.0:1, the site has the potential to accommodate 387 residential units. It is acknowledged that the site is presently underdeveloped as an Industrial land use.

To understand the potential traffic impact of increasing the FSR by 0.5:1, the following section assesses the traffic generated from the site by reviewing the following:

- Current Planning Controls (Baseline) adopting an FSR of 1.5:1
- Proposed Planning Controls (Future) adopting an FSR of 2.0:1

4.1.1 Traffic Generation based on a FSR of 1.5:1 (residential development)

Under the current LEP, the site is permitted for redevelopment with an FSR of up to 1.5:1 which consists of the current 1:1 FSR an additional bonus 0.5:1 FSR. When comparing this to the development potential of the site at an FSR of 2.0:1, it results in the construction of only 75% of total apartments. Therefore the potential unit yield for this site is:

- 387 Units x 75% = 287 units.

In the context of the traffic generation rates, and given this proposal relates to more than 20 apartments, the RMS guide indicates the development is considered as a high density residential flat dwelling. Therefore, per Technical Direction 13/04, the following weekday trip generation rates have been provided:

- Weekday average morning peak hour trips - 0.19 per Unit
- Weekday average evening peak hour trips – 0.15 per Unit

Based on the above rates, Table 4 below illustrates the estimated total peak trips that could be generated from site should it be developed with an FSR of 1.5:1.

Table 4 - Calculated Permissible Traffic Generation based on a FSR of 1.5:1 Residential Development

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[iv]	Assessment	Total Peak Trips
Residential Development (Units)	AM Peak	Per unit	0.19 (RMS Guide)	287 Units	54.9 (55)
Total AM Peak Trips					**55**
Residential Development (Units)	PM Peak	Per unit	0.15 (RMS Guide)	287 Units	43.1 (43)
Total PM Peak					**43**

Table 4 shows up to 55 and 43 trips in the AM Peak and PM Peak hour respectively may be generated from a site with a FSR of 1.5:1 currently permitted under the LEP. Comparing this to the existing situation, it results in an increase of 16 and 10 vehicular trips during the AM Peak and PM Peak respectively.

4.1.2 Traffic Generation based on a FSR of 2.0:1 (residential development)

This planning proposal considers the development of 12-40 Rosebery Avenue, Rosebery for primarily residential use by seeking an amendment to the LEP to permit a FSR of 2.0:1 from the permitted FSR of 1.5:1.

Based on the existing site area of 15,215 sqm, and by way of applying the increased FSR it would result in a residential development with a total GFA of 30,779 sqm, allowing for approximately 365 apartments and 18 terraces to be built. This assumes the existing site usages would be completely removed from site. In the context of the traffic generation rates, and given this proposal relates to more than 20 apartments, the RMS guide indicates the development is considered as a high density residential flat dwelling. Therefore, per Technical Direction 13/04, the following weekday trip generation rates for have been provided:

- Weekday average morning peak hour trips - 0.19 per Unit
- Weekday average evening peak hour trips – 0.15 per Unit

In the context of the RMS traffic generation rates, the Planning Proposal is identified as primarily providing for high density residential dwellings. Based on this, Table 5 illustrates the estimated total peak trips that would be generated assuming a FSR of 2.0:1.

Table 5 - Calculated Existing Traffic Generation based on a FSR of 2.0:1 Residential Development

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[v]	Assessment	Total Peak Trips
Residential Development (365 units + 18 Terraces)	AM Peak	Per unit/ Terrace	0.19 (RMS Guide)	383 Units	72.7 (73)
Total AM Peak Trips					**73**

Usage	Weekday Peak	Measurement	Weekday Peak hour rates[v]	Assessment	Total Peak Trips
Residential Development (365 units + 18 Terraces)	PM Peak	Per unit/ Terrace	0.15 (RMS Guide)	383 Units	57.45 (57)
Total PM Peak					**57**

Table 5 shows that the proposed planned use for the site would result in up to 73 and 57 trips in the AM Peak and PM Peak hour respectively. This is an increase of 34 trips in the AM Peak and 18 trips in the PM Peak compared to the current existing use as calculated in Section 3.6 above.

4.1.3 Summary of Traffic Generation Scenarios

The calculated total peak trips for each of the tested scenarios are summarised in Table 6. In reviewing the findings against the existing situation, the site presently has the potential to generate an additional:

- 16 and 10 vehicular trips during the AM Peak and PM Peak periods respectively under the current planning controls with an FSR of 1.5:1; and
- 34 and 18 vehicular trips during the AM Peak and PM Peak periods respectively under the proposed amended planning control with an FSR of 2.0:1.

In assessing the impact of increasing the developable FSR by 0.5:1, this will result in an additional 18 and 8 vehicular trips during the AM Peak and PM Peak respectively. The impact of the increase in vehicular traffic is reviewed in Section 4.2 below.

Table 6 – Summary of traffic generation scenarios permissible at the development site

Usage	Assessment	AM Peak Trips	PM Peak Trips
Existing Situation – Industrial Development [RTA Rates]	9,800 sqm GFA	39	39
Residential Use Development (FSR 1.5:1) [Baseline]	287 Residential Units	55	49
Residential Use Development (FSR 2.0:1) [Proposed]	365 Residential Units and 18 three bedroom terraces	73	57

4.2 Traffic Distribution

In reviewing the Planning Proposal, it is acknowledged that in conjunction with a Development Application, the traffic and parking impacts of the development would result in the closure of the existing driveway accesses from Dalmeny Avenue and Rosebery Avenue by way of a new vehicular access provided only from Dalmeny Avenue. In assessing the impacts of increasing traffic on Dalmeny Avenue, we have incorporated the following traffic distribution assumptions:

- For the residential development, 20% (In)/80% (Out) has been adopted in the AM peak and vice versa in the PM Peak. These movements generally occur during the road network peak due to residents leaving their

premises to travel to work, also allowing for some inbound movements for residents undertaking a round trip.

