

**MERITON RIVERFRONT APARTMENTS  
PROPOSED MIXED USE  
DEVELOPMENT**

**330 CHURCH STREET, PARRAMATTA**

***Assessment of Traffic and  
Parking Implications***

June 2013

Reference 11022

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## 1. INTRODUCTION

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This report has been prepared on behalf of Meriton Apartments to accompany an amended s75w Application to the Department of Planning for a mixed use development with residential apartments, serviced apartments and retail elements within the Riverbank Precinct on Church Street, Parramatta (Figure 1).

Regional centres in the metropolitan area, particularly those which have good access to public transport and retail/commercial and entertainment facilities, are undergoing revitalisation involving high density residential apartments, accommodation and retail uses as part of the urban consolidation process. A Part 3A Application was submitted to the Department of Planning and the Director General's Requirements specified in part:

**"7. Impacts (Construction and Operational)**

*Prepare a traffic impact study in accordance with the RTA's Guide to Traffic Generating Developments considering traffic generation and required road/intersection upgrades, access, loading docks(s) and carparking arrangements, measures to promote public transport usage and pedestrian and bicycle linkages.*

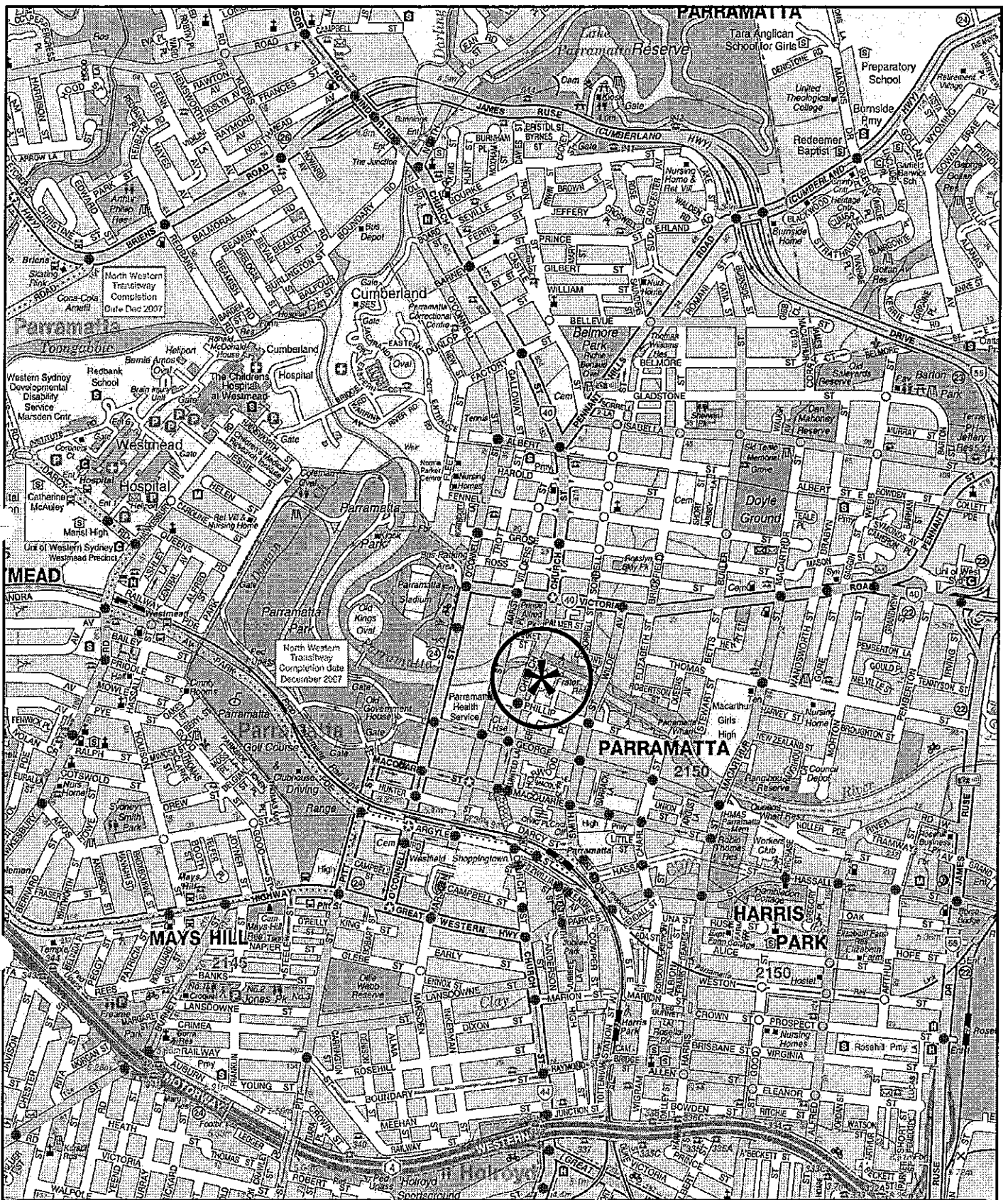
*The assessment should also address the implications of the proposed development for non-car travel modes (including all types of public transport, walking and cycling), addressing the importance of bus access and circulation in meeting travel needs in the area, likely associated costs of additional infrastructure or services where not proposed as part of the project, and also identify measures to mitigate potential impacts on public/private transport, pedestrians and cyclists during the construction stage of the project.*

**8. Carparking**

*The EA must demonstrate the adequate provision of on-site carparking for the proposal having regard to local EPI controls and the RTA's Guide to Traffic Generating Developments, as well as the site's high accessibility to public transport. (NOTE: the Department supports reduced carparking rates in areas well served by public transport)."*

The purpose of this report is to:

- \* describe the site, its context and the revised development scheme
- \* describe the road network serving the site and the prevailing traffic conditions and transport services in the area
- \* assess the adequacy of the proposed parking provision
- \* assess the potential traffic implications
- \* assess the availability and suitability of public transport services and measures to provide public transport usage and pedestrian/bicycle linkages
- \* assess the suitability of the proposed vehicle access, internal circulation and servicing arrangements.



LEGEND



LOCATION

FIG 1

## 2. PROPOSED DEVELOPMENT SCHEME

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### 2.1 SITE, CONTEXT AND EXISTING/FORMER USE

The development site (Figure 2) is a consolidation of 3 lots being an irregular shaped area of some 6,763m<sup>2</sup> which has frontages to Church Street and Lane № 11 which connects to Phillip Street. The site, which was previously occupied by the David Jones Department Store and more recently by Brandsmart, is bounded by the Parramatta River to the north, a multi-deck carpark to the east and commercial buildings to the south.

The site is located on the northern edge of the CBD and benefits by the open space reserves along the river and the large Parramatta Park just to the west. The retail component of the building is currently vacant, however 2 professional services companies (including Landcom) and 2 restaurants occupy parts of the building. The adjacent decked carpark is owned by Council, but leased by Meriton, and operates as a public parking station with 535 spaces.

The principal public transport services in the vicinity of the site include:

- \* Parramatta Railway Station and bus interchange which is located approximately 700 metres to the south of the site
- \* numerous bus services which operate along Church Street and other nearby roads
- \* Parramatta Wharf a short distance to the east and the shared pedestrian and cycle path running along the river.



LEGEND



SITE

FIG 2

## 2.2 PRECINCT PLANNING

The site comprises a pre-eminent part of the Parramatta Riverbank Precinct which is bounded by Church Street, Phillip Street, Wilde Street and the Parramatta River. Planning criteria for development of the precinct are contained in:

- \* Parramatta Riverbank Urban Design Strategy – April 2009
- \* Parramatta City Council Preliminary Draft Riverbank Design Guidelines – 2010

Details of the envisaged development outcome including vehicle access, pedestrian network and future new 'Civic Space' are provided on the extracts reproduced overleaf.

## 2.3 PROPOSED DEVELOPMENT

It is proposed to demolish the existing buildings and structures and excavate the site for basement carparking. The new building complex will involve:

- \* podium level
- \* 2 tower buildings
- \* basement and podium levels of carparking

The proposed development will comprise:

### Residential Apartments

66 x one-bedroom apartments  
292 x two-bedroom apartments  
20 x three-bedroom apartments

**Total: 378 apartments**

### Serviced Apartments

3 x studio apartments  
170 x one-bedroom apartments  
66 x two-bedroom apartments  
27 x three-bedroom apartments

