# Appendix I

## Traffic impact assessment

# White Bay 6 Marine Park - Proposed all weather cover and additional boat storage

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Prepared for White Bay 6 Pty Ltd | 10 August 2017


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# White Bay 6 Marine Park - Proposed all weather cover and additional boat storage

Traffic Impact Assessment

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| | | | |
|---|---|---|---|
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| Date | 10 August 2017 | Date | 10 August 2017 |



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# 1 Introduction

## 1.1 Transport context of the proposal

White Bay 6 Pty Ltd (the proponent) is seeking to modify major project approval MP06_0037 under Section 75W of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to provide enhanced workshop and employee facilities, all weather cover to support existing tenancies and approved activities, as well as permitting additional boat storage (the 'proposed modification' or 'proposal') at the White Bay 6 Marine Park in Balmain, NSW (the site). The site is directly adjacent and to the east of the White Bay Cruise Ship Terminal which is operated by the Port Authority of NSW (PANSW).

EMM Consulting Pty Limited (EMM) has prepared this traffic impact assessment to assess the traffic and parking impacts of the proposal, which would increase the site's boat storage capacity from approved 50 to 176 berths. This includes up to 126 boats that may be stored on portable racks on the site's hardstand area.

This has quantified the maximum number of boats as 176 (126 more than the existing approved number) that could potentially be stored on the site and used on a regular basis, under the current approval and the proposed modification.

In addition, five buildings containing workshops/covered maintenance areas, warehouses and office space are proposed, including the reconfigured Building 1 and expanded Building 2.

The existing locality traffic volumes and traffic conditions have been investigated and documented in this report for two alternative traffic survey days at the Victoria Road and Robert Street intersection. The intersection traffic conditions were surveyed:

- on Thursday 24 July 2014 when there was no cruise ship visiting the White Bay Cruise Ship Terminal; and
- on Tuesday 14 July 2015 when the cruise ship Sun Princess was visiting the White Bay Cruise Ship Terminal, arriving at 07:00 am and departing at 16:00 pm.

The existing site traffic activity from the site operations in July 2014 was also quantified by a twelve hour traffic survey on 17 July 2014.

The adjacent White Bay Cruise Ship Terminal has public access restrictions for the traffic travelling via Robert Street on cruise ship days, which do not currently apply to the site operations. The site access arrangements for the site will continue to allow vehicular access via Robert Street on all days via swipe card access (see Section 2.3) at the PANSW gatehouse, including on the days when a cruise ship is visiting the White Bay Cruise Terminal.

The relevant peak traffic generation periods for the site operations on a typical weekday are as follows:

- An early morning site peak traffic period when the site traffic will be primarily employees and contractors arriving at the site, with some customer and commercial delivery traffic. This period would coincide with the normal weekday morning peak hour commuter traffic peak on the surrounding major roads, which is typically 7.00 to 8.00 am on weekdays.
- A mid morning peak period, when traffic is primarily customers arriving at the site before taking boats out for the day, and some commercial deliveries also occur. The site traffic activity normally peaks between 9.45 and 10.45 am on weekdays.

- A mid afternoon peak period, when the site traffic is primarily customers departing from the site after taking boats out for the day. This traffic generally peaks between 2.15 and 3.15 pm on weekdays.

- A late afternoon peak period when the site traffic is primarily employees departing from the site, with some customer traffic. This period can also coincide with the normal weekday afternoon peak hour commuter traffic on the surrounding major roads, which is typically 5.00 to 6.00 pm on weekdays.

The general layout of the proposal is depicted on the proposed site plan (Drawing No. DA1002; issue 07) provided in Appendix A.

## 1.2 Site location and access

The site location in relation to the White Bay Cruise Ship Terminal is shown on Figure 1.1.

The site is located less than 2 kilometres (km) north-west in a direct line from the centre of the Sydney CBD. However the actual travel distance for access by road is significantly further and also depends on which access route is being used.

The site access traffic will normally travel via the traffic signals at the intersection of Victoria Road and Robert Street and the channelised T-intersection at the corner of Robert Street and Mullens Street. Robert Street is also the primary access routes for residential traffic travelling to and from the Balmain Peninsula from the Sydney CBD direction and is heavily used by residential traffic and buses, during both the morning and afternoon commuter peak traffic periods on weekdays.

However, the Robert Street route provides the most direct and convenient access to the major road network for the site traffic without this traffic needing to use any residential street for access to and from the major road network.

## 1.3 Scope of this report

This assessment of the proposal's traffic impacts has considered the following general traffic and parking matters which are outlined in the Roads and Maritime Services (RMS) Guide to Traffic Generating Developments (RTA 2002), namely:

- the existing locality traffic conditions for the road network and intersections;

- the existing site activity;

- traffic and car parking generating characteristics of the proposal;

- traffic and car parking impacts of the proposal;

- a summary of any relevant traffic or parking impact and mitigation measures;

- traffic safety; and

- access by walking, cycling and public transport.


Source: EMM (2014), GA (2014)

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EMM
EMGA Mitchell McLennan

**Access to main road network**

White Bay 6

Environmental Assessment

Figure 1.1

# 2 Existing traffic conditions

## 2.1 Road network

The major road network in the Rozelle Port area, which provides access to the White Bay Cruise Ship Terminal and other port facilities including the site, is shown in Figure 2.1. Also shown are the approved access routes for B-Double trucks. Further detail of the number of traffic lanes, including the additional left and right turning lanes at the Robert Street and Victoria Road intersection are shown in Figure 2.2.

Since 2010, a morning and afternoon peak hour 'citybound' bus lane has been introduced on Victoria Road which is shown on Figure 2.2. This bus lane has reduced the peak hour car traffic capacity and the corresponding traffic volumes for the car traffic which is using Victoria Road during both the morning and afternoon peak traffic periods.

## 2.2 Traffic volumes

Baseline traffic volume surveys, which included the existing site traffic travelling via Robert Street, were undertaken for this assessment on Thursday 24 July 2014 (on a non-cruise ship day) and Tuesday 14 July 2015 (when a cruise ship was visiting the White Bay Cruise Terminal).

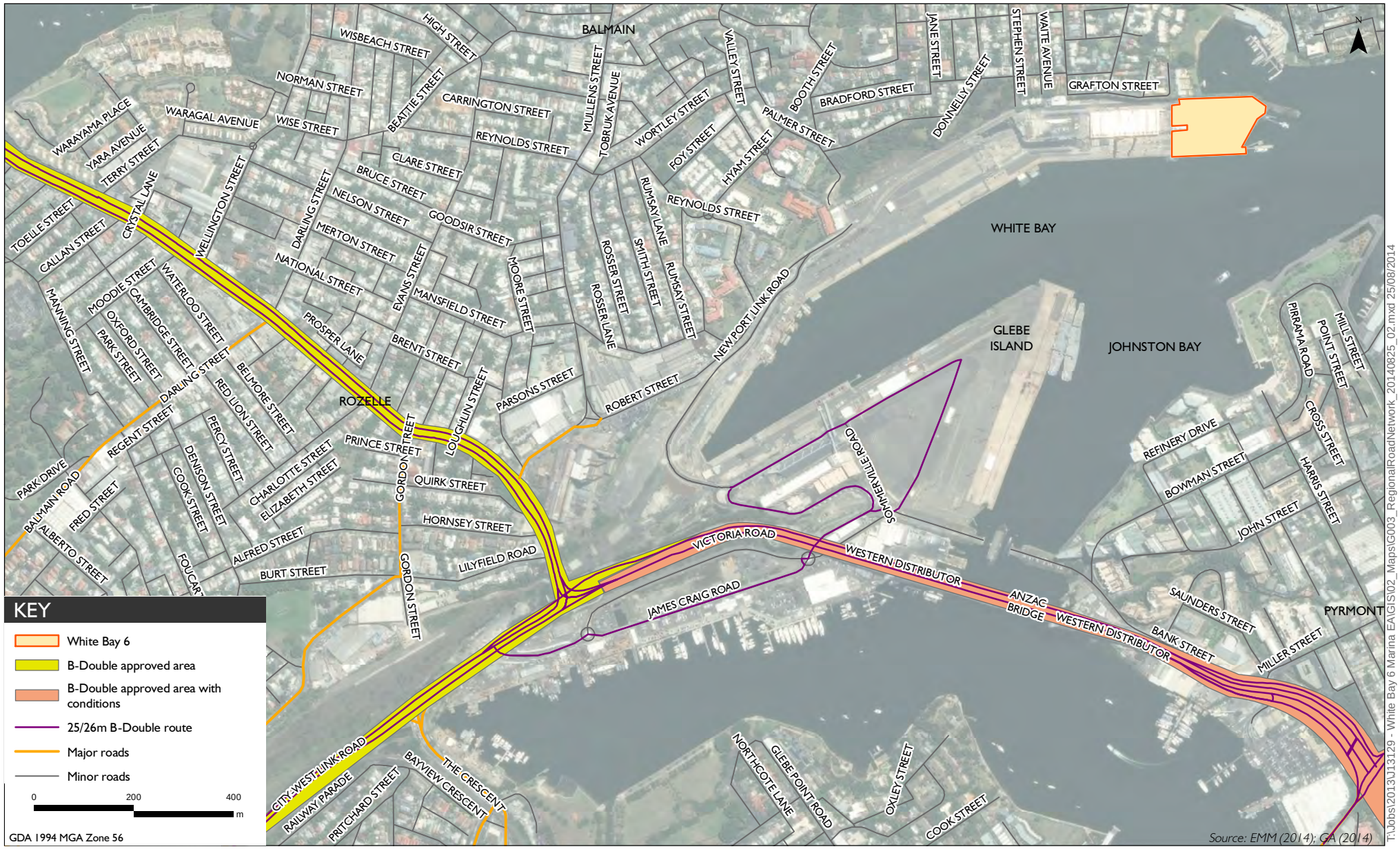
The traffic survey results recorded the following intersection and major road peak hourly traffic volumes (Table 2.1) on each traffic survey day. The full traffic survey results are included in Appendix B.

**Table 2.1 Summary of July 2014 and July 2015 peak hourly traffic surveys**

| Intersection | Time | Total intersection traffic volume in the peak hour | Two way traffic volume on Victoria Road | Two way traffic volume on Victoria Road | Two way traffic volume on Robert Street |
|---|---|---|---|---|---|
| **Surveyed traffic in 2014 – with no Cruise Ship visiting** | | | | | |
| Victoria Road/ Robert Street | Morning Peak Hour (7.15 to 8.15 am) | 5,913 vehicles per hour | 4,277 vehicles, north of the intersection | 5,862 vehicles, south of the intersection | 1,687 vehicles, east of the intersection |
| Victoria Road/ Robert Street | Afternoon Peak Hour (5.00 to 6.00 pm) | 7,293 vehicles per hour | 5,271 vehicles, north of the intersection | 7,199 vehicles, south of the intersection | 2,116 vehicles, east of the intersection |
| **Surveyed traffic in 2015 – with a Cruise Ship visiting** | | | | | |
| Victoria Road/ Robert Street | Morning Peak Hour (7.15 to 8.15 am) | 5,528 vehicles per hour | 3,822 vehicles, north of the intersection | 5,482 vehicles, south of the intersection | 1,752 vehicles, east of the intersection |
| Victoria Road/ Robert Street | Afternoon Peak Hour (4.15 to 5.15 pm) | 5,672 vehicles per hour | 3,965 vehicles, north of the intersection | 5,561 vehicles, south of the intersection | 1,818 vehicles, east of the intersection |

*Note: *Includes eastbound traffic using the underpass to the Anzac Bridge which bypasses the main part of the intersection.*

The traffic survey results in Table 2.1 show the range of recent and current major road traffic volumes at the intersection in July 2014 and July 2015. These survey results also show there is minimal additional traffic using Robert Street on a cruise ship day as there was only a slight increase of 65 vehicles in the morning peak hour traffic using Robert Street in the July 2015 survey compared to the July 2014 survey. There was actually a reduction in the afternoon peak hour traffic between the two traffic surveys.




Source: EMM (2014); GA (2014)

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**Regional road network**

White Bay 6
Environmental Assessment
Figure 2.1

**Figure 2.2** **Layout of the major road access via the Victoria Road and Robert Street intersection**

## 2.3 Site layout

The site has dimensions of approximately 100 m by 150 m and is located at the eastern end of Robert Street, where the road is effectively a two lane two way private road which provides access to the port area. This includes the White Bay Cruise Ship Terminal and the site, which includes a marine refuelling facility, boat storage, hard stand and harbour access for vessels via a travel lift and marina bull bay.

The current layout of the site including the vehicular access, car parking, boat refuelling and boat storage areas is shown on the site plan Appendix A. Approximately 45 car parking spaces are currently provided for use by the site employees, customers and site visitors including 10 spaces for the approved 50 dry boat storage berths at the site. This parking is located along the northern edge of the site access road, along the northern site boundary.

The vehicular access to and from the site is currently controlled at the PANSW access gatehouse (Figure 2.3) which is located approximately 800 m west of the site, near the corner of Robert Street and Buchanan Street. The site traffic currently uses Robert Street for all its access, including on the days when there is a cruise ship visiting the White Bay Cruise Terminal.

**Figure 2.3 Road connections at the PANSW gatehouse on Robert Street 800 m west of the site**

Although the public vehicular access to the White Bay Cruise Terminal is restricted on the days when a cruise ship is visiting the port, with no access permitted to use Robert Street, the site traffic for all site employees, contractors and customers will continue to be permitted to travel via Robert Street with an agreed access identification process via authorised access identification cards and provision of visitor lists to the PANSW gatehouse on a cruise ship day. The proposed site access control procedure is provided in Appendix E.

## 2.4 Existing site traffic

The current site traffic volumes were surveyed over a twelve hour period on Thursday 17 July 2014.

The detailed site traffic survey results, which are included in Appendix C, showed a total of 98 vehicle movements for the day (over a twelve hour survey period) which included 86 car/light vehicle movements and 12 heavy vehicle movements.

The weather was dry and sunny on the day of the traffic survey and the surveyed site traffic volumes are considered to be representative of site traffic on a typical winter weekday.

A summary of the existing site operations hourly traffic movements, commencing each quarter hourly interval over the 12 hour survey period, is shown in Figure 2.4. The analysis of the existing site hourly traffic movements showed the following peak site traffic generation movements on the survey day:

- a mid morning peak site traffic generation period occurred between 9.45 to 10.45 am with 14 vehicle movements (7 in, 7 out); and
- a mid afternoon peak site traffic generation period occurred between 2.15 to 3.15 pm with 13 vehicle movements (5 in, 8 out).

During the normal weekday morning and afternoon commuter peak traffic periods at the external major road access intersections, the site traffic movements were lower than the surveyed mid morning and mid afternoon peak levels.

These traffic movements were 10 vehicle movements per hour (9 in, 1 out) during the normal weekday morning commuter peak traffic period 7.00 to 8.00 am and 10 vehicle movements per hour (3 in, 7 out) during the normal weekday afternoon commuter peak traffic period 5.00 to 6.00 pm.

## 2.5 Intersections

The existing traffic capacity at the major road access intersection (Victoria Road and Roberts Street), has been assessed from the July 2014 and July 2015 surveyed intersection traffic volumes which are provided in Appendix B.

The intersection modelling software SIDRA was used to analyse the morning and afternoon commuter peak hour traffic periods at each intersection. The RMS intersection level of service standards have been used for this assessment, which are shown in Table 2.2.

The detailed SIDRA program results are included in Appendix D and are summarised in Table 2.3. The modelled morning and afternoon peak period intersection layouts, including the effective queuing lengths of the turning lanes on each intersection approach, are also shown in Appendix D.

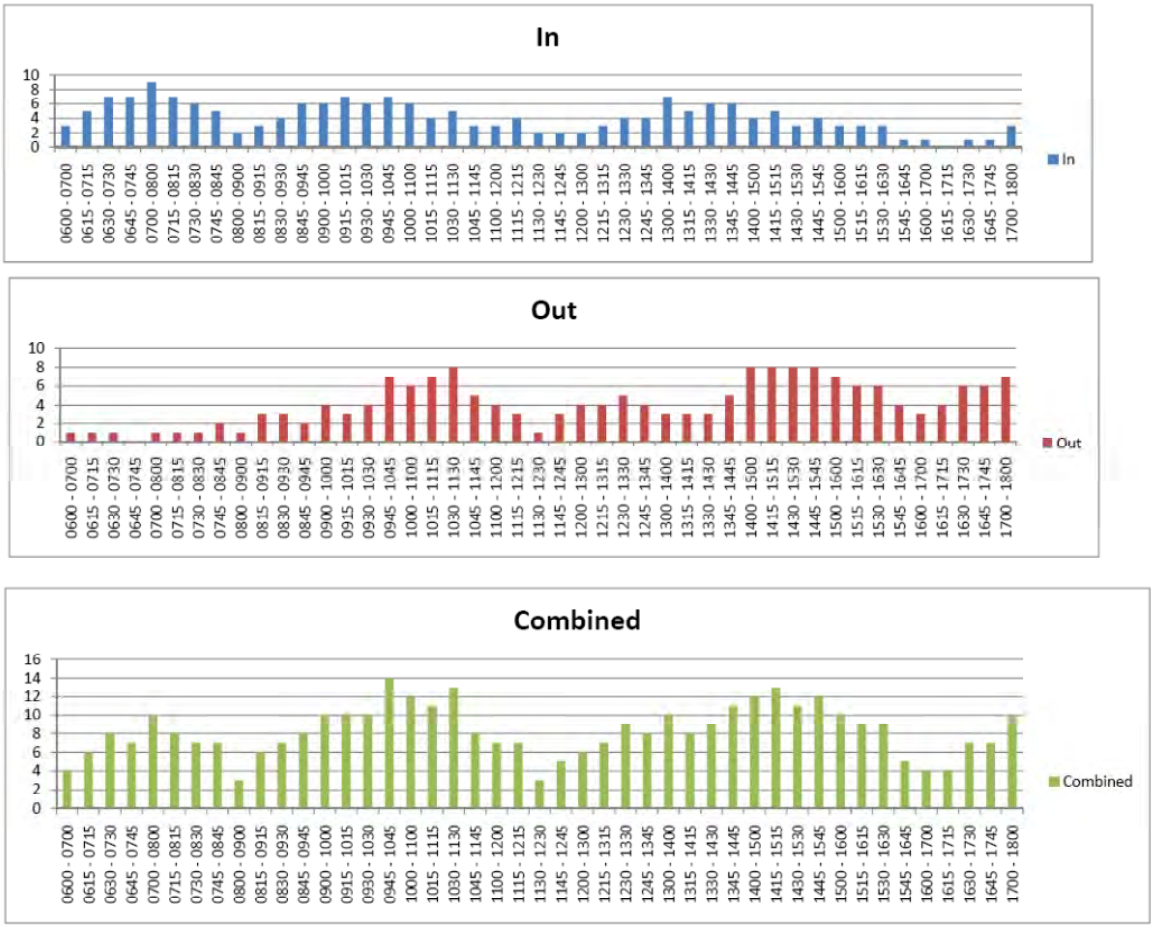


**Figure 2.4 Existing site hourly traffic movements for quarter hourly intervals on 17 July 2014**

**Table 2.2 RMS Intersection level of service standards**

| LoS | Average delay (seconds per vehicle) | Traffic signals, roundabout | Priority intersection ('stop' and 'give way') |
|---|---|---|---|
| A | Less than 14 | Good operation | Good operation |
| B | 15 to 28 | Good with acceptable delays and spare capacity | Acceptable delays and spare capacity |
| C | 29 to 42 | Satisfactory | Satisfactory, but accident study required |
| D | 43 to 56 | Operating near capacity | Near capacity and accident study required |
| E | 57 to 70 | At capacity. At signals, incidents will cause excessive delays. Roundabouts require other control mode | At capacity; requires other control mode |
| F | Greater than 71 | Unsatisfactory with excessive queuing | Unsatisfactory with excessive queuing, requires other control mode |

*Source: Guide to Traffic Generating Developments, RTA 2002.*

The intersection traffic operations are primarily reported in terms of level of service (LoS) limits and their corresponding average vehicle delay (AVD) in seconds (s). The intersection modelling results also include the intersection degree of saturation (DOS) which is a measure of the spare capacity of the intersection to accommodate additional traffic movements under the calculated optimum traffic signal phasing and cycle time, which is determined by the SIDRA analysis program.

**Table 2.3 Results of the existing intersection operations SIDRA analysis**

| Intersection peak hour | Existing situation –intersection operations | | | | | |
|---|---|---|---|---|---|---|
| | Traffic day | LOS | DOS | AVD* (seconds) | Optimum cycle time (seconds) | Maximum traffic queue length (m) |
| Victoria Road/ Robert Street am peak hour (7.15–8.15 am) | July 2014 Normal Day | C | 0.937 | 34.0 | 90 | 391 (Victoria Road north) |
| Victoria Road/ Robert Street pm peak hour (5.00–6.00 pm) | July 2014 Normal Day | B | 1.000 | 27.7 | 150 | 392 (Victoria Road north) |
| Victoria Road/ Robert Street am peak hour (7.15–8.15 am) | July 2015 Cruise Ship Day | B | 0.877 | 21.3 | 55 | 193 (Victoria Road north) |
| Victoria Road/ Robert Street pm peak hour (4.15–5.15 pm) | July 2015 Cruise Ship Day | B | 1.076 | 20.8 | 86 | 139 (Victoria Road north) |

*Notes: *The average vehicle delay for traffic signals is the average for all traffic movements at the intersection.*

The SIDRA intersection traffic modelling results (Table 2.2), indicate that the intersection is operating with either good or satisfactory traffic delays (LoS B or C). The higher intersection pm peak degrees of saturation (1.000 to 1.076) compared to 0.877 to 0.937 in the am peak indicate generally more congested traffic conditions at the intersection during the afternoons. It is noted that the city bound morning peak hour car traffic volumes using Victoria Road have declined in recent years (since 2010), following the commencement of the Inner West Busway operations.

The maximum peak hour traffic queues were approximately 390 m in July 2014 on the Victoria Road (north) traffic approach during both the morning and afternoon traffic peak hours. The maximum queue lengths were significantly lower in the July 2015 intersection traffic analysis. Both the 2014 and 2015 intersection modelling results show the maximum peak hour traffic volumes and the intersection traffic queues have been reducing since 2010, following the commencement of the Inner West Busway operations.

The minor road intersection traffic queue lengths are not shown in the SIDRA analysis results summary in Table 2.3. However, they are included in the detailed intersection analysis results in Appendix D. In July 2014 the minor road (Robert Street) intersection approach maximum traffic queue lengths were 188 m (am peak) and 126 m (pm peak) respectively. However in July 2015, these maximum peak hour traffic queue lengths had reduced to approximately 76 m and 55 m respectively, during the morning and the afternoon traffic peak hours.

## 2.6 Public transport

There are no existing regular scheduled public transport services operating via the eastern end of Robert Street, where the facility operates. The same applies to the White Bay Cruise Terminal, which is generally reliant on taxis and coaches for passenger movement.

## 2.7 Traffic safety

The traffic safety conditions on the local road access to the site via Robert Street and the main Victoria Road and Robert Street access intersection are considered to be generally good currently.

The recent intersection redesign and reconfiguration works (from the Inner West Busway project which was completed in late 2010) would have included network road safety audits which would have ensured the most up to date road safety standards were incorporated into the design of the route intersection.

## 2.8 Pedestrian and cycle access

Access by pedestrians and cyclists to and from the site from surrounding residential areas is considered unlikely due to the current separation distances from the nearest residential properties, which are located near the corner of Robert Street at Buchanan Street. However some local residents from within the local Balmain and Rozelle areas may walk or cycle to the site if they needed to for any reason.

Three bicycle parking/storage spaces are provided with the existing development, in accordance with the conditions of MP06_0311. These bicycle parking spaces will be retained under the proposal.

# 3 Traffic and parking demands of the proposal

## 3.1 Site access and circulation

The site effectively shares its vehicular access via Robert Street and Mullens Street with the White Bay Cruise Ship Terminal. However, the public vehicular access for the White Bay Cruise Ship Terminal is only permitted via the new port link road to James Craig Road and The Crescent (City West Link Road) on the days when a cruise ship is visiting, which prevents that traffic from using Robert Street.

The intersection of Robert Street and Victoria Road had either good or satisfactory traffic conditions at the times surveyed (LoS B or C) in 2014 and 2015 and has some spare traffic capacity to accommodate additional traffic if required at the morning and afternoon commuter traffic peak periods.

The existing site layout provides 45 car parking spaces for the site employees, customers and visitors including the 50 approved dry boat storage berths. Additional site car parking for the additional storage berths would be provided in accordance with recommended RMS parking demand rates from the Guide to Traffic Generating Developments (0.2 spaces per dry berth).

The internal site layout and the traffic circulation plans which show where the existing car parking is provided within the site are shown on the proposed site plan provided in Appendix A.

## 3.2 Traffic generation during operations

In terms of traffic generation, the traffic impacts of the proposal on the external road network will be directly proportional to the future total number of operating boat storage berths (176) at the site in comparison to the approved number of berths (50) at the site. Further,

- The following workshops have been proposed:
  - Building 1 workshop (covered boat maintenance zone) is 505 $m^2$;
  - Building 2 workshop (covered boat maintenance zone) is 130 $m^2$;
  - Building 3 workshop is 238 $m^2$; and
  - Building 5 workshop is 70 $m^2$.

The above workshops will be operational Mon-Sat 7 am to 7 pm and on Sundays/public holidays 8 am to 6 pm. There will be no additional employees or customers associated with the proposed workshops. These workshops would bring the employees indoor.

- The following office spaces have been proposed:
  - Building 1 office space is 340 $m^2$; and
  - Building 4 office space is 82 $m^2$.

Modification 4 estimated 15 staff would be associated with new buildings associated with the application. This estimate has not changed for Building 1. There will be no additional staff associated with Building 4, which is proposed to contain meeting and amenity space. Offices space is currently approved for 24 hours a day, seven days per week.

- Building 1 is proposed to contain a 340 $m^2$ warehouse space.

There will be no additional employee or visitors associated with this warehouse.

The roll-on roll-off vehicle loading facility for barges at the site was not constructed and the originally proposed traffic usage of up to 64 heavy vehicle movements daily has not occurred. In place of these movements, there are now occasional deliveries by trucks to and from the site for boat deliveries and pick-ups by road, which can normally occur up to twice daily (representing 4 daily truck movements) which would generally occur during the weekday daytime periods outside the main morning and afternoon commuter traffic peak hours.

The peak traffic periods for the site generally occur during the daytime (mid morning and mid afternoon periods) on weekdays and weekends or public holidays and the site will not have high traffic generation periods which coincide with the normal times of peak weekday commuter traffic conditions on either The Crescent or City West Link Road.

A comparative summary of the likely additional daily and peak hour traffic movements which would be generated by the proposal, in comparison to the existing site traffic usage, is provided in Table 3.1.

**Table 3.1 Summary of peak daily and peak hourly traffic volumes generated by the proposal**

| Traffic period | Type of traffic | As originally approved | With approved operations (50 dry boat storage berths) | With potential maximum site utilisation (126 additional boat storage berths) |
|---|---|---|---|---|
| Daily Traffic | Staff trips | 60 | 54 | 54 |
| | Fuel deliveries | 6 | 6 | 6 |
| | Ro-Ro ramp/Boat deliveries | 64 | 4 | 4 |
| | Storage berths | 0 | 70 | 280 |
| | All traffic | 130 | 134 | 344 |
| **Additional traffic** | | | | **210** |
| Peak Hour Traffic | Staff trips | 30 | 27 | 27 |
| | Fuel deliveries | 3 | 3 | 3 |
| | Ro-Ro Ramp/Boat deliveries | 0 | 0 | 0 |
| | Storage berths | 0 | 14 | 56 |
| | All traffic | 33 | 44 | 86 |
| **Additional traffic** | | | | **42** |

From Table 3.1, it is calculated that the additional 126 boat storage berths would generate up to 210 additional daily vehicle movements.

Approximately 42 of these additional vehicle movements would potentially be occurring at the site during either the morning or the afternoon commuter traffic peak periods. These movements would mainly be travelling inbound towards the site (90%) during the morning commuter peak traffic periods and mainly outbound (70%) during the afternoon commuter peak periods.

It is anticipated that the additional site operations traffic will have a similar geographical distribution to the existing site traffic movements which is 60 per cent travelling to and from the south or the east in comparison to 40 per cent travelling to and from the west via either Victoria Road or the City West Link. During the morning peak traffic period any outbound traffic from the site which would be travelling towards the west, would need to travel via the City West Link due to the morning peak period (6.30 am to 9.30 am) no right turn restriction which applies to the Robert Street traffic at the Victoria Road intersection.

## 3.3 Traffic generation during construction

During the proposal's construction phase, the additional peak hourly traffic movements generated on the external road network would be similar to the additional hourly traffic movements generated during the operations phase. However there would be higher proportions of heavy vehicle traffic during construction. During construction of the proposal, it is estimated that there will be a maximum of 20 daily heavy vehicles and 30 daily cars or other private vehicles visiting the site at the peak phase of the construction work.

Approximately one third of these vehicles would potentially be travelling inbound towards the site during a typical morning peak hour (eg 7.00 to 8.00 am) and one third would potentially be travelling outbound from the site during a typical afternoon peak hour (eg 5.00 to 6.00 pm).

The peak hourly site construction traffic movements will therefore be approximately:

- 10 cars per hour and 7 trucks per hour travelling in during the morning peak hour; and
- 10 cars per hour and 7 trucks per hour travelling out during the afternoon peak hour.

The geographic direction distribution of this site construction traffic during the peak hours would also be similar to that for the site operations traffic and would be generally 60 per cent travelling to or from the south and east and 40 per cent travelling to or from the north and west.

## 3.4 Car parking

The existing site car parking capacity of 45 spaces, which is primarily for existing customers, site employees and visitors, will be retained and additional car parking will be provided in four smaller parking areas on the main part of the site as shown on the proposed site plan (Drawing No. DA1002) provided in Appendix A. Existing bicycle parking capacity (three bicycle parking/storage spaces) will also be retained.

The additional car parking supply for the proposal to the site has been calculated in accordance with the RMS Guide to traffic generating developments. This car parking standard recommends 0.2 car parking spaces per berth for car parking at a dry boat storage marina. This rate is also consistent with the recommendations of the Australian Standard AS 3962-2001 – Guidelines for the design of marinas, which recommends car parking in the range 0.2 to 0.4 parking spaces per dry boat storage berth.

The RMS car parking standard effectively corresponds to the lower end of the AS 3962 range, but is appropriate for this site as there are other car parking demand uses at the site (eg employee and visitor car parking) and some shared usage of the overall site car parking supply between the different user groups will generally be feasible. The total site car parking capacity will therefore need to be increased as follows:

- A total of 45 car parking spaces are required currently, representing 35 spaces for the site employees and visitors and 10 car parking spaces for the existing approved dry boat storage (50 boats) for customers and their guests.