- To provide a robust assessment, we have assumed all vehicular trips associated with the existing developments with accesses on either Rosebery Avenue or Dalmeny Avenue have not been removed from the traffic volumes. To assess the impact of the additional traffic generated from the development we have removed 39 trips from the Proposed AM Peak and PM Peaks.
- To distribute the traffic onto the adjacent road network, we have assumed the existing traffic turning percentages currently utilising Epsom Road and Dalmeny Avenue to travel elsewhere in the network. They are:
  - AM Peak - Traffic turning out from Dalmeny Ave to Epsom Road 66% turn left 34% turn right;
  - AM Peak – Traffic turning in from Epsom Road to Dalmeny Ave 64% arrive from the eastbound approach; 36% arrive from the westbound approach
  - PM Peak - Traffic turning out from Dalmeny Ave to Epsom Road 72% turn left 28% turn right;
  - PM Peak – Traffic turning in from Epsom Road to Dalmeny Ave 65% arrive from the westbound approach; 35% arrive from the westbound approach

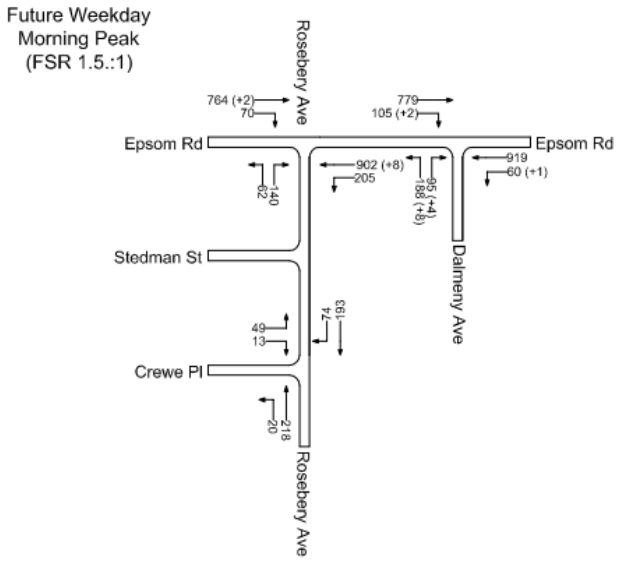
The calculated split of in/out trips during the AM and PM peak hours is presented in Table 7.

Table 7 - Calculated split in/out trips associated with the Planning Proposal (FSR 2.0:1)

	AM Peak			PM Peak		
	In	**Out**	**Total**	**In**	**Out**	**Total**
Existing Situation			**39**			**39**
FSR 1.5:1Residential [Baseline]			55			49
FSR 1.5:1 Total Additional Trips (20:80)	**3.2 (3)**	**12.8 (13)**	**16**	**8**	**2**	**10**
FSR 2.1:1 Residential [Proposal]			73			57
FSR 2.0:1 Total Additional Trips (20:80)	**6.8(7)**	**27.2 (27)**	**34**	**14.4 (14)**	**3.6 (4)**	**18**

4.3 Intersection Capacity Assessment (Baseline FSR of 1.5:1)

The post development traffic generation associated with a developable FSR 1.5:1 presented in Table 7 distributed onto the road network is presented in Figure 11 and Figure 12. The figures presented were used in SIDRA.



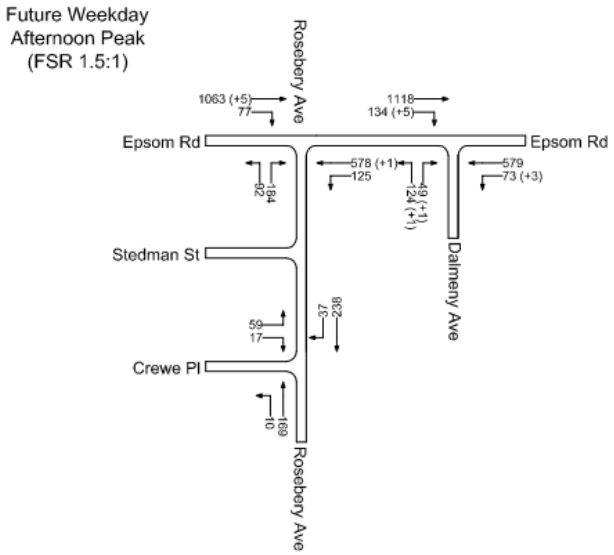


Figure 11 - Future AM Peak Traffic Distribution (FSR 1.5:1) Figure 12 – Future PM Peak Traffic Distribution (FSR 1.5:1)

The projected traffic volumes have been applied to the surveyed traffic turn count volumes and subsequently modelled using SIDRA. The results of this analysis are summarised below with SIDRA outputs provided as Attachment 3.

Table 8 – SIDRA Intersection Modelling Results (Baseline FSR of 1.5:1)

Period	Intersection	Level of Service	Avg. Delay	Deg. Of Sat.	Back of Queue (m)
AM Peak	Rosebery Ave – Crewe Pl	A*	4.5	0.056	0.2
	Rosebery Ave – Epsom Rd	B*	21.9	0.541	2.4
	Dalmeny Ave – Epsom Rd	B	22.8	0.640	109.8
PM Peak	Rosebery Ave – Crewe Pl	A*	4.3	0.066	1.7
	Rosebery Ave – Epsom Rd	A*	11.7	0.348	1.8
	Dalmeny Ave – Epsom Rd	B	22.0	0.755	124.5

*The results presented are based on the worse approach with the greatest average delay.

Under the current developable FSR of 1.5:1, with the addition of 16 in/out movements in the AM Peak and 10 in/out movements in the PM Peak, SIDRA modelling indicates the site will continue to operate well compared with the existing situation.

If the site was only developed under a developable FSR of 1.5:1, the traffic modelling associated with Epsom Road and Dalmeny Avenue intersection indicates the increase in traffic movement on Dalmeny Avenue would not result in any notable impact on the overall operation at this intersection and will continue to operate well within its capacity compared with the existing traffic conditions modelled.