**Total: 266 apartments**

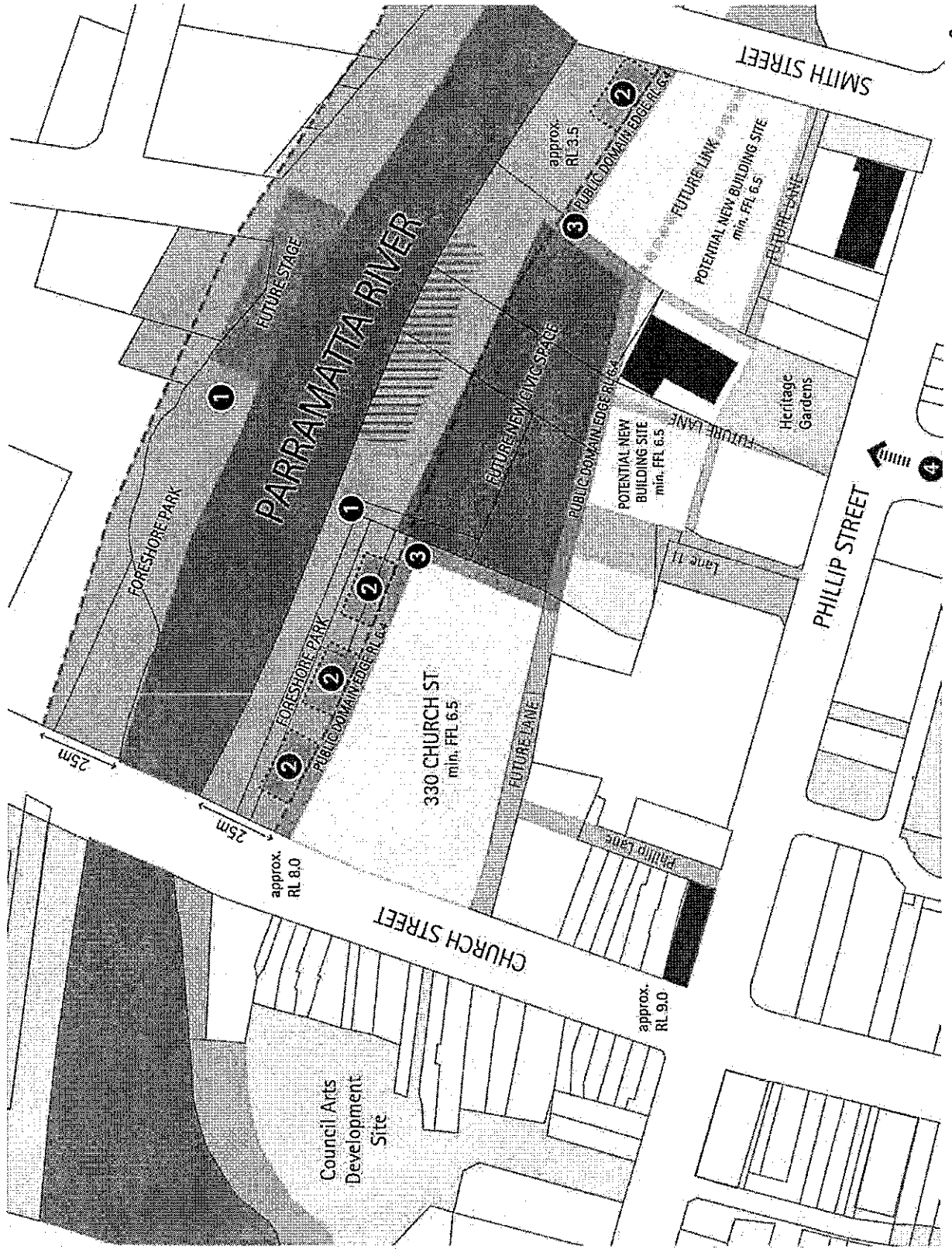
### Retail

3,201.7m<sup>2</sup>

# Riverbank – Pedestrian Amenity: Public Domain Plan

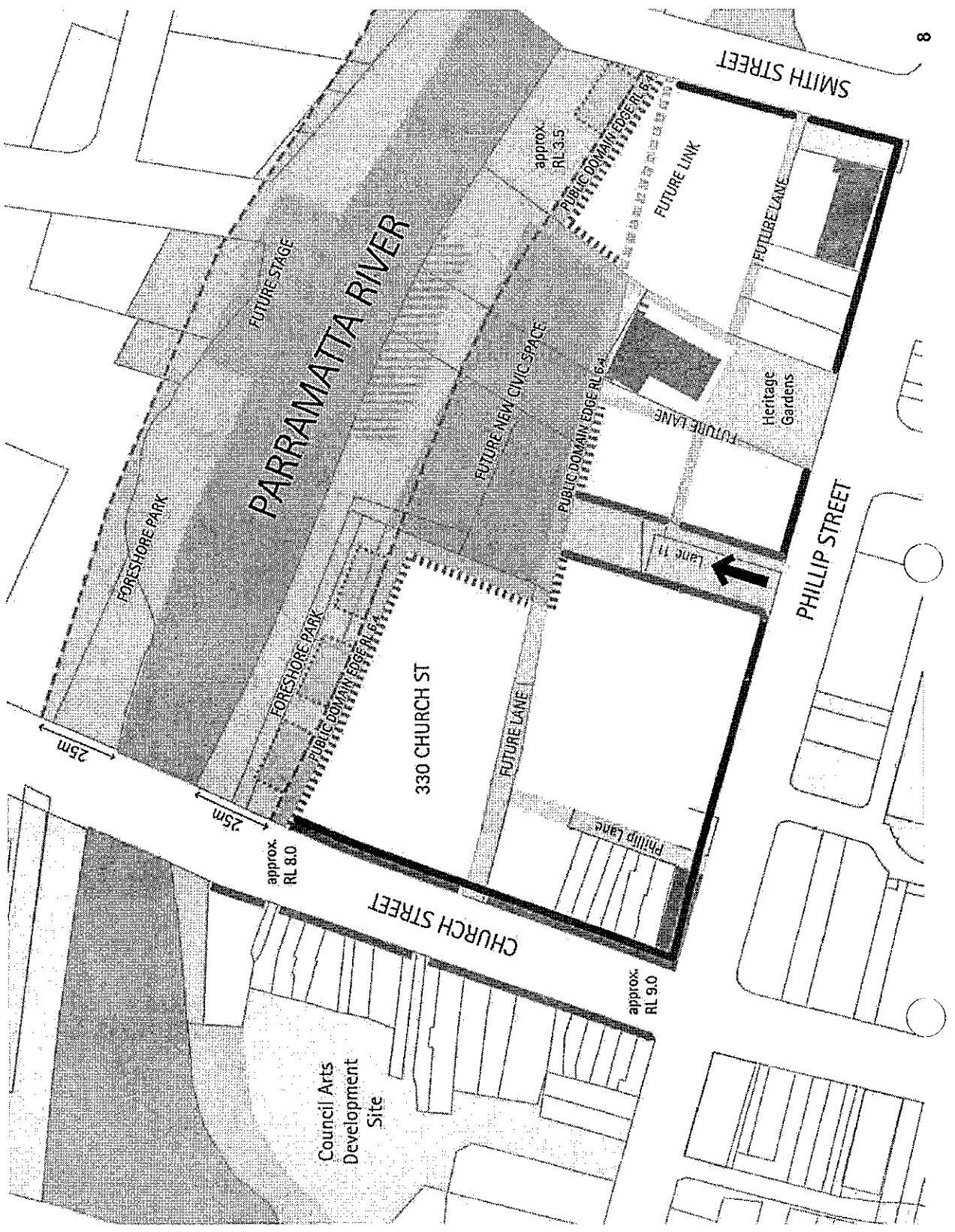


- ① Foreshore park in 25m setback may include stage to northern bank and changed river's edge.
  - ② Terraces and steps connect public domain edge at RL 6.4 to Forshore Park and Civic Space (to flood requirements).
  - ③ Public domain edge (min. 5m wide) at RL 6.4 for riverfront activation. (RL = 1 in 100 year flood + 400mm freeboard)
  - ④ Civic Link
- Potential building site
  - Council land
  - Heritage building
  - Open space
  - Fine grain pedestrian network to Lanes Strategy 2010
  - 25m setback from river's edge to Flood Mitigation Policy





# Riverbank – Pedestrian Amenity: Shelter + Car Access



- Continuous awnings required
- Continuous weather protection for pedestrians encouraged
- Additional vehicular entries prohibited
- Vehicular access from here
- Council Land
- Heritage item
- Open Space
- Fine grain pedestrian network
- 25m setback from river's edge for flood mitigation



A total of 709 parking spaces will be provided in the basement and podium levels with car and service vehicle access being provided by connection to Lane № 11 and Phillip Street.

Details of the proposed development are provided in the architectural drawings prepared by Tony Caro Architecture which accompany the Development Application and are reproduced in Appendix A.

### 3. ROAD NETWORK AND TRAFFIC CONDITIONS

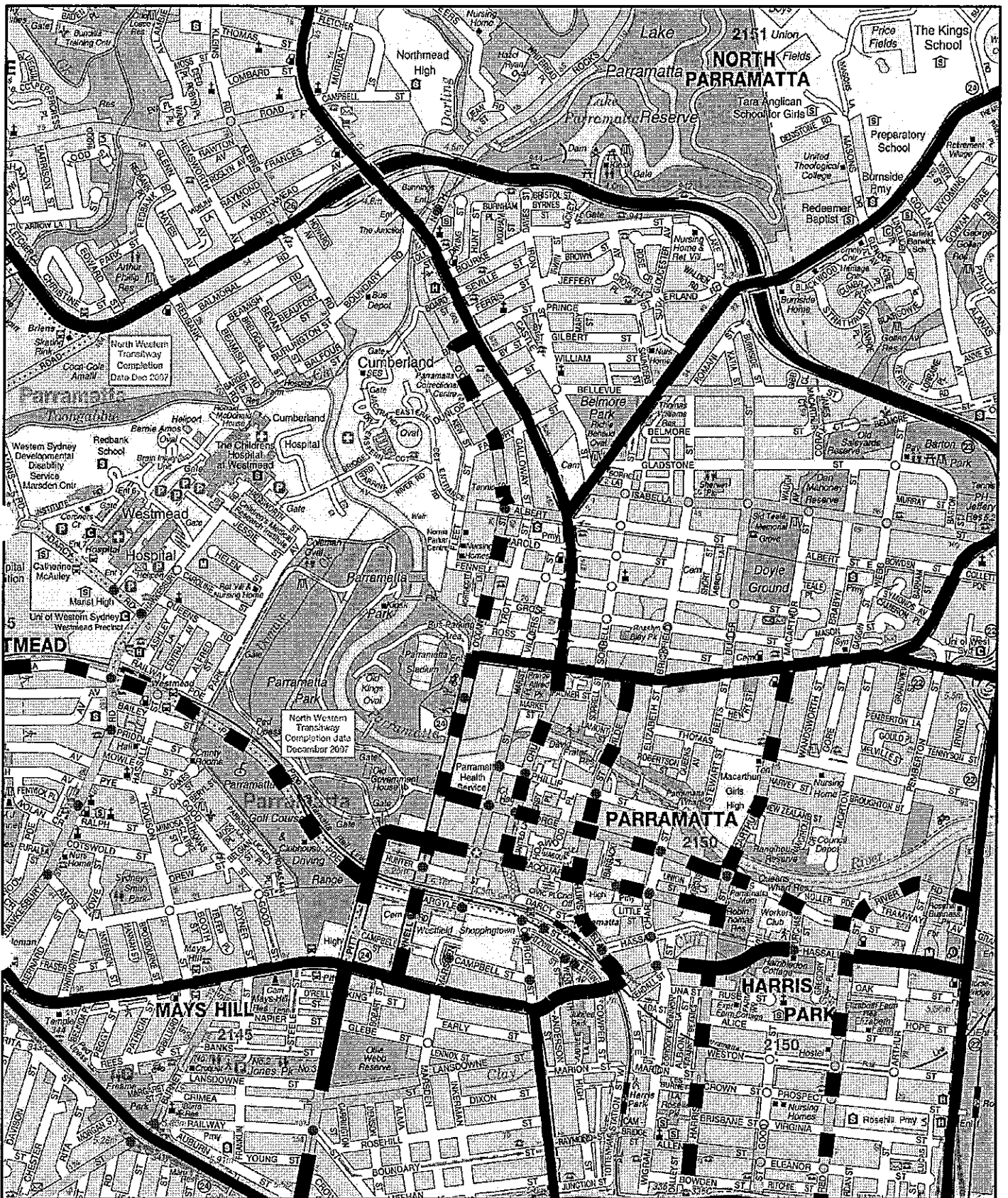
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#### 3.1 ROAD NETWORK

The road network which facilitates access to and from the development site (Figure 3) comprises:

- \* *M4 Motorway and Great Western Highway* – State Roads and arterial routes connecting between the City and Penrith
- \* *Windsor Road/Church Street (North)* – a State Road and arterial route which connects between Parramatta and Windsor
- \* *James Ruse Drive* – a State Road and arterial route which connects between Great Western Highway/M4 and Old Windsor Road
- \* *Pennant Hills Road* – a State Road and arterial route which connects between Parramatta and the F3 Motorway at Wahroonga
- \* *Victoria Road* – a State Road and east/west arterial route which connects between the City and Parramatta
- \* *George Street and Macquarie Street* – east-west collector routes running through the CBD
- \* *Smith Street and O'Connell Street* – north-south collector routes running through the CBD
- \* *Phillip Street* – a minor collector route running along the northern side of the CBD.