- The proposed additional boat storage capacity for 126 more boats will require a further 26 car parking spaces.

- The proposed additional workshops will require a further 4 car parking spaces (Leichhardt Council DCP – Part C industry parking rate 1 space per 250m$^2$ gross floor area).

- The proposed additional warehouse will require a further 2 car parking spaces (Leichhardt Council DCP – Part C warehouse parking rate 1 space per 300m$^2$ gross floor area).

- The proposed additional office space will require a further 4 car parking spaces (Leichhardt Council DCP – Part C office premises parking rate 1 space per 100m$^2$ gross floor area).

In total, the proposal requires an additional 36 car parking spaces, representing a total demand of 81 car parking spaces.

The proposal includes a total of 81 car parking spaces, and as such, will provide adequate capacity for the estimated future maximum site car parking demand.

## 3.5 Public transport

In the context of the proposal, the demand for public transport travel will be generally low and will primarily occur either by taxis or private minibuses.

# 4 Impact assessment

## 4.1 Traffic volumes on the surrounding roads

Current peak hourly traffic volumes, the future additional traffic generated by the proposal and the corresponding percentage traffic increases on the surrounding roads in the Rozelle locality are summarised in Table 4.1. The analysis assumes the maximum future site operations traffic for +126 additional boats stored at the site will all be using the main site access route via Robert Street to and from Victoria Road on all days, including the days when there is a cruise ship visiting the White Bay Cruise Terminal.

Generally lower proportional traffic increases would occur on the main Robert Street site access route during the peak site construction activity, when the predicted generated hourly construction traffic movements (an additional 17 vehicle movements per hour) will be significantly lower than the potential maximum additional hourly traffic movements which would be generated during the future site operations (an additional 42 vehicle movements per hour).

**Table 4.1 Future locality traffic volumes including additional project operations traffic**

| Traffic generation route | Traffic day | Existing hourly traffic volumes (am and pm peaks) July 2014 | Additional peak hourly traffic from the proposal | Future total peak hourly traffic | Average peak hourly traffic increase |
|---|---|---|---|---|---|
| **Surveyed traffic in 2014 –with no Cruise Ship visiting** | | | | | |
| Robert Street east of Victoria Road | Normal day | 1,687-2,116 | 42 | 1,729-2,158 | 2.2% |
| Victoria Road north of Robert Street | Normal day | 4,277-5,271 | 4-7 | 4,281-5,278 | 0.1% |
| Victoria Road south of Robert Street | Normal day | 5,862-7,199 | 35-38 | 5,900-7,234 | 0.6% |
| **Surveyed traffic in 2015 –on a Cruise Ship visit day** | | | | | |
| Robert Street east of Victoria Road | Cruise Ship day | 1,752-1,818 | 42 | 1,794-1,860 | 2.4% |
| Victoria Road north of Robert Street | Cruise Ship day | 3,822-3,965 | 4-7 | 3,826-3,972 | 0.1% |
| Victoria Road south of Robert Street | Cruise Ship day | 5,482-5,561 | 35-38 | 5,520-5,596 | 0.7% |

The results in Table 4.1 show that traffic increases from the proposal will primarily only be measurable on the Robert Street route, where there will be approximately +2.2 to 2.4% peak hourly traffic increases on either of the days with or without a cruise ship visiting.

The Robert Street route at Victoria Road has peak hourly two way traffic volumes in the range 1,687-2,116 vehicles per hour currently, which correspond generally to sub arterial route traffic conditions. The likely project generated traffic increases from the additional site traffic using Robert Street, (up to 42 additional hourly vehicle movements for +126 additional boats in storage) are unlikely to have any noticeable road or intersection traffic queuing impacts to the route. This is further analysed in the context of the potential site traffic impacts at the Victoria Road and Robert Street intersection in Section 4.2.

At the other locations on the major road network (Victoria Road) either to the north-west or the south-east of Robert Street, there will be generally less than 0.7 per cent increases in the peak hourly traffic in any direction. These increases will have no noticeable effects on the peak hourly traffic flow conditions on the route. This is also confirmed by the analysis of the potential site traffic flow impacts for the key intersection at Victoria Road and Robert Street, in Section 4.2.

## 4.2 Traffic impacts at intersections

The future traffic operations SIDRA intersection assessment results are presented in Table 4.2 and Table 4.3 for the July 2014 and July 2015 existing traffic conditions, for the site generated construction traffic (+17 hourly vehicle movements) and for the site generated operations traffic (+42 hourly vehicle movements) for 126 additional berths.

**Table 4.2 Future SIDRA results for 2014 Victoria Road/Robert Street intersection operations**

| Intersection | Traffic day | LOS | DOS | AVD* (seconds) | Optimum Cycle Time (seconds) | Maximum traffic queue length (m) |
|---|---|---|---|---|---|---|
| Victoria Road/ Robert Street am peak hour | Normal Day (July 2014 Base Traffic) | C | 0.937 | 34.0 | 90 | 391 (Victoria Road north) |
| | Normal Day (with construction traffic) | C | 0.922 | 33.9 | 95 | 405 (Victoria Road north) |
| | Normal Day (with maximum +126 boats in storage at the site) | C | 0.941 | 34.0 | 90 | 391 (Victoria Road north) |
| Victoria Road/ Robert Street pm peak hour | Normal Day (July 2014 Base Traffic) | B | 1.000 | 27.7 | 150 | 392 (Victoria Road north) |
| | Normal Day (with construction traffic) | B | 1.000 | 27.8 | 150 | 392 (Victoria Road north) |
| | Normal Day (with maximum +126 boats in storage at the site) | B | 1.000 | 27.8 | 150 | 392 (Victoria Road north) |

*Notes:* ** The average vehicle delay for traffic signals is the average for all traffic movements at the intersection.*

**Table 4.3 Future SIDRA results for 2015 Victoria Road/Robert Street intersection operations**

| Intersection | Traffic day | LOS | DOS | AVD* (seconds) | Optimum Cycle Time (seconds) | Maximum traffic queue length (m) |
|---|---|---|---|---|---|---|
| Victoria Road/ Robert Street am peak hour | Cruise Ship Day (July 2015 Base Traffic) | B | 0.877 | 21.3 | 55 | 193 (Victoria Road north) |
| | Cruise Ship Day (with construction traffic) | B | 0.877 | 21.3 | 55 | 193 (Victoria Road north) |
| | Cruise Ship Day (with maximum +126 boats in storage at the site) | B | 0.898 | 21.6 | 55 | 193 (Victoria Road north) |
| Victoria Road/ Robert Street pm peak hour | Cruise Ship Day (July 2015 Base Traffic) | B | 1.076 | 20.8 | 86 | 139 (Victoria Road north) |
| | Cruise Ship Day (with construction traffic) | B | 1.076 | 21.0 | 86 | 139 (Victoria Road north) |
| | Cruise Ship Day (with maximum +126 boats in storage at the site) | B | 1.076 | 21.0 | 86 | 139 (Victoria Road north) |

*Notes: * The average vehicle delay for traffic signals is the average for all traffic movements at the intersection.*

The intersection analysis results in Table 4.2 and Table 4.3 show virtually no measurable traffic effects at the intersection for either the year 2014 (no cruise ship) or year 2015 (with cruise ship) traffic survey periods considered. Neither the proposal's construction traffic nor its operations traffic will have any measurable effect on either the morning or the afternoon peak hour levels of service, degrees of saturation or maximum traffic queue lengths at the intersection.

The SIDRA intersection traffic assessment allows the program to determine the optimum intersection cycle time, which in some cases changes for the future traffic scenarios, in which case this also becomes a factor in any change in the future intersection traffic operations. The future traffic effects of the proposal for +150 boats stored at the site are effectively:

- July 2014 traffic conditions (no cruise ship) the morning peak hour average intersection delay remains unchanged at 34.0 seconds;
- July 2014 traffic conditions (no cruise ship) the afternoon peak hour average intersection delay increases marginally from 27.7 to 27.8 seconds;
- July 2015 traffic conditions (with cruise ship) the morning peak hour average intersection delay increases marginally from 21.3 seconds to 21.6 seconds; and
- July 2015 traffic conditions (with cruise ship) the afternoon peak hour average intersection delay increases marginally from 20.8 seconds to 21.0 seconds.

These additional intersection traffic delays are barely measurable and would generally be acceptable in terms of their impacts as there would be minimal change to the existing peak hourly traffic delays on both Robert Street and Victoria Road, at this intersection.

## 4.3 Site car parking requirements

Car parking is already provided for the existing approved operational uses on the site, including the approved 50 boats capacity for undercover dry boat storage.

The site has a large car parking area for the site employees and visitors which is located immediately inside the site entry, which provides approximately 45 car parking spaces at the site.

Additional car parking demand for the site has been assessed for the additional future customers of the additional boat storage berths and their guests at the site, which results in the following site car parking design requirements:

- +26 car parking space for the users of the 126 additional boat storage berths;
- +4 car parking space for the workshops;
- +2 car parking spaces for the warehouse; and
- +4 car spaces for the office premises.

As described in Section 3.4, additional car parking capacity that is to be provided for the proposal (to provide a future total of 81 car parking spaces at the site). This demonstrates that the site will have the capacity to accommodate parking for the future maximum of +126 additional boats storage, office, workshops and warehouse spaces at the site, which would increase the total site car parking demand from 45 spaces for the existing approved development, to 81 car parking spaces with the proposal.

## 4.4 Traffic safety

Traffic safety conditions on the local road access to the site via Robert Street the major road access intersection where this road meets Victoria Road are acceptable currently and will not be adversely affected by the proposal during either its construction or operations stages.

## 4.5 Access for pedestrians, cyclists and public transport

Access for pedestrians and cyclists from the site to the surrounding areas is considered unlikely due to the separation distances from the nearest residential areas at Balmain or Rozelle.

The existing bicycle parking spaces at the site will be retained with the proposal.

The demand for public transport travel for the proposal will be generally low and will primarily occur either by taxis or private minibuses.

# 5 Summary and conclusions

The traffic impacts for the proposal have been assessed for two examples of the locality site access traffic conditions (for access via Robert Street and Victoria Road) using the base intersection traffic volumes which were surveyed in July 2014 on a day when there was no cruise ship visiting the White Bay Cruise Terminal and in July 2015 on a day when there was a cruise ship (Sun Princess) visiting the White Bay Cruise Terminal:

- The existing morning and afternoon peak hourly traffic volumes using Robert Street and Victoria Road were surveyed as follows:
  - In July 2014, Robert Street, east of Victoria Road was 1,687- 2,116 vehicles per hour;
  - In July 2014 Victoria Road, south of Robert Street was 5,862- 7,199 vehicles per hour;
  - In July 2015, Robert Street, east of Victoria Road was 1,752- 1,818 vehicles per hour; and
  - In July 2015 Victoria Road, south of Robert Street was 5,482- 5,561 vehicles per hour.
- These existing volumes are within the range of typical peak hourly traffic volumes respectively for a sub-arterial road (Robert Street) and a major arterial route (Victoria Road).
- The main arterial road access intersection which is at Victoria Road and Robert Street has been analysed using the SIDRA intersection analysis program for both the July 2014 and the July 2015 traffic volumes. The intersection is operating with either good or satisfactory traffic delays (LoS B or C) currently, although the intersection degrees of saturation is relatively high, representing more congested peak hour traffic operations, during the afternoon traffic peak hour. Since 2010, the morning peak hour city-bound car traffic volumes using Victoria Road have actually declined, as a result of traffic changes to Victoria Road following the implementation of the Inner West Busway (city bound peak period bus lane).
- The intersection currently has similar morning and afternoon peak hour major road traffic queues, although the traffic queues were generally higher during the 2014 traffic survey (at approximately 390 m in both directions) compared to between 140 m to 190 m during the 2015 traffic survey.
- The existing site traffic (in July 2014) was surveyed as approximately 98 vehicle movements daily, with a mid morning traffic peak of approximately 14 hourly vehicle movements occurring between 9.45 to 10.45 am and a mid afternoon traffic peak of approximately 13 hourly vehicle movements occurring between 2.15 to 3.15 pm. During the normal commuter peak traffic periods on the external major roads, the site traffic movements were generally lower, being approximately 10 vehicle movements per hour (9 in, 1 out) during a typical morning commuter peak traffic period (eg 7.00 to 8.00 am) and 10 vehicle movements per hour (3 in, 7 out) during a typical afternoon commuter peak traffic period (eg 5.00 to 6.00 pm).
- Additional traffic generated by the proposal has been assessed from the site traffic usage on busy days, which will generate approximately 210 additional daily vehicle movements (cars or other smaller vehicles typically) of which 42 additional vehicle movements would generally be occurring during the external major road commuter peak traffic periods in the mornings or afternoons on weekdays. The predicted additional site traffic is likely to be distributed approximately 60 per cent to and from the south and east (via the Anzac Bridge) and 40 per cent via other routes, subject also to the effects of the morning peak period right turn traffic restriction from Robert Street at the Victoria Road intersection.

- During the peak construction period, the additional generated peak hourly traffic movements from the site will also be similar, being approximately 17 additional hourly vehicle movements, of which a higher proportion would be heavy vehicles (7 out of 17 additional hourly vehicle movements).

- The additional site traffic from the construction and operations of the proposal will not generally affect the capacity or safety of road networks in the area where the proportional traffic increases (from the proposed additional 126 boats storage, office, workshop and warehouse spaces at the site) will generally be minimal, being maximum 0.7% peak hourly traffic increases at various locations on Victoria Road and a maximum 2.4% peak hourly traffic increase on Robert Street. These are the two roads which provide the primary access to the area. The proposal would generally have minimal effect to the operating traffic capacity or safety of these roads or any other traffic routes.

- The effect of the additional proposal generated peak hourly traffic has also been assessed at the major road access intersection (at Victoria Road and Robert Street) for the additional site construction and operational (+126 boats storage) traffic movements. The project SIDRA intersection traffic assessment shows generally no measurable traffic changes for either the July 2014 (no cruise ship) or July 2015 (with cruise ship) base traffic conditions at the intersection, in terms of either the intersection levels of service, degree of saturation or traffic queue lengths. The SIDRA program has allowed the optimum intersection cycle time to vary at the intersections, which in some cases changes the future optimum intersection cycle time.

- Existing site car parking will be retained and expanded to accommodate the proposal. Additional car parking for the proposal will be provided at the recommended rate of the RTA (now RMS) guide to traffic generating developments. The site has 45 car parking spaces currently of which 35 are intended for use by the site employees and other site visitors and 10 are intended for customers of the approved 50 boat dry boat storage facility.

- For the future site development, 36 additional car parking spaces will be provided, resulting in a total capacity of 81 car parking spaces. This will provide overall increased capacity to accommodate the future maximum combined demand from all employees and visitors at the site which has been assessed as 81 car parking spaces. Also, during the peak utilisation periods for the site boat launching activity (which will be on weekends and during public holidays), the site employee car parking demand will generally be lower, such that a higher proportion of the overall site car parking capacity would effectively be available for additional use by customers of the proposed dry boat storage facility and hard stand boat storage area.

- Normal public transport services will not generally be required for the proposal. Where there will be a demand for individual or group transport travel by taxis and private minibuses these vehicles will be used to transport some site patrons and their guests to and from the site.

- Access by pedestrians and cyclists to and from the site from surrounding areas is unlikely due to the current separation distances from the nearest residential area, which is near the corner of Robert Street at Buchanan Street. Some local residents from within a normal walking distance catchment (which is 500 m to 800 m approximately) may nevertheless walk if they needed to visit the site. Existing bicycle parking will be retained at the site.

- In an overall transport context, the traffic impacts for the proposal have been assessed via Robert Street for two site access conditions (access on a normal day and access on a cruise ship day) and in both situations the existing road network has been found to provide adequate traffic capacity. On the days when a cruise ship is visiting the port, the site access arrangements for the extended site operations at the site will be agreed between the proponent and PANSW.

# Appendix A

## Plans of the proposal

# DRAFT MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Revisions

| No | Date | Description | Ver | App'd |
|---|---|---|---|---|
| 01 | 07/08/15 | ISSUE FOR DRAFT PLACEHOLDING | 01 | JW |
| 02 | 12/08/15 | ISSUE FOR DRAFT EA | 02 | JW |
| 03 | 26/08/15 | ISSUE FOR EA | 03 | JW |
| 04 | 09/10/15 | ISSUE FOR EA | 04 | JW |
| 05 | 27/06/17 | ISSUE FOR EA | JWr | JW |

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Client
WHITE BAY 6 PTY LTD

Drawing Status
NOT FOR CONSTRUCTION

Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
COVER PAGE

N

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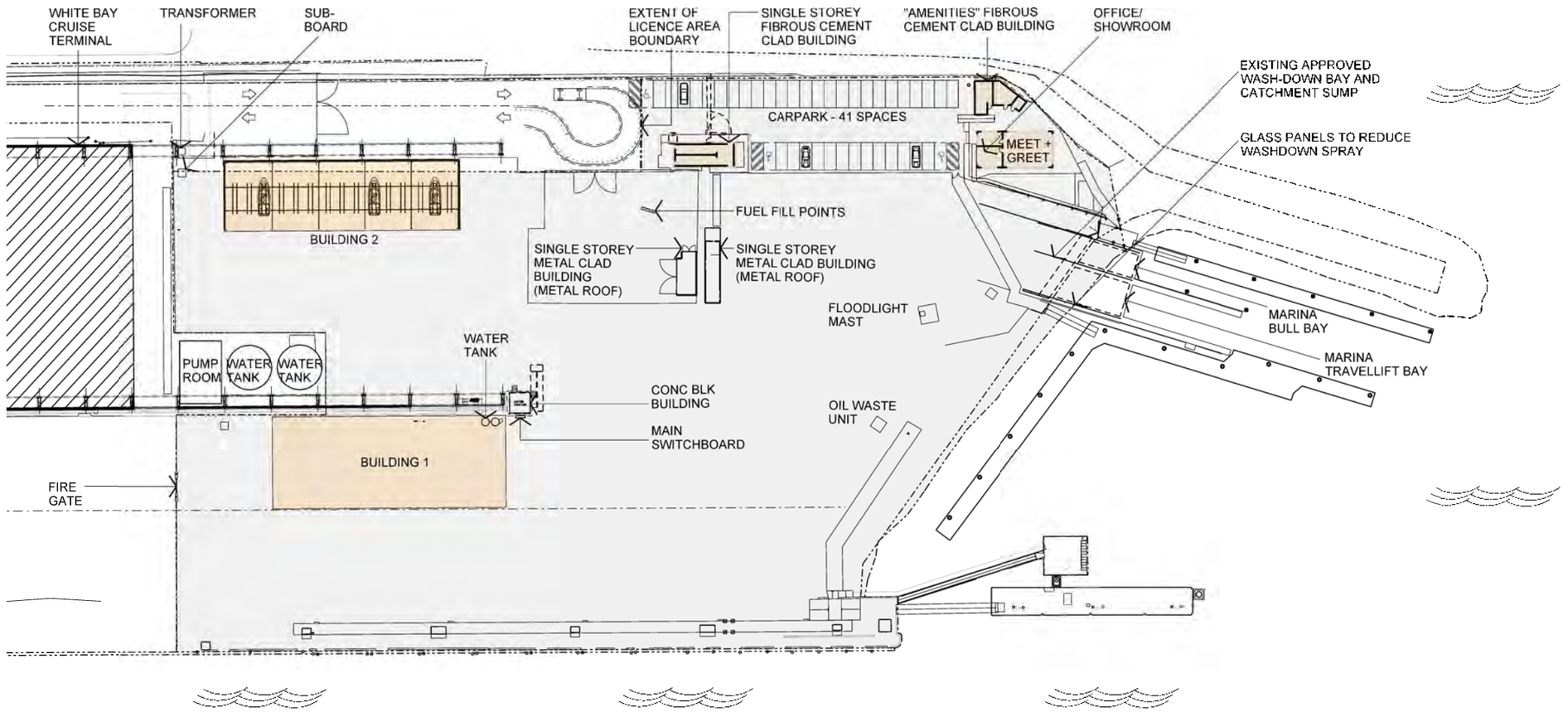


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(Modification 4 to MP06_0037)

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| 03 | 26/08/15 | ISSUE FOR EA | 03 | JW |
| 04 | 13/10/15 | ISSUE FOR EA | 04 | JW |
| 05 | 16/12/15 | ISSUE FOR EA | 05 | JW |

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Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
APPROVED SITE PLAN (PREFERRED CONFIGURATION)

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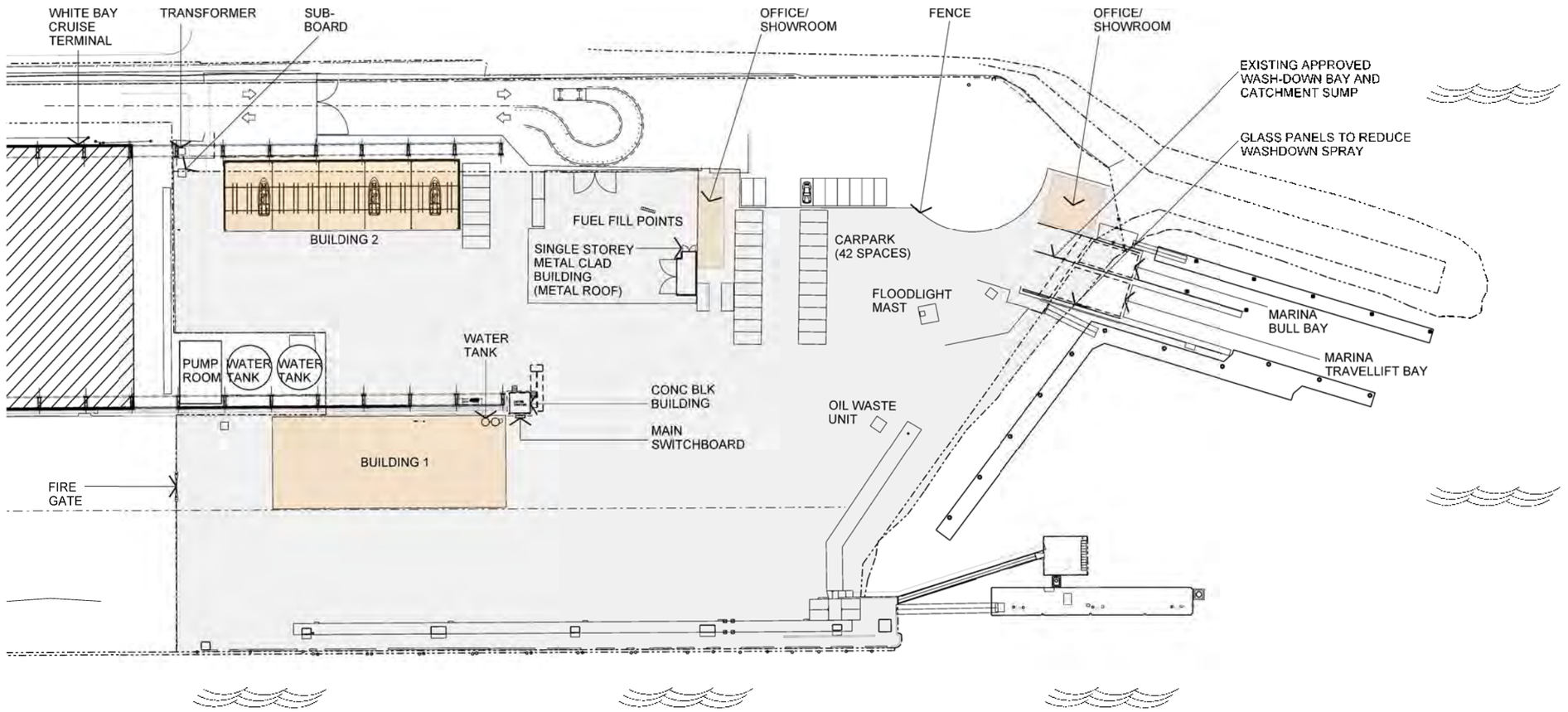


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Project: MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

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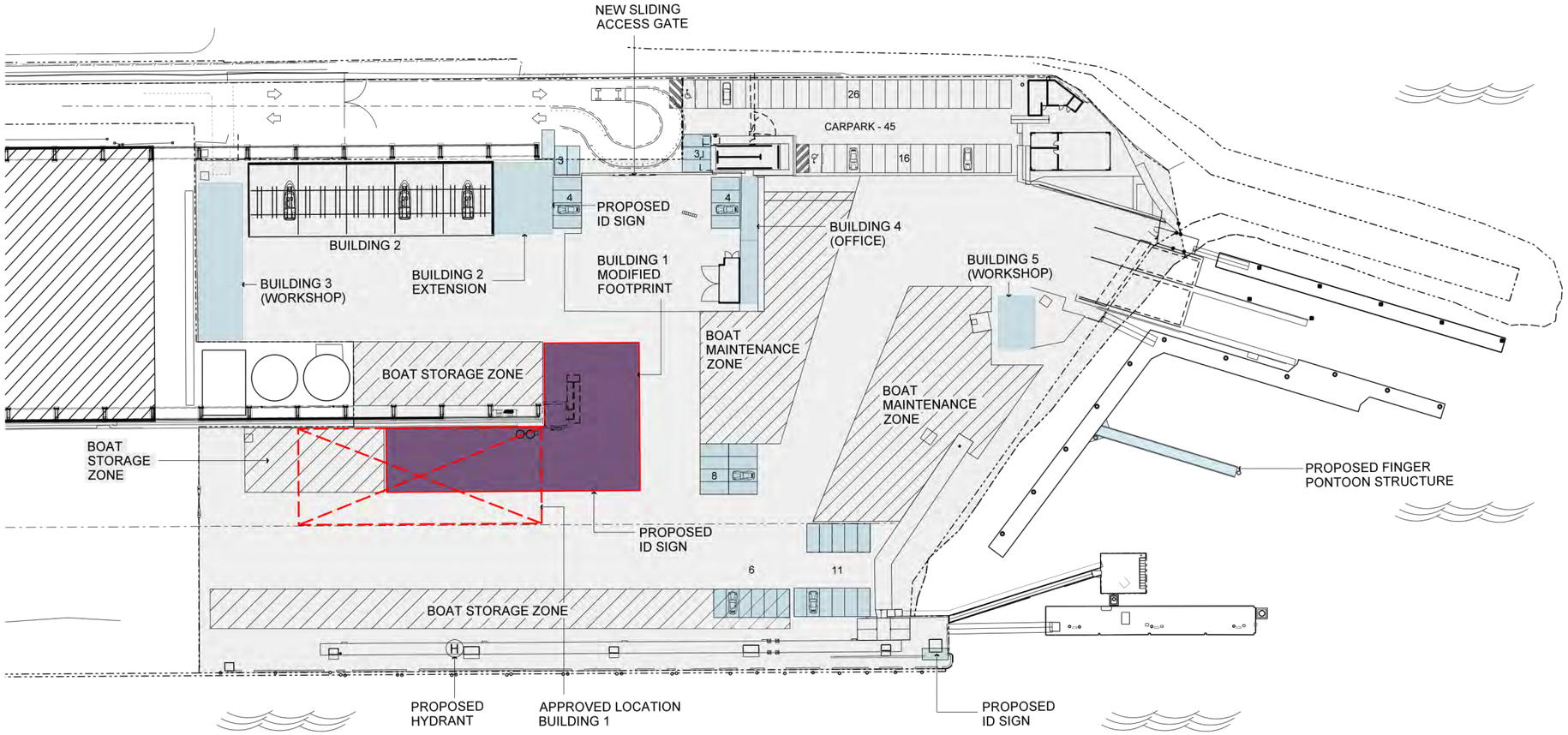


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| 07 | 27/06/17 | ISSUE FOR EA | JWr | JW |


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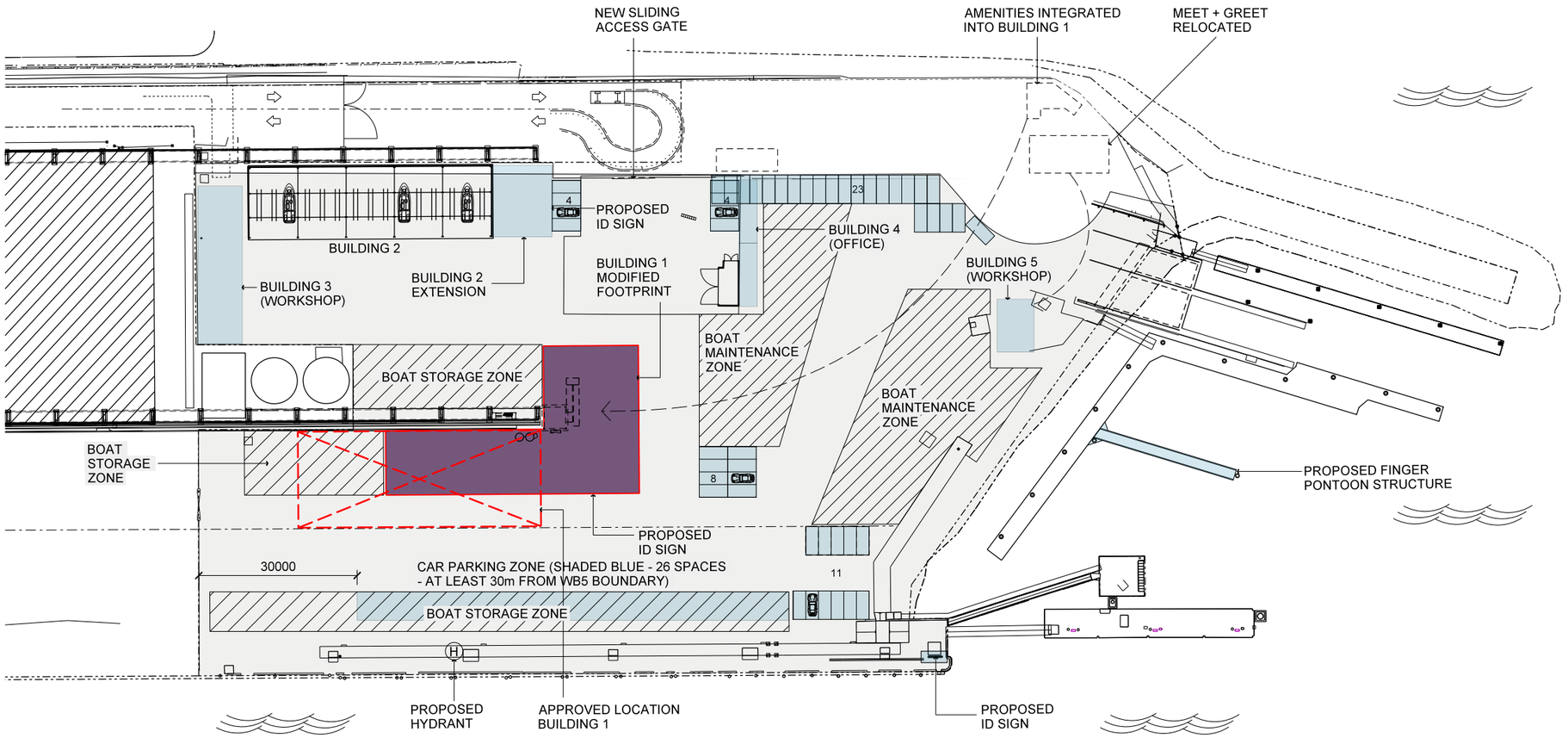