4.4 Intersection Capacity Assessment (Proposal FSR of 2.0:1)

The post development traffic generation associated with an FSR 2.0:1 presented in Table 7 is distributed onto the road network presented in Figure 13 and Figure 14. The figures presented were used in SIDRA.

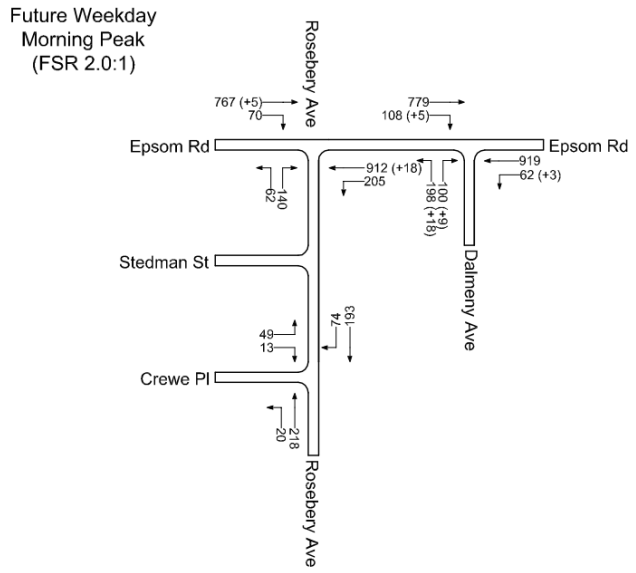


Figure 13 - Future AM Peak Traffic Distribution

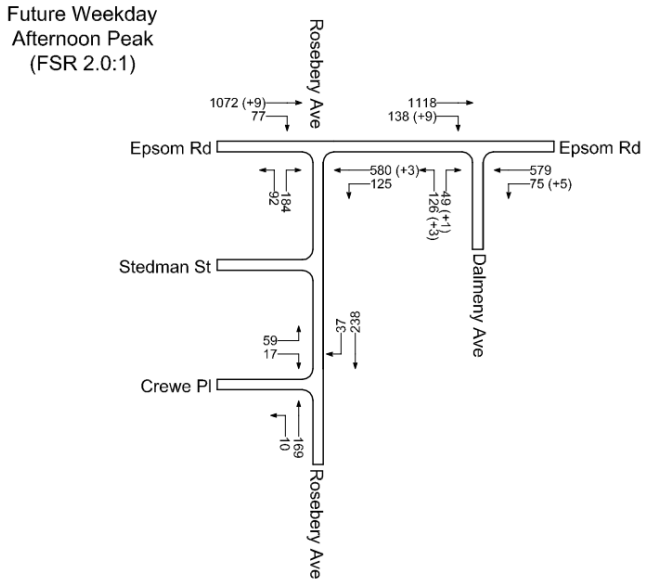


Figure 14 – Future PM Peak Traffic Distribution

The results of this analysis are summarised below in Table 9 below with SIDRA outputs provided as Attachment 4.

Table 9 – Summary of SIDRA Intersection Modelling Results (2.0:1 FSR)

Period	Intersection	Level of Service	Avg Delay	Deg. Of Sat.	Back of Queue (m)
AM Peak	Rosebery Ave – Crewe Pl	A*	4.5	0.056	0.2
	Rosebery Ave – Epsom Rd	B*	22.6	0.554	17.3
	Dalmeny Ave – Epsom Rd	B	23.0	0.643	111.3
PM Peak	Rosebery Ave – Crewe Pl	A*	4.3	0.066	1.7
	Rosebery Ave – Epsom Rd	A*	11.7	0.352	12.8
	Dalmeny Ave – Epsom Rd	B	23.1	0.791	128.8

*The results presented are based on the worse approach with the greatest average delay.

The SIDRA modelling results presented in Table 9 indicates the site will continue to operate well within its capacity and will continue to operate satisfactorily.

4.5 Assessment of Traffic Generation impacts by increasing the FSR by 0.5:1

The results presented as part of the traffic modelling in sections 4.3 and 4.4, have demonstrated that the increase in traffic movements in and out Dalmeny Avenue onto Epsom Road, shows no notable impact on the overall road network operation. In assessing the impact of increasing the FSR by 0.5:1 above the currently developable FSR of 1.5:1, the traffic modelling associated with Rosebery Avenue and Dalmeny Avenue intersection indicates the increase in traffic movement on Dalmeny Avenue would not result in any notable impact on the overall operation at this intersection. Therefore, the proposal to accommodate a development with a 2.0:1 FSR instead of a 1.5:1 FSR would not result in any detrimental impacts.

Table 10 – Summary of Level of Service Results

Period	Intersection	Existing	FSR 1.5:1 [Baseline]	FSR 2.0:1 [Proposal]
AM Peak	Rosebery Ave – Crewe Pl	A*	A*	A*
	Rosebery Ave – Epsom Rd	A*	B*	B*
	Dalmeny Ave – Epsom Rd	B	B	B
PM Peak	Rosebery Ave – Crewe Pl	A*	A*	A*
	Rosebery Ave – Epsom Rd	A*	A*	A*
	Dalmeny Ave – Epsom Rd	B	B	B

*The results presented are based on the worse approach with the greatest average delay.