Barriers to the road system are presented by Parramatta River, the railway line and the closure of Church Street between Macquarie Street and Darcy Street.



## LEGEND

-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR



## ROAD NETWORK

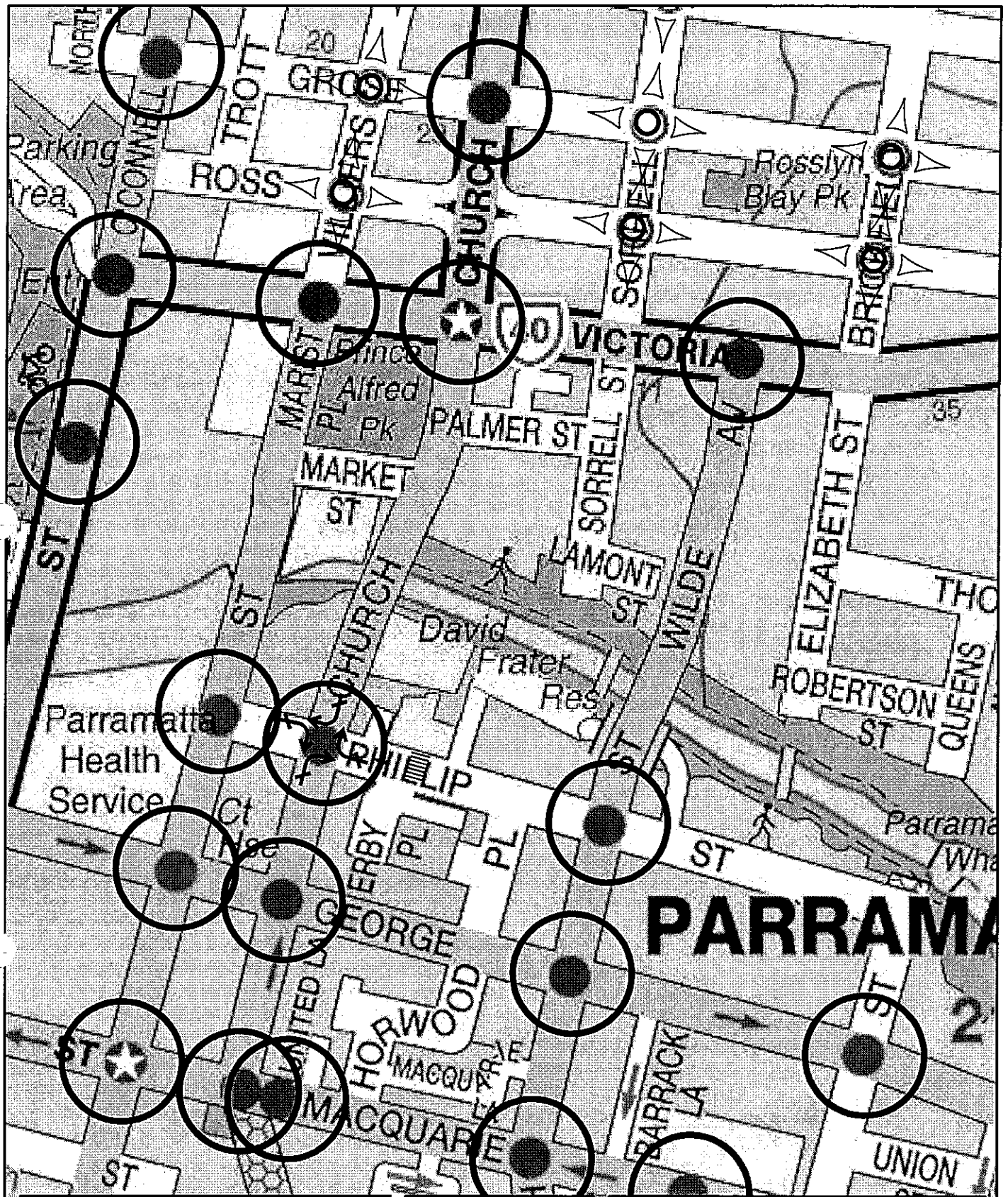
FIG 3

### 3.2 TRAFFIC CONTROLS

The existing traffic controls which have been applied to the road system in the vicinity of the site (Figure 4) include:

- \* the traffic control signals along Church Street including the Phillip Street, George Street and Macquarie Street intersections
- \* the traffic control signals at the Marsden Street/Phillip Street and Phillip Street/Smith Street intersections
- \* the one-way easterly traffic flows along George Street through the traffic control signals at the intersections of:
  - Factory Street and Church Street (Windsor Road)
  - Marsden Street
  - Smith Street
- \* the one-way westerly traffic flow along Macquarie Street through the traffic signals at the intersection of:
  - Factory Street and Church Street (Windsor Road)
  - Marsden Street
  - Smith Street
- \* the NO RIGHT TURN restrictions at the Church Street/Phillip Street intersections
- \* the marked footcrossing across Phillip Street on the western side of Lane No 11.

Details of the intersection arrangements in the vicinity of the site are provided in Appendix B.



# LEGEND

- TRAFFIC SIGNAL CONTROL
- △△△△ ROUNDABOUT
- ⚡ RESTRICTED TURNING MOVEMENT



## TRAFFIC CONTROLS

FIG 4

### 3.3 TRAFFIC CONDITIONS

An indication of the existing traffic conditions in the vicinity of the site is provided by data published by the RMS<sup>1</sup> and surveys undertaken as part of this assessment. The RMS data is expressed in terms of Annual Average Daily Traffic (AADT) and the most recently available data is summarised in the following:

|                                 | AADT   |
|---------------------------------|--------|
| O'Connell Street                |        |
| At Bridge over Parramatta River | 27,549 |
| Church Street                   |        |
| South of Albert Street          | 27,403 |

Traffic movement surveys were carried out during the morning and afternoon peak periods at the access intersections in the vicinity of the site. The results of these surveys are provided in Appendix A and principal results are summarised in the following:

|                |    | AM  | PM  |
|----------------|----|-----|-----|
| Church Street  | NB | 130 | 230 |
|                | RT | 2   | -   |
|                | LT | 18  | 34  |
|                | SB | 144 | 150 |
|                | RT | -   | -   |
|                | LT | 124 | 104 |
| Phillip Street | EB | 146 | 74  |
|                | RT | 2   | -   |
|                | LT | 24  | 44  |
|                | WB | 90  | 198 |
|                | RT | -   | -   |
|                | LT | 20  | 16  |

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<sup>1</sup> Traffic Volume Data Sydney Region  
Roads and Maritime Services

|                |    | AM  | PM  |
|----------------|----|-----|-----|
| Smith Street   | NB | 182 | 408 |
|                | RT | 40  | 24  |
|                | LT | 74  | 62  |
|                | SB | 494 | 264 |
|                | RT | 172 | 52  |
|                | LT | 266 | 100 |
| Phillip Street | EB | 104 | 88  |
|                | RT | 28  | 54  |
|                | LT | 62  | 140 |
|                | WB | 114 | 100 |
|                | RT | 64  | 310 |
|                | LT | 24  | 36  |
| <hr/>          |    |     |     |
| Phillip Street | EB | 169 | 253 |
|                | LT | 81  | 8   |
|                | WB | 185 | 205 |
|                | RT | 106 | 25  |
| Lane           | RT | 17  | 21  |
|                | LT | 12  | 43  |

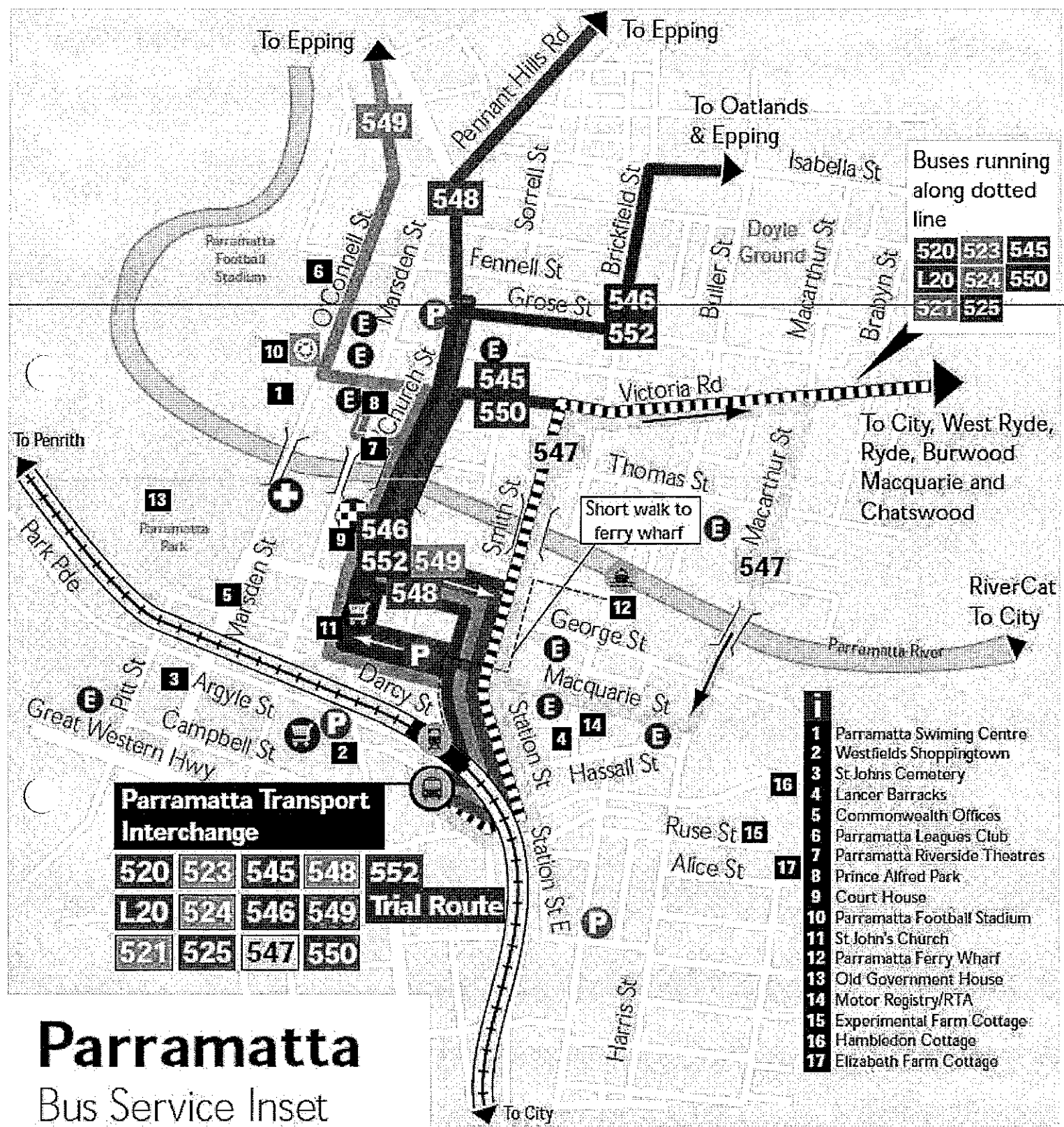
The operational performance of intersections on the road system in the vicinity of the site have been assessed using SIDRA. The results of these assessments are provided in Appendix D and summarised in the following:

|                | AM  |      | PM  |      |
|----------------|-----|------|-----|------|
|                | LOS | AVD  | LOS | AVD  |
| Marsden/Philip | A   | 13.1 | A   | 13.2 |
| Church/Philip  | B   | 26.1 | B   | 27.7 |
| Smith/Philip   | B   | 27.1 | C   | 35.4 |
| Marsden/George | B   | 17.9 | B   | 14.7 |
| Church/George  | C   | 34.4 | C   | 35.6 |
| Smith/George   | C   | 44.0 | C   | 37.2 |

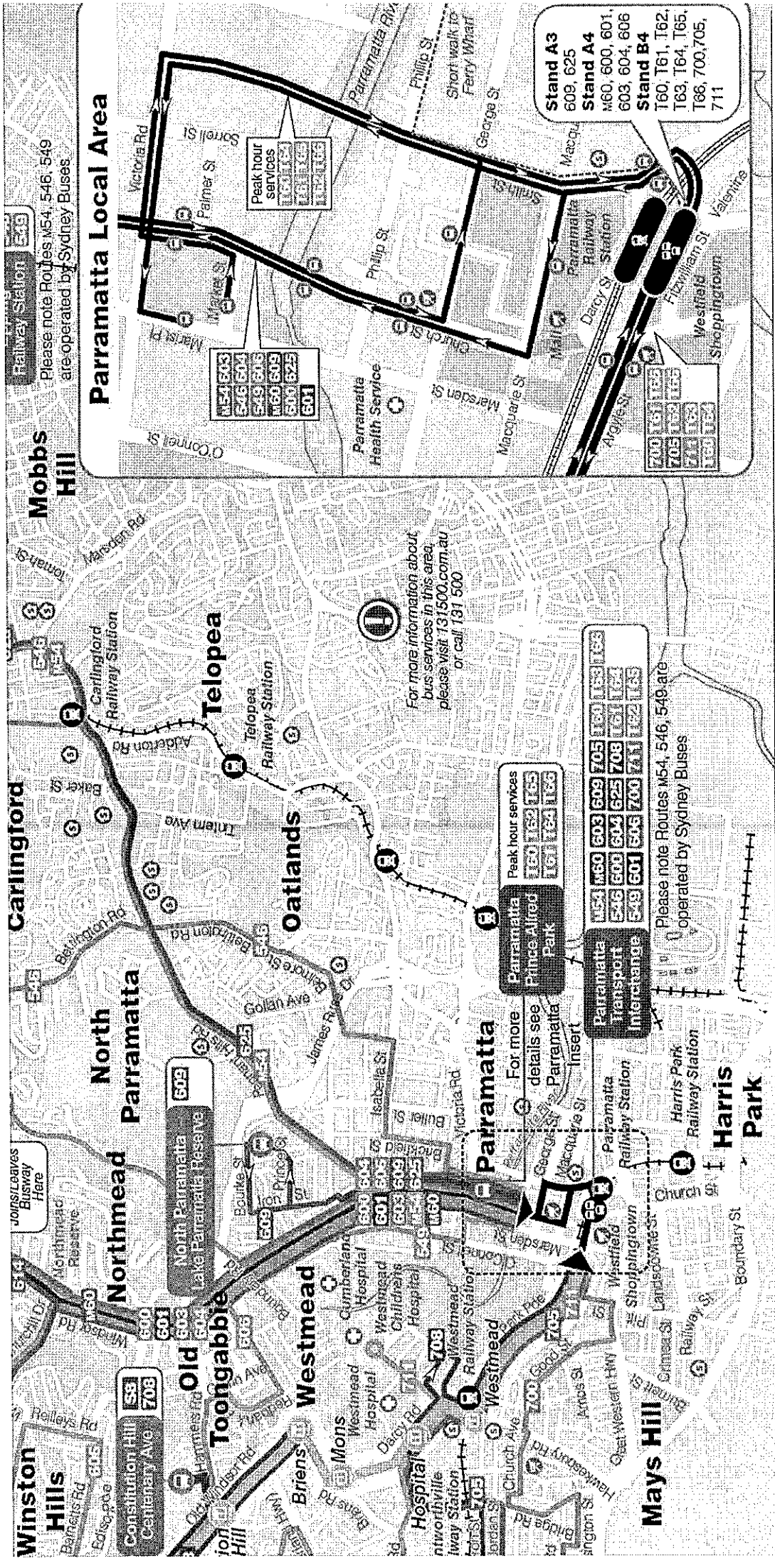
The operation of the intersections in the area is relatively satisfactory for a CBD environment with access and control being facilitated by the traffic signal controlled intersections with attendant one-way and NO RIGHT TURN restrictions. In previous years when the David Jones Department store operated on the site, there were significant traffic movements to/from the multi-deck carpark through Lane № 11. However, that former circumstance no longer occurs with the total access movements along Lane № 11 being less than 100 vph during the recent weekday afternoon survey.

### 3.4 PUBLIC TRANSPORT SERVICES

The site is conveniently located in relation to bus, rail and ferry services. Numerous frequent and high capacity bus services operate past the site as shown on the diagrams overleaf while the railway station is easily accessed by walking or by bus.



# Parramatta Bus Service Inset



**Winston Hills**  
Barnetts Rd  
Botteghe Rd

**Constitution Hill**  
Centenary Ave  
708

**Old Toongabbie**  
Hammers Rd  
601  
603  
604

**Westmead**  
Mons Westmead Hospital  
Westmead Childrens Hospital  
Darcy Rd  
701  
703

**Parramatta**  
For more details see  
Parramatta Park  
Insert

**Parramatta Transport Interchange**  
M54 M60 603 609 705 708 711 712 713  
546 600 604 625 708 711 712 713

**Harris Park**  
Harris Park Railway Station  
Boundary St

**Mays Hill**  
Hawkesbury Rd  
Arms St  
705 706 707 708 709 710 711 712 713

**North Parramatta**  
North Parramatta Lake Parramatta Reserve  
602

**oatlands**  
Golan Ave  
James River Dr

**Telopea**  
Telopea Railway Station  
Adderton Rd

**Mobbs Hill**  
Carlingford Railway Station  
Bake St

**Parramatta Local Area**  
Please note Routes M54, 546, 549 are operated by Sydney Buses.

**Peak hour services**  
M54 603  
546 604  
549 605  
M60 609  
600 625  
601

**Stand A3**  
609, 625  
**Stand A4**  
M60, 600, 601,  
603, 604, 606  
**Stand B4**  
T60, T61, T62,  
T63, T64, T65,  
T66, 700, 705,  
711

For more information about bus services in this area, please visit [131500.com.au](http://131500.com.au) or call 131 500

Please note Routes M54, 546, 549 are operated by Sydney Buses

## 4. PARKING

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Parramatta City Council's LEP 2007 (amendment No. 4) specifies the following carparking criteria in relation to the proposed development:

### Maximum Parking Provision

|                                         |                                      |
|-----------------------------------------|--------------------------------------|
| Multi Dwelling Housing (Parramatta CBD) | 1 space per dwelling                 |
|                                         | 1 space per 5 dwellings for visitors |
| Shops                                   | 1 space per 30m <sup>2</sup> GFA     |

Application of this criteria to the proposed development scheme would indicate the following provision:

### Residential Apartments

|                |            |
|----------------|------------|
| 378 apartments | 378 spaces |
| Visitors       | 76 spaces  |

### Serviced Apartments

|                |            |
|----------------|------------|
| 266 apartments | 266 spaces |
| Visitors       | 53 spaces  |

### Retail

|                       |                   |
|-----------------------|-------------------|
| 3,201.7m <sup>2</sup> | 107 spaces        |
| <b>Total:</b>         | <b>880 spaces</b> |

The LEP carparking criteria is a "maximum" and the Director General's Requirements express the policy of the Department to reduce carparking provisions in areas well served by public transport (ie Parramatta CBD).

Occupants of serviced apartments also do not have the same car ownership/usage characteristics as residential apartment occupants.

It is normal practice in mixed retail/residential apartment developments to 'pool' the residential visitor and retail spaces due to the differing peak demand characteristics and the resultant flexibility outcome. Thus, the proposed provision/availability of parking spaces will be as follows:

|                                     | Normal                              |
|-------------------------------------|-------------------------------------|
| Residential and serviced apartments | 529 (AV. 0.82 spaces per apartment) |
| Retail and resident visitors        | 180                                 |
| <b>Total:</b>                       | <b>709 spaces</b>                   |

A total of 38 accessible spaces will be provided for residents and 11 designated and suitable spaces for disabled drivers.

Council DCP in respect of provision of motor bike and bicycle parking specifies the following:

- Motor cycle - equivalent of 1 car parking space
- Bicycle - equivalent of 1 car parking space per 100 parking spaces

Accordingly there will be a provision of 25m<sup>2</sup> for motor cycle parking and some 158m<sup>2</sup> for secure bicycle parking.