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PROPOSED WORKS

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BOAT STORAGE/ MAINTENANCE ZONE

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Project: MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title: PROPOSED SITE PLAN (ALTERNATIVE)

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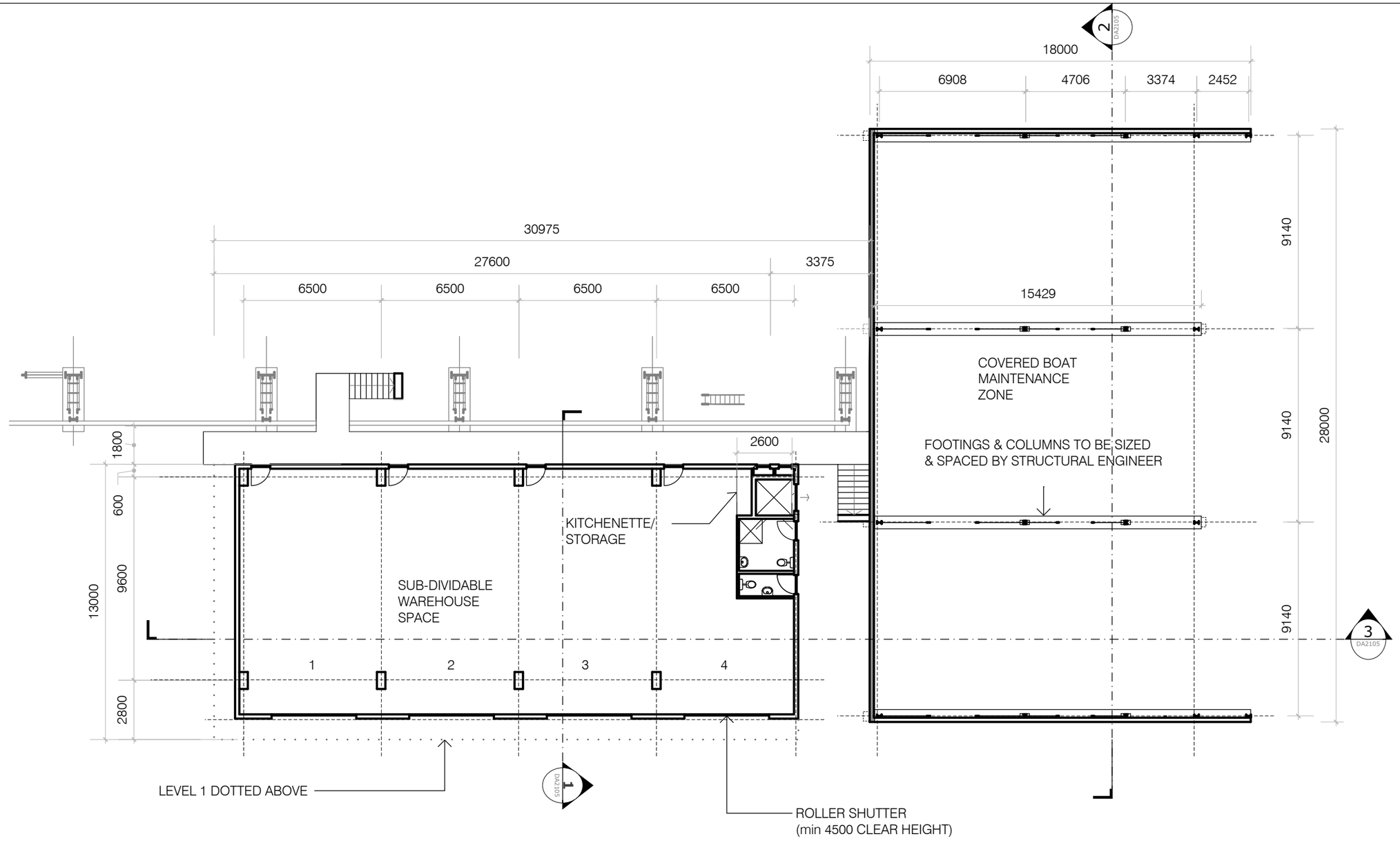


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Project: MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title: BUILDING 1 PLAN - GL

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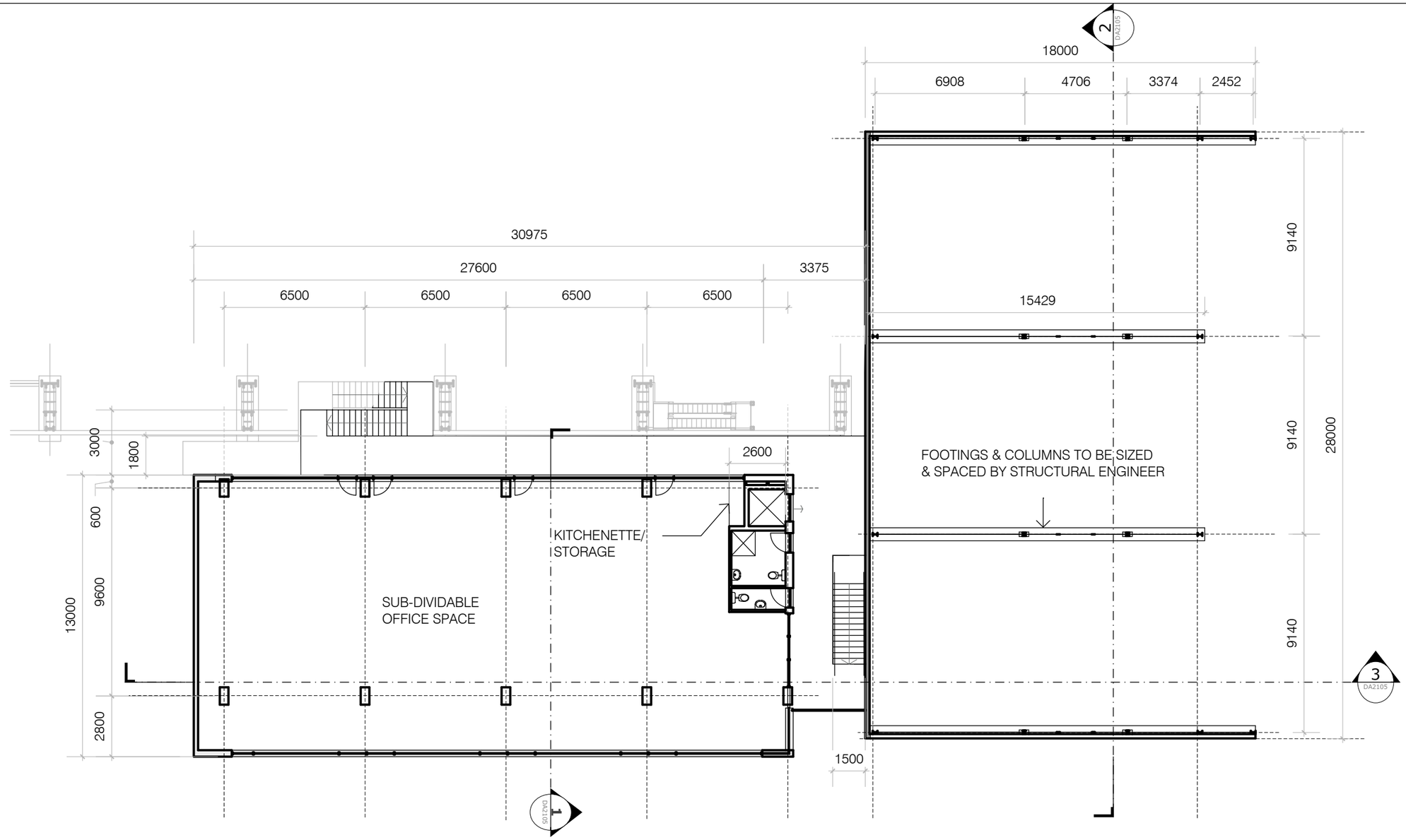


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Project: MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

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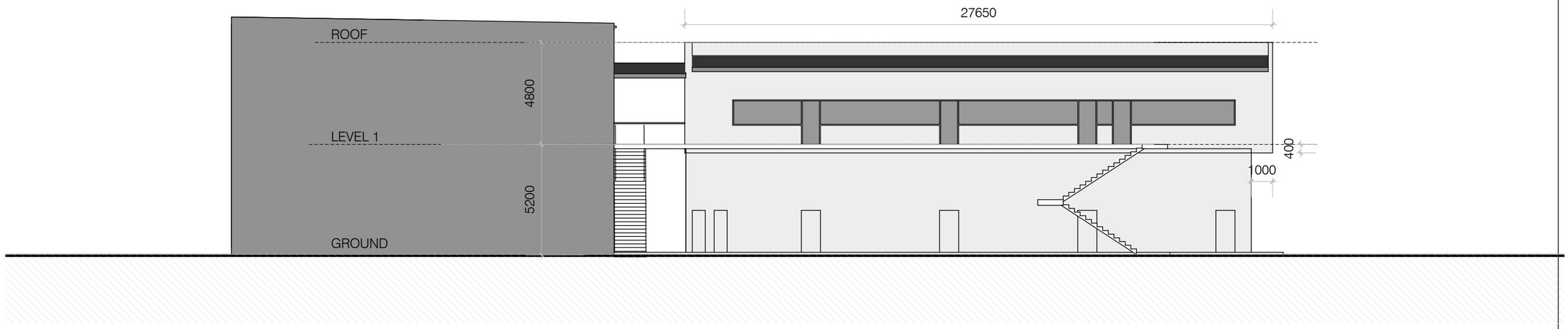


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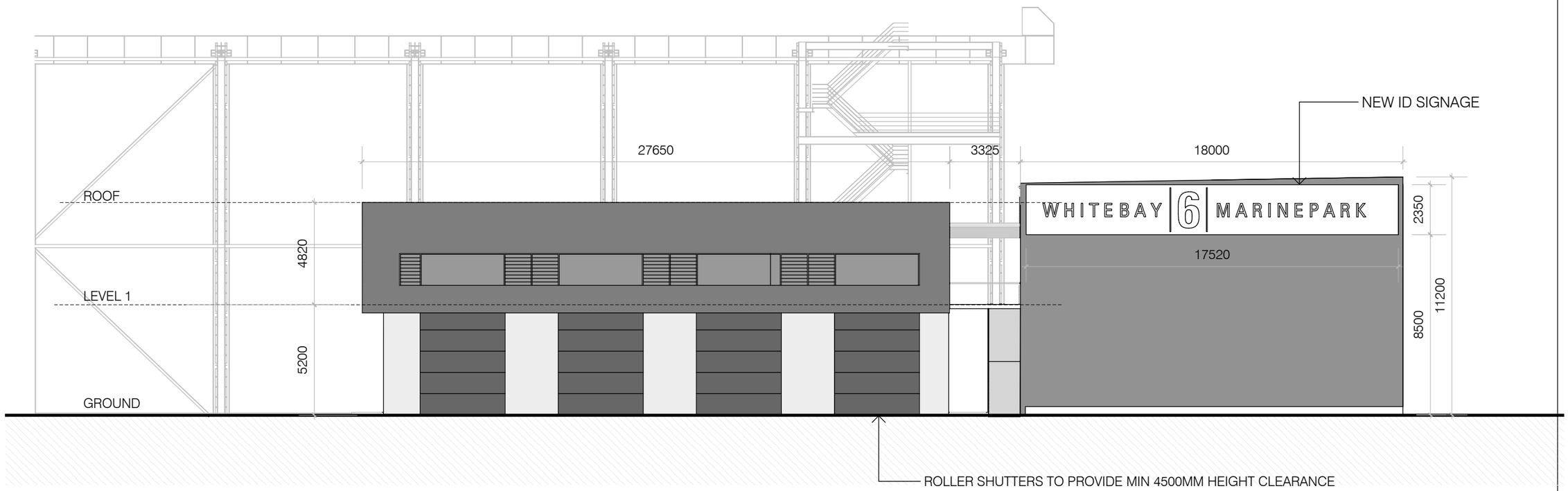


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Project
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Drawing Title
BUILDING 1
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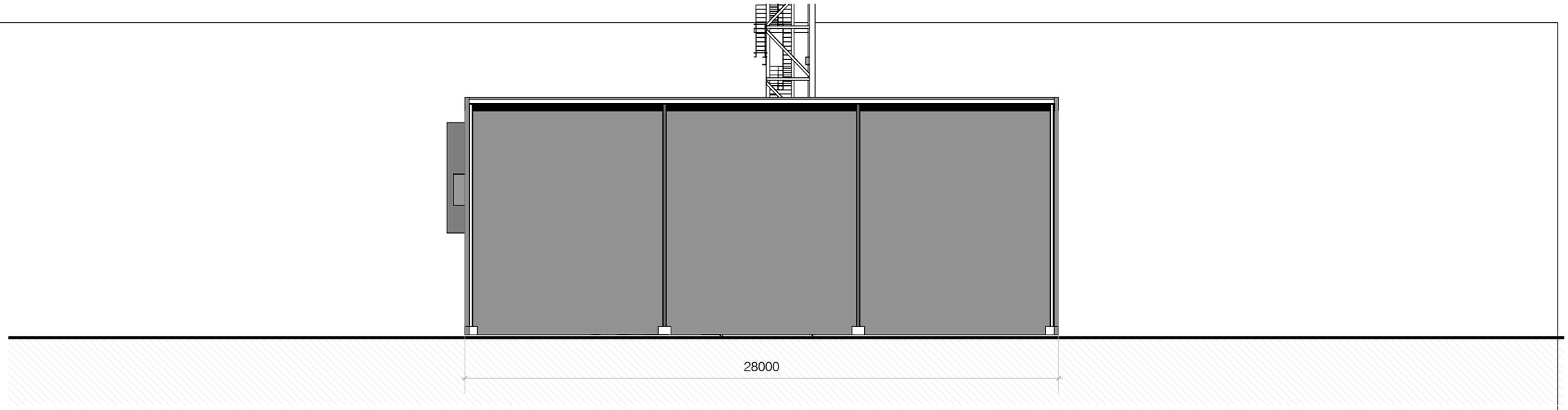


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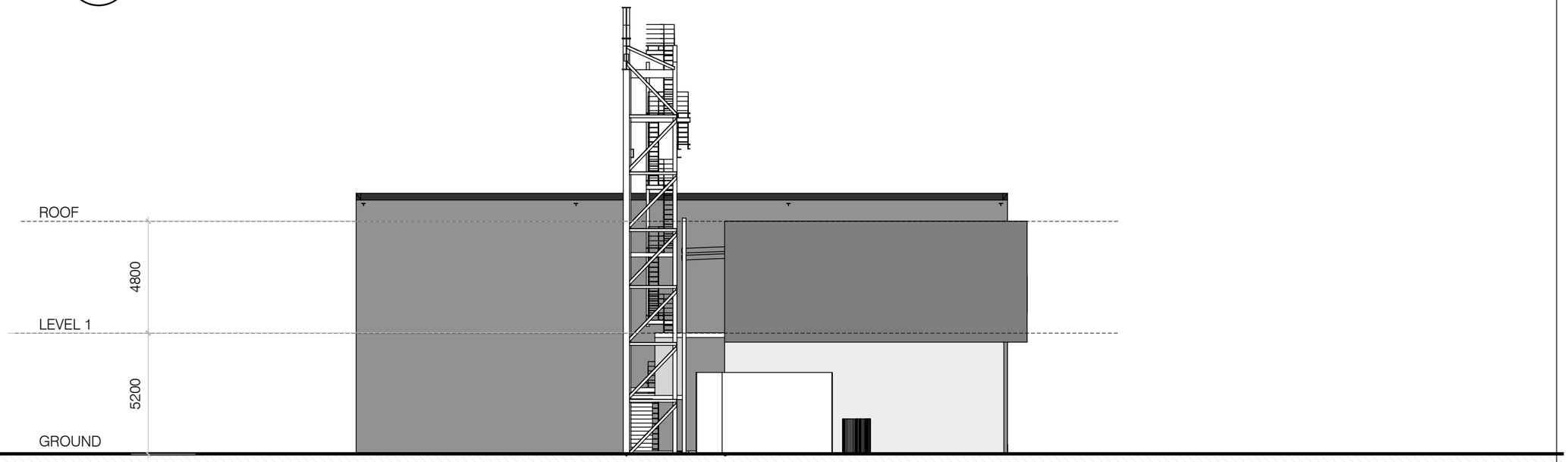


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Drawing Title
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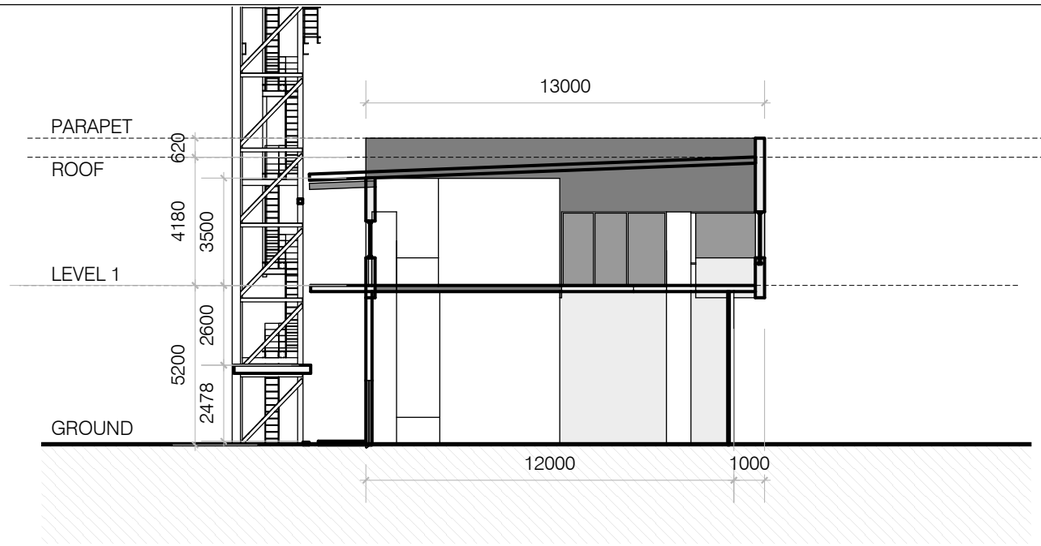


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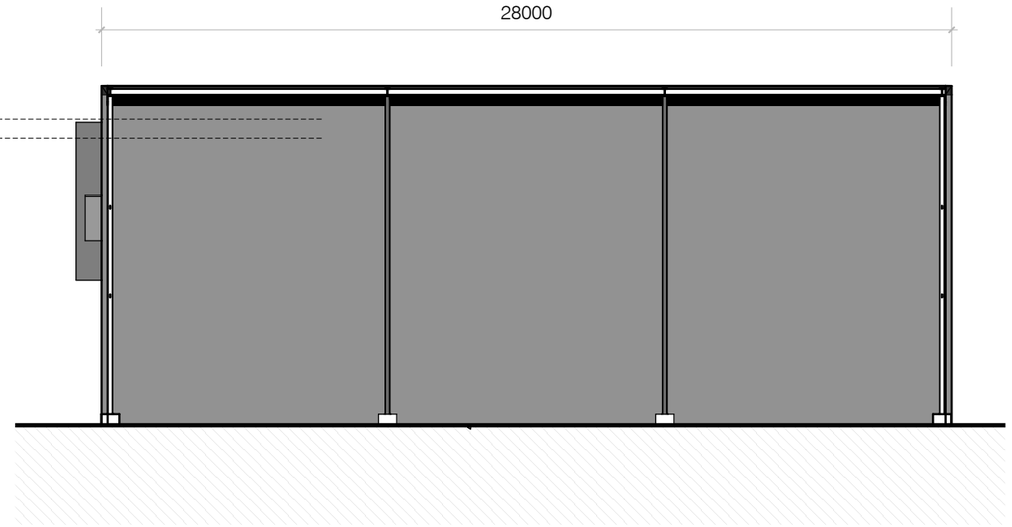


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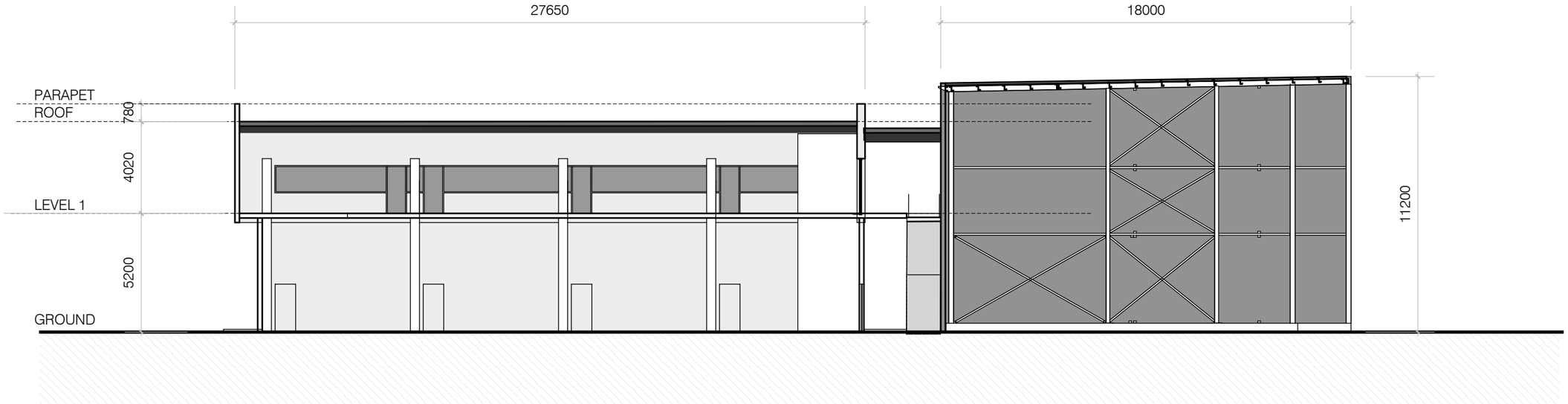


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NOT FOR CONSTRUCTION

Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
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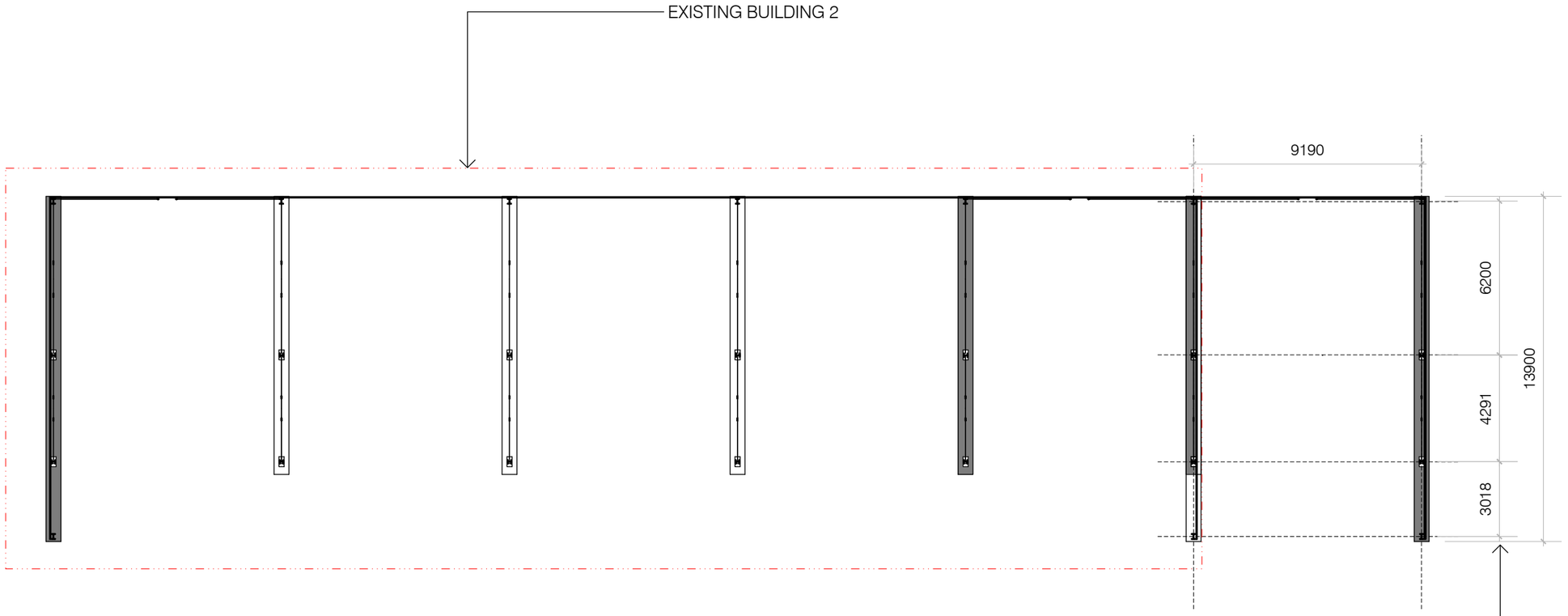


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Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
BUILDING 2
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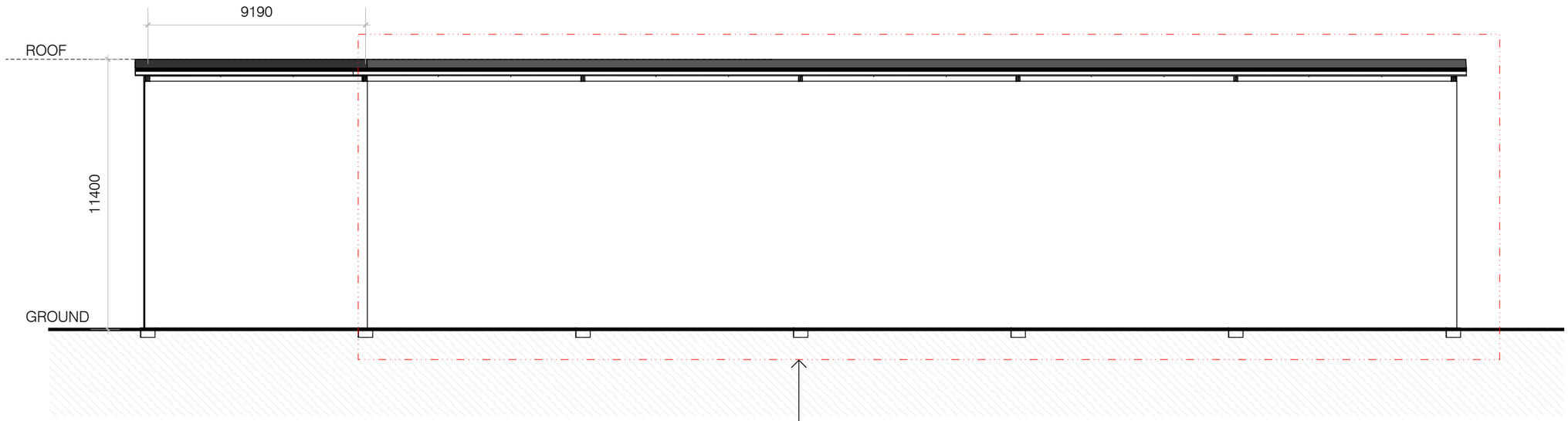


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EXISTING BUILDING 2



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MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
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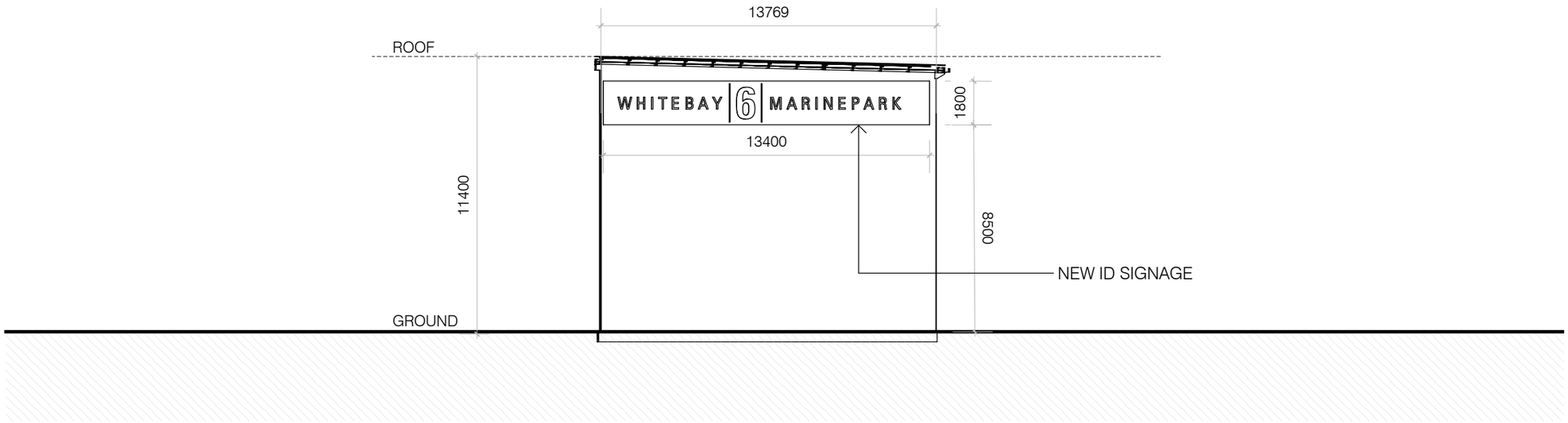


1 ELEVATION - EAST
1:200

FOOTING & COLUMNS TO BE SIZED & SPACED BY STRUCTURAL ENGINEER

| Revisions | | | | |
|---|---|---|---|---|
| No | Date | Description | Ver | App'd |
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |

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Client
WHITE BAY 6 PTY LTD

Drawing Status
NOT FOR CONSTRUCTION

Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
BUILDING 2 ELEVATIONS

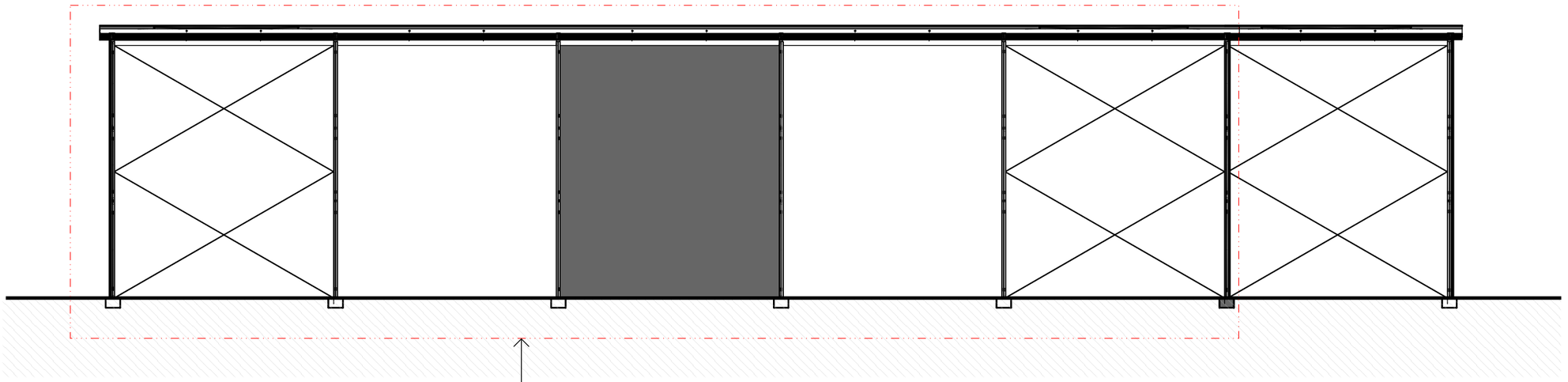
N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2113 | 01 |