Table 11 – Summary of Average Delay (Secs) Results

Period	Intersection	Existing	FSR 1.5:1	FSR 2.0:1
AM Peak	Rosebery Ave – Crewe Pl	4.5	4.5	4.5
	Rosebery Ave – Epsom Rd	21.3	21.9	22.6
	Dalmeny Ave – Epsom Rd	22.6	22.8	23.0
PM Peak	Rosebery Ave – Crewe Pl	4.3	4.3	4.3
	Rosebery Ave – Epsom Rd	10.3	11.7	11.7
	Dalmeny Ave – Epsom Rd	22.4	22.0	23.1

Table 12 – Summary of Degree of Saturation Results

Period	Intersection	Existing	FSR 1.5:1	FSR 2.0:1
AM Peak	Rosebery Ave – Crewe Pl	0.056	0.056	0.056
	Rosebery Ave – Epsom Rd	0.530	0.541	0.554
	Dalmeny Ave – Epsom Rd	0.638	0.640	0.643
PM Peak	Rosebery Ave – Crewe Pl	0.066	0.066	0.066
	Rosebery Ave – Epsom Rd	0.260	0.348	0.352
	Dalmeny Ave – Epsom Rd	0.777	0.755	0.791

Table 13 – Summary of Back of Queue Distance (m) Results

Period	Intersection	Existing	FSR 1.5:1	FSR 2.0:1
AM Peak	Rosebery Ave – Crewe Pl	0.2	0.2	0.2
	Rosebery Ave – Epsom Rd	16.5	16.8	17.3
	Dalmeny Ave – Epsom Rd	108.6	109.8	111.3
PM Peak	Rosebery Ave – Crewe Pl	1.7	1.7	1.7
	Rosebery Ave – Epsom Rd	12.5	12.6	12.8
	Dalmeny Ave – Epsom Rd	126.3	124.5	128.8

5 Parking Assessment

The parking provision for the development must comply with the requirements presented in Council's Local Environmental Plan 2012 (the LEP) and Development Control Plans 2012 (the DCP). The LEP sets a maximum parking provision calculated for the specific land use that a development cannot exceed.

In reviewing the parking provision requirements associated with this proposal, clause 7.2 of the LEP, states the following:

> **7.2 *Interpretation***
>
> *(2) For the purposes of this Division, land is in Category A, Category B or Category C if it is shown on the Land Use and Transport Integration Map as being in one of those categories. However, land is taken to be in another of those categories if:*
>
> *(a) the land is part of a site that includes land in that other category, and*
>
> *(b) this Division would permit a greater number of car parking spaces if the land were in that other category.*
>
> *(3) For the purposes of this Division, land is in Category D, Category E or Category F if it is shown on the Public Transport Accessibility Level Map as being in one of those categories. However, land is taken to be in another of those categories if:*
>
> *(a) the land is part of a site that includes land in that other category, and*
>
> *(b) this Division would permit a greater number of car parking spaces if the land were in that other category.*
>
> *(4) More than one provision of this Division may apply in the case of a mixed use development and in such a case:*
>
> *(a) the maximum number of car parking spaces is the sum of the number of spaces permitted under each of those provisions, and*
>
> *(b) a reference in those provisions to a building, is taken to be a reference to the parts of the building in which the relevant use occurs.*

In interpreting the above LEP requirements, it allows for the higher parking provision rate to be adopted for the site should it fall within a Land Category C for the residential component. As such, the following parking provision rates apply to the residential component of the development.

> *(c) on land in category C:*
>
> *i. for each studio dwelling—0.4 spaces, and*
> *ii. for each 1 bedroom dwelling—0.5 spaces, and*
> *iii. for each 2 bedroom dwelling—1 space, and*
> *iv. for each 3 or more bedroom dwelling—1.2 spaces, and*
> *v. for each dwelling up to 30 dwellings—0.2 spaces, and*
> *vi. for each dwelling more than 30 and up to 70 dwellings—0.125 spaces, and*
> *vii. for each dwelling more than 70 dwellings—0.067 spaces.*

In assessing the proposal against the baseline allowance to build a scheme with a FSR of 1.5:1, it would result in only 75% of the proposed 2.0:1 development being provided for each type of unit configuration proposed. To

determine the maximum parking provision allowed under the existing LEP, the relevant parking provision calculation is presented in Table 14. The table indicates the maximum parking provision associated with the current developable FSR of 1.5:1 is 225 parking spaces.

Table 14 – Parking Provision (Baseline FSR of 1.5:1)

Use Type					Required Spaces
Studio	0	Units	@	0.4 spaces per apartment	0
1 Bedroom apartment	133	Units	@	0.5 spaces per apartment	66.5 (66)
2 Bedroom apartment	107	Units	@	1.0 spaces per apartment	107
3 Bedroom apartment (inc Terraces)	47	Units	@	1.2 spaces per apartment	56.4 (56)
Visitor Parking	30	Units	@	0.2 spaces up to 30 dwellings	6
Visitor Parking	40	Units	@	0.125 spaces between 30 to 70 dwellings	5
Visitor Parking	217	Units	@	0.0675 spaces for more than 70 dwellings	14.6 (15)
FSR 1.5:1 Maximum Parking Spaces (Apartment and Visitors):					**225**

In assessing the car park requirements the potential increase in FSR by 0.5:1 to a developable FSR of 2.0:1 may result in a maximum parking provision of 340 parking spaces. This calculation is presented in Table 15 (this is based on a potential yield of 378 apartments and terraces).

Table 15 – Parking Provision (Proposal FSR of 2.0:1)

Use Type					Required Spaces
Studio	0	Units	@	0.4 spaces per apartment	0
1 Bedroom apartment	177	Units	@	0.5 spaces per apartment	88.5 (89)
2 Bedroom apartment	143	Units	@	1.0 spaces per apartment	143
3 Bedroom apartment (including 18 terraces)	63	Units	@	1.2 spaces per apartment	75.6 (76)
Visitor Parking	30	Units	@	0.2 spaces up to 30 dwellings	6
Visitor Parking	40	Units	@	0.125 spaces between 30 to 70 dwellings	5
Visitor Parking	313	Units	@	0.0675 spaces for more than 70 dwellings	21
FSR 2.0:1 Maximum Parking Spaces (Apartment and Visitors):					340
Increase in parking from FSR of 1.5:1					**+85 spaces**

In comparing and assessing the impact of increasing the developable FSR by 0.5:1, it would result in an additional 85 parking spaces being provided on site.