The proposed parking provision represents a relatively constrained contemporary outcome which has regard for:

- \* the convenient proximity of public transport services
- \* the convenience and amenity of walking and cycling
- \* the retail, entertainment, employment and services which will be available in walking distance.

## 5. TRAFFIC

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An indication of the potential traffic generation of the proposed development can be established by reference to the recent RMS Technical Direction TDT 2013/4 (Appendix D) which updates its earlier 'Guide to Traffic Generating Developments' and specifies the following peak generation:

### High Density Residential (Regional CBD Centres)

Vehicle trips per hour per dwelling

| AM   | PM   |
|------|------|
| 0.19 | 0.15 |

Because of the lower car usage characteristic for serviced apartments the traffic generation is generally lower than that of residential apartments during the morning and afternoon peak periods, however in order to provide a robust assessment no distinction is made in relation to this factor.

The RMS criteria for 'retail' use is very outdated and essentially relates large regional shopping centres. A widely accepted contemporary rate for retail floorspace with good accessibility to public transport services, high density residential and employment is 4.0 vtpm per 100m<sup>2</sup> (35% in AM). Application of these factors to the proposed development would indicate the following:

|                                                        |                                  |
|--------------------------------------------------------|----------------------------------|
| 644 apartments @ 0.19                                  | - 123 vtpm in AM peak            |
| 644 apartments @ 0.15                                  | - 97 vtpm in PM Peak             |
| Retail 3,207m <sup>2</sup> @ 4.0 per 100m <sup>2</sup> | - 44 vtpm AM 128 vtpm PM         |
| <b>Total</b>                                           | <b>- 163 vtpm AM 225 vtpm PM</b> |

The previous assessment was based on peak traffic generation outcomes of 175vtpm in the AM (+8%) and 259vtpm in the PM (+15%). Again in order to provide a robust assessment these previous projections have been retained and distributed IN and OUT as follows:

|                        | AM        |            | PM         |           |
|------------------------|-----------|------------|------------|-----------|
|                        | IN        | OUT        | IN         | OUT       |
| Residential apartments | 18        | 73         | 73         | 18        |
| Serviced apartments    | 10        | 30         | 30         | 10        |
| Retail                 | 30        | 14         | 64         | 64        |
| <b>Total</b>           | <b>58</b> | <b>117</b> | <b>167</b> | <b>92</b> |

The proposed development replaces the earlier David Jones Department Store occupancy of the site and the Riverbank Master Plan incorporate removal of the existing 535 space decked car park with a Civic Square (ie the existing traffic generation of the car park will be replaced by the generation of the proposed development albeit that there is apparently no timeframe identified for removal of the car park).

The existing uses on the site are two professional services companies (including Landcom) and 2 restaurants (the remainder is now currently vacant). The assessed traffic generation of the existing uses is as follows:

| AM |     | PM |     |
|----|-----|----|-----|
| IN | OUT | IN | OUT |
| 45 | 5   | 15 | 45  |

Thus the projected additional movements consequential to the proposed development will be:

|    |     |     |    |
|----|-----|-----|----|
| 13 | 112 | 152 | 47 |
|----|-----|-----|----|

The projected distribution of these additional generated movements is as follows:

|                      | IN          | OUT         |
|----------------------|-------------|-------------|
| George Street West   | 20%         | -           |
| Marsden Street South | 10%         | 30%         |
| Marsden Street North | -           | 20%         |
| Church Street North  | 20%         | -           |
| Wilde Street North   | 20%         | 20%         |
| Phillip Street East  | 20%         | 20%         |
| Smith Street South   | 10%         | 10%         |
|                      | <b>100%</b> | <b>100%</b> |

The additional generated movements have been distributed onto the road system and the intersections modelled using SIDRA. The results of the operational performance assessment for the morning and afternoon peak periods are provided in Appendix E and summarised in the following:

|                 | AM  |      | PM  |      |
|-----------------|-----|------|-----|------|
|                 | LOS | AVD  | LOS | AVD  |
| Marsden/Phillip | A   | 13.6 | A   | 13.9 |
| Church/Phillip  | B   | 26.8 | C   | 30.1 |
| Smith/Phillip   | C   | 30.5 | C   | 37.0 |
| Marsden/George  | B   | 17.9 | B   | 14.9 |
| Church/George   | C   | 34.4 | C   | 35.6 |
| Smith/George    | C   | 40.5 | C   | 37.1 |

The results indicate that a satisfactory operational performance will be maintained at these intersections with the completed development.

It is apparent that the proposed development is consistent with that envisaged in the planning for the precinct and that there will not be any unsatisfactory traffic implications.

## 6. ACCESS, INTERNAL CIRCULATION AND SERVICING

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### Access

The proposed vehicle access arrangements comprise:

- \* 6.0 metre wide combined ingress/egress accesses for the basement and podium carpark connecting through Lot 101 to Lane № 11
- \* a connection for the loading dock through Lot 101 to Lane № 11.

These accesses will comply with the design requirement of AS 2890.1 and 2 and will accommodate the movement of all vehicles requiring to access the site.

### Internal Circulation

The design of the carparking areas and their access connections will comply with the AS 2890.1 criteria with suitable and appropriate ramps, aisles, bays etc. Resident parking spaces and serviced apartment parking spaces will be segregated and secured while the retail and visitor spaces will be 'pooled'.

### Servicing

A loading dock accommodating a HRV vehicle and other smaller vehicles is provided in the south-eastern corner of the building adjacent to the carpark access. Refuse will be removed from the Garbage Room while service personnel etc will be able to use the retail/visitor parking spaces.

Details of the turning path assessment for these vehicles indicating satisfactory provision are shown on the diagrams in Appendix F.

## 7. PEDESTRIANS, CYCLISTS AND PUBLIC TRANSPORT

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### Pedestrians

The proposed development will comply with and facilitate the pedestrian amenity for the Riverside Precinct which includes:

- \* the future 'Civic Link' along Horwood Place and through the centre of the precinct
- \* the future lane running along the southern side of the site from Church Street
- \* the 'public domain edge' running along the northern and eastern side of the proposed building
- \* the continuous awning running along the western side of the site
- \* dedication of a strip of land along the northern edge of the site to Council for enhancement of the foreshore park.

### Cyclists

Provision will be made on-site for bicycle storage/parking and this will have easy direct access to Council's bicycle network (along the river) and its connections to the regional bicycle network.

### Public Transport

The proposed pedestrian linkages and site access will facilitate use of the existing bus services past the site. The provision of an awning along the western side of the site will provide shelter for the Church Street bus stop while the future implementation of the Civic Link will facilitate access to/from the railway station.

## 8. CONSTRUCTION

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During the construction process B Class hoardings will be erected along the street frontages to maintain these pedestrian movements in a safe and sheltered environment and maintain the existing bus stop activity. The principal vehicle access into the site during the construction process will be along Lane № 11 where traffic controllers will be employed to supervise any vehicle and pedestrian conflicts.

The projected traffic generation of the development on completion and occupation is 175 vtpm in the morning peak and 259 vtpm in the afternoon peak. Thus the traffic generation during the construction process will be substantially less than the building after completion.

There will be some concentration of truck movements during the excavation process and during major concretes pours. However, there will be a Construction Traffic Management Plan in place to ensure the orderly arrival and departure of trucks and these activities will only occur for relatively short periods of time.

Construction workers who need to drive will inevitably park in the adjacent decked car park and will represent part of the existing traffic generation of that car park (replacing that of workers etc involved with the existing uses on the site). The excavation movements will be spread throughout the day and even with allowance for the size of the trucks involved the traffic impact will be less than that of the completed development. The Construction Traffic Management Plan (subject to approval) will nominate the route/s to be taken by trucks and these will avoid unnecessary circulation on the CBD road system (eg Church Street left to Phillip Street into site/out of site and Phillip Street left to Wilde Street then Victoria Road).

A detailed Construction Traffic Management Plan will be prepared and submitted for approval as part of the Construction Certificate documentation while Traffic Control Plans and appropriate applications will be submitted for hoarding erection and mobile crane use etc.

## 9. CONCLUSION

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This assessment report has examined the traffic, transport and parking implications associated with the proposed construction of a mixed use residential/serviced apartment and retail development on part of the Riverside Precinct at Parramatta. The assessment has established that:

- \* the proposed parking provision will be adequate for the needs of the development and appropriate to the desired constraint on undue traffic generation particularly in a CBD environment where there are excellent public transport services
- \* the traffic generated by the proposed development will not have any adverse impact on the surrounding road network
- \* the internal access, parking and servicing provisions have been designed in accordance with all relevant planning controls and standards.