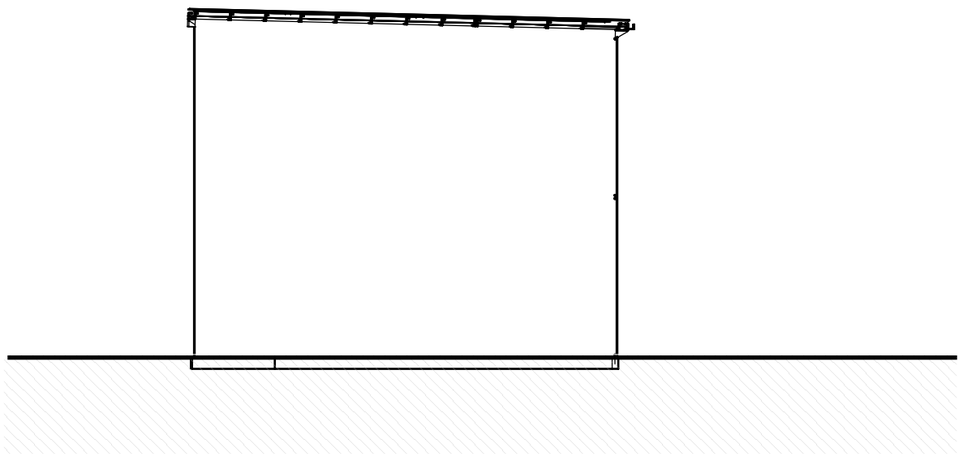


A3

PLOT DATE & TIME: $DATE$ $TIME$ PLOTTED & CHECKED BY: $USER$ REF: $FILE$




1 SECTION - SOUTH
1:200



2 SECTION - EAST
1:200

**Revisions**

| No | Date | Description | Ver | App'd |
|---|---|---|---|---|
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |

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**Client**
WHITE BAY 6 PTY LTD

**Drawing Status**
NOT FOR CONSTRUCTION

**Project**
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

**Drawing Title**
BUILDING 2
SECTIONS

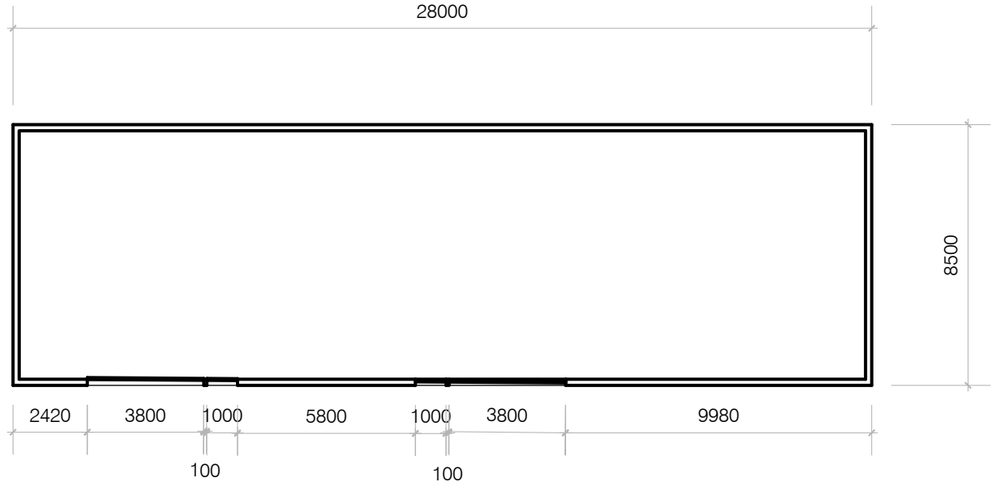
N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2114 | 01 |

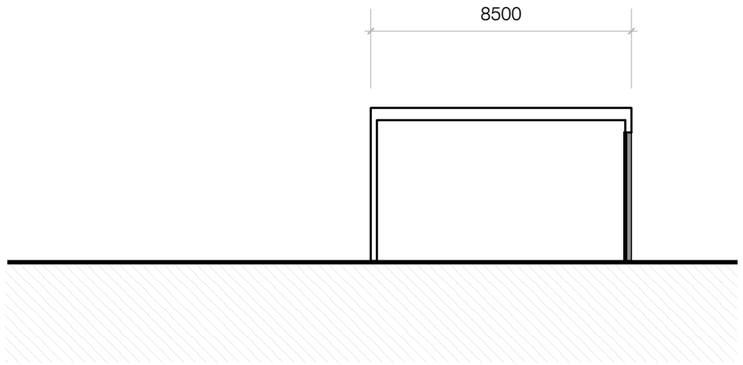
PLOT DATE & TIME: $DATE$ $TIME$ PLOTTED & CHECKED BY: $USER$ REF: $FILE$



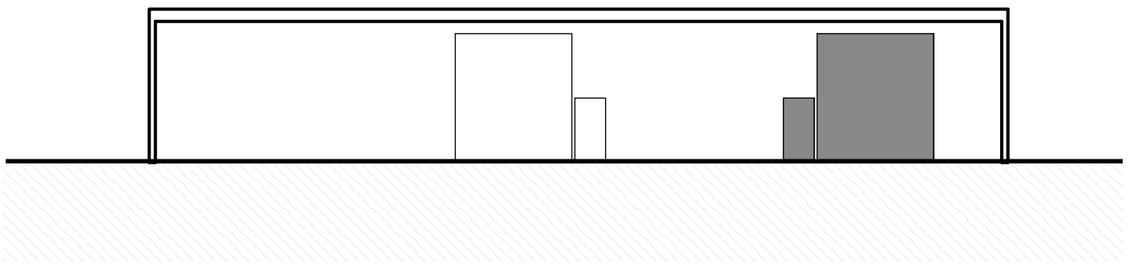
A3




1 PLAN
1:200




1 SECTION - SOUTH
1:200



1 SECTION - WEST
1:200

| Revisions | | | | |
|---|---|---|---|---|
| No | Date | Description | Ver | App'd |
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |

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Client
WHITE BAY 6 PTY LTD

Drawing Status
NOT FOR CONSTRUCTION

Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
BUILDING 3
PLAN + SECTIONS

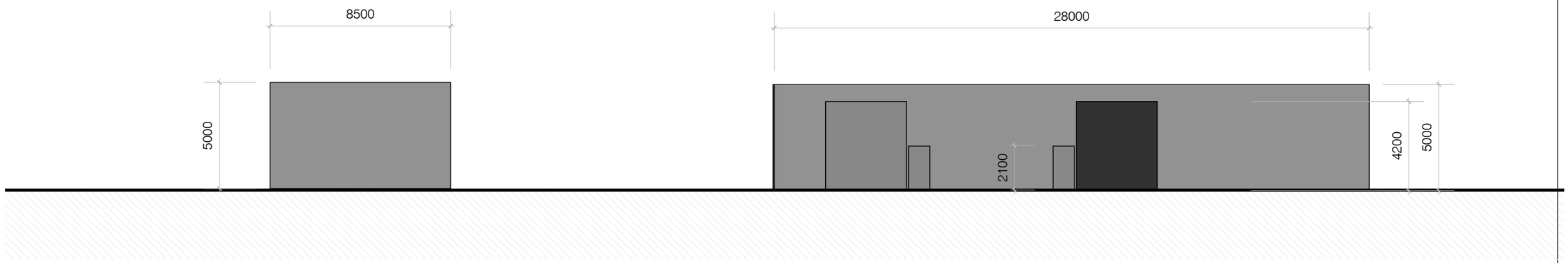
N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2121 | 01 |



PLOT DATE & TIME: $DATE$ $TIME$ PLOTTED & CHECKED BY: $USER$ REF: $FILE$

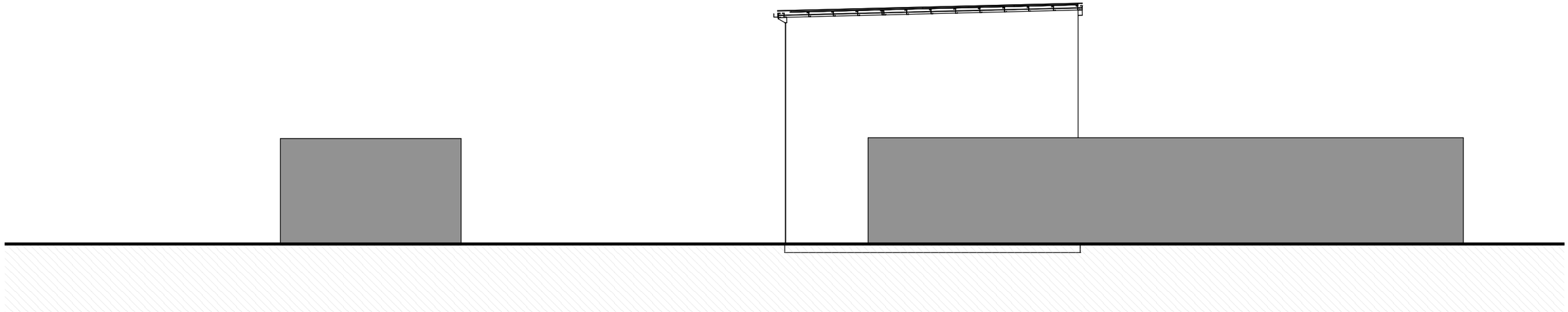
A3




1 ELEVATION - NORTH
1:200




1 ELEVATION - EAST
1:200



1 ELEVATION -SOUTH
1:200

1 ELEVATION - WEST
1:200

**Revisions**

| No | Date | Description | Ver | App'd |
|---|---|---|---|---|
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |

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**Client**
WHITE BAY 6 PTY LTD

**Drawing Status**
NOT FOR CONSTRUCTION

**Project**
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

**Drawing Title**
BUILDING 3
ELEVATIONS

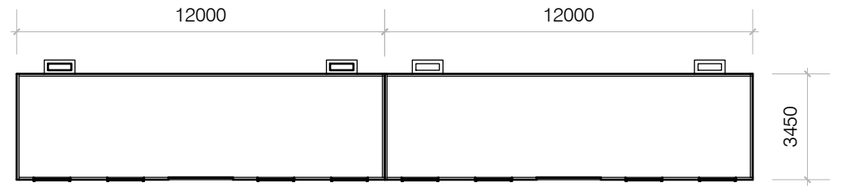
N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2122 | 01 |

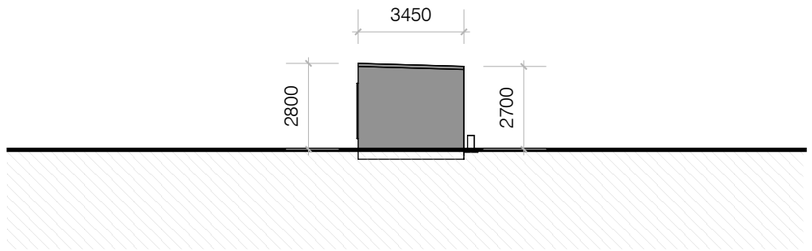


PLOT DATE & TIME: $DATE$ $TIME$ PLOTTED & CHECKED BY: $USER$ REF: $FILE$

A3




1 PLAN
1:200

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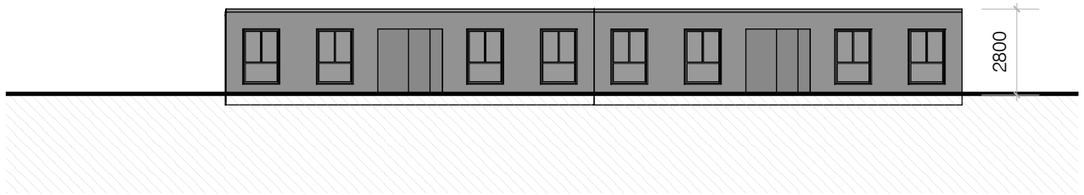
1:200




2 ELEVATION - EAST
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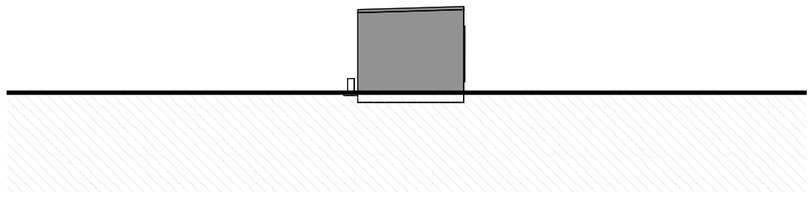

3 ELEVATION - SOUTH
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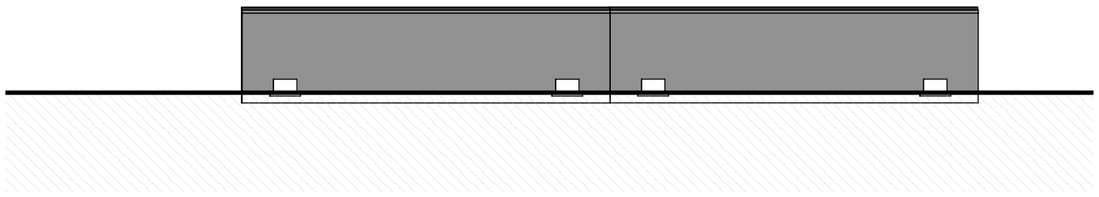

4 ELEVATION - WEST
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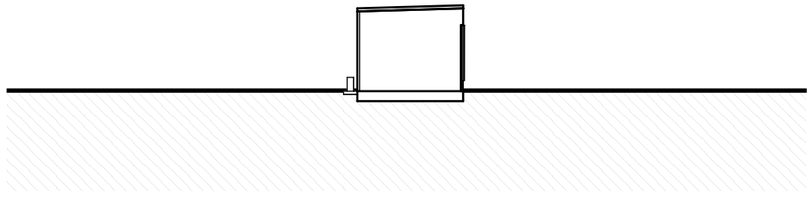
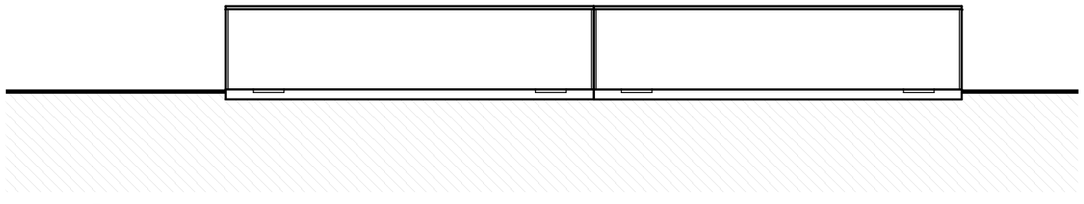


1 SECTION
1:200



2 SECTION - EAST
1:200

**Revisions**

| No | Date | Description | Ver | App'd |
|---|---|---|---|---|
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |

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**Client**
WHITE BAY 6 PTY LTD

**Drawing Status**
NOT FOR CONSTRUCTION

**Project**
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

**Drawing Title**
BUILDING 4 ELEVATIONS

N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2131 | 01 |



A3

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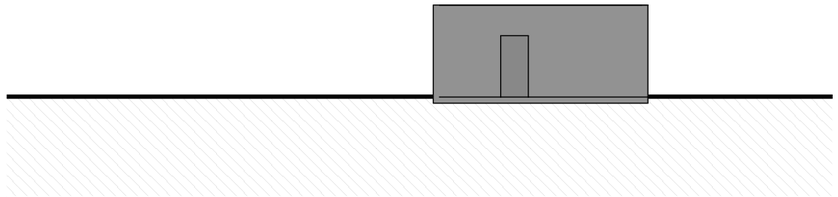
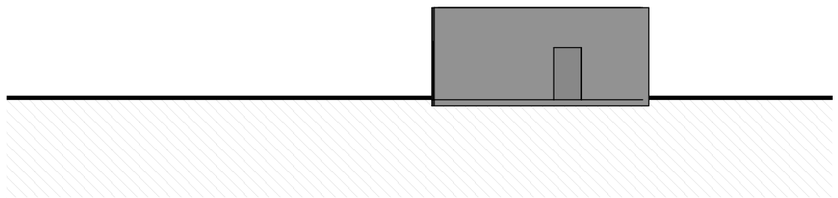
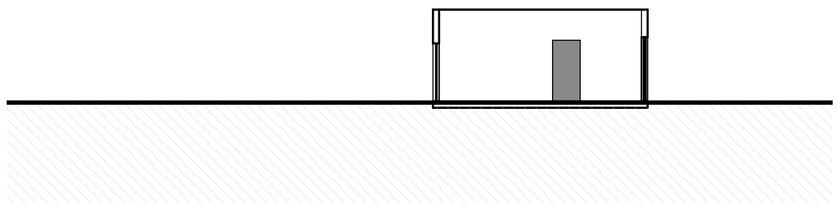


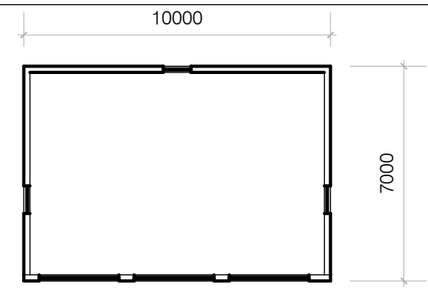
1 ELEVATION - SOUTH
1:200



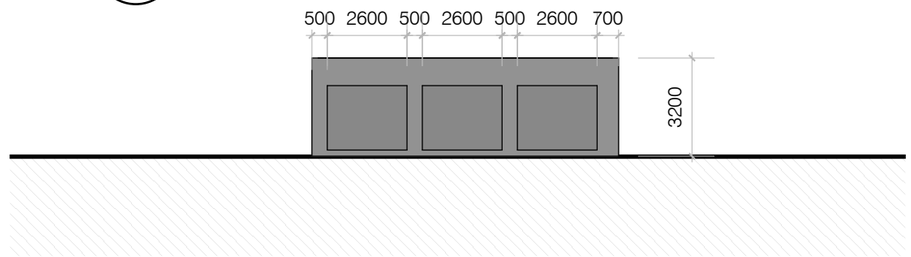
3 ELEVATION - NORTH
1:200



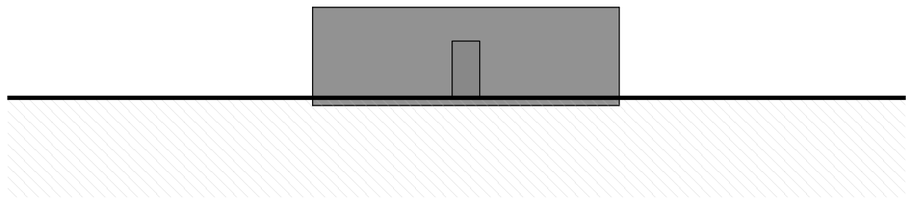
1 SECTION - SOUTH
1:200



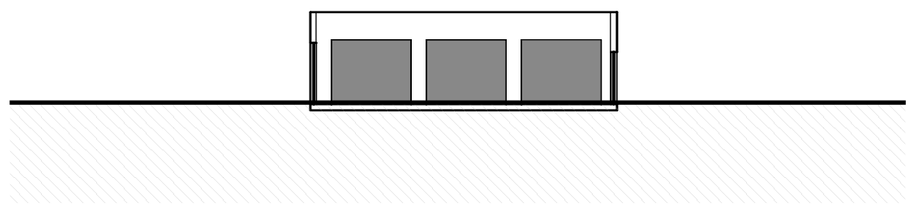

1 PLAN
1:200




2 ELEVATION - EAST
1:200



4 ELEVATION - WEST
1:200



2 SECTION - WEST
1:200

| Revisions | | | | |
|---|---|---|---|---|
| No | Date | Description | Ver | App'd |
| 1 | 26/06/17 | ISSUE FOR EA | JWr | JWh |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Client
WHITE BAY 6 PTY LTD

Drawing Status
NOT FOR CONSTRUCTION

Project
MASTERPLAN + DEVELOPMENT FOR WHITE BAY 6

Drawing Title
BUILDING 5
PLAN + SECTIONS

N

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| 15041 | 1:200 | DA2141 | 01 |



PLOT DATE & TIME: $DATE$ $TIME$ PLOTTED & CHECKED BY: $USER$ REF: $FILE$

A3


| Revisions | | | | |
|---|---|---|---|---|
| No | Date | Description | Ver | App'd |
| 01 | 26/08/15 | ISSUE FOR EA | 01 | JW |
| 02 | 16/12/15 | ISSUE FOR EA | 01 | JW |
| 03 | 27/06/17 | ISSUE FOR EA | JWr | JW |

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Client
WHITE BAY 6 PTY LTD

Drawing Status
NOT FOR CONSTRUCTION

Project
MASTERPLAN +
DEVELOPMENT FOR
WHITE BAY 6

Drawing Title
PHOTOMONTAGE - EAST

| Proj No. | Scale at A3 | Drawing No | Issue |
|---|---|---|---|
| | | DA8501 | 03 |



A3

PLOT DATE & TIME: 27/06/2017 5:32:31 PM PLOTTED & CHECKED BY: wrathall
REF: P:\2015\15041_BaileysMarineMasterplan\03_CAD\microstation\sheet_files\15041_DA8501.dgn

# Appendix B

## Intersection traffic surveys

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

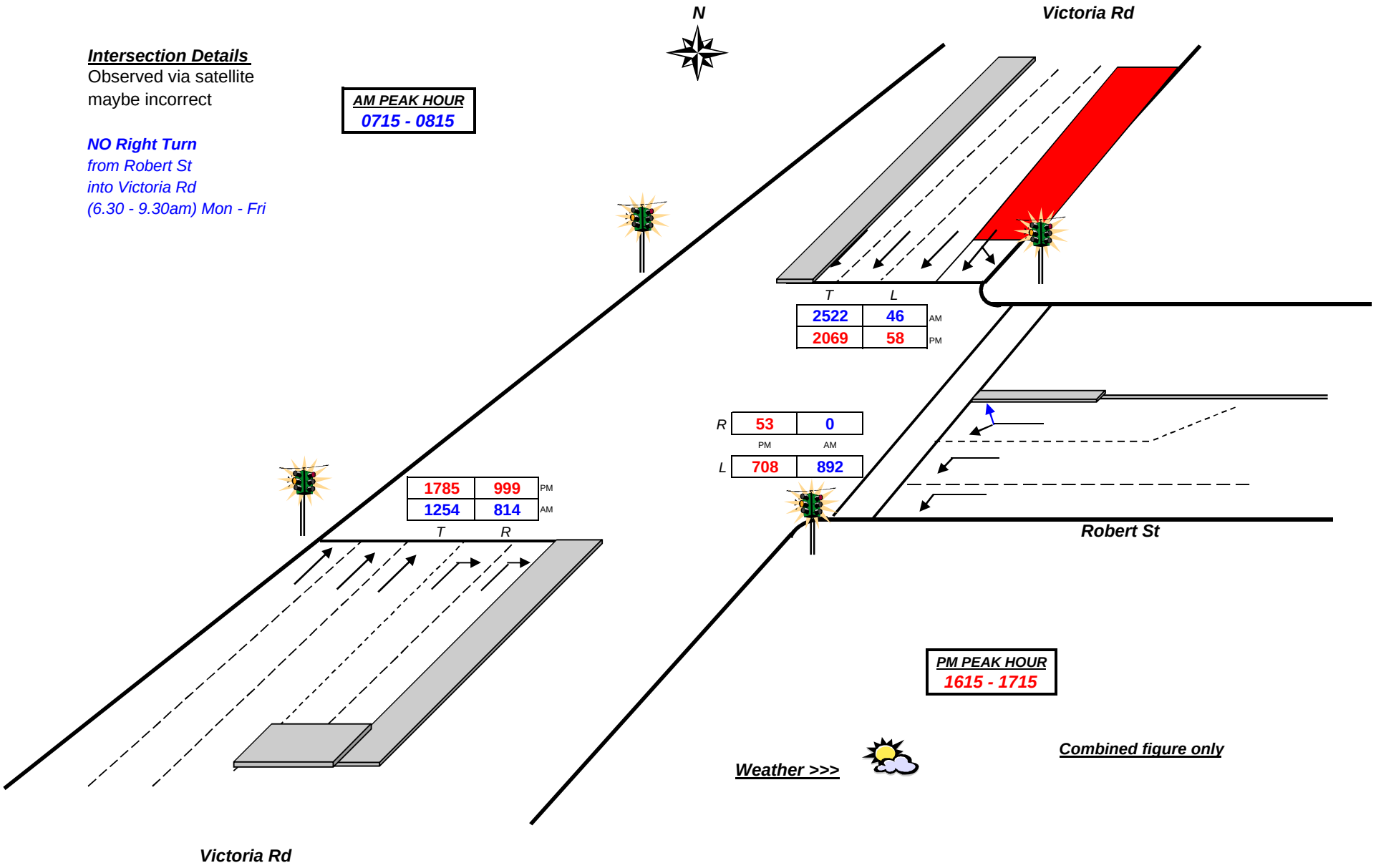
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA
Job No/Name : 5685 ROZELLE Roberts St
Day/Date : Tuesday 14th July 2015

***Intersection Details***
Observed via satellite
maybe incorrect

***NO Right Turn***
*from Robert St*
*into Victoria Rd*
*(6.30 - 9.30am) Mon - Fri*

***AM PEAK HOUR***
***0715 - 0815***




***PM PEAK HOUR***
***1615 - 1715***

***Weather >>>***

***Combined figure only***

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : EMGA
Job No/Name : 5685 ROZELLE Roberts St
Day/Date : Tuesday 14th July 2015

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Time Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 0600 - 0615 | | | | **0** |
| 0615 - 0630 | | NOT | | **0** |
| 0630 - 0645 | | REQUIRED | | **0** |
| 0645 - 0700 | | | | **0** |
| 0700 - 0715 | | | | **0** |
| 0715 - 0730 | | | | **0** |
| 0730 - 0745 | | | | **0** |
| 0745 - 0800 | | | | **0** |
| 0800 - 0815 | | | | **0** |
| 0815 - 0830 | | | | **0** |
| 0830 - 0845 | | | | **0** |
| 0845 - 0900 | | | | **0** |
| **Per End** | **0** | **0** | **0** | **0** |

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Peak Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 0600 - 0700 | 0 | 0 | 0 | **0** |
| 0615 - 0715 | 0 | 0 | 0 | **0** |
| 0630 - 0730 | 0 | 0 | 0 | **0** |
| 0645 - 0745 | 0 | 0 | 0 | **0** |
| 0700 - 0800 | 0 | 0 | 0 | **0** |
| 0715 - 0815 | 0 | 0 | 0 | **0** |
| 0730 - 0830 | 0 | 0 | 0 | **0** |
| 0745 - 0845 | 0 | 0 | 0 | **0** |
| 0800 - 0900 | 0 | 0 | 0 | **0** |
| **PEAK HR** | **0** | **0** | **0** | **0** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 472 | 5 | 8 | 56 | 68 | 129 | **738** |
| 0615 - 0630 | 595 | 17 | 3 | 81 | 69 | 157 | **922** |
| 0630 - 0645 | 558 | 18 | 0 | 145 | 131 | 230 | **1082** |
| 0645 - 0700 | 536 | 14 | 0 | 148 | 165 | 239 | **1102** |
| 0700 - 0715 | 620 | 9 | 0 | 156 | 139 | 266 | **1190** |
| 0715 - 0730 | 564 | 12 | 0 | 199 | 184 | 383 | **1342** |
| 0730 - 0745 | 607 | 11 | 0 | 202 | 154 | 292 | **1266** |
| 0745 - 0800 | 670 | 13 | 0 | 223 | 173 | 257 | **1336** |
| 0800 - 0815 | 593 | 10 | 0 | 233 | 280 | 266 | **1382** |
| 0815 - 0830 | 582 | 14 | 0 | 210 | 212 | 257 | **1275** |
| 0830 - 0845 | 589 | 10 | 0 | 203 | 258 | 275 | **1335** |
| 0845 - 0900 | 573 | 13 | 0 | 160 | 279 | 239 | **1264** |
| **Per End** | **6959** | **146** | **11** | **2016** | **2112** | **2990** | **14234** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 5 | 0 | 0 | 3 | 3 | 3 | **14** |
| 0615 - 0630 | 11 | 0 | 0 | 1 | 3 | 3 | **18** |
| 0630 - 0645 | 15 | 0 | 0 | 2 | 4 | 13 | **34** |
| 0645 - 0700 | 14 | 0 | 0 | 3 | 2 | 8 | **27** |
| 0700 - 0715 | 9 | 0 | 0 | 2 | 8 | 12 | **31** |
| 0715 - 0730 | 18 | 0 | 0 | 14 | 2 | 14 | **48** |
| 0730 - 0745 | 19 | 0 | 0 | 8 | 6 | 14 | **47** |
| 0745 - 0800 | 26 | 0 | 0 | 6 | 7 | 13 | **52** |
| 0800 - 0815 | 25 | 0 | 0 | 7 | 8 | 15 | **55** |
| 0815 - 0830 | 31 | 0 | 0 | 4 | 8 | 12 | **55** |
| 0830 - 0845 | 22 | 0 | 0 | 5 | 7 | 14 | **48** |
| 0845 - 0900 | 21 | 0 | 0 | 9 | 6 | 18 | **54** |
| **Per End** | **216** | **0** | **0** | **64** | **64** | **139** | **483** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 477 | 5 | 8 | 59 | 71 | 132 | **752** |
| 0615 - 0630 | 606 | 17 | 3 | 82 | 72 | 160 | **940** |
| 0630 - 0645 | 573 | 18 | 0 | 147 | 135 | 243 | **1116** |
| 0645 - 0700 | 550 | 14 | 0 | 151 | 167 | 247 | **1129** |
| 0700 - 0715 | 629 | 9 | 0 | 158 | 147 | 278 | **1221** |
| 0715 - 0730 | 582 | 12 | 0 | 213 | 186 | 397 | **1390** |
| 0730 - 0745 | 626 | 11 | 0 | 210 | 160 | 306 | **1313** |
| 0745 - 0800 | 696 | 13 | 0 | 229 | 180 | 270 | **1388** |
| 0800 - 0815 | 618 | 10 | 0 | 240 | 288 | 281 | **1437** |
| 0815 - 0830 | 613 | 14 | 0 | 214 | 220 | 269 | **1330** |
| 0830 - 0845 | 611 | 10 | 0 | 208 | 265 | 289 | **1383** |
| 0845 - 0900 | 594 | 13 | 0 | 169 | 285 | 257 | **1318** |
| **Per End** | **7175** | **146** | **11** | **2080** | **2176** | **3129** | **14717** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 2161 | 54 | 11 | 430 | 433 | 755 | **3844** |
| 0615 - 0715 | 2309 | 58 | 3 | 530 | 504 | 892 | **4296** |
| 0630 - 0730 | 2278 | 53 | 0 | 648 | 619 | 1118 | **4716** |
| 0645 - 0745 | 2327 | 46 | 0 | 705 | 642 | 1180 | **4900** |
| 0700 - 0800 | 2461 | 45 | 0 | 780 | 650 | 1198 | **5134** |
| 0715 - 0815 | 2434 | 46 | 0 | 857 | 791 | 1198 | **5326** |
| 0730 - 0830 | 2452 | 48 | 0 | 868 | 819 | 1072 | **5259** |
| 0745 - 0845 | 2434 | 47 | 0 | 869 | 923 | 1055 | **5328** |
| 0800 - 0900 | 2337 | 47 | 0 | 806 | 1029 | 1037 | **5256** |
| **PEAK HR** | **2434** | **46** | **0** | **857** | **791** | **1198** | **5326** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 45 | 0 | 0 | 9 | 12 | 27 | **93** |
| 0615 - 0715 | 49 | 0 | 0 | 8 | 17 | 36 | **110** |
| 0630 - 0730 | 56 | 0 | 0 | 21 | 16 | 47 | **140** |
| 0645 - 0745 | 60 | 0 | 0 | 27 | 18 | 48 | **153** |
| 0700 - 0800 | 72 | 0 | 0 | 30 | 23 | 53 | **178** |
| 0715 - 0815 | 88 | 0 | 0 | 35 | 23 | 56 | **202** |
| 0730 - 0830 | 101 | 0 | 0 | 25 | 29 | 54 | **209** |
| 0745 - 0845 | 104 | 0 | 0 | 22 | 30 | 54 | **210** |
| 0800 - 0900 | 99 | 0 | 0 | 25 | 29 | 59 | **212** |
| **PEAK HR** | **88** | **0** | **0** | **35** | **23** | **56** | **202** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 2206 | 54 | 11 | 439 | 445 | 782 | **3937** |
| 0615 - 0715 | 2358 | 58 | 3 | 538 | 521 | 928 | **4406** |
| 0630 - 0730 | 2334 | 53 | 0 | 669 | 635 | 1165 | **4856** |
| 0645 - 0745 | 2387 | 46 | 0 | 732 | 660 | 1228 | **5053** |
| 0700 - 0800 | 2533 | 45 | 0 | 810 | 673 | 1251 | **5312** |
| 0715 - 0815 | 2522 | 46 | 0 | 892 | 814 | 1254 | **5528** |
| 0730 - 0830 | 2553 | 48 | 0 | 893 | 848 | 1126 | **5468** |
| 0745 - 0845 | 2538 | 47 | 0 | 891 | 953 | 1109 | **5538** |
| 0800 - 0900 | 2436 | 47 | 0 | 831 | 1058 | 1096 | **5468** |
| **PEAK HR** | **2522** | **46** | **0** | **892** | **814** | **1254** | **5528** |