The impact of increasing parking by 85 parking spaces results in an increase in traffic activity by 20 in/out vehicle movements in the AM Peak and 8 in/out movements in the PM Peak. In reviewing the intersection modelling undertaken using an FSR of 1.5:1 and 2.0:1, the increase in vehicle trips in/out of the site during the

morning and afternoon peak periods very minor increase in traffic activity adjacent to the site compared with the existing situation (as presented in section 4.1.3). Therefore, the proposal to accommodate a development with a 2.0:1 FSR instead of a 1.5:1 FSR would not result in any detrimental impacts.

ATTACHMENT A

6 Summary

This report presents the preliminary traffic assessment findings associated with increasing the FSR from 1.5:1 to 2.0:1 of the subject property, known as 12-40 Rosebery Avenue, Rosebery.

The development proposal considers the traffic generation scenario of a residential development with an FSR of 2.0:1 that may provide up to 365 residential units and 18 terraces. The findings of this assessment indicate this will result in slightly more traffic being generated when compared to developing the site in accordance the current baseline LEP density, (1.0:1 with the inclusion of an additional 0.5:1 under Clause 6.14) a total of 1.5:1.

The project will result in a net increase of up to 23 vehicular trips associated with the site development in the AM and PM Peak accessing the Dalmeny Avenue intersection with Epsom Road compared to its current use.

Traffic modelling of the Dalmeny Avenue and Epsom Road intersection indicates the increase in traffic movement into and out of Dalmeny Avenue under the baseline scenario (FSR 1.5:1) and proposed scenario (FSR 2.0:1) would not result in any notable impact on the overall operation at this intersection, which will continue to operate well within its capacity compared with the existing traffic conditions modelled.

The impact of potentially providing 340 spaces associated with the residential use of the development results in an increase of 85 spaces compared to what is currently permitted under the current allowable FSR of 1.5:1. The basement car parking arrangement is capable of being developed in accordance with the relevant Australian Standards, with full assessment to be undertaken during the Development Application process.

In assessing the impacts of increasing the parking provision on site, it will result in a minor increase vehicle trips entering/exiting the site during the AM and PM Peak. In reviewing this against the findings of the traffic modelling, the proposal for an increase in FSR from 1.5:1 to 2.0:1 to permit a higher residential apartment yield, this report has demonstrated that the increase in traffic movements in and out from dedicated driveways on Dalmeny Avenue shows no notable impact on the overall road network operation and will provide an acceptable level of service during the typical weekday peak periods.

As such this traffic assessment supports the Planning Proposal to increase the floor space ratio (FSR) from a ratio 1.5:1 to 2.0:1.

Attachment 1 – Architectural Plans

Attachment 2 – SIDRA OUTPUTS (Existing Situation)

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - AM Existing

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	65	0.0	0.108	9.6	LOS A	0.4	3.1	0.74	0.86	39.4
3	R2	147	0.0	0.530	26.4	LOS B	2.4	16.5	0.94	1.11	33.1
Approach		213	0.0	0.530	21.3	LOS B	2.4	16.5	0.88	1.03	34.8
East: Epsom Rd (E)											
4	L2	219	0.0	0.600	5.6	LOS A	0.0	0.0	0.00	0.11	57.2
5	T1	941	0.0	0.600	0.1	LOS A	0.0	0.0	0.00	0.11	58.8
Approach		1160	0.0	0.600	1.2	NA	0.0	0.0	0.00	0.11	58.5
West: Epsom Rd (w)											
11	T1	802	0.0	0.411	0.1	LOS A	0.0	0.0	0.00	0.00	49.9
12	R2	74	0.0	0.553	50.0	LOS D	2.2	15.3	0.96	1.08	27.6
Approach		876	0.0	0.553	4.3	NA	2.2	15.3	0.08	0.09	46.8
All Vehicles		2248	0.0	0.600	4.3	NA	2.4	16.5	0.11	0.19	50.3

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - AM Existing

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	70% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	189	0.0	0.357	30.4	LOS C	5.7	40.0	0.73	0.73	32.2
3	R2	96	0.0	0.294	34.0	LOS C	3.0	21.0	0.89	0.73	31.2
Approach		285	0.0	0.357	31.6	LOS C	5.7	40.0	0.78	0.73	31.9
East: Epsom Rd (WB)											
4	L2	62	0.0	0.606	34.8	LOS C	15.2	106.2	0.82	0.88	34.6
5	T1	967	0.0	0.606	31.0	LOS C	15.5	108.6	0.82	0.88	34.9
Approach		1029	0.0	0.606	31.2	LOS C	15.5	108.6	0.82	0.88	34.9
West: Epsom Rd (EB)											
11	T1	820	0.0	0.638	6.8	LOS A	8.3	58.2	0.46	0.41	45.6
12	R2	108	0.0	0.638	36.9	LOS C	4.9	34.5	0.97	0.79	31.2
Approach		928	0.0	0.638	10.3	LOS A	8.3	58.2	0.52	0.46	43.3
All Vehicles		2243	0.0	0.638	22.6	LOS B	15.5	108.6	0.69	0.68	37.5

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	26	28.0	LOS C	0.1	0.1	0.68	0.68
P4	West Full Crossing	26	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		53	41.1	LOS E			0.82	0.82

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

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - AM Existing

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	21	0.0	0.129	3.4	LOS A	0.0	0.0	0.00	0.04	40.0
2	T1	229	0.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.04	39.9
Approach		251	0.0	0.129	0.3	NA	0.0	0.0	0.00	0.04	39.9
North: RoadName											
8	T1	203	0.0	0.160	0.9	LOS A	1.0	6.8	0.38	0.15	38.9
9	R2	78	0.0	0.160	4.5	LOS A	1.0	6.8	0.38	0.15	38.8
Approach		281	0.0	0.160	1.9	NA	1.0	6.8	0.38	0.15	38.9
West: RoadName											
10	L2	52	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.2
12	R2	14	0.0	0.056	4.6	LOS A	0.2	1.5	0.32	0.51	37.9
Approach		65	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.1
All Vehicles		597	0.0	0.160	1.5	NA	1.0	6.8	0.22	0.14	39.2