# APPENDIX A

## ARCHITECTURAL PLANS

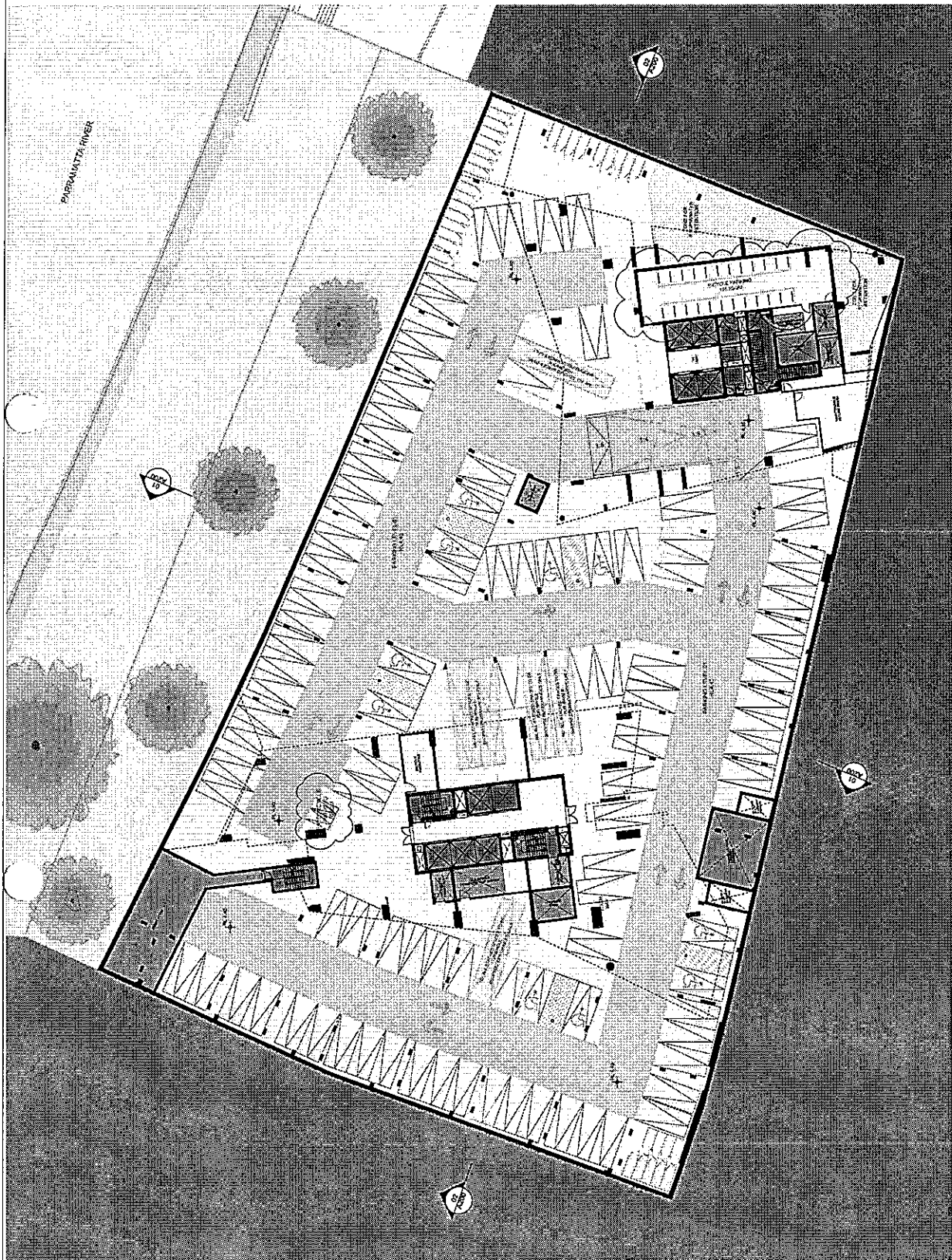
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**01 PLAN PARKING LEVEL 01**

**GENERAL NOTES**

1. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NATIONAL BUILDING REGULATIONS AND THE NEW SOUTH WALES BUILDING REGULATIONS.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NATIONAL BUILDING REGULATIONS AND THE NEW SOUTH WALES BUILDING REGULATIONS.
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10. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE NATIONAL BUILDING REGULATIONS AND THE NEW SOUTH WALES BUILDING REGULATIONS.

| <p><b>REVISIONS</b></p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>1</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>2</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>3</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>4</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>5</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>6</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>7</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>8</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>9</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> <tr> <td>10</td> <td>10/10/2017</td> <td>ISSUED FOR TENDERS</td> </tr> </table> |            | NO.                | DATE | DESCRIPTION | 1 | 10/10/2017 | ISSUED FOR TENDERS | 2 | 10/10/2017 | ISSUED FOR TENDERS | 3 | 10/10/2017 | ISSUED FOR TENDERS | 4 | 10/10/2017 | ISSUED FOR TENDERS | 5 | 10/10/2017 | ISSUED FOR TENDERS | 6 | 10/10/2017 | ISSUED FOR TENDERS | 7 | 10/10/2017 | ISSUED FOR TENDERS | 8 | 10/10/2017 | ISSUED FOR TENDERS | 9 | 10/10/2017 | ISSUED FOR TENDERS | 10 | 10/10/2017 | ISSUED FOR TENDERS | <p><b>PROJECT INFORMATION</b></p> <p>PROJECT NAME: RIVERFRONT APARTMENTS</p> <p>PROJECT ADDRESS: 100 RIVERFRONT AVENUE, PARRAMATTA NSW 2150</p> <p>CLIENT: THE CHURCH &amp; DWIGHT</p> <p>DESIGNER: MERITON</p> <p>DATE: 10/10/2017</p> <p>SCALE: 1:200</p> <p>PROJECT NO: A099</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------|-------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|---|------------|--------------------|----|------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DATE       | DESCRIPTION        |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 10/10/2017 | ISSUED FOR TENDERS |      |             |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |   |            |                    |    |            |                    |                                                                                                                                                                                                                                                                                     |

**MERITON**

ARCHITECTS

100 RIVERFRONT AVENUE, PARRAMATTA NSW 2150

TEL: 02 9610 1000

WWW.MERITONARCHITECTS.COM.AU





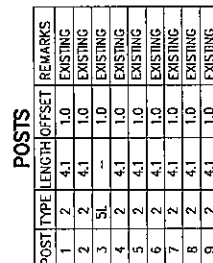
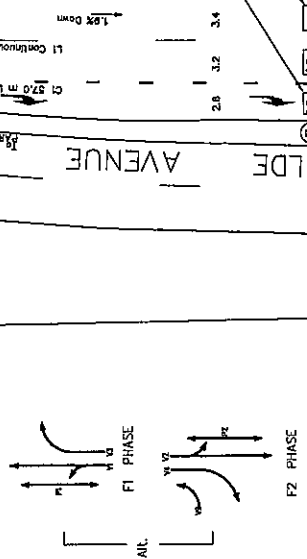


## **APPENDIX B**

### **INTERSECTION DETAILS**

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7000.354.VV.1100



- Special regulatory stop sign (R1-4) placed on posts 1 and 5.
- Audio tactile push buttons are provided on posts 1, 2, 3, 4, 5, 6, 8 and 9. Push button on post 7 is a standard push button.
- "BUS LANE" is coloured red, refer to RTA specification R1D and Technical Direction No.9/97.
- Remove 10 m of red pavement from Smith Street, back from stop line.
- Make 10 m of red pavement to be constructed at all marked foot crossings in accordance with

| SIGNAL GROUP PHASE CHART |                                    |   |   |   |   |         |    |    |                    |                      |   |  |
|--------------------------|------------------------------------|---|---|---|---|---------|----|----|--------------------|----------------------|---|--|
| SIGNAL GROUP             | PHASE DURING WHICH GREEN DISPLAYED |   |   |   |   | OVERLAP |    |    | OVERLAP CONDITIONS | DURATION OF L.T.R.A. |   |  |
|                          | A                                  | B | C | D | E | F       | F1 | F2 |                    |                      |   |  |
| V1                       | X                                  | X |   |   |   |         |    | X  | F1/A/B<br>B/A/C    | OVERLAP RUNNING      |   |  |
| V2                       | X                                  |   | X |   |   |         |    |    | F2/A/C<br>C/A/F2x  | *P2 NOT RUNNING      |   |  |
| V3                       |                                    | X |   |   |   | X       | X  |    | F1/F2<br>B/F       | ARROW TIME           | Δ |  |
| V4                       |                                    |   | X |   |   | X       |    | X  | F2/C<br>C/F        | ARROW TIME           | Δ |  |
| V5                       |                                    |   |   | X |   |         |    |    |                    |                      |   |  |
| V6                       |                                    |   |   |   | X |         |    |    |                    | ARROW TIME           | □ |  |
| V7                       |                                    |   |   |   |   | C       |    |    |                    | ARROW TIME           | Δ |  |
| V8                       |                                    |   |   |   |   |         | C  |    |                    |                      |   |  |
| V9                       |                                    |   | X |   |   | X       |    | X  | C/D F1/F2<br>F/F2  | ARROW TIME           | Δ |  |
| V10                      |                                    |   |   |   |   |         |    |    |                    | ARROW TIME           | Δ |  |
| P1                       | X                                  | X |   |   |   |         |    | X  | F1/A/B             |                      |   |  |
| P2                       | X                                  |   | X |   |   |         |    | X  | F2/A/C             |                      |   |  |
| P3                       |                                    |   |   |   |   |         | X  |    |                    |                      |   |  |
| P4                       |                                    |   |   |   |   |         |    | X  |                    |                      |   |  |

Push button on post 8, extends V7 RA subject to timer. At the end of the period, the V7 RA may or may not fire. The full clearance period. At the end of the clearance period, V7 to be present.

Push button on post 1, extends RA protection subject to timer.

Push button on post 3, extends RA protection subject to timer.

Push button on post 5, extends RA protection subject to timer.

Push button on post 7, extends RA protection subject to timer.

[illegible]

# SPECIAL SIGNAL GROUP DISPLAY

Sequence (Rate: VD 08-8)

| Signal Group | Table Type | Remarks                                            |
|--------------|------------|----------------------------------------------------|
| A/B          | 3          | (1) Pedestrians to be fitted with split final top  |
| B/C          | 41         | (2) Signal to be fitted with split final top       |
| A/B          | PED        | (3) Normal introduction concurrent with A/B Green  |
|              |            | (4) Pedestrians to be fitted with split final top  |
|              |            | (5) Pedestrians to be fitted with split final top  |
|              |            | (6) Pedestrians to be fitted with split final top  |
|              |            | (7) Pedestrians to be fitted with split final top  |
|              |            | (8) Pedestrians to be fitted with split final top  |
|              |            | (9) Pedestrians to be fitted with split final top  |
|              |            | (10) Pedestrians to be fitted with split final top |
|              |            | (11) Pedestrians to be fitted with split final top |
|              |            | (12) Pedestrians to be fitted with split final top |
|              |            | (13) Pedestrians to be fitted with split final top |
|              |            | (14) Pedestrians to be fitted with split final top |
|              |            | (15) Pedestrians to be fitted with split final top |
|              |            | (16) Pedestrians to be fitted with split final top |
|              |            | (17) Pedestrians to be fitted with split final top |
|              |            | (18) Pedestrians to be fitted with split final top |
|              |            | (19) Pedestrians to be fitted with split final top |
|              |            | (20) Pedestrians to be fitted with split final top |
|              |            | (21) Pedestrians to be fitted with split final top |
|              |            | (22) Pedestrians to be fitted with split final top |
|              |            | (23) Pedestrians to be fitted with split final top |
|              |            | (24) Pedestrians to be fitted with split final top |
|              |            | (25) Pedestrians to be fitted with split final top |
|              |            | (26) Pedestrians to be fitted with split final top |
|              |            | (27) Pedestrians to be fitted with split final top |
|              |            | (28) Pedestrians to be fitted with split final top |
|              |            | (29) Pedestrians to be fitted with split final top |
|              |            | (30) Pedestrians to be fitted with split final top |

| Signal Group | Table Type | Remarks                                                           |
|--------------|------------|-------------------------------------------------------------------|
| A/LT         | 30         | (1) Timed RA protection for A ped.                                |
|              |            | (2) Push button on post 5 extends RA protection subject to timer. |

| Signal Group | Table Type | Remarks                                            |
|--------------|------------|----------------------------------------------------|
| A/B          | 3          | (1) Pedestrians to be fitted with split final top  |
| B/C          | 41         | (2) Signal to be fitted with split final top       |
| A/B          | PED        | (3) Normal introduction concurrent with A/B Green  |
|              |            | (4) Pedestrians to be fitted with split final top  |
|              |            | (5) Pedestrians to be fitted with split final top  |
|              |            | (6) Pedestrians to be fitted with split final top  |
|              |            | (7) Pedestrians to be fitted with split final top  |
|              |            | (8) Pedestrians to be fitted with split final top  |
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|              |            | (11) Pedestrians to be fitted with split final top |
|              |            | (12) Pedestrians to be fitted with split final top |
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|              |            | (14) Pedestrians to be fitted with split final top |
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|              |            | (18) Pedestrians to be fitted with split final top |
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|              |            | (29) Pedestrians to be fitted with split final top |
|              |            | (30) Pedestrians to be fitted with split final top |



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## MOVEMENT DIAGRAMS

## NOTES

1. Special Pedestal Details--

Ped 3 is to be a Type 3 MA.