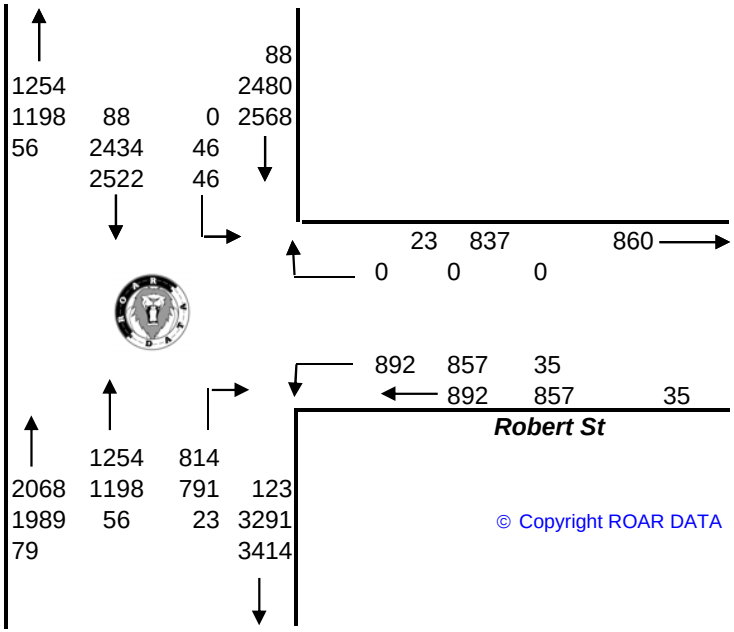
**R.O.A.R. DATA**
***Reliable, Original & Authentic Results***
Ph.88196847, Fax 88196849, Mob.0418-239019

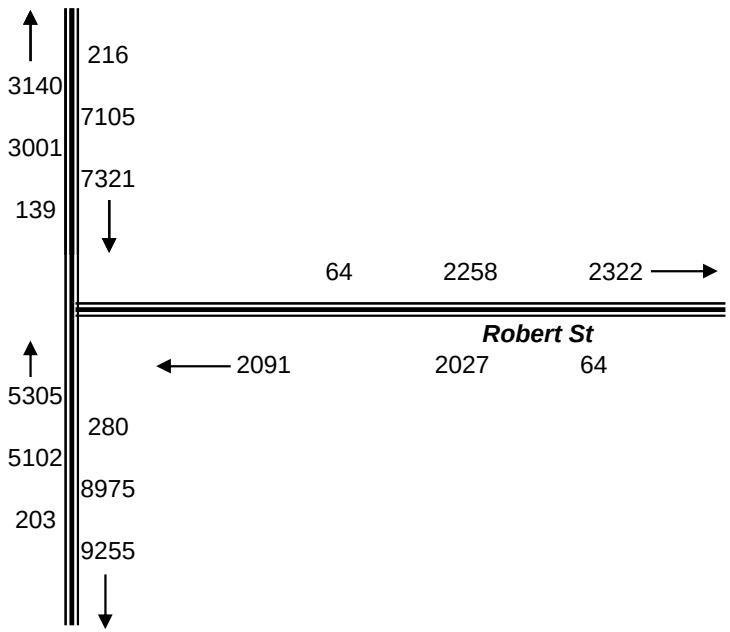
Client : EMGA
Job No/Name : 5685 ROZELLE Roberts St
Day/Date : Tuesday 14th July 2015

***AM PEAK***
***0715 - 0815***

**TOTAL VOLUMES FOR COUNT PERIOD**

N



# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : EMGA
Job No/Name : 5685 ROZELLE Roberts St
Day/Date : Tuesday 14th July 2015

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Time Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 1500 - 1515 | | | | **0** |
| 1515 - 1530 | | NOT | | **0** |
| 1530 - 1545 | | REQUIRED | | **0** |
| 1545 - 1600 | | | | **0** |
| 1600 - 1615 | | | | **0** |
| 1615 - 1630 | | | | **0** |
| 1630 - 1645 | | | | **0** |
| 1645 - 1700 | | | | **0** |
| 1700 - 1715 | | | | **0** |
| 1715 - 1730 | | | | **0** |
| 1730 - 1745 | | | | **0** |
| 1745 - 1800 | | | | **0** |
| **Per End** | **0** | **0** | **0** | **0** |

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Peak Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 1500 - 1600 | 0 | 0 | 0 | **0** |
| 1515 - 1615 | 0 | 0 | 0 | **0** |
| 1530 - 1630 | 0 | 0 | 0 | **0** |
| 1545 - 1645 | 0 | 0 | 0 | **0** |
| 1600 - 1700 | 0 | 0 | 0 | **0** |
| 1615 - 1715 | 0 | 0 | 0 | **0** |
| 1630 - 1730 | 0 | 0 | 0 | **0** |
| 1645 - 1745 | 0 | 0 | 0 | **0** |
| 1700 - 1800 | 0 | 0 | 0 | **0** |
| **PEAK HR** | **0** | **0** | **0** | **0** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 228 | 7 | 15 | 120 | 86 | 280 | **736** |
| 1515 - 1530 | 254 | 7 | 14 | 150 | 188 | 348 | **961** |
| 1530 - 1545 | 451 | 6 | 16 | 177 | 214 | 521 | **1385** |
| 1545 - 1600 | 463 | 11 | 9 | 155 | 221 | 425 | **1284** |
| 1600 - 1615 | 448 | 10 | 8 | 183 | 233 | 515 | **1397** |
| 1615 - 1630 | 479 | 13 | 18 | 161 | 260 | 401 | **1332** |
| 1630 - 1645 | 507 | 9 | 15 | 184 | 232 | 485 | **1432** |
| 1645 - 1700 | 413 | 21 | 8 | 123 | 249 | 431 | **1245** |
| 1700 - 1715 | 597 | 15 | 12 | 225 | 239 | 420 | **1508** |
| 1715 - 1730 | 531 | 13 | 5 | 193 | 212 | 275 | **1229** |
| 1730 - 1745 | 502 | 21 | 9 | 200 | 270 | 297 | **1299** |
| 1745 - 1800 | 620 | 19 | 10 | 168 | 246 | 295 | **1358** |
| **Per End** | **5493** | **152** | **139** | **2039** | **2650** | **4693** | **15166** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 8 | 0 | 0 | 4 | 0 | 7 | **19** |
| 1515 - 1530 | 10 | 0 | 0 | 5 | 2 | 8 | **25** |
| 1530 - 1545 | 9 | 0 | 0 | 2 | 3 | 10 | **24** |
| 1545 - 1600 | 13 | 0 | 0 | 4 | 5 | 16 | **38** |
| 1600 - 1615 | 19 | 0 | 0 | 5 | 5 | 11 | **40** |
| 1615 - 1630 | 17 | 0 | 0 | 3 | 3 | 11 | **34** |
| 1630 - 1645 | 20 | 0 | 0 | 1 | 5 | 15 | **41** |
| 1645 - 1700 | 19 | 0 | 0 | 5 | 5 | 8 | **37** |
| 1700 - 1715 | 17 | 0 | 0 | 6 | 6 | 14 | **43** |
| 1715 - 1730 | 7 | 0 | 1 | 4 | 2 | 16 | **30** |
| 1730 - 1745 | 12 | 0 | 0 | 5 | 7 | 14 | **38** |
| 1745 - 1800 | 21 | 0 | 0 | 8 | 6 | 16 | **51** |
| **Per End** | **172** | **0** | **1** | **52** | **49** | **146** | **420** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 236 | 7 | 15 | 124 | 86 | 287 | **755** |
| 1515 - 1530 | 264 | 7 | 14 | 155 | 190 | 356 | **986** |
| 1530 - 1545 | 460 | 6 | 16 | 179 | 217 | 531 | **1409** |
| 1545 - 1600 | 476 | 11 | 9 | 159 | 226 | 441 | **1322** |
| 1600 - 1615 | 467 | 10 | 8 | 188 | 238 | 526 | **1437** |
| 1615 - 1630 | 496 | 13 | 18 | 164 | 263 | 412 | **1366** |
| 1630 - 1645 | 527 | 9 | 15 | 185 | 237 | 500 | **1473** |
| 1645 - 1700 | 432 | 21 | 8 | 128 | 254 | 439 | **1282** |
| 1700 - 1715 | 614 | 15 | 12 | 231 | 245 | 434 | **1551** |
| 1715 - 1730 | 538 | 13 | 6 | 197 | 214 | 291 | **1259** |
| 1730 - 1745 | 514 | 21 | 9 | 205 | 277 | 311 | **1337** |
| 1745 - 1800 | 641 | 19 | 10 | 176 | 252 | 311 | **1409** |
| **Per End** | **5665** | **152** | **140** | **2091** | **2699** | **4839** | **15586** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 1396 | 31 | 54 | 602 | 709 | 1574 | **4366** |
| 1515 - 1615 | 1616 | 34 | 47 | 665 | 856 | 1809 | **5027** |
| 1530 - 1630 | 1841 | 40 | 51 | 676 | 928 | 1862 | **5398** |
| 1545 - 1645 | 1897 | 43 | 50 | 683 | 946 | 1826 | **5445** |
| 1600 - 1700 | 1847 | 53 | 49 | 651 | 974 | 1832 | **5406** |
| 1615 - 1715 | 1996 | 58 | 53 | 693 | 980 | 1737 | **5517** |
| 1630 - 1730 | 2048 | 58 | 40 | 725 | 932 | 1611 | **5414** |
| 1645 - 1745 | 2043 | 70 | 34 | 741 | 970 | 1423 | **5281** |
| 1700 - 1800 | 2250 | 68 | 36 | 786 | 967 | 1287 | **5394** |
| **PEAK HR** | **1996** | **58** | **53** | **693** | **980** | **1737** | **5517** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 40 | 0 | 0 | 15 | 10 | 41 | **106** |
| 1515 - 1615 | 51 | 0 | 0 | 16 | 15 | 45 | **127** |
| 1530 - 1630 | 58 | 0 | 0 | 14 | 16 | 48 | **136** |
| 1545 - 1645 | 69 | 0 | 0 | 13 | 18 | 53 | **153** |
| 1600 - 1700 | 75 | 0 | 0 | 14 | 18 | 45 | **152** |
| 1615 - 1715 | 73 | 0 | 0 | 15 | 19 | 48 | **155** |
| 1630 - 1730 | 63 | 0 | 1 | 16 | 18 | 53 | **151** |
| 1645 - 1745 | 55 | 0 | 1 | 20 | 20 | 52 | **148** |
| 1700 - 1800 | 57 | 0 | 1 | 23 | 21 | 60 | **162** |
| **PEAK HR** | **73** | **0** | **0** | **15** | **19** | **48** | **155** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 1436 | 31 | 54 | 617 | 719 | 1615 | **4472** |
| 1515 - 1615 | 1667 | 34 | 47 | 681 | 871 | 1854 | **5154** |
| 1530 - 1630 | 1899 | 40 | 51 | 690 | 944 | 1910 | **5534** |
| 1545 - 1645 | 1966 | 43 | 50 | 696 | 964 | 1879 | **5598** |
| 1600 - 1700 | 1922 | 53 | 49 | 665 | 992 | 1877 | **5558** |
| 1615 - 1715 | 2069 | 58 | 53 | 708 | 999 | 1785 | **5672** |
| 1630 - 1730 | 2111 | 58 | 41 | 741 | 950 | 1664 | **5565** |
| 1645 - 1745 | 2098 | 70 | 35 | 761 | 990 | 1475 | **5429** |
| 1700 - 1800 | 2307 | 68 | 37 | 809 | 988 | 1347 | **5556** |
| **PEAK HR** | **2069** | **58** | **53** | **708** | **999** | **1785** | **5672** |

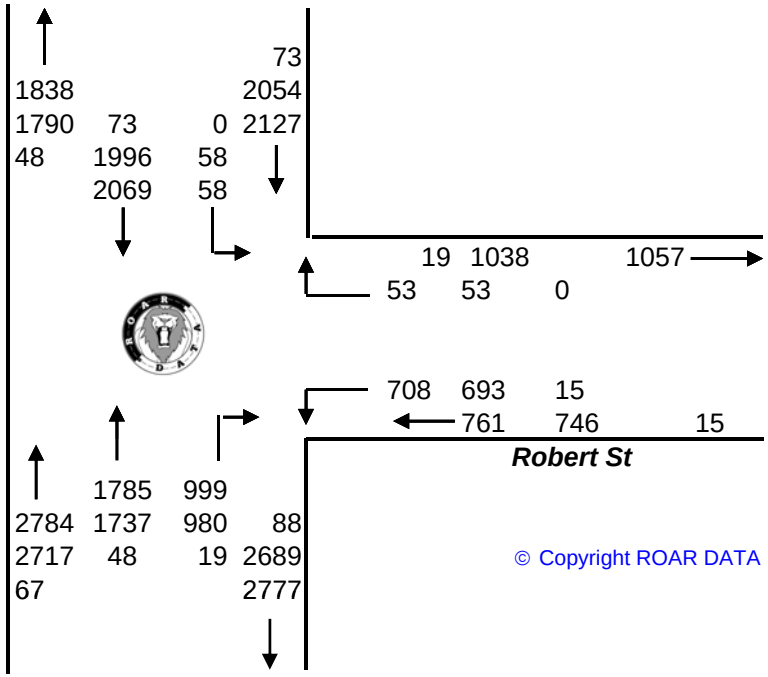
**R.O.A.R. DATA**
***Reliable, Original & Authentic Results***
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA
Job No/Name : 5685 ROZELLE Roberts St
Day/Date : Tuesday 14th July 2015

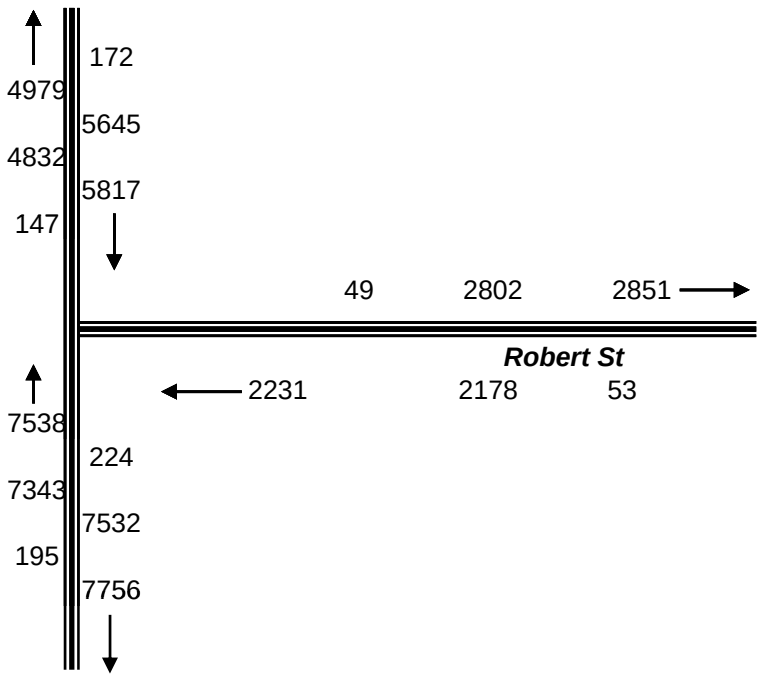
***PM PEAK***
***1615 - 1715***

**TOTAL VOLUMES FOR COUNT PERIOD**

**N**





# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

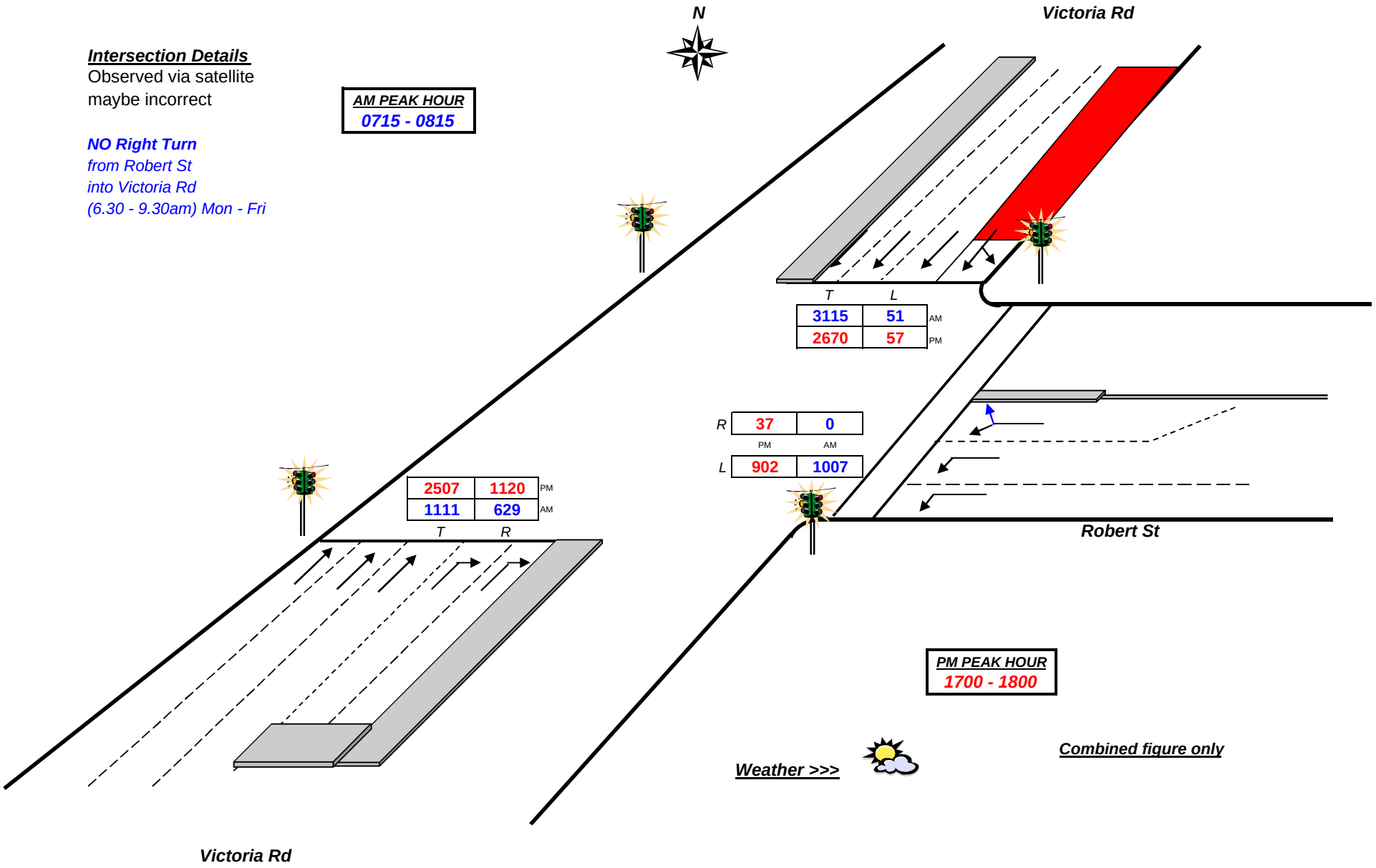
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA
Job No/Name : 5260 ROZELLE Roberts St
Day/Date : Thursday 24th July 2014

***Intersection Details***
Observed via satellite
maybe incorrect

***NO Right Turn***
*from Robert St*
*into Victoria Rd*
*(6.30 - 9.30am) Mon - Fri*

***AM PEAK HOUR***
***0715 - 0815***




***PM PEAK HOUR***
***1700 - 1800***

***Weather >>>***

***Combined figure only***

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849.

Mobile.0418239019


Client : EMGA

Job No/Name : 5260 ROZELLE Roberts St

Day/Date : Thursday 24th July 2014

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Time Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 0600 - 0615 | | | | **0** |
| 0615 - 0630 | | NOT | | **0** |
| 0630 - 0645 | | REQUIRED | | **0** |
| 0645 - 0700 | | | | **0** |
| 0700 - 0715 | | | | **0** |
| 0715 - 0730 | | | | **0** |
| 0730 - 0745 | | | | **0** |
| 0745 - 0800 | | | | **0** |
| 0800 - 0815 | | | | **0** |
| 0815 - 0830 | | | | **0** |
| 0830 - 0845 | | | | **0** |
| 0845 - 0900 | | | | **0** |
| **Per End** | **0** | **0** | **0** | **0** |

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Peak Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 0600 - 0700 | 0 | 0 | 0 | **0** |
| 0615 - 0715 | 0 | 0 | 0 | **0** |
| 0630 - 0730 | 0 | 0 | 0 | **0** |
| 0645 - 0745 | 0 | 0 | 0 | **0** |
| 0700 - 0800 | 0 | 0 | 0 | **0** |
| 0715 - 0815 | 0 | 0 | 0 | **0** |
| 0730 - 0830 | 0 | 0 | 0 | **0** |
| 0745 - 0845 | 0 | 0 | 0 | **0** |
| 0800 - 0900 | 0 | 0 | 0 | **0** |
| **PEAK HR** | **0** | **0** | **0** | **0** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 399 | 7 | 5 | 64 | 45 | 89 | **609** |
| 0615 - 0630 | 547 | 10 | 1 | 69 | 51 | 123 | **801** |
| 0630 - 0645 | 698 | 10 | 0 | 107 | 105 | 221 | **1141** |
| 0645 - 0700 | 662 | 11 | 0 | 144 | 159 | 203 | **1179** |
| 0700 - 0715 | 628 | 15 | 0 | 148 | 104 | 205 | **1100** |
| 0715 - 0730 | 659 | 15 | 0 | 262 | 153 | 292 | **1381** |
| 0730 - 0745 | 785 | 10 | 0 | 241 | 112 | 257 | **1405** |
| 0745 - 0800 | 761 | 14 | 0 | 249 | 162 | 248 | **1434** |
| 0800 - 0815 | 823 | 12 | 0 | 228 | 186 | 256 | **1505** |
| 0815 - 0830 | 545 | 9 | 0 | 216 | 203 | 212 | **1185** |
| 0830 - 0845 | 309 | 10 | 0 | 160 | 169 | 203 | **851** |
| 0845 - 0900 | 332 | 14 | 0 | 58 | 175 | 195 | **774** |
| **Per End** | **7148** | **137** | **6** | **1946** | **1624** | **2504** | **13365** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 6 | 0 | 0 | 1 | 5 | 8 | **20** |
| 0615 - 0630 | 7 | 0 | 0 | 5 | 1 | 3 | **16** |
| 0630 - 0645 | 10 | 0 | 0 | 3 | 1 | 11 | **25** |
| 0645 - 0700 | 10 | 1 | 0 | 1 | 6 | 6 | **24** |
| 0700 - 0715 | 8 | 0 | 0 | 1 | 5 | 11 | **25** |
| 0715 - 0730 | 17 | 0 | 0 | 7 | 4 | 8 | **36** |
| 0730 - 0745 | 21 | 0 | 0 | 10 | 5 | 21 | **57** |
| 0745 - 0800 | 26 | 0 | 0 | 6 | 4 | 12 | **48** |
| 0800 - 0815 | 23 | 0 | 0 | 4 | 3 | 17 | **47** |
| 0815 - 0830 | 27 | 0 | 0 | 6 | 5 | 25 | **63** |
| 0830 - 0845 | 23 | 0 | 0 | 8 | 2 | 18 | **51** |
| 0845 - 0900 | 25 | 0 | 0 | 2 | 7 | 14 | **48** |
| **Per End** | **203** | **1** | **0** | **54** | **48** | **154** | **460** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 0600 - 0615 | 405 | 7 | 5 | 65 | 50 | 97 | **629** |
| 0615 - 0630 | 554 | 10 | 1 | 74 | 52 | 126 | **817** |
| 0630 - 0645 | 708 | 10 | 0 | 110 | 106 | 232 | **1166** |
| 0645 - 0700 | 672 | 12 | 0 | 145 | 165 | 209 | **1203** |
| 0700 - 0715 | 636 | 15 | 0 | 149 | 109 | 216 | **1125** |
| 0715 - 0730 | 676 | 15 | 0 | 269 | 157 | 300 | **1417** |
| 0730 - 0745 | 806 | 10 | 0 | 251 | 117 | 278 | **1462** |
| 0745 - 0800 | 787 | 14 | 0 | 255 | 166 | 260 | **1482** |
| 0800 - 0815 | 846 | 12 | 0 | 232 | 189 | 273 | **1552** |
| 0815 - 0830 | 572 | 9 | 0 | 222 | 208 | 237 | **1248** |
| 0830 - 0845 | 332 | 10 | 0 | 168 | 171 | 221 | **902** |
| 0845 - 0900 | 357 | 14 | 0 | 60 | 182 | 209 | **822** |
| **Per End** | **7351** | **138** | **6** | **2000** | **1672** | **2658** | **13825** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 2306 | 38 | 6 | 384 | 360 | 636 | **3730** |
| 0615 - 0715 | 2535 | 46 | 1 | 468 | 419 | 752 | **4221** |
| 0630 - 0730 | 2647 | 51 | 0 | 661 | 521 | 921 | **4801** |
| 0645 - 0745 | 2734 | 51 | 0 | 795 | 528 | 957 | **5065** |
| 0700 - 0800 | 2833 | 54 | 0 | 900 | 531 | 1002 | **5320** |
| 0715 - 0815 | 3028 | 51 | 0 | 980 | 613 | 1053 | **5725** |
| 0730 - 0830 | 2914 | 45 | 0 | 934 | 663 | 973 | **5529** |
| 0745 - 0845 | 2438 | 45 | 0 | 853 | 720 | 919 | **4975** |
| 0800 - 0900 | 2009 | 45 | 0 | 662 | 733 | 866 | **4315** |
| **PEAK HR** | **3028** | **51** | **0** | **980** | **613** | **1053** | **5725** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 33 | 1 | 0 | 10 | 13 | 28 | **85** |
| 0615 - 0715 | 35 | 1 | 0 | 10 | 13 | 31 | **90** |
| 0630 - 0730 | 45 | 1 | 0 | 12 | 16 | 36 | **110** |
| 0645 - 0745 | 56 | 1 | 0 | 19 | 20 | 46 | **142** |
| 0700 - 0800 | 72 | 0 | 0 | 24 | 18 | 52 | **166** |
| 0715 - 0815 | 87 | 0 | 0 | 27 | 16 | 58 | **188** |
| 0730 - 0830 | 97 | 0 | 0 | 26 | 17 | 75 | **215** |
| 0745 - 0845 | 99 | 0 | 0 | 24 | 14 | 72 | **209** |
| 0800 - 0900 | 98 | 0 | 0 | 20 | 17 | 74 | **209** |
| **PEAK HR** | **87** | **0** | **0** | **27** | **16** | **58** | **188** |