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - PM Existing

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	97	0.0	0.090	6.1	LOS A	0.4	3.0	0.61	0.68	41.0
3	R2	194	0.0	0.344	14.3	LOS A	1.8	12.5	0.89	1.03	37.2
Approach		291	0.0	0.344	11.5	LOS A	1.8	12.5	0.80	0.91	38.4
East: Epsom Rd (E)											
4	L2	132	0.0	0.382	4.6	LOS A	0.0	0.0	0.00	0.10	48.9
5	T1	607	0.0	0.382	0.1	LOS A	0.0	0.0	0.00	0.10	49.4
Approach		739	0.0	0.382	0.9	NA	0.0	0.0	0.00	0.10	49.3
West: Epsom Rd (w)											
11	T1	1119	0.0	0.574	0.1	LOS A	0.0	0.0	0.00	0.00	59.8
12	R2	81	0.0	0.121	10.6	LOS A	0.5	3.7	0.67	0.85	49.7
Approach		1200	0.0	0.574	0.8	NA	0.5	3.7	0.05	0.06	59.0
All Vehicles		2229	0.0	0.574	2.2	NA	1.8	12.5	0.13	0.18	52.0

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - PM Existing

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	129	0.0	0.133	14.7	LOS B	3.2	22.7	0.46	0.63	37.4
3	R2	51	0.0	0.140	26.1	LOS B	1.3	9.3	0.86	0.71	33.5
Approach		180	0.0	0.140	17.9	LOS B	3.2	22.7	0.58	0.65	36.2
East: Epsom Rd (WB)											
4	L2	74	0.0	0.777	52.1	LOS D	17.7	123.8	0.99	1.06	29.5
5	T1	609	0.0	0.777	48.4	LOS D	18.0	126.3	0.99	1.07	29.8
Approach		683	0.0	0.777	48.8	LOS D	18.0	126.3	0.99	1.07	29.8
West: Epsom Rd (EB)											
11	T1	1177	0.0	0.662	8.1	LOS A	11.8	82.4	0.54	0.50	44.8
12	R2	136	0.0	0.662	19.5	LOS B	11.4	80.1	0.76	0.71	37.4
Approach		1313	0.0	0.662	9.3	LOS A	11.8	82.4	0.57	0.52	43.9
All Vehicles		2176	0.0	0.777	22.4	LOS B	18.0	126.3	0.70	0.70	37.6

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - PM Existing

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Rosebery Ave (S)											
1	L2	11	0.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.03	40.1
2	T1	178	0.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.03	39.9
Approach		188	0.0	0.097	0.2	NA	0.0	0.0	0.00	0.03	39.9
North: Rosebery Ave (N)											
8	T1	251	0.0	0.155	0.7	LOS A	0.9	6.6	0.33	0.07	39.2
9	R2	39	0.0	0.155	4.2	LOS A	0.9	6.6	0.33	0.07	39.1
Approach		289	0.0	0.155	1.2	NA	0.9	6.6	0.33	0.07	39.2
West: Crewe Pl											
10	L2	62	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
12	R2	18	0.0	0.066	4.4	LOS A	0.2	1.7	0.28	0.50	37.9
Approach		80	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
All Vehicles		558	0.0	0.155	1.3	NA	0.9	6.6	0.21	0.12	39.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: 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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 3 – SIDRA OUTPUTS (BASELINE FSR 1.5:1)

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - AM FUTURE 1.5 TO 1 FSR

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	65	0.0	0.110	9.7	LOS A	0.5	3.2	0.74	0.86	39.4
3	R2	147	0.0	0.541	27.3	LOS B	2.4	16.9	0.94	1.12	32.9
Approach		213	0.0	0.541	21.9	LOS B	2.4	16.9	0.88	1.04	34.6
East: Epsom Rd (E)											
4	L2	219	0.0	0.605	4.7	LOS A	0.0	0.0	0.00	0.10	48.8
5	T1	949	0.0	0.605	0.1	LOS A	0.0	0.0	0.00	0.10	49.3
Approach		1168	0.0	0.605	1.0	NA	0.0	0.0	0.00	0.10	49.2
West: Epsom Rd (w)											
11	T1	804	0.0	0.412	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	74	0.0	0.572	53.5	LOS D	2.3	15.9	0.96	1.08	31.4
Approach		878	0.0	0.572	4.5	NA	2.3	15.9	0.08	0.09	55.6
All Vehicles		2259	0.0	0.605	4.3	NA	2.4	16.9	0.11	0.19	49.5

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - AM FUTURE 1.5 TO 1 FSR

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	70% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	198	0.0	0.376	30.6	LOS C	6.0	42.0	0.73	0.73	32.2
3	R2	100	0.0	0.307	34.1	LOS C	3.1	22.0	0.89	0.74	31.2
Approach		298	0.0	0.376	31.8	LOS C	6.0	42.0	0.79	0.73	31.8
East: Epsom Rd (WB)											
4	L2	63	0.0	0.609	35.0	LOS C	15.3	106.9	0.82	0.88	34.6
5	T1	967	0.0	0.609	31.2	LOS C	15.7	109.8	0.82	0.88	34.8
Approach		1031	0.0	0.609	31.4	LOS C	15.7	109.8	0.82	0.88	34.8
West: Epsom Rd (EB)											
11	T1	820	0.0	0.640	6.7	LOS A	8.4	58.8	0.46	0.41	45.7
12	R2	111	0.0	0.640	37.0	LOS C	4.9	34.4	0.97	0.80	31.2
Approach		931	0.0	0.640	10.3	LOS A	8.4	58.8	0.52	0.46	43.3
All Vehicles		2259	0.0	0.640	22.8	LOS B	15.7	109.8	0.69	0.69	37.4

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	28.1	LOS C	0.1	0.1	0.68	0.68
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	41.2	LOS E			0.82	0.82