Peds 5 & 6 to be Type 2 and 3-5 long fitted with split final top

Ped 7 - to be Type 2 and 3-1 long fitted with split final top

Ped 8 - to be Type 2 and 3-2 long fitted with split final top

This site is Telecom linked.

3. The W and X LT red arrow are to be mounted as a 4 aspect display.

4. All push buttons are audio-tactile.

5. The W and X LT red arrow are to be mounted as a 4 aspect display.

6. All push buttons are audio-tactile.

7. The W and X LT red arrow are to be mounted as a 4 aspect display.

8. All push buttons are audio-tactile.

9. The W and X LT red arrow are to be mounted as a 4 aspect display.

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26. All push buttons are audio-tactile.

27. The W and X LT red arrow are to be mounted as a 4 aspect display.

28. All push buttons are audio-tactile.

29. The W and X LT red arrow are to be mounted as a 4 aspect display.

30. All push buttons are audio-tactile.

## DETECTOR SPECIFICATION CHART

| Detector | Specification   |
|----------|-----------------|
| A        | SG/PS A/LT A/EV |
| A-B1     | SG/PS A/LT A/EV |
| A-B2     | SG/PS A/LT A/EV |
| C        | SG/PS A/LT A/EV |
| A PED    | SG/PS A/LT A/EV |
| A-B PED  | SG/PS A/LT A/EV |
| C PED    | SG/PS A/LT A/EV |



## LOCALITY SKETCH

Scale 1:1000

T.C.S. MAP CO-ORDINATES 15.0

(400065), (425085)

## DESIGN

Scale 1:1000

T.C.S. MAP CO-ORDINATES 15.0

(400065), (425085)

FILE: 354-TS-240

LAYOUT DMR PLAN No 7000354M/1093 (Sht. 1)

| DEPT. MOTOR TRANSPORT, N.S.W.          | PLANS | REVISIONS | SCALE | DATE    | BY       | CHKD     | APPD     |
|----------------------------------------|-------|-----------|-------|---------|----------|----------|----------|
| TRAFFIC PLANNING AND MANAGEMENT BRANCH | 55005 | 1         | 1:200 | 10/3/76 | J. J. J. | J. J. J. | J. J. J. |
| MARSDEN & GEORGE STREETS               |       |           |       |         |          |          |          |
| PARRAMATTA                             |       |           |       |         |          |          |          |
| WESTERN DISTRICT                       |       |           |       |         |          |          |          |
| T.C.S. M/1093                          |       |           |       |         |          |          |          |

| SIGNAL GROUP | TABLE TYPE | REMARKS                                                                                                                                                                                                              |
|--------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A/B/E        | 3          | K<->B<->E overlap                                                                                                                                                                                                    |
| B/E (RT)     | 39         | Timed R.A. protection for 'A' pedestal, Z- Filter Option                                                                                                                                                             |
| B/E (LT)     | 78         | Timed R.A. protection for 'C' pedestals, extended by P.B. on Post 6, subject to timer.                                                                                                                               |
| C COND/A (U) | 87         | Timed R.A. protection for 'B' pedestal<br>Red signal held RED for 'C' walk. At end of the 'Walk', C L5 yellow arrow to flash for the full clearance period.<br>At the end of the clearance period, C L5 to be green. |
| C L5 (RT)    | -          | (c) Introduction concurrent with A/B/E overlap.<br>(ii) Walk/Clearance overlap permitted A<->B<->C<->E<br>(iii) Timer terminated except under masterlink.                                                            |
| A/B/E        | Pod        |                                                                                                                                                                                                                      |

## DETECTOR SPECIFICATION

[illegible]

1. This site is SDATS linked.
2. Special STOP sign (R1-4) placed on posts 4 and 8.
3. All push buttons are audio-tactile type.
4. Kerb ramps to be constructed in accordance with Model Drawing MO.A173.B01A adjacent posts 1, 2, 5, 6, 7 & 8.
5. The Justice Precinct Access has been derived from plans prepared by Robert Bird & Partners.
6. Contingent and associated ducts on the western kerb to be lowered to suit proposed new footpath levels.

| POSTS | TYPE | LENGTH | OFFSET | REMARKS  |
|-------|------|--------|--------|----------|
| 1     | 2    | 4.1    | 1.0    | New      |
| 2     | 55   | -      | 1.0    | New      |
| 3     | 2    | 4.1    | 0.9    | New ##   |
| 4     | 2    | 4.1    | 0.8    | New ##   |
| 5     | 2    | 4.1    | 1.0    | New ##   |
| 6     | 2    | 4.1    | 1.0    | Existing |
| 7     | 2    | 4.1    | 1.0    | New      |
| 8     | 2    | 4.1    | 1.0    | New      |

Post to be installed on existing post base

## MOVEMENTS



### D' Phase

C' Phase

**"B" and "E" Phase**  
**Z+ introduces E phase**

Phase

10-4-2006

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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type="checkbox"/> <b>RECEIVED</b><br>43. <input type="checkbox"/> <b>RECEIVED</b><br>44. <input type="checkbox"/> <b>RECEIVED</b><br>45. <input type="checkbox"/> <b>RECEIVED</b><br>46. <input type="checkbox"/> <b>RECEIVED</b><br>47. <input type="checkbox"/> <b>RECEIVED</b><br>48. <input type="checkbox"/> <b>RECEIVED</b><br>49. <input type="checkbox"/> <b>RECEIVED</b><br>50. <input type="checkbox"/> <b>RECEIVED</b><br>51. <input type="checkbox"/> <b>RECEIVED</b><br>52. <input type="checkbox"/> <b>RECEIVED</b><br>53. <input type="checkbox"/> <b>RECEIVED</b><br>54. <input type="checkbox"/> <b>RECEIVED</b><br>55. <input type="checkbox"/> <b>RECEIVED</b><br>56. <input type="checkbox"/> <b>RECEIVED</b><br>57. <input type="checkbox"/> <b>RECEIVED</b><br>58. <input type="checkbox"/> <b>RECEIVED</b><br>59. <input type="checkbox"/> <b>RECEIVED</b><br>60. <input type="checkbox"/> <b>RECEIVED</b><br>61. <input type="checkbox"/> <b>RECEIVED</b><br>62. <input type="checkbox"/> <b>RECEIVED</b><br>63. 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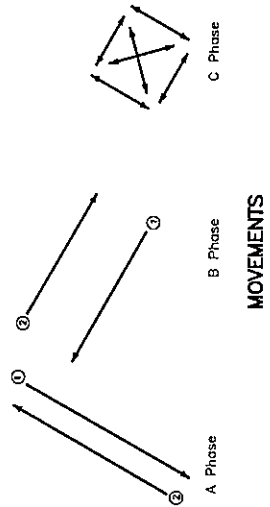
**Roads and Traffic Authority, N.S.W.**  
**PARRAMATTA CITY COUNCIL**  
**TRAFFIC SIGNALS AT MARSDEN STREET,**  
**PHILLIP STREET AND JUSTICE ACCESS**  
**PARRAMATTA**

|                                   |  |                                              |  |
|-----------------------------------|--|----------------------------------------------|--|
| EXISTING <input type="checkbox"/> |  | PROPOSED <input checked="" type="checkbox"/> |  |
| CADD FILE: WT002.dwg              |  | SCALE: 10                                    |  |
| SCALE: 3/4" = 1'-0"               |  | SHEET: 9                                     |  |
| 354 TS 292                        |  | 7000.354.W.1092                              |  |
| SUPPORTS<br>BUILT/POSS.           |  | REGN.                                        |  |