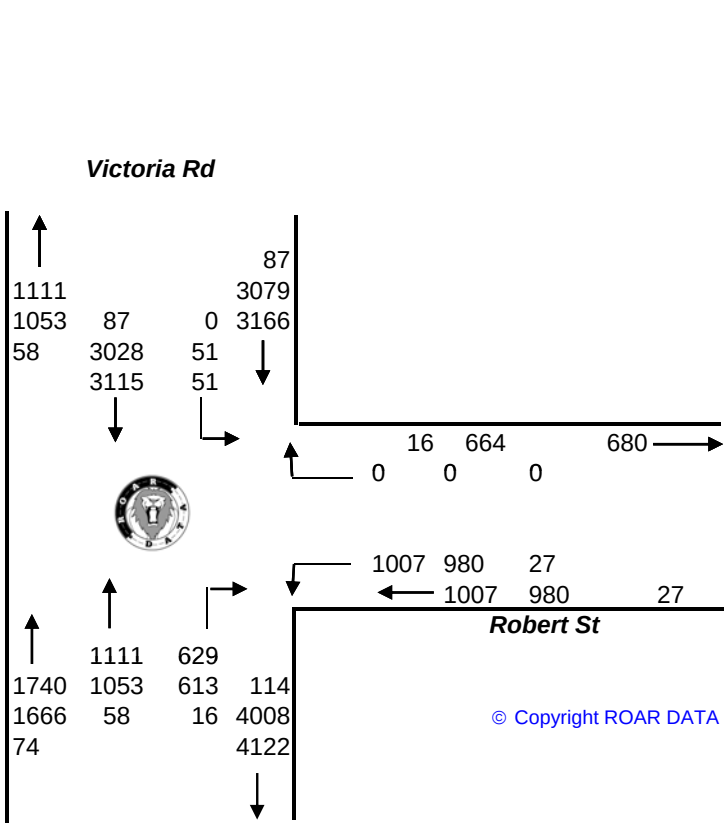
| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 0600 - 0700 | 2339 | 39 | 6 | 394 | 373 | 664 | **3815** |
| 0615 - 0715 | 2570 | 47 | 1 | 478 | 432 | 783 | **4311** |
| 0630 - 0730 | 2692 | 52 | 0 | 673 | 537 | 957 | **4911** |
| 0645 - 0745 | 2790 | 52 | 0 | 814 | 548 | 1003 | **5207** |
| 0700 - 0800 | 2905 | 54 | 0 | 924 | 549 | 1054 | **5486** |
| 0715 - 0815 | 3115 | 51 | 0 | 1007 | 629 | 1111 | **5913** |
| 0730 - 0830 | 3011 | 45 | 0 | 960 | 680 | 1048 | **5744** |
| 0745 - 0845 | 2537 | 45 | 0 | 877 | 734 | 991 | **5184** |
| 0800 - 0900 | 2107 | 45 | 0 | 682 | 750 | 940 | **4524** |
| **PEAK HR** | **3115** | **51** | **0** | **1007** | **629** | **1111** | **5913** |

**R.O.A.R. DATA**
***Reliable, Original & Authentic Results***
Ph.88196847, Fax 88196849, Mob.0418-239019

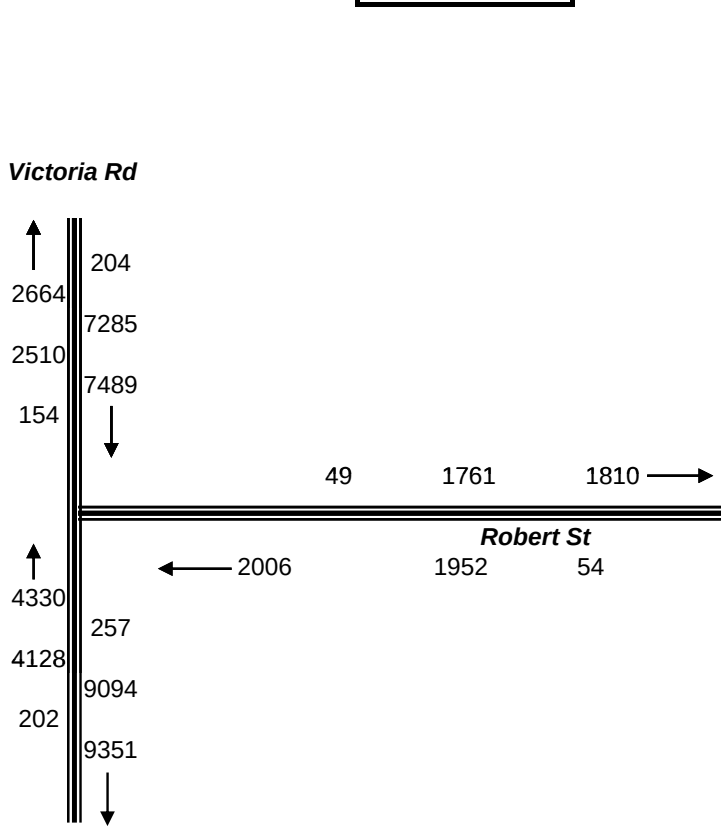
Client : EMGA
Job No/Name : 5260 ROZELLE Roberts St
Day/Date : Thursday 24th July 2014

***AM PEAK***
***0715 - 0815***

**TOTAL VOLUMES FOR COUNT PERIOD**





# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849.
Mobile.0418239019

Client : EMGA
Job No/Name : 5260 ROZELLE Roberts St
Day/Date : Thursday 24th July 2014

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Time Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 1500 - 1515 | | | | **0** |
| 1515 - 1530 | | NOT | | **0** |
| 1530 - 1545 | | REQUIRED | | **0** |
| 1545 - 1600 | | | | **0** |
| 1600 - 1615 | | | | **0** |
| 1615 - 1630 | | | | **0** |
| 1630 - 1645 | | | | **0** |
| 1645 - 1700 | | | | **0** |
| 1700 - 1715 | | | | **0** |
| 1715 - 1730 | | | | **0** |
| 1730 - 1745 | | | | **0** |
| 1745 - 1800 | | | | **0** |
| **Per End** | **0** | **0** | **0** | **0** |

| PEDS | NORTH | EAST | SOUTH | |
|---|---|---|---|---|
| Peak Per | *Victoria Rd* | *Robert St* | *Victoria Rd* | TOT |
| 1500 - 1600 | 0 | 0 | 0 | **0** |
| 1515 - 1615 | 0 | 0 | 0 | **0** |
| 1530 - 1630 | 0 | 0 | 0 | **0** |
| 1545 - 1645 | 0 | 0 | 0 | **0** |
| 1600 - 1700 | 0 | 0 | 0 | **0** |
| 1615 - 1715 | 0 | 0 | 0 | **0** |
| 1630 - 1730 | 0 | 0 | 0 | **0** |
| 1645 - 1745 | 0 | 0 | 0 | **0** |
| 1700 - 1800 | 0 | 0 | 0 | **0** |
| **PEAK HR** | **0** | **0** | **0** | **0** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 502 | 22 | 10 | 215 | 233 | 487 | **1469** |
| 1515 - 1530 | 481 | 18 | 17 | 213 | 208 | 550 | **1487** |
| 1530 - 1545 | 520 | 20 | 14 | 200 | 207 | 517 | **1478** |
| 1545 - 1600 | 536 | 15 | 6 | 163 | 250 | 627 | **1597** |
| 1600 - 1615 | 561 | 25 | 5 | 195 | 197 | 581 | **1564** |
| 1615 - 1630 | 543 | 14 | 7 | 148 | 207 | 675 | **1594** |
| 1630 - 1645 | 532 | 10 | 9 | 145 | 187 | 363 | **1246** |
| 1645 - 1700 | 572 | 10 | 5 | 148 | 217 | 513 | **1465** |
| 1700 - 1715 | 634 | 17 | 11 | 184 | 253 | 589 | **1688** |
| 1715 - 1730 | 656 | 8 | 7 | 261 | 282 | 691 | **1905** |
| 1730 - 1745 | 661 | 16 | 11 | 237 | 300 | 608 | **1833** |
| 1745 - 1800 | 652 | 16 | 8 | 198 | 266 | 550 | **1690** |
| **Per End** | **6850** | **191** | **110** | **2307** | **2807** | **6751** | **19016** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 8 | 0 | 0 | 4 | 5 | 10 | **27** |
| 1515 - 1530 | 13 | 0 | 0 | 5 | 3 | 15 | **36** |
| 1530 - 1545 | 16 | 0 | 0 | 3 | 2 | 13 | **34** |
| 1545 - 1600 | 25 | 0 | 0 | 3 | 6 | 16 | **50** |
| 1600 - 1615 | 11 | 0 | 0 | 6 | 3 | 13 | **33** |
| 1615 - 1630 | 28 | 0 | 0 | 4 | 2 | 13 | **47** |
| 1630 - 1645 | 18 | 0 | 0 | 3 | 2 | 7 | **30** |
| 1645 - 1700 | 15 | 0 | 0 | 5 | 4 | 16 | **40** |
| 1700 - 1715 | 18 | 0 | 0 | 7 | 5 | 14 | **44** |
| 1715 - 1730 | 20 | 0 | 0 | 4 | 4 | 21 | **49** |
| 1730 - 1745 | 12 | 0 | 0 | 5 | 7 | 14 | **38** |
| 1745 - 1800 | 17 | 0 | 0 | 6 | 3 | 20 | **46** |
| **Per End** | **201** | **0** | **0** | **55** | **46** | **172** | **474** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Time Per | T | L | R | L | R | T | TOT |
| 1500 - 1515 | 510 | 22 | 10 | 219 | 238 | 497 | **1496** |
| 1515 - 1530 | 494 | 18 | 17 | 218 | 211 | 565 | **1523** |
| 1530 - 1545 | 536 | 20 | 14 | 203 | 209 | 530 | **1512** |
| 1545 - 1600 | 561 | 15 | 6 | 166 | 256 | 643 | **1647** |
| 1600 - 1615 | 572 | 25 | 5 | 201 | 200 | 594 | **1597** |
| 1615 - 1630 | 571 | 14 | 7 | 152 | 209 | 688 | **1641** |
| 1630 - 1645 | 550 | 10 | 9 | 148 | 189 | 370 | **1276** |
| 1645 - 1700 | 587 | 10 | 5 | 153 | 221 | 529 | **1505** |
| 1700 - 1715 | 652 | 17 | 11 | 191 | 258 | 603 | **1732** |
| 1715 - 1730 | 676 | 8 | 7 | 265 | 286 | 712 | **1954** |
| 1730 - 1745 | 673 | 16 | 11 | 242 | 307 | 622 | **1871** |
| 1745 - 1800 | 669 | 16 | 8 | 204 | 269 | 570 | **1736** |
| **Per End** | **7051** | **191** | **110** | **2362** | **2853** | **6923** | **19490** |

| Lights | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 2039 | 75 | 47 | 791 | 898 | 2181 | **6031** |
| 1515 - 1615 | 2098 | 78 | 42 | 771 | 862 | 2275 | **6126** |
| 1530 - 1630 | 2160 | 74 | 32 | 706 | 861 | 2400 | **6233** |
| 1545 - 1645 | 2172 | 64 | 27 | 651 | 841 | 2246 | **6001** |
| 1600 - 1700 | 2208 | 59 | 26 | 636 | 808 | 2132 | **5869** |
| 1615 - 1715 | 2281 | 51 | 32 | 625 | 864 | 2140 | **5993** |
| 1630 - 1730 | 2394 | 45 | 32 | 738 | 939 | 2156 | **6304** |
| 1645 - 1745 | 2523 | 51 | 34 | 830 | 1052 | 2401 | **6891** |
| 1700 - 1800 | 2603 | 57 | 37 | 880 | 1101 | 2438 | **7116** |
| **PEAK HR** | **2603** | **57** | **37** | **880** | **1101** | **2438** | **7116** |

| Heavies | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 62 | 0 | 0 | 15 | 16 | 54 | **147** |
| 1515 - 1615 | 65 | 0 | 0 | 17 | 14 | 57 | **153** |
| 1530 - 1630 | 80 | 0 | 0 | 16 | 13 | 55 | **164** |
| 1545 - 1645 | 82 | 0 | 0 | 16 | 13 | 49 | **160** |
| 1600 - 1700 | 72 | 0 | 0 | 18 | 11 | 49 | **150** |
| 1615 - 1715 | 79 | 0 | 0 | 19 | 13 | 50 | **161** |
| 1630 - 1730 | 71 | 0 | 0 | 19 | 15 | 58 | **163** |
| 1645 - 1745 | 65 | 0 | 0 | 21 | 20 | 65 | **171** |
| 1700 - 1800 | 67 | 0 | 0 | 22 | 19 | 69 | **177** |
| **PEAK HR** | **67** | **0** | **0** | **22** | **19** | **69** | **177** |

| Combined | NORTH | | EAST | | SOUTH | | |
|---|---|---|---|---|---|---|---|
| | *Victoria Rd* | | *Robert St* | | *Victoria Rd* | | |
| Peak Per | T | L | R | L | R | T | TOT |
| 1500 - 1600 | 2101 | 75 | 47 | 806 | 914 | 2235 | **6178** |
| 1515 - 1615 | 2163 | 78 | 42 | 788 | 876 | 2332 | **6279** |
| 1530 - 1630 | 2240 | 74 | 32 | 722 | 874 | 2455 | **6397** |
| 1545 - 1645 | 2254 | 64 | 27 | 667 | 854 | 2295 | **6161** |
| 1600 - 1700 | 2280 | 59 | 26 | 654 | 819 | 2181 | **6019** |
| 1615 - 1715 | 2360 | 51 | 32 | 644 | 877 | 2190 | **6154** |
| 1630 - 1730 | 2465 | 45 | 32 | 757 | 954 | 2214 | **6467** |
| 1645 - 1745 | 2588 | 51 | 34 | 851 | 1072 | 2466 | **7062** |
| 1700 - 1800 | 2670 | 57 | 37 | 902 | 1120 | 2507 | **7293** |
| **PEAK HR** | **2670** | **57** | **37** | **902** | **1120** | **2507** | **7293** |

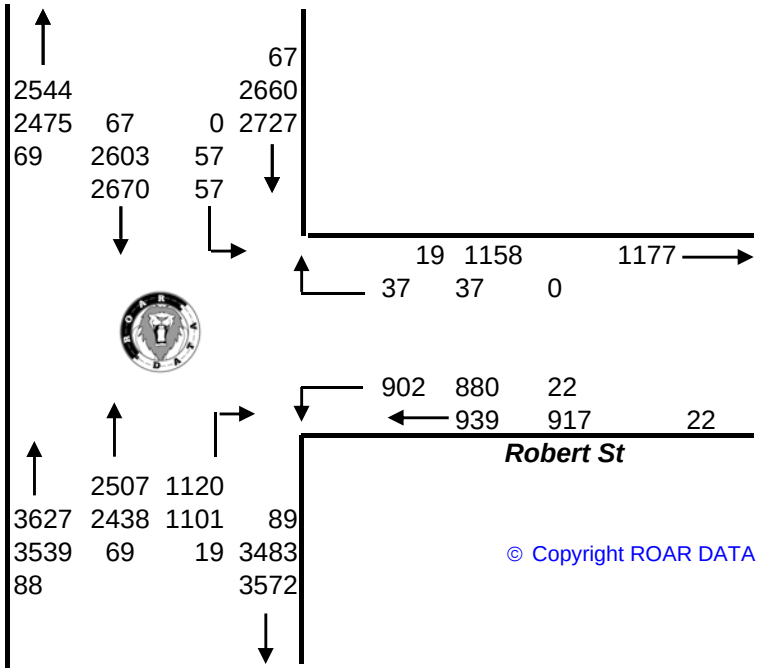
**R.O.A.R. DATA**
***Reliable, Original & Authentic Results***
Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA
Job No/Name : 5260 ROZELLE Roberts St
Day/Date : Thursday 24th July 2014

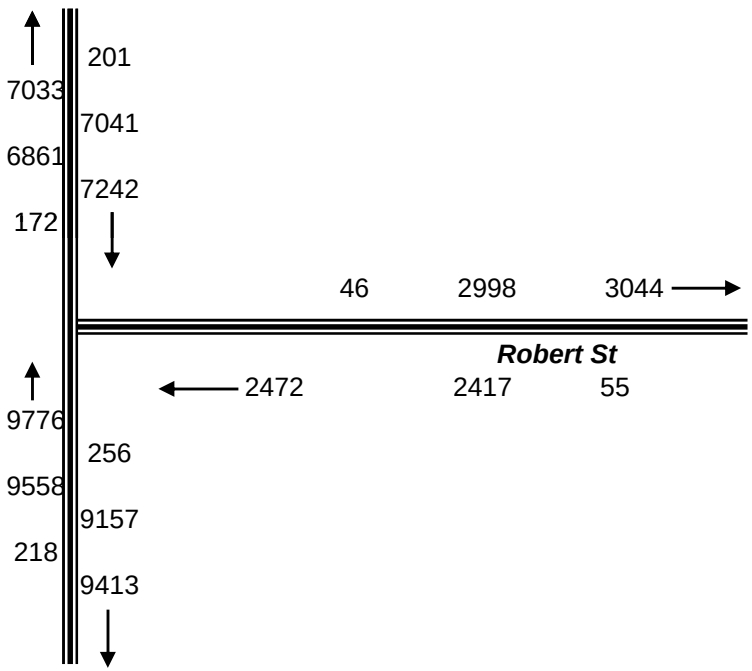
***PM PEAK***
***1700 - 1800***

**TOTAL VOLUMES FOR COUNT PERIOD**

N





# Appendix C

## Site traffic generation survey

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA
Job No/Name : 5246 ROZELLE Traffic Counts
Day/Date : Thursday 17th July 2014

**Lights**

| | BOAT STORAGE | | |
|---|---|---|---|
| | *Main Access* | | |
| Time Per | IN | OUT | TOTAL |
| 0600 - 0615 | 0 | 0 | **0** |
| 0615 - 0630 | 0 | 0 | **0** |
| 0630 - 0645 | 1 | 1 | **2** |
| 0645 - 0700 | 2 | 0 | **2** |
| 0700 - 0715 | 1 | 0 | **1** |
| 0715 - 0730 | 2 | 0 | **2** |
| 0730 - 0745 | 1 | 0 | **1** |
| 0745 - 0800 | 3 | 0 | **3** |
| 0800 - 0815 | 0 | 0 | **0** |
| 0815 - 0830 | 1 | 0 | **1** |
| 0830 - 0845 | 0 | 0 | **0** |
| 0845 - 0900 | 1 | 0 | **1** |
| 0900 - 0915 | 1 | 1 | **2** |
| 0915 - 0930 | 1 | 0 | **1** |
| 0930 - 0945 | 1 | 0 | **1** |
| 0945 - 1000 | 1 | 2 | **3** |
| 1000 - 1015 | 2 | 1 | **3** |
| 1015 - 1030 | 0 | 1 | **1** |
| 1030 - 1045 | 3 | 2 | **5** |
| 1045 - 1100 | 0 | 1 | **1** |
| 1100 - 1115 | 0 | 1 | **1** |
| 1115 - 1130 | 2 | 2 | **4** |
| 1130 - 1145 | 1 | 0 | **1** |
| 1145 - 1200 | 0 | 0 | **0** |
| 1200 - 1215 | 1 | 1 | **2** |
| 1215 - 1230 | 0 | 0 | **0** |
| 1230 - 1245 | 1 | 2 | **3** |
| 1245 - 1300 | 0 | 1 | **1** |
| 1300 - 1315 | 2 | 1 | **3** |
| 1315 - 1330 | 1 | 1 | **2** |
| 1330 - 1345 | 1 | 1 | **2** |
| 1345 - 1400 | 3 | 0 | **3** |
| 1400 - 1415 | 0 | 1 | **1** |
| 1415 - 1430 | 2 | 1 | **3** |
| 1430 - 1445 | 1 | 3 | **4** |
| 1445 - 1500 | 1 | 3 | **4** |
| 1500 - 1515 | 1 | 1 | **2** |
| 1515 - 1530 | 0 | 1 | **1** |
| 1530 - 1545 | 2 | 3 | **5** |
| 1545 - 1600 | 0 | 2 | **2** |
| 1600 - 1615 | 0 | 0 | **0** |
| 1615 - 1630 | 0 | 1 | **1** |
| 1630 - 1645 | 0 | 0 | **0** |
| 1645 - 1700 | 0 | 1 | **1** |
| 1700 - 1715 | 0 | 1 | **1** |
| 1715 - 1730 | 1 | 3 | **4** |
| 1730 - 1745 | 0 | 1 | **1** |
| 1745 - 1800 | 2 | 2 | **4** |
| **Per End** | **43** | **43** | **86** |

**Heavies**

| | BOAT STORAGE | | |
|---|---|---|---|
| | *Main Access* | | |
| Time Per | IN | OUT | TOTAL |
| 0600 - 0615 | 0 | 0 | **0** |
| 0615 - 0630 | 0 | 0 | **0** |
| 0630 - 0645 | 0 | 0 | **0** |
| 0645 - 0700 | 0 | 0 | **0** |
| 0700 - 0715 | 1 | 0 | **1** |
| 0715 - 0730 | 0 | 0 | **0** |
| 0730 - 0745 | 0 | 0 | **0** |
| 0745 - 0800 | 1 | 1 | **2** |
| 0800 - 0815 | 0 | 0 | **0** |
| 0815 - 0830 | 0 | 0 | **0** |
| 0830 - 0845 | 0 | 1 | **1** |
| 0845 - 0900 | 0 | 0 | **0** |
| 0900 - 0915 | 0 | 1 | **1** |
| 0915 - 0930 | 1 | 0 | **1** |
| 0930 - 0945 | 1 | 0 | **1** |
| 0945 - 1000 | 0 | 0 | **0** |
| 1000 - 1015 | 0 | 0 | **0** |
| 1015 - 1030 | 1 | 0 | **1** |
| 1030 - 1045 | 0 | 1 | **1** |
| 1045 - 1100 | 0 | 0 | **0** |
| 1100 - 1115 | 0 | 1 | **1** |
| 1115 - 1130 | 0 | 0 | **0** |
| 1130 - 1145 | 0 | 0 | **0** |
| 1145 - 1200 | 0 | 0 | **0** |
| 1200 - 1215 | 0 | 0 | **0** |
| 1215 - 1230 | 0 | 0 | **0** |
| 1230 - 1245 | 0 | 0 | **0** |
| 1245 - 1300 | 0 | 0 | **0** |
| 1300 - 1315 | 0 | 0 | **0** |
| 1315 - 1330 | 0 | 0 | **0** |
| 1330 - 1345 | 0 | 0 | **0** |
| 1345 - 1400 | 0 | 0 | **0** |
| 1400 - 1415 | 0 | 0 | **0** |
| 1415 - 1430 | 0 | 0 | **0** |
| 1430 - 1445 | 0 | 0 | **0** |
| 1445 - 1500 | 0 | 0 | **0** |
| 1500 - 1515 | 0 | 0 | **0** |
| 1515 - 1530 | 0 | 0 | **0** |
| 1530 - 1545 | 0 | 0 | **0** |
| 1545 - 1600 | 0 | 0 | **0** |
| 1600 - 1615 | 1 | 0 | **1** |
| 1615 - 1630 | 0 | 0 | **0** |
| 1630 - 1645 | 0 | 1 | **1** |
| 1645 - 1700 | 0 | 0 | **0** |
| 1700 - 1715 | 0 | 0 | **0** |
| 1715 - 1730 | 0 | 0 | **0** |
| 1730 - 1745 | 0 | 0 | **0** |
| 1745 - 1800 | 0 | 0 | **0** |
| **Per End** | **6** | **6** | **12** |

**Combined**

| | BOAT STORAGE | | |
|---|---|---|---|
| | *Main Access* | | |
| Time Per | IN | OUT | TOTAL |
| 0600 - 0615 | 0 | 0 | **0** |
| 0615 - 0630 | 0 | 0 | **0** |
| 0630 - 0645 | 1 | 1 | **2** |
| 0645 - 0700 | 2 | 0 | **2** |
| 0700 - 0715 | 2 | 0 | **2** |
| 0715 - 0730 | 2 | 0 | **2** |
| 0730 - 0745 | 1 | 0 | **1** |
| 0745 - 0800 | 4 | 1 | **5** |
| 0800 - 0815 | 0 | 0 | **0** |
| 0815 - 0830 | 1 | 0 | **1** |
| 0830 - 0845 | 0 | 1 | **1** |
| 0845 - 0900 | 1 | 0 | **1** |
| 0900 - 0915 | 1 | 2 | **3** |
| 0915 - 0930 | 2 | 0 | **2** |
| 0930 - 0945 | 2 | 0 | **2** |
| 0945 - 1000 | 1 | 2 | **3** |
| 1000 - 1015 | 2 | 1 | **3** |
| 1015 - 1030 | 1 | 1 | **2** |
| 1030 - 1045 | 3 | 3 | **6** |
| 1045 - 1100 | 0 | 1 | **1** |
| 1100 - 1115 | 0 | 2 | **2** |
| 1115 - 1130 | 2 | 2 | **4** |
| 1130 - 1145 | 1 | 0 | **1** |
| 1145 - 1200 | 0 | 0 | **0** |
| 1200 - 1215 | 1 | 1 | **2** |
| 1215 - 1230 | 0 | 0 | **0** |
| 1230 - 1245 | 1 | 2 | **3** |
| 1245 - 1300 | 0 | 1 | **1** |
| 1300 - 1315 | 2 | 1 | **3** |
| 1315 - 1330 | 1 | 1 | **2** |
| 1330 - 1345 | 1 | 1 | **2** |
| 1345 - 1400 | 3 | 0 | **3** |
| 1400 - 1415 | 0 | 1 | **1** |
| 1415 - 1430 | 2 | 1 | **3** |
| 1430 - 1445 | 1 | 3 | **4** |
| 1445 - 1500 | 1 | 3 | **4** |
| 1500 - 1515 | 1 | 1 | **2** |
| 1515 - 1530 | 0 | 1 | **1** |
| 1530 - 1545 | 2 | 3 | **5** |
| 1545 - 1600 | 0 | 2 | **2** |
| 1600 - 1615 | 1 | 0 | **1** |
| 1615 - 1630 | 0 | 1 | **1** |
| 1630 - 1645 | 0 | 1 | **1** |
| 1645 - 1700 | 0 | 1 | **1** |
| 1700 - 1715 | 0 | 1 | **1** |
| 1715 - 1730 | 1 | 3 | **4** |
| 1730 - 1745 | 0 | 1 | **1** |
| 1745 - 1800 | 2 | 2 | **4** |
| **Per End** | **49** | **49** | **98** |

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849, Mob.0418-239019

Client : EMGA

Job No/Name : 5246 ROZELLE Traffic Counts

Day/Date : Thursday 17th July 2014

**Lights**

| | BOAT STORAGE Main Access | | |
|---|---|---|---|
| Peak Per | IN | OUT | TOTAL |
| 0600 - 0700 | 3 | 1 | **4** |
| 0615 - 0715 | 4 | 1 | **5** |
| 0630 - 0730 | 6 | 1 | **7** |
| 0645 - 0745 | 6 | 0 | **6** |
| 0700 - 0800 | 7 | 0 | **7** |
| 0715 - 0815 | 6 | 0 | **6** |
| 0730 - 0830 | 5 | 0 | **5** |
| 0745 - 0845 | 4 | 0 | **4** |
| 0800 - 0900 | 2 | 0 | **2** |
| 0815 - 0915 | 3 | 1 | **4** |
| 0830 - 0930 | 3 | 1 | **4** |
| 0845 - 0945 | 4 | 1 | **5** |
| 0900 - 1000 | 4 | 3 | **7** |
| 0915 - 1015 | 5 | 3 | **8** |
| 0930 - 1030 | 4 | 4 | **8** |
| **0945 - 1045** | 6 | 6 | **12** |
| 1000 - 1100 | 5 | 5 | **10** |
| 1015 - 1115 | 3 | 5 | **8** |
| 1030 - 1130 | 5 | 6 | **11** |
| 1045 - 1145 | 3 | 4 | **7** |
| 1100 - 1200 | 3 | 3 | **6** |
| 1115 - 1215 | 4 | 3 | **7** |
| 1130 - 1230 | 2 | 1 | **3** |
| 1145 - 1245 | 2 | 3 | **5** |
| 1200 - 1300 | 2 | 4 | **6** |
| 1215 - 1315 | 3 | 4 | **7** |
| 1230 - 1330 | 4 | 5 | **9** |
| 1245 - 1345 | 4 | 4 | **8** |
| 1300 - 1400 | 7 | 3 | **10** |
| 1315 - 1415 | 5 | 3 | **8** |
| 1330 - 1430 | 6 | 3 | **9** |
| 1345 - 1445 | 6 | 5 | **11** |
| 1400 - 1500 | 4 | 8 | **12** |
| 1415 - 1515 | 5 | 8 | **13** |
| 1430 - 1530 | 3 | 8 | **11** |
| 1445 - 1545 | 4 | 8 | **12** |
| 1500 - 1600 | 3 | 7 | **10** |
| 1515 - 1615 | 2 | 6 | **8** |
| 1530 - 1630 | 2 | 6 | **8** |
| 1545 - 1645 | 0 | 3 | **3** |
| 1600 - 1700 | 0 | 2 | **2** |
| 1615 - 1715 | 0 | 3 | **3** |
| 1630 - 1730 | 1 | 5 | **6** |
| 1645 - 1745 | 1 | 6 | **7** |
| 1700 - 1800 | 3 | 7 | **10** |
| **PEAK HR** | **6** | **6** | **12** |

**Heavies**

| | BOAT STORAGE Main Access | | |
|---|---|---|---|
| Peak Per | IN | OUT | TOTAL |
| 0600 - 0700 | 0 | 0 | **0** |
| 0615 - 0715 | 1 | 0 | **1** |
| 0630 - 0730 | 1 | 0 | **1** |
| 0645 - 0745 | 1 | 0 | **1** |
| 0700 - 0800 | 2 | 1 | **3** |
| 0715 - 0815 | 1 | 1 | **2** |
| 0730 - 0830 | 1 | 1 | **2** |
| 0745 - 0845 | 1 | 2 | **3** |
| 0800 - 0900 | 0 | 1 | **1** |
| 0815 - 0915 | 0 | 2 | **2** |
| 0830 - 0930 | 1 | 2 | **3** |
| 0845 - 0945 | 2 | 1 | **3** |
| 0900 - 1000 | 2 | 1 | **3** |
| 0915 - 1015 | 2 | 0 | **2** |
| 0930 - 1030 | 2 | 0 | **2** |
| **0945 - 1045** | 1 | 1 | **2** |
| 1000 - 1100 | 1 | 1 | **2** |
| 1015 - 1115 | 1 | 2 | **3** |
| 1030 - 1130 | 0 | 2 | **2** |
| 1045 - 1145 | 0 | 1 | **1** |
| 1100 - 1200 | 0 | 1 | **1** |
| 1115 - 1215 | 0 | 0 | **0** |
| 1130 - 1230 | 0 | 0 | **0** |
| 1145 - 1245 | 0 | 0 | **0** |
| 1200 - 1300 | 0 | 0 | **0** |
| 1215 - 1315 | 0 | 0 | **0** |
| 1230 - 1330 | 0 | 0 | **0** |
| 1245 - 1345 | 0 | 0 | **0** |
| 1300 - 1400 | 0 | 0 | **0** |
| 1315 - 1415 | 0 | 0 | **0** |
| 1330 - 1430 | 0 | 0 | **0** |
| 1345 - 1445 | 0 | 0 | **0** |
| 1400 - 1500 | 0 | 0 | **0** |
| 1415 - 1515 | 0 | 0 | **0** |
| 1430 - 1530 | 0 | 0 | **0** |
| 1445 - 1545 | 0 | 0 | **0** |
| 1500 - 1600 | 0 | 0 | **0** |
| 1515 - 1615 | 1 | 0 | **1** |
| 1530 - 1630 | 1 | 0 | **1** |
| 1545 - 1645 | 1 | 1 | **2** |
| 1600 - 1700 | 1 | 1 | **2** |
| 1615 - 1715 | 0 | 1 | **1** |
| 1630 - 1730 | 0 | 1 | **1** |
| 1645 - 1745 | 0 | 0 | **0** |
| 1700 - 1800 | 0 | 0 | **0** |
| **PEAK HR** | **1** | **1** | **2** |