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - AM FUTURE [NO CHANGE]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	21	0.0	0.129	3.4	LOS A	0.0	0.0	0.00	0.04	40.0
2	T1	229	0.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.04	39.9
Approach		251	0.0	0.129	0.3	NA	0.0	0.0	0.00	0.04	39.9
North: RoadName											
8	T1	203	0.0	0.160	0.9	LOS A	1.0	6.8	0.38	0.15	38.9
9	R2	78	0.0	0.160	4.5	LOS A	1.0	6.8	0.38	0.15	38.8
Approach		281	0.0	0.160	1.9	NA	1.0	6.8	0.38	0.15	38.9
West: RoadName											
10	L2	52	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.2
12	R2	14	0.0	0.056	4.6	LOS A	0.2	1.5	0.32	0.51	37.9
Approach		65	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.1
All Vehicles		597	0.0	0.160	1.5	NA	1.0	6.8	0.22	0.14	39.2

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - PM FUTURE 1.5 TO 1 FSR

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	97	0.0	0.090	6.1	LOS A	0.4	3.0	0.61	0.68	41.0
3	R2	194	0.0	0.348	14.5	LOS A	1.8	12.6	0.89	1.03	37.2
Approach		291	0.0	0.348	11.7	LOS A	1.8	12.6	0.80	0.91	38.4
East: Epsom Rd (E)											
4	L2	132	0.0	0.383	4.6	LOS A	0.0	0.0	0.00	0.10	48.9
5	T1	608	0.0	0.383	0.1	LOS A	0.0	0.0	0.00	0.10	49.4
Approach		740	0.0	0.383	0.9	NA	0.0	0.0	0.00	0.10	49.3
West: Epsom Rd (w)											
11	T1	1124	0.0	0.577	0.1	LOS A	0.0	0.0	0.00	0.00	49.8
12	R2	81	0.0	0.122	9.7	LOS A	0.5	3.7	0.67	0.83	39.8
Approach		1205	0.0	0.577	0.8	NA	0.5	3.7	0.05	0.06	49.0
All Vehicles		2236	0.0	0.577	2.2	NA	1.8	12.6	0.13	0.18	47.4

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - PM FUTURE 1.5 TO 1 FSR

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	131	0.0	0.136	15.2	LOS B	3.3	23.4	0.47	0.63	37.2
3	R2	52	0.0	0.143	26.1	LOS B	1.4	9.7	0.86	0.71	33.5
Approach		182	0.0	0.143	18.3	LOS B	3.3	23.4	0.58	0.65	36.1
East: Epsom Rd (WB)											
4	L2	77	0.0	0.755	49.7	LOS D	17.4	122.0	0.98	1.03	30.0
5	T1	609	0.0	0.755	46.0	LOS D	17.8	124.5	0.98	1.03	30.4
Approach		686	0.0	0.755	46.4	LOS D	17.8	124.5	0.98	1.03	30.4
West: Epsom Rd (EB)											
11	T1	1177	0.0	0.673	8.5	LOS A	12.2	85.2	0.55	0.51	44.6
12	R2	141	0.0	0.673	20.8	LOS B	12.0	83.8	0.78	0.74	36.9
Approach		1318	0.0	0.673	9.8	LOS A	12.2	85.2	0.58	0.53	43.6
All Vehicles		2186	0.0	0.755	22.0	LOS B	17.8	124.5	0.71	0.70	37.8

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - PM FUTURE [NO CHANGE]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Rosebery Ave (S)											
1	L2	11	0.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.03	40.1
2	T1	178	0.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.03	39.9
Approach		188	0.0	0.097	0.2	NA	0.0	0.0	0.00	0.03	39.9
North: Rosebery Ave (N)											
8	T1	251	0.0	0.155	0.7	LOS A	0.9	6.6	0.33	0.07	39.2
9	R2	39	0.0	0.155	4.2	LOS A	0.9	6.6	0.33	0.07	39.1
Approach		289	0.0	0.155	1.2	NA	0.9	6.6	0.33	0.07	39.2
West: Crewe Pl											
10	L2	62	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
12	R2	18	0.0	0.066	4.4	LOS A	0.2	1.7	0.28	0.50	37.9
Approach		80	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
All Vehicles		558	0.0	0.155	1.3	NA	0.9	6.6	0.21	0.12	39.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: 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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 4 – SIDRA OUTPUTS (PROPOSAL FSR 2.0:1)

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - AM FUTURE 2.0 TO 1 FSR

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	65	0.0	0.112	9.9	LOS A	0.5	3.2	0.75	0.86	39.3
3	R2	147	0.0	0.556	28.4	LOS B	2.5	17.4	0.95	1.12	32.5
Approach		213	0.0	0.556	22.7	LOS B	2.5	17.4	0.89	1.04	34.4
East: Epsom Rd (E)											
4	L2	219	0.0	0.610	4.7	LOS A	0.0	0.0	0.00	0.10	48.8
5	T1	960	0.0	0.610	0.1	LOS A	0.0	0.0	0.00	0.10	49.3
Approach		1179	0.0	0.610	1.0	NA	0.0	0.0	0.00	0.10	49.2
West: Epsom Rd (w)											
11	T1	807	0.0	0.414	0.1	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	74	0.0	0.596	57.2	LOS E	2.4	16.6	0.96	1.09	30.4
Approach		881	0.0	0.596	4.8	NA	2.4	16.6	0.08	0.09	55.4
All Vehicles		2273	0.0	0.610	4.5	NA	2.5	17.4	0.11	0.19	49.3

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - AM FUTURE 2.0 TO 1 FSR

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	70% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	208	0.0	0.398	30.8	LOS C	6.4	44.6	0.74	0.74	32.1
3	R2	105	0.0	0.323	34.2	LOS C	3.3	23.3	0.90	0.74	31.2
Approach		314	0.0	0.398	31.9	LOS C	6.4	44.6	0.79	0.74	31.8
East: Epsom Rd (WB)											
4	L2	65	0.0	0.613	35.3	LOS C	15.5	108.4	0.82	0.88	34.4
5	T1	967	0.0	0.613	31.6	LOS C	15.9	111.3	0.83	0.88	34.7
Approach		1033	0.0	0.613	31.8	LOS C	15.9	111.3	0.83	0.88	34.7
West: Epsom Rd (EB)											
11	T1	820	0.0	0.643	6.7	LOS A	8.5	59.6	0.46	0.41	45.7
12	R2	114	0.0	0.643	37.0	LOS C	4.9	34.3	0.97	0.80	31.2
Approach		934	0.0	0.643	10.4	LOS A	8.5	59.6	0.52	0.46	43.3
All Vehicles		2280	0.0	0.643	23.0	LOS B	15.9	111.3	0.70	0.69	37.2

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	28.1	LOS C	0.1	0.1	0.68	0.68
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	41.2	LOS E			0.82	0.82

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

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - AM FUTURE [NO CHANGE]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	21	0.0	0.129	3.4	LOS A	0.0	0.0	0.00	0.04	40.0
2	T1	229	0.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.04	39.9
Approach		251	0.0	0.129	0.3	NA	0.0	0.0	0.00	0.04	39.9
North: RoadName											
8	T1	203	0.0	0.160	0.9	LOS A	1.0	6.8	0.38	0.15	38.9
9	R2	78	0.0	0.160	4.5	LOS A	1.0	6.8	0.38	0.15	38.8
Approach		281	0.0	0.160	1.9	NA	1.0	6.8	0.38	0.15	38.9
West: RoadName											
10	L2	52	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.2
12	R2	14	0.0	0.056	4.6	LOS A	0.2	1.5	0.32	0.51	37.9
Approach		65	0.0	0.056	4.5	LOS A	0.2	1.5	0.32	0.51	38.1
All Vehicles		597	0.0	0.160	1.5	NA	1.0	6.8	0.22	0.14	39.2

MOVEMENT SUMMARY

Site: Epsom RD - Rosbery Ave - PM FUTURE 2.0 TO 1 FSR

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: RoadName											
1	L2	97	0.0	0.091	6.1	LOS A	0.4	3.0	0.61	0.68	41.0
3	R2	194	0.0	0.352	14.6	LOS B	1.8	12.8	0.90	1.03	37.1
Approach		291	0.0	0.352	11.8	LOS A	1.8	12.8	0.80	0.91	38.3
East: Epsom Rd (E)											
4	L2	132	0.0	0.384	4.6	LOS A	0.0	0.0	0.00	0.10	48.9
5	T1	611	0.0	0.384	0.1	LOS A	0.0	0.0	0.00	0.10	49.4
Approach		742	0.0	0.384	0.9	NA	0.0	0.0	0.00	0.10	49.3
West: Epsom Rd (w)											
11	T1	1128	0.0	0.579	0.1	LOS A	0.0	0.0	0.00	0.00	49.8
12	R2	81	0.0	0.122	9.7	LOS A	0.5	3.7	0.67	0.83	39.8
Approach		1209	0.0	0.579	0.8	NA	0.5	3.7	0.05	0.06	49.0
All Vehicles		2242	0.0	0.579	2.2	NA	1.8	12.8	0.13	0.18	47.4

MOVEMENT SUMMARY

Site: Epsom Rd - Dalmeny Ave - PM FUTURE 2.0 TO 1 FSR

New Site
Signals - Fixed Time Cycle Time = 120 seconds (User-Given Cycle Time)Variable Sequence Analysis applied.
The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Dalmeny Ave (NB)											
1	L2	133	0.0	0.137	14.7	LOS B	3.3	23.3	0.47	0.63	37.4
3	R2	52	0.0	0.143	26.1	LOS B	1.4	9.5	0.86	0.71	33.5
Approach		184	0.0	0.143	17.9	LOS B	3.3	23.3	0.58	0.65	36.2
East: Epsom Rd (WB)											
4	L2	79	0.0	0.791	53.3	LOS D	18.1	126.4	1.00	1.09	29.1
5	T1	609	0.0	0.791	49.6	LOS D	18.4	128.8	1.00	1.09	29.5
Approach		688	0.0	0.791	50.0	LOS D	18.4	128.8	1.00	1.09	29.5
West: Epsom Rd (EB)											
11	T1	1177	0.0	0.671	8.5	LOS A	12.3	85.9	0.55	0.51	44.6
12	R2	145	0.0	0.671	20.6	LOS B	12.3	85.9	0.77	0.73	36.9
Approach		1322	0.0	0.671	9.8	LOS A	12.3	85.9	0.58	0.53	43.6
All Vehicles		2195	0.0	0.791	23.1	LOS B	18.4	128.8	0.71	0.72	37.3

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow	Average Delay	Level of Service	Average Back of Queue Pedestrian	Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec		ped	m		per ped
P1	South Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: Rosebery Ave - Crewe Pl - PM FUTURE [NO CHANGE]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	ODMov	Demand Flows Total	HV	Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Rosebery Ave (S)											
1	L2	11	0.0	0.097	3.4	LOS A	0.0	0.0	0.00	0.03	40.1
2	T1	178	0.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.03	39.9
Approach		188	0.0	0.097	0.2	NA	0.0	0.0	0.00	0.03	39.9
North: Rosebery Ave (N)											
8	T1	251	0.0	0.155	0.7	LOS A	0.9	6.6	0.33	0.07	39.2
9	R2	39	0.0	0.155	4.2	LOS A	0.9	6.6	0.33	0.07	39.1
Approach		289	0.0	0.155	1.2	NA	0.9	6.6	0.33	0.07	39.2
West: Crewe Pl											
10	L2	62	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
12	R2	18	0.0	0.066	4.4	LOS A	0.2	1.7	0.28	0.50	37.9
Approach		80	0.0	0.066	4.3	LOS A	0.2	1.7	0.28	0.50	38.2
All Vehicles		558	0.0	0.155	1.3	NA	0.9	6.6	0.21	0.12	39.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: 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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.