**Combined**

| | BOAT STORAGE Main Access | | |
|---|---|---|---|
| Peak Per | IN | OUT | TOTAL |
| 0600 - 0700 | 3 | 1 | **4** |
| 0615 - 0715 | 5 | 1 | **6** |
| 0630 - 0730 | 7 | 1 | **8** |
| 0645 - 0745 | 7 | 0 | **7** |
| 0700 - 0800 | 9 | 1 | **10** |
| 0715 - 0815 | 7 | 1 | **8** |
| 0730 - 0830 | 6 | 1 | **7** |
| 0745 - 0845 | 5 | 2 | **7** |
| 0800 - 0900 | 2 | 1 | **3** |
| 0815 - 0915 | 3 | 3 | **6** |
| 0830 - 0930 | 4 | 3 | **7** |
| 0845 - 0945 | 6 | 2 | **8** |
| 0900 - 1000 | 6 | 4 | **10** |
| 0915 - 1015 | 7 | 3 | **10** |
| 0930 - 1030 | 6 | 4 | **10** |
| **0945 - 1045** | 7 | 7 | **14** |
| 1000 - 1100 | 6 | 6 | **12** |
| 1015 - 1115 | 4 | 7 | **11** |
| 1030 - 1130 | 5 | 8 | **13** |
| 1045 - 1145 | 3 | 5 | **8** |
| 1100 - 1200 | 3 | 4 | **7** |
| 1115 - 1215 | 4 | 3 | **7** |
| 1130 - 1230 | 2 | 1 | **3** |
| 1145 - 1245 | 2 | 3 | **5** |
| 1200 - 1300 | 2 | 4 | **6** |
| 1215 - 1315 | 3 | 4 | **7** |
| 1230 - 1330 | 4 | 5 | **9** |
| 1245 - 1345 | 4 | 4 | **8** |
| 1300 - 1400 | 7 | 3 | **10** |
| 1315 - 1415 | 5 | 3 | **8** |
| 1330 - 1430 | 6 | 3 | **9** |
| 1345 - 1445 | 6 | 5 | **11** |
| 1400 - 1500 | 4 | 8 | **12** |
| 1415 - 1515 | 5 | 8 | **13** |
| 1430 - 1530 | 3 | 8 | **11** |
| 1445 - 1545 | 4 | 8 | **12** |
| 1500 - 1600 | 3 | 7 | **10** |
| 1515 - 1615 | 3 | 6 | **9** |
| 1530 - 1630 | 3 | 6 | **9** |
| 1545 - 1645 | 1 | 4 | **5** |
| 1600 - 1700 | 1 | 3 | **4** |
| 1615 - 1715 | 0 | 4 | **4** |
| 1630 - 1730 | 1 | 6 | **7** |
| 1645 - 1745 | 1 | 6 | **7** |
| 1700 - 1800 | 3 | 7 | **10** |
| **PEAK HR** | **7** | **7** | **14** |

# R.O.A.R. DATA

***Reliable, Original & Authentic Results***

Ph.88196847, Fax 88196849, Mob.0418-239019


| | |
|---|---|
| Client | : EMGA |
| Job No/Name | : 5246 ROZELLE Traffic Counts |
| Day/Date | : Thursday 17th July 2014 |

## Lights

***PEAK HOUR***
***0945 - 1045***

| | | | |
|---|---|---|---|
| *To James Craig Rd* | 6 → | | *Sydney Harbour Boat Storage* |
| | ← 6 | | |

## Heavies

***PEAK HOUR***
***0945 - 1045***

| | | | |
|---|---|---|---|
| *To James Craig Rd* | 1 → | | *Sydney Harbour Boat Storage* |
| | ← 1 | | |

## Combined

***PEAK HOUR***
***0945 - 1045***

| | | | |
|---|---|---|---|
| *To James Craig Rd* | 7 → | | *Sydney Harbour Boat Storage* |
| | ← 7 | | |

## Lights

**Total Vehicles Counted for Period**

| | | | |
|---|---|---|---|
| *To James Craig Rd* | 43 → | | *Sydney Harbour Boat Storage* |
| | ← 43 | | |

## Heavies

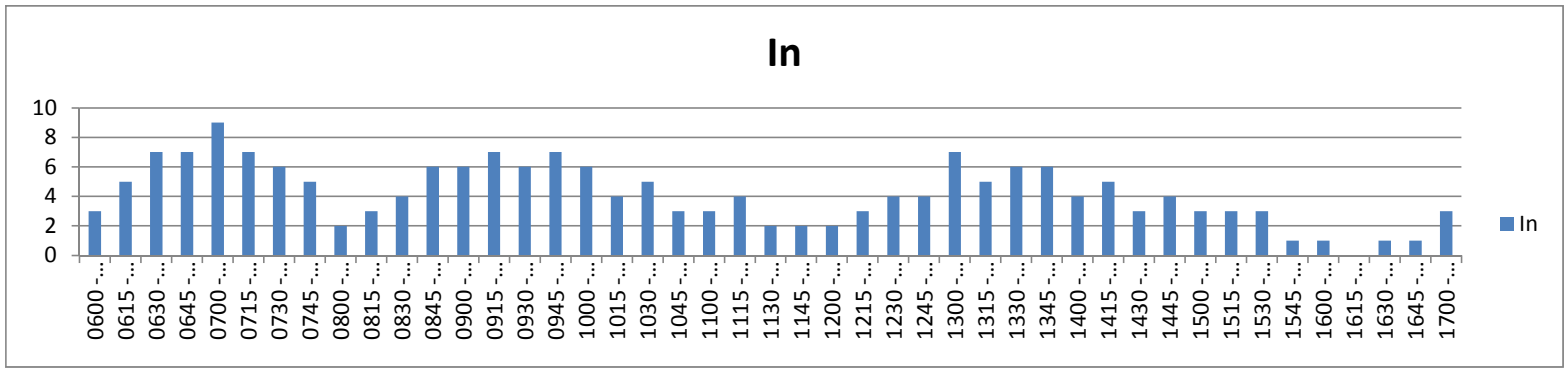
**Total Vehicles Counted for Period**

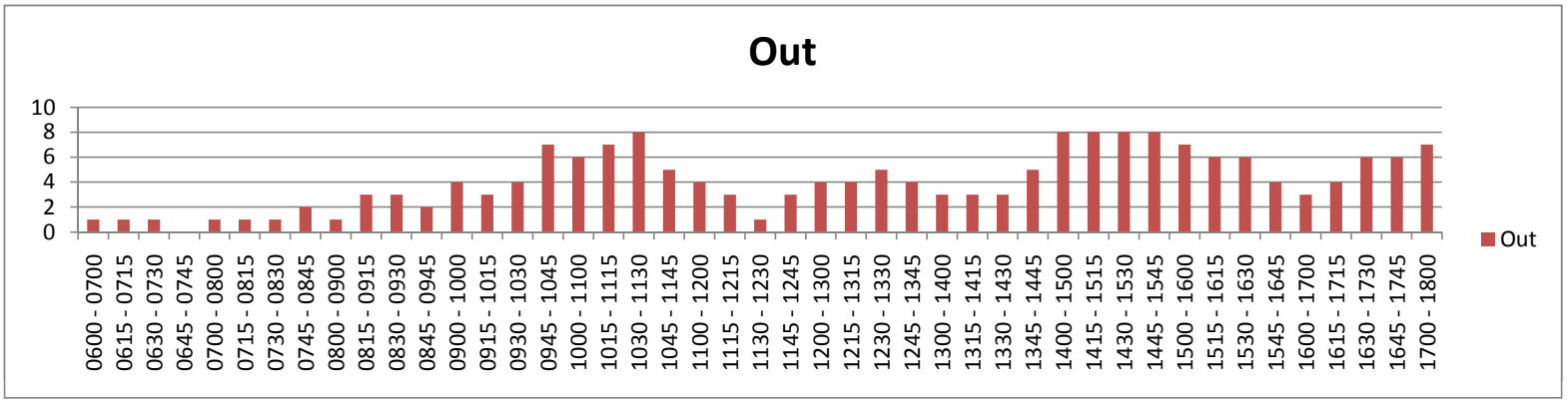
| | | | |
|---|---|---|---|
| *To James Craig Rd* | 6 → | | *Sydney Harbour Boat Storage* |
| | ← 6 | | |

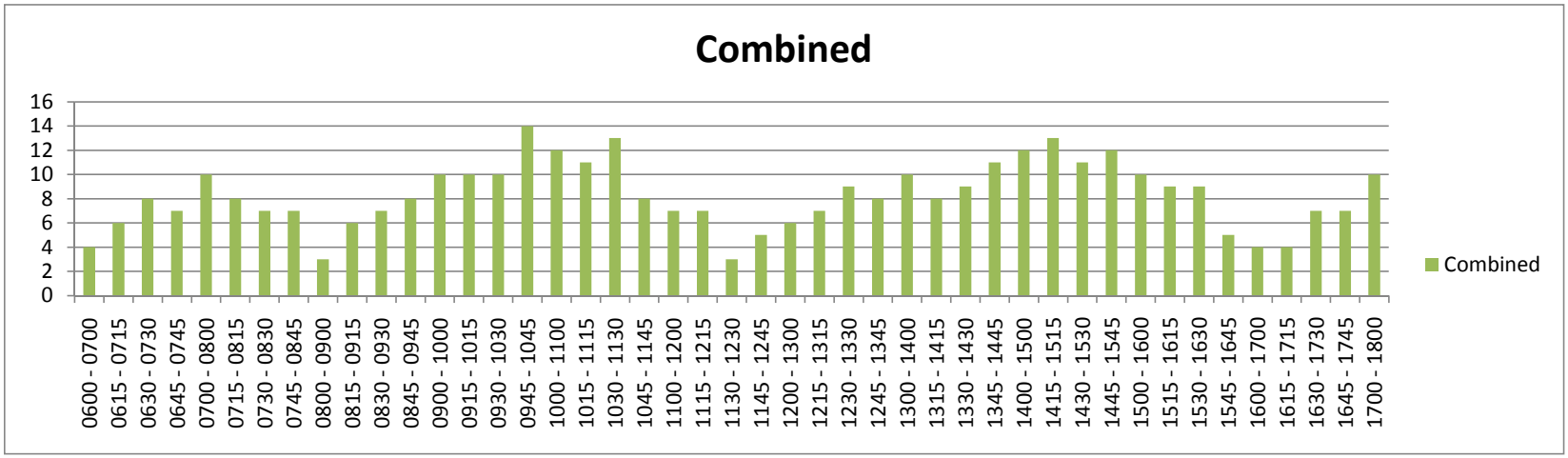
## Combined

**Total Vehicles Counted for Period**

| | | | |
|---|---|---|---|
| *To James Craig Rd* | 49 → | | *Sydney Harbour Boat Storage* |
| | ← 49 | | |

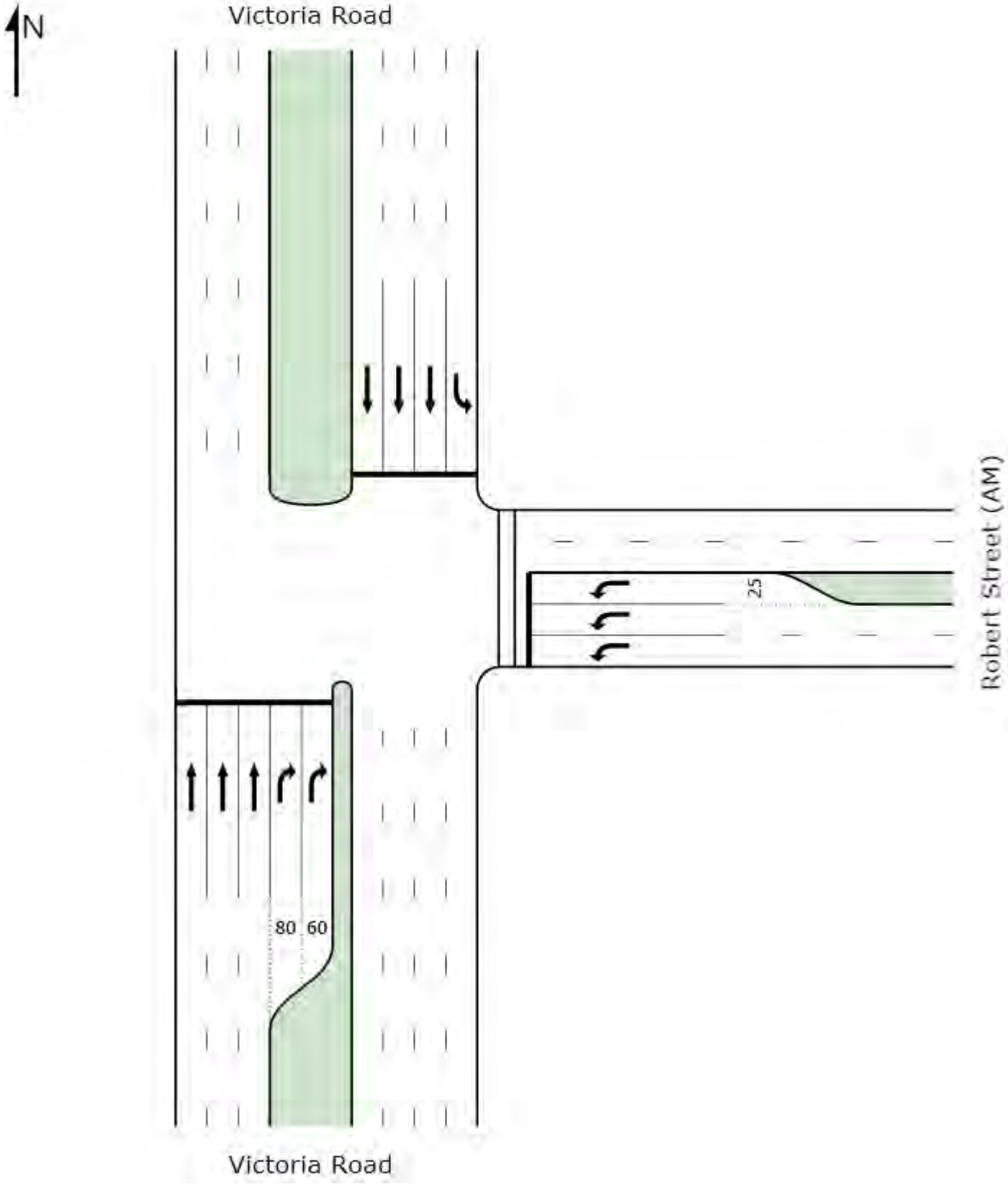

In
10
8
6
4
2
0
0600 -...
0615 -...
0630 -...
0645 -...
0700 -...
0715 -...
0730 -...
0745 -...
0800 -...
0815 -...
0830 -...
0845 -...
0900 -...
0915 -...
0930 -...
0945 -...
1000 -...
1015 -...
1030 -...
1045 -...
1100 -...
1115 -...
1130 -...
1145 -...
1200 -...
1215 -...
1230 -...
1245 -...
1300 -...
1315 -...
1330 -...
1345 -...
1400 -...
1415 -...
1430 -...
1445 -...
1500 -...
1515 -...
1530 -...
1545 -...
1600 -...
1615 -...
1630 -...
1645 -...
1700 -...
In

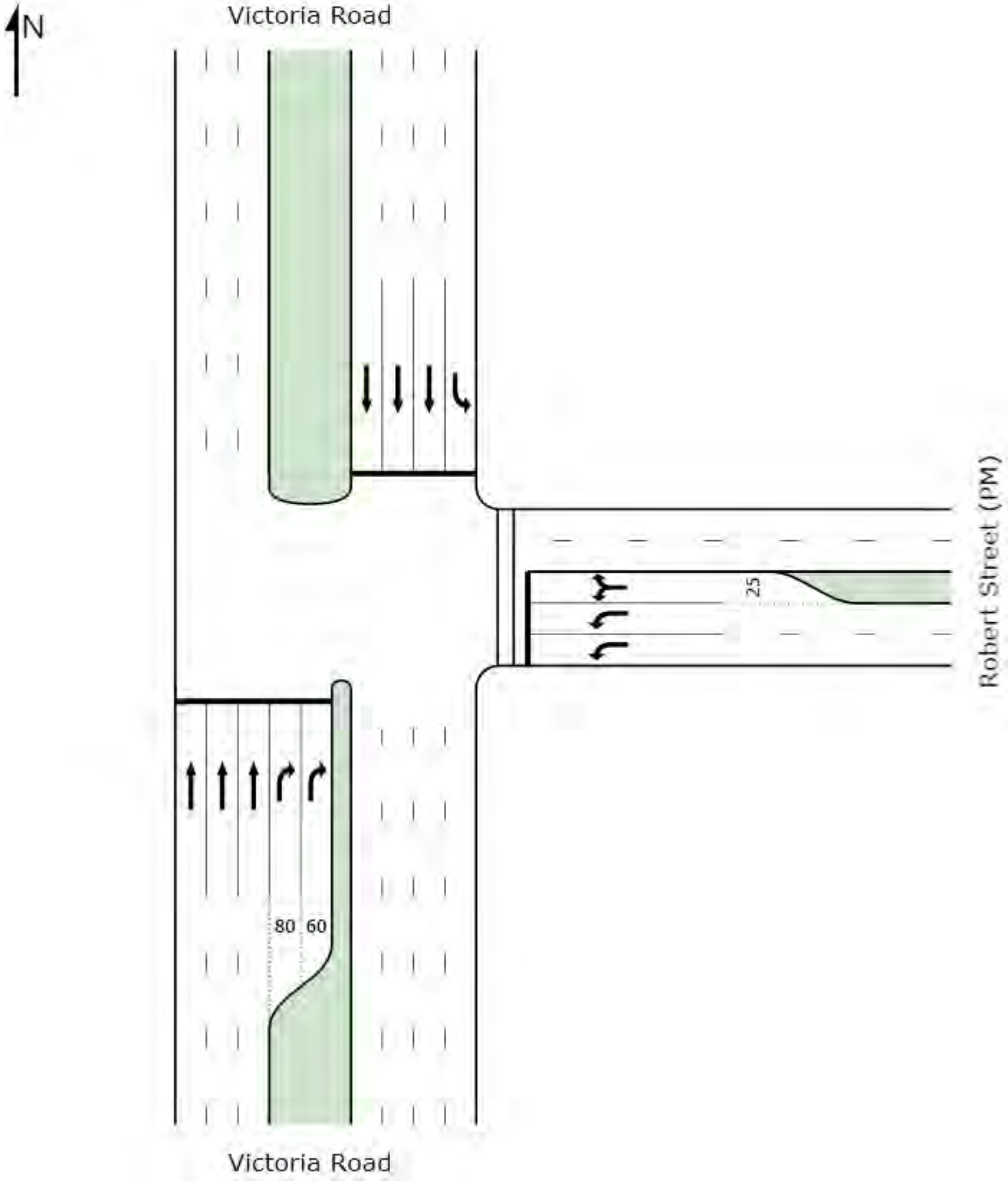

Out
10
8
6
4
2
0
0600 - 0700
0615 - 0715
0630 - 0730
0645 - 0745
0700 - 0800
0715 - 0815
0730 - 0830
0745 - 0845
0800 - 0900
0815 - 0915
0830 - 0930
0845 - 0945
0900 - 1000
0915 - 1015
0930 - 1030
0945 - 1045
1000 - 1100
1015 - 1115
1030 - 1130
1045 - 1145
1100 - 1200
1115 - 1215
1130 - 1230
1145 - 1245
1200 - 1300
1215 - 1315
1230 - 1330
1245 - 1345
1300 - 1400
1315 - 1415
1330 - 1430
1345 - 1445
1400 - 1500
1415 - 1515
1430 - 1530
1445 - 1545
1500 - 1600
1515 - 1615
1530 - 1630
1545 - 1645
1600 - 1700
1615 - 1715
1630 - 1730
1645 - 1745
1700 - 1800
Out


Combined
16
14
12
10
8
6
4
2
0
0600 - 0700
0615 - 0715
0630 - 0730
0645 - 0745
0700 - 0800
0715 - 0815
0730 - 0830
0745 - 0845
0800 - 0900
0815 - 0915
0830 - 0930
0845 - 0945
0900 - 1000
0915 - 1015
0930 - 1030
0945 - 1045
1000 - 1100
1015 - 1115
1030 - 1130
1045 - 1145
1100 - 1200
1115 - 1215
1130 - 1230
1145 - 1245
1200 - 1300
1215 - 1315
1230 - 1330
1245 - 1345
1300 - 1400
1315 - 1415
1330 - 1430
1345 - 1445
1400 - 1500
1415 - 1515
1430 - 1530
1445 - 1545
1500 - 1600
1515 - 1615
1530 - 1630
1545 - 1645
1600 - 1700
1615 - 1715
1630 - 1730
1645 - 1745
1700 - 1800
Combined

# Appendix D

## SIDRA intersection analysis results


N
Victoria Road
Robert Street (AM)
25
80
60
Victoria Road


N
Victoria Road
Robert Street (PM)
25
80
60
Victoria Road

# PHASING SUMMARY

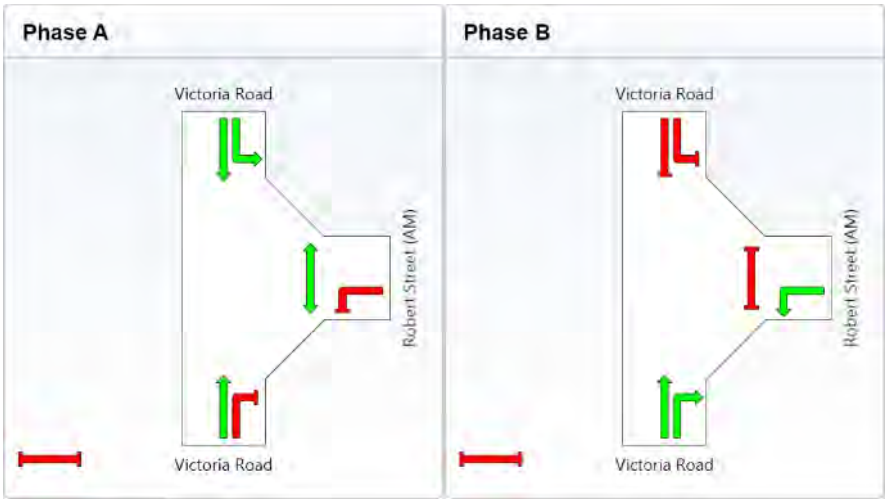


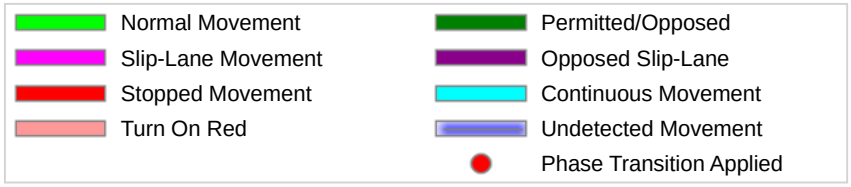
Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 95 seconds (Optimum Cycle Time - Minimum Delay)

**Phase times determined by the program**
**Sequence: Two-Phase**
**Input Sequence: A, B**
**Output Sequence: A, B**

**Phase Timing Results**

| Phase | A | B |
|---|---|---|
| Green Time (sec) | 57 | 26 |
| Yellow Time (sec) | 4 | 4 |
| All-Red Time (sec) | 2 | 2 |
| Phase Time (sec) | 63 | 32 |
| Phase Split | 66 % | 34 % |



# PHASING SUMMARY

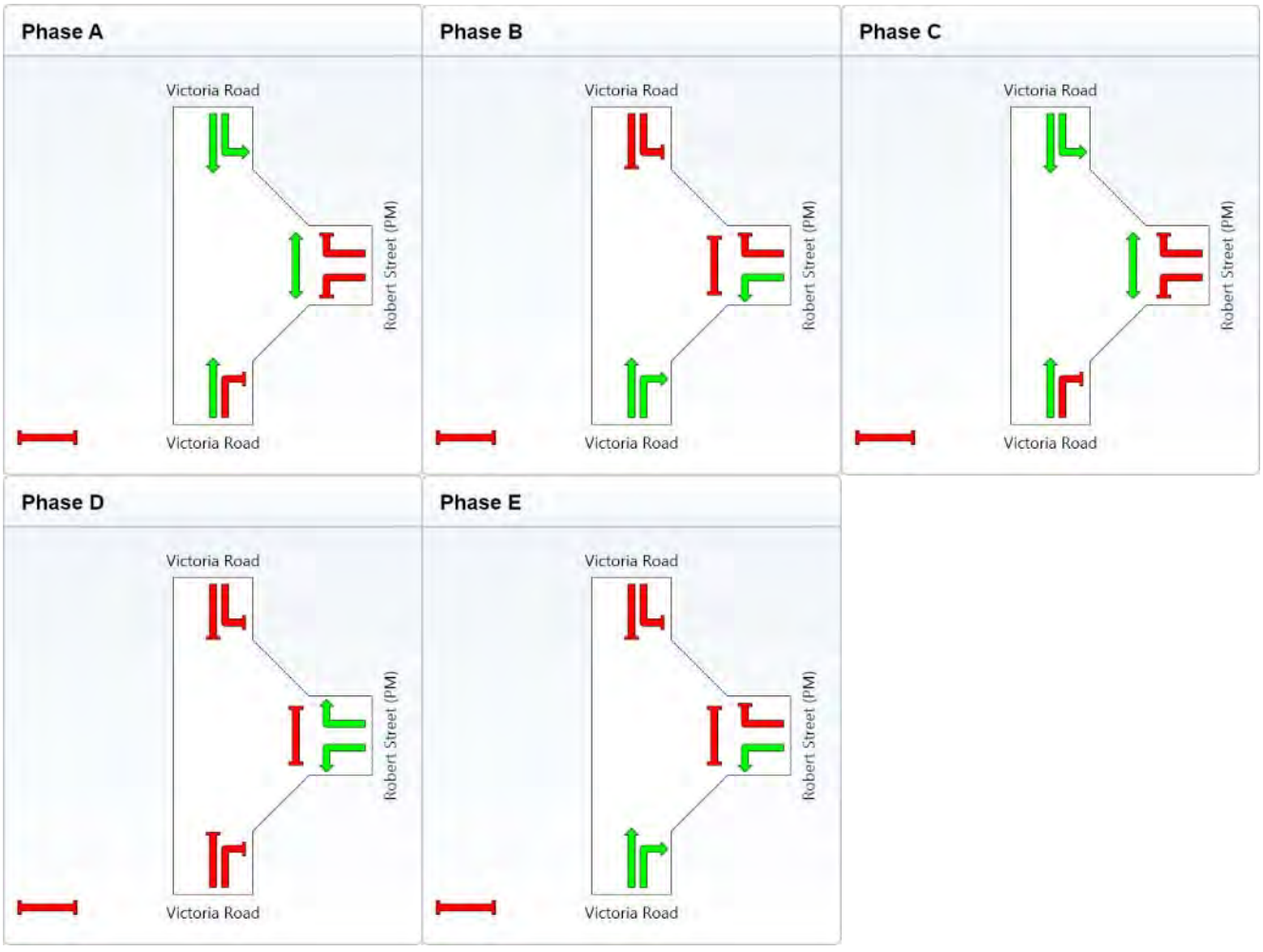


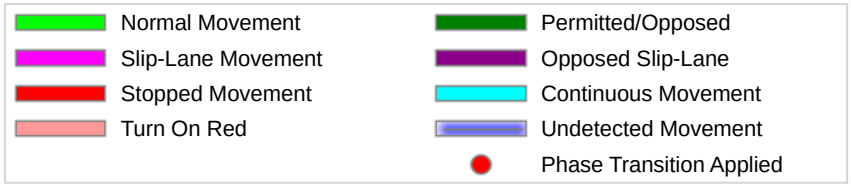
Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 145 seconds (Optimum Cycle Time - Minimum Delay)

**Phase times determined by the program**
**Sequence: Two-Phase**
**Input Sequence: A, B, C, D, E**
**Output Sequence: A, B, C, D, E**

**Phase Timing Results**

| Phase | A | B | C | D | E |
|---|---|---|---|---|---|
| Green Time (sec) | 42 | 19 | 28 | 6 | 20 |
| Yellow Time (sec) | 4 | 4 | 4 | 4 | 4 |
| All-Red Time (sec) | 2 | 2 | 2 | 2 | 2 |
| Phase Time (sec) | 48 | 25 | 34 | 12 | 26 |
| Phase Split | 33 % | 17 % | 23 % | 8 % | 18 % |



# MOVEMENT SUMMARY

**Site: Victoria Road Robert Street**
**AM Existing 2014**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1169 | 5.2 | 0.238 | 0.5 | LOS A | 1.5 | 10.7 | 0.18 | 0.10 | 56.6 |
| 3 | R | 662 | 2.5 | 0.865 | 50.5 | LOS D | 17.7 | 126.8 | 0.96 | 0.98 | 25.2 |
| Approach | | 1832 | 4.3 | 0.865 | 18.6 | LOS B | 17.7 | 126.8 | 0.46 | 0.42 | 39.0 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 1060 | 2.7 | 0.937 | 62.0 | LOS E | 26.2 | 187.7 | 0.99 | 1.03 | 22.2 |
| Approach | | 1060 | 2.7 | 0.937 | 62.0 | LOS E | 26.2 | 187.7 | 0.99 | 1.03 | 22.2 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 115 | 53.2 | 0.142 | 18.6 | LOS B | 2.2 | 22.3 | 0.46 | 0.74 | 41.2 |
| 8 | T | 3218 | 0.9 | 0.922 | 34.1 | LOS C | 55.4 | 390.6 | 0.97 | 1.07 | 29.5 |
| Approach | | 3333 | 2.7 | 0.922 | 33.6 | LOS C | 55.4 | 390.6 | 0.96 | 1.06 | 29.8 |
| All Vehicles | | 6224 | 3.2 | 0.937 | 34.0 | LOS C | 55.4 | 390.6 | 0.82 | 0.87 | 30.1 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 13.3 | LOS B | 0.1 | 0.1 | 0.54 | 0.54 |
| All Pedestrians | | 53 | 13.3 | LOS B | | | 0.54 | 0.54 |

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: Victoria Road Robert Street**
**AM Construction 2014**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 95 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1169 | 5.2 | 0.237 | 0.5 | LOS A | 1.5 | 10.7 | 0.17 | 0.09 | 56.8 |
| 3 | R | 673 | 3.1 | 0.912 | 49.4 | LOS D | 18.2 | 130.6 | 0.95 | 0.93 | 25.6 |
| Approach | | 1842 | 4.5 | 0.912 | 18.4 | LOS B | 18.2 | 130.6 | 0.46 | 0.40 | 39.2 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 1060 | 2.7 | 0.921 | 60.4 | LOS E | 26.5 | 189.8 | 0.99 | 1.00 | 22.5 |
| Approach | | 1060 | 2.7 | 0.921 | 60.4 | LOS E | 26.5 | 189.8 | 0.99 | 1.00 | 22.5 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 122 | 52.6 | 0.151 | 19.0 | LOS B | 2.5 | 25.1 | 0.47 | 0.74 | 40.8 |
| 8 | T | 3218 | 0.9 | 0.922 | 34.7 | LOS C | 57.4 | 405.4 | 0.97 | 1.06 | 29.3 |
| Approach | | 3340 | 2.8 | 0.922 | 34.1 | LOS C | 57.4 | 405.4 | 0.96 | 1.05 | 29.6 |
| All Vehicles | | 6242 | 3.3 | 0.922 | 33.9 | LOS C | 57.4 | 405.4 | 0.81 | 0.85 | 30.2 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 13.7 | LOS B | 0.1 | 0.1 | 0.54 | 0.54 |
| All Pedestrians | | 53 | 13.7 | LOS B | | | 0.54 | 0.54 |

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: Victoria Road Robert Street AM 2014 With +150 Berths Site Traffic**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 90 seconds (Optimum Cycle Time - Minimum Delay)

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1169 | 5.2 | 0.238 | 0.5 | LOS A | 1.5 | 10.7 | 0.18 | 0.10 | 56.6 |
| 3 | R | 698 | 2.4 | 0.911 | 48.5 | LOS D | 18.3 | 130.6 | 0.97 | 0.94 | 25.8 |
| Approach | | 1867 | 4.2 | 0.911 | 18.5 | LOS B | 18.3 | 130.6 | 0.47 | 0.41 | 39.1 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 1064 | 2.7 | 0.941 | 62.9 | LOS E | 26.6 | 190.3 | 0.99 | 1.03 | 22.0 |
| Approach | | 1064 | 2.7 | 0.941 | 62.9 | LOS E | 26.6 | 190.3 | 0.99 | 1.03 | 22.0 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 119 | 51.3 | 0.146 | 18.5 | LOS B | 2.3 | 22.9 | 0.46 | 0.74 | 41.1 |
| 8 | T | 3218 | 0.9 | 0.922 | 34.1 | LOS C | 55.4 | 390.6 | 0.97 | 1.07 | 29.5 |
| Approach | | 3337 | 2.7 | 0.922 | 33.6 | LOS C | 55.4 | 390.6 | 0.96 | 1.06 | 29.8 |
| All Vehicles | | 6268 | 3.2 | 0.941 | 34.0 | LOS C | 55.4 | 390.6 | 0.82 | 0.86 | 30.1 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

**Movement Performance - Pedestrians**

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 13.3 | LOS B | 0.1 | 0.1 | 0.54 | 0.54 |
| All Pedestrians | | 53 | 13.3 | LOS B | | | 0.54 | 0.54 |

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: Victoria Road Robert Street**
**PM Existing 2014**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2945 | 2.8 | 0.585 | 2.3 | LOS A | 17.3 | 124.1 | 0.27 | 0.25 | 54.9 |
| 3 | R | 873 | 1.7 | 1.000[3] | 38.0 | LOS C | 19.0 | 134.6 | 0.99 | 0.87 | 29.5 |
| Approach | | 3818 | 2.4 | 1.000 | 10.5 | LOS A | 19.0 | 134.6 | 0.44 | 0.39 | 45.8 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 949 | 2.4 | 0.728 | 33.8 | LOS C | 17.7 | 126.2 | 0.94 | 0.86 | 31.1 |
| 6 | R | 39 | 0.0 | 0.728 | 75.3 | LOS F | 3.9 | 27.3 | 1.00 | 0.87 | 19.6 |
| Approach | | 988 | 2.3 | 0.728 | 35.4 | LOS C | 17.7 | 126.2 | 0.94 | 0.86 | 30.4 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 107 | 44.1 | 0.154 | 21.3 | LOS B | 2.5 | 24.0 | 0.58 | 0.75 | 38.9 |
| 8 | T | 2763 | 0.8 | 0.963 | 48.9 | LOS D | 55.5 | 391.5 | 1.00 | 1.08 | 24.6 |
| Approach | | 2871 | 2.5 | 0.963 | 47.9 | LOS D | 55.5 | 391.5 | 0.98 | 1.07 | 24.9 |
| All Vehicles | | 7677 | 2.4 | 1.000 | 27.7 | LOS B | 55.5 | 391.5 | 0.71 | 0.71 | 33.2 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 34.7 | LOS D | 0.2 | 0.2 | 0.68 | 0.68 |
| All Pedestrians | | 53 | 34.7 | LOS D | | | 0.68 | 0.68 |

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: Victoria Road Robert Street**
**PM Construction 2014**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2945 | 2.8 | 0.585 | 2.3 | LOS A | 17.3 | 124.1 | 0.27 | 0.25 | 54.9 |
| 3 | R | 873 | 1.7 | 1.000[3] | 38.0 | LOS C | 19.0 | 134.6 | 0.99 | 0.87 | 29.5 |
| Approach | | 3818 | 2.4 | 1.000 | 10.5 | LOS A | 19.0 | 134.6 | 0.44 | 0.39 | 45.8 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 960 | 2.9 | 0.744 | 33.9 | LOS C | 18.1 | 130.1 | 0.94 | 0.86 | 31.0 |
| 6 | R | 46 | 6.8 | 0.744 | 88.3 | LOS F | 4.6 | 33.6 | 1.00 | 0.89 | 17.6 |
| Approach | | 1006 | 3.0 | 0.744 | 36.4 | LOS C | 18.1 | 130.1 | 0.94 | 0.86 | 30.0 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 107 | 44.1 | 0.154 | 21.3 | LOS B | 2.5 | 24.0 | 0.58 | 0.75 | 38.9 |
| 8 | T | 2763 | 0.8 | 0.963 | 48.9 | LOS D | 55.5 | 391.5 | 1.00 | 1.08 | 24.6 |
| Approach | | 2871 | 2.5 | 0.963 | 47.9 | LOS D | 55.5 | 391.5 | 0.98 | 1.07 | 24.9 |
| All Vehicles | | 7695 | 2.5 | 1.000 | 27.8 | LOS B | 55.5 | 391.5 | 0.71 | 0.71 | 33.2 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 34.7 | LOS D | 0.2 | 0.2 | 0.68 | 0.68 |
| All Pedestrians | | 53 | 34.7 | LOS D | | | 0.68 | 0.68 |

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: Victoria Road Robert Street**
**PM 2014 With +150 Berths Site Traffic**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 150 seconds (Optimum Cycle Time - Minimum Delay)

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2955 | 2.8 | 0.587 | 2.3 | LOS A | 17.5 | 125.1 | 0.27 | 0.26 | 54.8 |
| 3 | R | 873 | 1.7 | 1.000[3] | 38.0 | LOS C | 19.0 | 134.6 | 0.99 | 0.87 | 29.5 |
| Approach | | 3828 | 2.4 | 1.000 | 10.5 | LOS A | 19.0 | 134.6 | 0.44 | 0.39 | 45.8 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 976 | 2.4 | 0.753 | 34.1 | LOS C | 18.5 | 131.9 | 0.95 | 0.86 | 31.0 |
| 6 | R | 43 | 0.0 | 0.753 | 83.2 | LOS F | 4.2 | 29.5 | 1.00 | 0.90 | 18.3 |
| Approach | | 1019 | 2.3 | 0.753 | 36.2 | LOS C | 18.5 | 131.9 | 0.95 | 0.86 | 30.1 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 111 | 42.9 | 0.158 | 21.3 | LOS B | 2.6 | 24.6 | 0.58 | 0.75 | 38.9 |
| 8 | T | 2763 | 0.8 | 0.963 | 48.9 | LOS D | 55.5 | 391.5 | 1.00 | 1.08 | 24.6 |
| Approach | | 2874 | 2.5 | 0.963 | 47.9 | LOS D | 55.5 | 391.5 | 0.98 | 1.07 | 24.9 |
| All Vehicles | | 7721 | 2.4 | 1.000 | 27.8 | LOS B | 55.5 | 391.5 | 0.71 | 0.71 | 33.2 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

3 x = 1.00 due to short lane. Refer to the Lane Summary report for information about excess flow and related conditions.

**Movement Performance - Pedestrians**

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 34.7 | LOS D | 0.2 | 0.2 | 0.68 | 0.68 |
| All Pedestrians | | 53 | 34.7 | LOS D | | | 0.68 | 0.68 |

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: Victoria Road Robert Street**
**AM Existing 2015**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1320 | 4.5 | 0.297 | 0.9 | LOS A | 1.8 | 12.7 | 0.30 | 0.17 | 54.5 |
| 3 | R | 857 | 2.8 | 0.863 | 36.9 | LOS C | 13.8 | 98.6 | 1.00 | 1.04 | 29.9 |
| Approach | | 2177 | 3.8 | 0.863 | 15.1 | LOS B | 13.8 | 98.6 | 0.58 | 0.51 | 41.2 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 939 | 3.9 | 0.765 | 31.6 | LOS C | 10.5 | 76.1 | 0.95 | 0.92 | 32.1 |
| Approach | | 939 | 3.9 | 0.765 | 31.6 | LOS C | 10.5 | 76.1 | 0.95 | 0.92 | 32.1 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 111 | 56.2 | 0.164 | 18.2 | LOS B | 1.6 | 16.8 | 0.56 | 0.75 | 41.5 |
| 8 | T | 2593 | 1.2 | 0.877 | 22.8 | LOS B | 27.2 | 192.5 | 0.96 | 1.06 | 34.9 |
| Approach | | 2703 | 3.4 | 0.877 | 22.6 | LOS B | 27.2 | 192.5 | 0.94 | 1.05 | 35.1 |
| All Vehicles | | 5819 | 3.7 | 0.877 | 21.3 | LOS B | 27.2 | 192.5 | 0.81 | 0.83 | 36.6 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 14.5 | LOS B | 0.1 | 0.1 | 0.73 | 0.73 |
| All Pedestrians | | 53 | 14.5 | LOS B | | | 0.73 | 0.73 |

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: Victoria Road Robert Street**
**AM Construction 2015**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1320 | 4.5 | 0.297 | 0.9 | LOS A | 1.8 | 12.7 | 0.30 | 0.17 | 54.5 |
| 3 | R | 867 | 3.3 | 0.876 | 37.3 | LOS C | 14.3 | 103.0 | 1.00 | 1.04 | 29.8 |
| Approach | | 2187 | 4.0 | 0.876 | 15.3 | LOS B | 14.3 | 103.0 | 0.58 | 0.51 | 41.0 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 939 | 3.9 | 0.765 | 31.6 | LOS C | 10.5 | 76.1 | 0.95 | 0.92 | 32.1 |
| Approach | | 939 | 3.9 | 0.765 | 31.6 | LOS C | 10.5 | 76.1 | 0.95 | 0.92 | 32.1 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 118 | 55.4 | 0.174 | 18.2 | LOS B | 1.7 | 17.9 | 0.57 | 0.75 | 41.5 |
| 8 | T | 2593 | 1.2 | 0.877 | 22.8 | LOS B | 27.2 | 192.5 | 0.96 | 1.06 | 34.9 |
| Approach | | 2711 | 3.5 | 0.877 | 22.6 | LOS B | 27.2 | 192.5 | 0.94 | 1.05 | 35.1 |
| All Vehicles | | 5837 | 3.8 | 0.877 | 21.3 | LOS B | 27.2 | 192.5 | 0.81 | 0.83 | 36.5 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 14.5 | LOS B | 0.1 | 0.1 | 0.73 | 0.73 |
| All Pedestrians | | 53 | 14.5 | LOS B | | | 0.73 | 0.73 |

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: Victoria Road Robert Street AM 2015 With +150 Berths Site Traffic**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted
Signals - Fixed Time  Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 1320 | 4.5 | 0.297 | 0.9 | LOS A | 1.8 | 12.7 | 0.30 | 0.17 | 54.5 |
| 3 | R | 893 | 2.7 | 0.898 | 38.1 | LOS C | 15.5 | 111.0 | 1.00 | 1.04 | 29.5 |
| Approach | | 2213 | 3.8 | 0.898 | 15.9 | LOS B | 15.5 | 111.0 | 0.58 | 0.52 | 40.5 |
| East: Robert Street (AM) | | | | | | | | | | | |
| 4 | L | 943 | 3.9 | 0.769 | 31.7 | LOS C | 10.6 | 76.7 | 0.95 | 0.92 | 32.1 |
| Approach | | 943 | 3.9 | 0.769 | 31.7 | LOS C | 10.6 | 76.7 | 0.95 | 0.92 | 32.1 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 115 | 54.1 | 0.168 | 18.1 | LOS B | 1.7 | 17.3 | 0.57 | 0.75 | 41.5 |
| 8 | T | 2593 | 1.2 | 0.877 | 22.8 | LOS B | 27.2 | 192.5 | 0.96 | 1.06 | 34.9 |
| Approach | | 2707 | 3.4 | 0.877 | 22.6 | LOS B | 27.2 | 192.5 | 0.94 | 1.05 | 35.1 |
| All Vehicles | | 5863 | 3.6 | 0.898 | 21.6 | LOS B | 27.2 | 192.5 | 0.81 | 0.83 | 36.4 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

**Movement Performance - Pedestrians**

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 14.5 | LOS B | 0.1 | 0.1 | 0.73 | 0.73 |
| All Pedestrians | | 53 | 14.5 | LOS B | | | 0.73 | 0.73 |

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: Victoria Road Robert Street**
**PM Existing 2015**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 86 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2394 | 2.7 | 0.532 | 3.4 | LOS A | 12.0 | 86.2 | 0.39 | 0.36 | 52.5 |
| 3 | R | 537 | 1.9 | 1.076 | 102.2 | LOS F | 18.4 | 130.6 | 1.00 | 1.28 | 15.8 |
| Approach | | 2931 | 2.4 | 1.076 | 21.5 | LOS B | 18.4 | 130.6 | 0.50 | 0.53 | 36.8 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 745 | 2.1 | 0.671 | 27.6 | LOS B | 7.7 | 54.9 | 0.94 | 0.86 | 34.1 |
| 6 | R | 56 | 0.0 | 0.671 | 37.7 | LOS C | 3.2 | 22.9 | 0.98 | 0.85 | 29.5 |
| Approach | | 801 | 2.0 | 0.671 | 28.3 | LOS B | 7.7 | 54.9 | 0.95 | 0.86 | 33.7 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 113 | 45.8 | 0.182 | 18.5 | LOS B | 1.9 | 18.1 | 0.64 | 0.76 | 41.0 |
| 8 | T | 2126 | 1.2 | 0.829 | 17.0 | LOS B | 19.6 | 138.9 | 0.94 | 0.90 | 38.5 |
| Approach | | 2239 | 3.4 | 0.829 | 17.1 | LOS B | 19.6 | 138.9 | 0.93 | 0.89 | 38.6 |
| All Vehicles | | 5971 | 2.7 | 1.076 | 20.8 | LOS B | 19.6 | 138.9 | 0.72 | 0.71 | 37.0 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 31.8 | LOS D | 0.1 | 0.1 | 0.86 | 0.86 |
| All Pedestrians | | 53 | 31.8 | LOS D | | | 0.86 | 0.86 |

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: Victoria Road Robert Street**
**PM Construction 2015**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 86 seconds (Optimum Cycle Time - Minimum Delay)

## Movement Performance - Vehicles

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2394 | 2.7 | 0.532 | 3.4 | LOS A | 12.0 | 86.2 | 0.39 | 0.36 | 52.5 |
| 3 | R | 537 | 1.9 | 1.076 | 102.2 | LOS F | 18.4 | 130.6 | 1.00 | 1.28 | 15.8 |
| Approach | | 2931 | 2.4 | 1.076 | 21.5 | LOS B | 18.4 | 130.6 | 0.50 | 0.53 | 36.8 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 756 | 2.6 | 0.698 | 29.0 | LOS C | 8.5 | 60.8 | 0.95 | 0.88 | 33.4 |
| 6 | R | 63 | 5.0 | 0.698 | 43.7 | LOS D | 3.5 | 25.7 | 0.99 | 0.88 | 27.3 |
| Approach | | 819 | 2.8 | 0.698 | 30.1 | LOS C | 8.5 | 60.8 | 0.96 | 0.88 | 32.8 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 113 | 45.8 | 0.182 | 18.5 | LOS B | 1.9 | 18.1 | 0.64 | 0.76 | 41.0 |
| 8 | T | 2126 | 1.2 | 0.829 | 17.0 | LOS B | 19.6 | 138.9 | 0.94 | 0.90 | 38.5 |
| Approach | | 2239 | 3.4 | 0.829 | 17.1 | LOS B | 19.6 | 138.9 | 0.93 | 0.89 | 38.6 |
| All Vehicles | | 5988 | 2.8 | 1.076 | 21.0 | LOS B | 19.6 | 138.9 | 0.72 | 0.71 | 36.8 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

## Movement Performance - Pedestrians

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 31.8 | LOS D | 0.1 | 0.1 | 0.86 | 0.86 |
| All Pedestrians | | 53 | 31.8 | LOS D | | | 0.86 | 0.86 |

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: Victoria Road Robert Street PM 2015 With +150 Berths Site Traffic**

Existing Traffic Signals with Bus Lane Modelled as Left Turn Lane Buses excepted (Five Phases in PM Peak)
Signals - Fixed Time  Cycle Time = 86 seconds (Optimum Cycle Time - Minimum Delay)

**Movement Performance - Vehicles**

| Mov ID | Turn | Demand Flow veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | 95% Back of Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Victoria Road | | | | | | | | | | | |
| 2 | T | 2404 | 2.7 | 0.534 | 3.5 | LOS A | 12.1 | 86.9 | 0.39 | 0.36 | 52.5 |
| 3 | R | 537 | 1.9 | 1.076 | 102.2 | LOS F | 18.4 | 130.6 | 1.00 | 1.28 | 15.8 |
| Approach | | 2941 | 2.4 | 1.076 | 21.5 | LOS B | 18.4 | 130.6 | 0.50 | 0.53 | 36.9 |
| East: Robert Street (PM) | | | | | | | | | | | |
| 4 | L | 772 | 2.0 | 0.699 | 29.0 | LOS C | 8.5 | 60.9 | 0.95 | 0.87 | 33.4 |
| 6 | R | 60 | 0.0 | 0.699 | 40.8 | LOS C | 3.5 | 25.1 | 0.99 | 0.87 | 28.3 |
| Approach | | 832 | 1.9 | 0.699 | 29.9 | LOS C | 8.5 | 60.9 | 0.96 | 0.87 | 33.0 |
| North: Victoria Road | | | | | | | | | | | |
| 7 | L | 116 | 44.5 | 0.186 | 18.5 | LOS B | 1.9 | 18.5 | 0.64 | 0.76 | 41.0 |
| 8 | T | 2126 | 1.2 | 0.829 | 17.0 | LOS B | 19.6 | 138.9 | 0.94 | 0.90 | 38.5 |
| Approach | | 2242 | 3.4 | 0.829 | 17.1 | LOS B | 19.6 | 138.9 | 0.93 | 0.89 | 38.6 |
| All Vehicles | | 6015 | 2.7 | 1.076 | 21.0 | LOS B | 19.6 | 138.9 | 0.72 | 0.71 | 36.9 |

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model used.

**Movement Performance - Pedestrians**

| Mov ID | Description | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Average Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
|---|---|---|---|---|---|---|---|---|
| P3 | Across E approach | 53 | 31.8 | LOS D | 0.1 | 0.1 | 0.86 | 0.86 |
| All Pedestrians | | 53 | 31.8 | LOS D | | | 0.86 | 0.86 |

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

# Appendix E

## Site access control procedure

# White Bay 6 Marine Park

# Compliance Management SYSTEM PROCEDURE

**Site Access Control Procedure**

**Document No: PRO-011**

REVISION HISTORY

| REVISION NUMBER | DATE | REVISED BY | APPROVED BY | REASON FOR CHANGE |
|---|---|---|---|---|
| A | 09/07/2015 | A. Graveley | Gemma Broderick | Draft of document |
| 1 | 09/07/2015 | A. Graveley | T. Crosland | Version issued for comment to PANSW |
| 2 | 17/12/2015 | A. Graveley | | Amendments resulting from PANSW comment. Revision description of identification card. |
| | | | | |

# Table of Contents



# 1 PURPOSE

The purpose of this procedure is to describe the process for controlling access to White Bay 6 ensuring safe, secure and efficient transport networks in the White Bay PANSW precinct on cruise ship days.

# 2 SCOPE

This procedure applies to all White Bay 6 employees, contractors, customers and visitors requiring access to White Bay 6 via the road network on cruise ship days.

# 3 REFERENCES

- FRM-0111 Authorised Access Register
- FRM-062 Contractor Site Induction
- PRO-006 Contractor Management
- PRO-012 Storage Management
- FRM-1218 SHBS Customer Induction

# 4 DEFINITIONS

| Term | Meaning |
|---|---|
| Contractor | Any person(s), not employed directly by White Bay 6 that is providing a service for White Bay 6 clients to undertake specific work activities at the facility. |
| Visitor | Any person(s) not employed directly by White Bay 6, not a contractor, or a customer of White Bay 6. |
| PANSW | Ports Authority New South Wales |

# 5 RESPONSIBILITIES

## 5.1 Management

Management is responsible for the implementation and maintenance of this procedure and all associated processes and forms including:

- Collecting all personal and company information from applicants;
- Ensuring completion of online site inductions;
- Assessing personal and company information, and registration;

- Authorising approval of site access; and
- Providing Authorised Access Identification Cards.

### 5.2 Employees, contractors, customers, and visitors

Employees, contractors, customers, and visitors are responsible for:

- Ensuring they have provided all information and applicable documentation;
- Ensuring they have completed the online site induction; and
- Presenting Authorised Access Identification Cards to appropriate authority.

### 5.3 Ports Authority New South Wales

PANSW will be responsible for checking access identification cards on cruise days at the Roberts Street Entry Gate.

## 6 PROCEDURE

### 6.1 Gaining Authorised Site Access

Individuals will be required to apply for site access to White Bay 6. The application process is dependent on the type of access required. Individuals with authorised access will be recorded on FRM-0111 Authorised Access Register. The register includes four lists for the type of authorised accessed:

- Employees (Sydney Harbour Boat Storage and Baileys Marine Fuels Australia);
- Contractors;
- Customers; and
- Visitors - Temporary access.

The registers shall contain the following information for each individual:

- Name;
- Company name (if applicable);
- Date of induction (if applicable); and
- Date of expiry.

The register will be made available to PANSW on request.

#### 6.1.1 Employees

Employees will be authorised access to White Bay 6 upon commencement of employment and completion of the employee induction. Employees include persons employed by Sydney Harbour Boat Storage and Baileys Marine Fuels Australia.

#### 6.1.2 Contractors

Contractors will be authorised access to White Bay 6 upon the approval to conduct work outlined in PRO-006 Contractor Management. Gaining work approval requires the completion of the Contractor Site Induction and submission of the following documentation:

- Insurance details (public liability, ship repairers liability and workers compensation);
- Licences or permits (if applicable); and
- Safe Work Method Statement or other form of risk assessment.

### 6.1.3 Customers

Customers will be authorised access to White Bay 6 upon completion of the Sydney Harbour Boat Storage Customer Online Site Induction and formalisation of their contracts for vessel storage or work orders.

## 6.2 Authorised Site Access Identification Card

All employees, contractors, visitors and customers with authorised site access will be provided with an identification card from White Bay 6 management. The identification card will include the following:

- White Bay 6 logo;
- Name;
- Type of access (employee, contractor, customer, visitor);
- Expiry Date; and
- Photo.

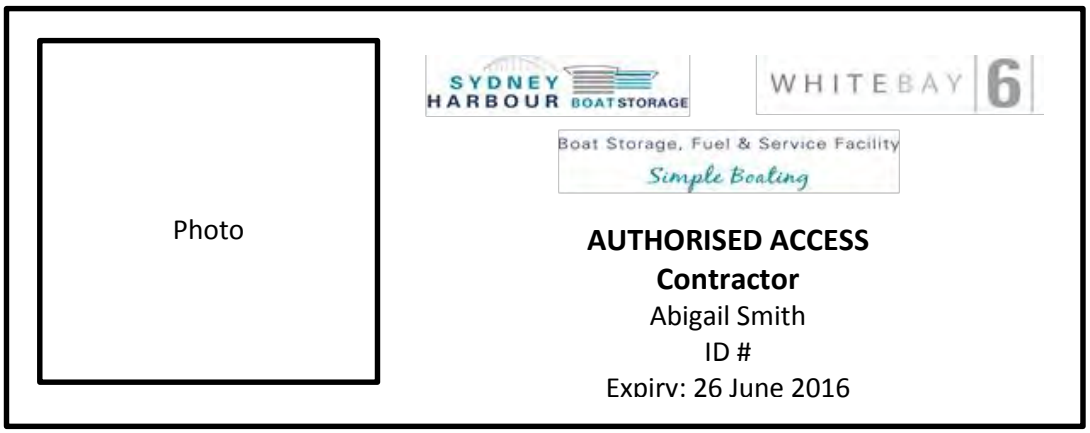



Figure 1. White Bay 6 Authorised Access Identification Card example

## 6.3 Visitors and Temporary Access

Visitors who regularly visit the site will be provided authorised access and issued with an Approved Access Identification Card.

Visitors who have not been issued with an Approved Access Identification Card but who have a scheduled appointment at White Bay 6 on cruise days will be authorised temporary access. The visitor information will be recorded on FRM-0111 Authorised Access Register - Temporary Access. The register will be updated as necessary and accessible by PANSW on request. When visitors have a scheduled appointment the security personnel at the Roberts Street Gate shall be phoned on the morning of the appointment and informed of:

- The visitors name;
- Associated company (where applicable);

- Time of appointment.

A request will be made to allow these persons to access the facility.

Visitors who do not have a scheduled appointment will not have authorised access to White Bay 6 on cruise days and will be directed to use the Port Link Road to access White Bay 6.

## 6.4 Access to White Bay 6 via Robert Street

Access to the White Bay 6 on cruise and non-cruise days will be via the PANSW Robert Street Entry Gate (Figure 2 green access route). On cruise ship days, individuals with authorised access to White Bay 6 will present their Authorised Access Identification Card (Figure 1) to PANSW security at the entry gate on Robert Street (Figure 2) to be granted access.

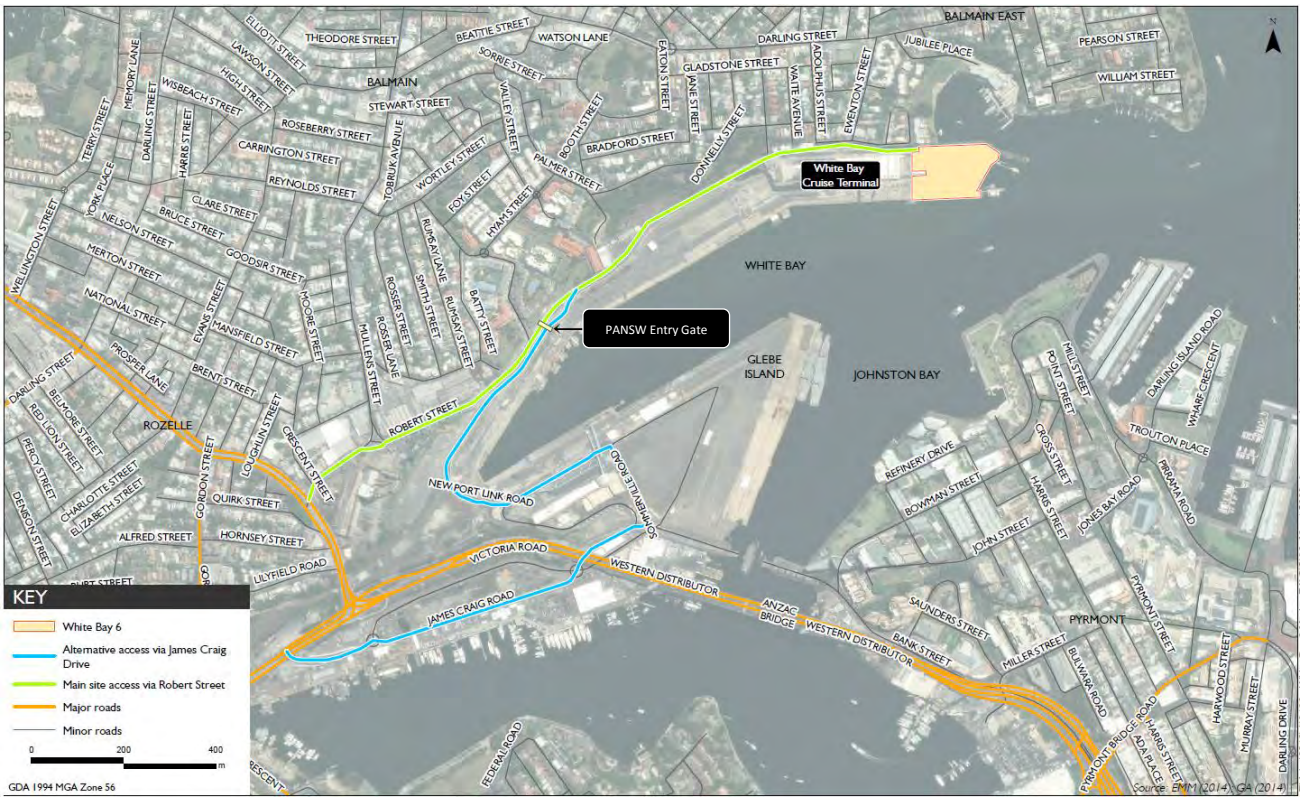



Figure 2. Access pathways to White Bay 6.

## 6.5 Communication of process

All applications for an Authorised Access Identification Card will include completing a Sydney Harbour Boat Storage Online Site Induction which communicates the process for access to White Bay 6. When Authorised Access Identification Cards are issued to individuals these shall be accompanied with an information letter which explains how to access the site on cruise ship days. Scheduled cruise days will be posted at White Bay 6 and on the Sydney Harbour Boat Storage website.

**END OF PROCEDURE**

EMM


SYDNEY
Ground floor, Suite 01, 20 Chandos Street
St Leonards, New South Wales, 2065
T 02 9493 9500 F 02 9493 9599

NEWCASTLE
Level 1, Suite 6, 146 Hunter Street
Newcastle, New South Wales, 2300
T 02 4907 4800 F 02 4907 4899

BRISBANE
Level 4, Suite 01, 87 Wickham Terrace
Spring Hill, Queensland, 4000
T 07 3839 1800 F 07 3839 1866