ATMOSPHERIC POLLUTION CONTROL BOARD

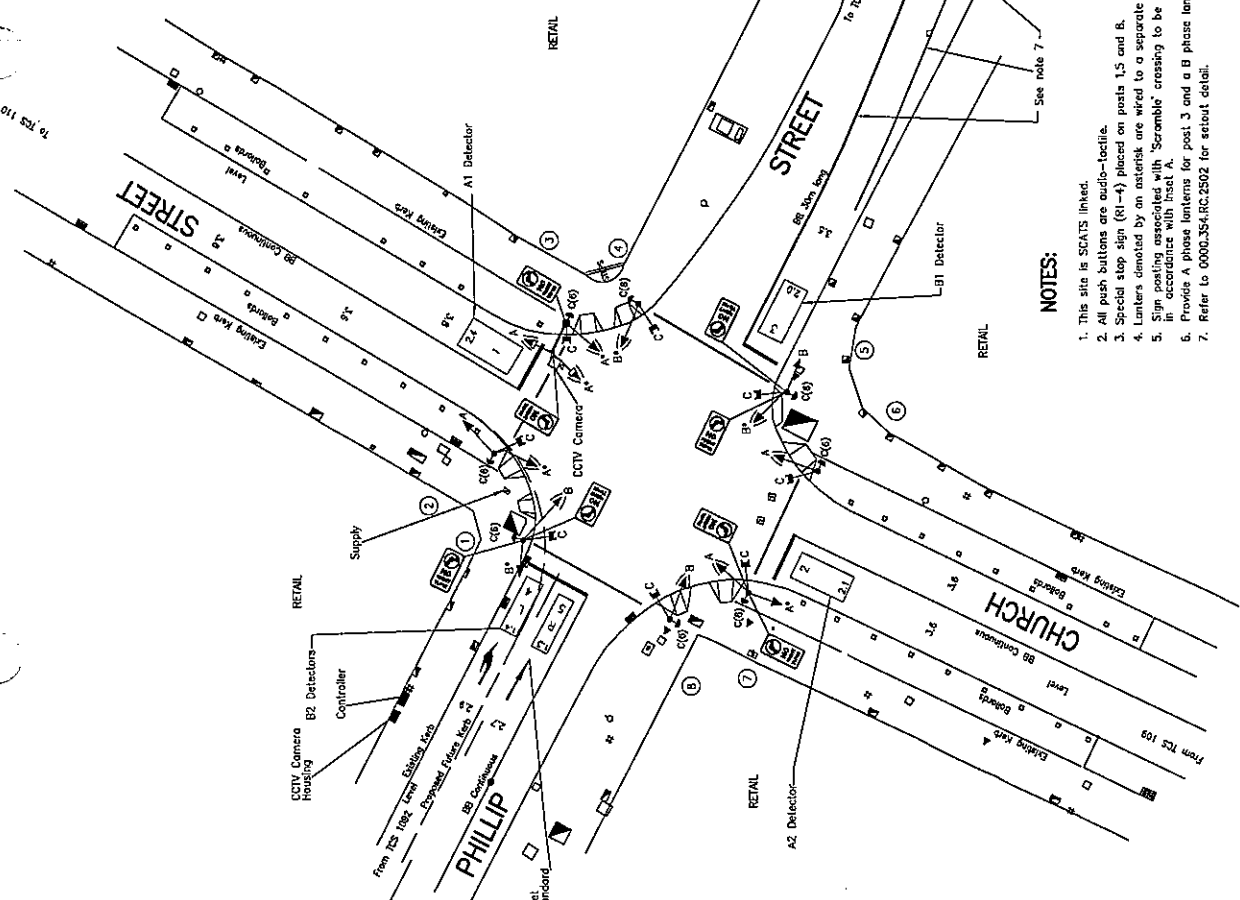
DATE IN SERVICE : 15/06/99  
1st RECONSTRUCTION : 29/06/01  
2nd RECONSTRUCTION : 19/02/98

7000.354.W.0185

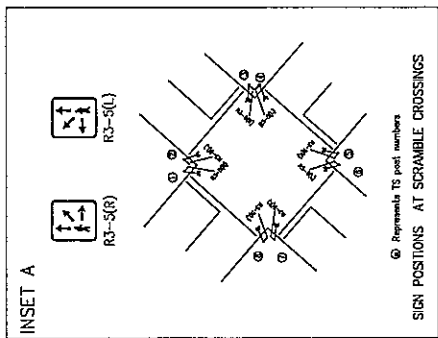


**POSTS**

| POST | TYPE | LENGTH | OFFSET | REMARKS |
|------|------|--------|--------|---------|
| 1    | 1    | 3.2    | EXIST  | EXIST   |
| 2    | 2    | 4.1    | EXIST  | EXIST   |
| 3    | 3    | 5.5    | EXIST  | EXIST   |
| 4    | 4    | 3.2    | EXIST  | EXIST   |
| 5    | 5    | 4.1    | EXIST  | EXIST   |
| 6    | 6    | 4.1    | EXIST  | EXIST   |
| 7    | 7    | 4.1    | EXIST  | EXIST   |
| 8    | 8    | 3.2    | EXIST  | EXIST   |



- NOTES:**
- This site is SCATS linked.
  - All push buttons are audio-tactile.
  - Special stop sign (R1-4) placed on posts 1,5 and 6.
  - Lanterns denoted by an asterisk are wired to a separate signal group.
  - Sign postings associated with 'Scramble' crossing to be in accordance with Inset A.
  - Provide A phase lanterns for post 3 and a B phase lantern for post 5.
  - Refer to 0000.354.RC.2502 for setout detail.



|                                                                                                                       |  |                                                                                                                                                                                                           |  |
|-----------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>APPROVED</b><br>TRANSPORT AND TRAFFIC<br>PLANNING ASSOCIATES<br>11/01/97<br>DATE                                   |  | <b>EXISTING</b> <input checked="" type="checkbox"/> <b>PROPOSED</b> <input type="checkbox"/><br>ROAD DRAWING FILE: W0185.11M.dgn<br>SCALE: 1:1200<br>FILE: 354TS250<br>RECD: 7000.354.W.0185<br>SHEET: 11 |  |
| <b>Roads and Traffic Authority, N.S.W.</b><br>CITY OF PARRAMATTA<br>CHURCH STREET AND<br>PHILLIP STREET<br>PARRAMATTA |  |                                                                                                                                                                                                           |  |
| TCS No 185<br>DESIGN LAYOUT                                                                                           |  | 11/01/97<br>DATE                                                                                                                                                                                          |  |

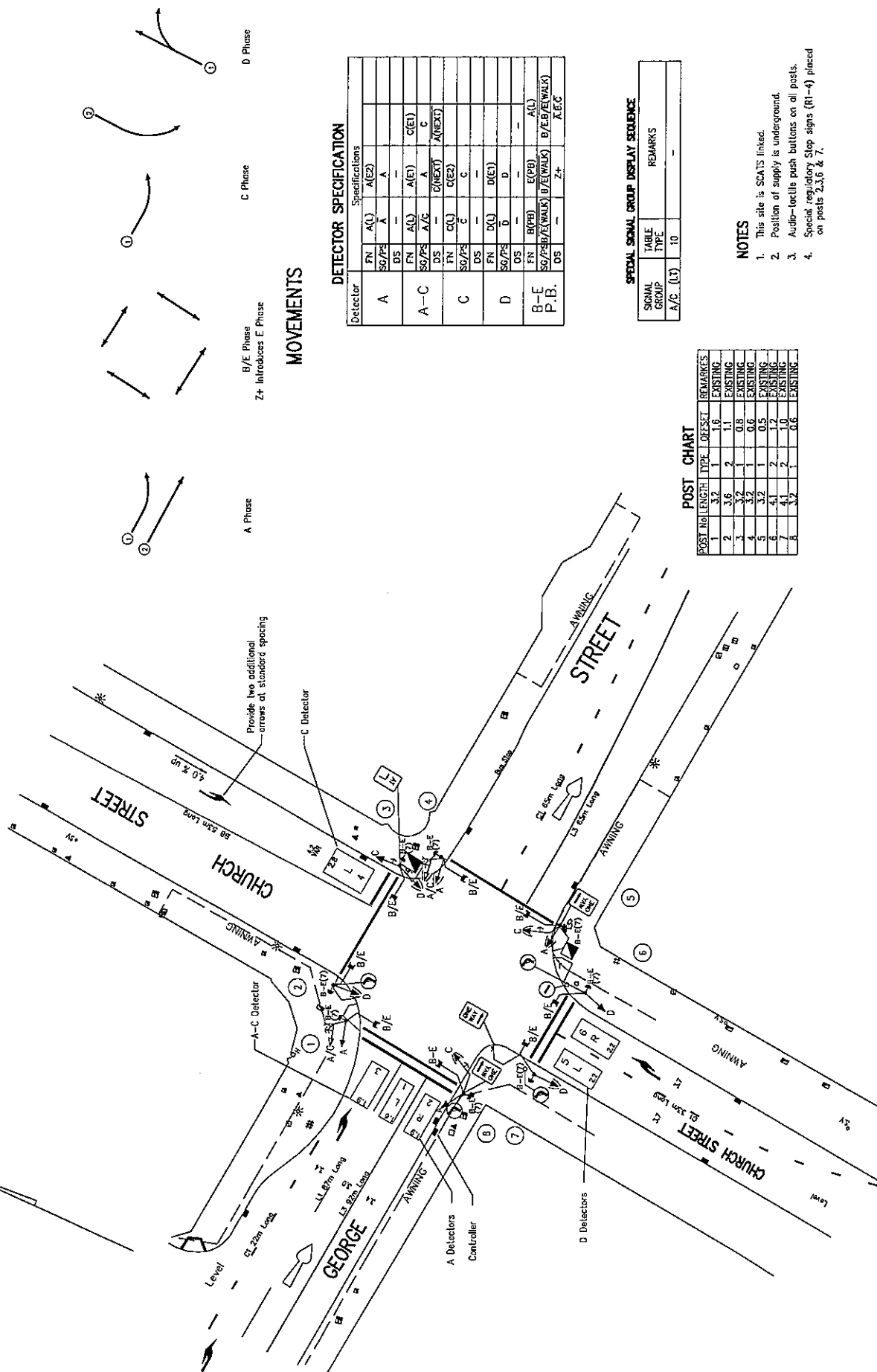
| REVISION | DATE     | DESCRIPTION |
|----------|----------|-------------|
| 1        | 22/06/98 | Issue       |
| 2        | 22/06/98 | Issue       |
| 3        | 22/06/98 | Issue       |
| 4        | 22/06/98 | Issue       |
| 5        | 22/06/98 | Issue       |
| 6        | 22/06/98 | Issue       |
| 7        | 22/06/98 | Issue       |
| 8        | 22/06/98 | Issue       |
| 9        | 22/06/98 | Issue       |
| 10       | 22/06/98 | Issue       |
| 11       | 22/06/98 | Issue       |
| 12       | 22/06/98 | Issue       |
| 13       | 22/06/98 | Issue       |
| 14       | 22/06/98 | Issue       |
| 15       | 22/06/98 | Issue       |
| 16       | 22/06/98 | Issue       |
| 17       | 22/06/98 | Issue       |
| 18       | 22/06/98 | Issue       |
| 19       | 22/06/98 | Issue       |
| 20       | 22/06/98 | Issue       |
| 21       | 22/06/98 | Issue       |
| 22       | 22/06/98 | Issue       |
| 23       | 22/06/98 | Issue       |
| 24       | 22/06/98 | Issue       |
| 25       | 22/06/98 | Issue       |
| 26       | 22/06/98 | Issue       |
| 27       | 22/06/98 | Issue       |
| 28       | 22/06/98 | Issue       |
| 29       | 22/06/98 | Issue       |
| 30       | 22/06/98 | Issue       |
| 31       | 22/06/98 | Issue       |
| 32       | 22/06/98 | Issue       |
| 33       | 22/06/98 | Issue       |
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| 79       | 22/06/98 | Issue       |
| 80       | 22/06/98 | Issue       |
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| 84       | 22/06/98 | Issue       |
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| 87       | 22/06/98 | Issue       |
| 88       | 22/06/98 | Issue       |
| 89       | 22/06/98 | Issue       |
| 90       | 22/06/98 | Issue       |
| 91       | 22/06/98 | Issue       |
| 92       | 22/06/98 | Issue       |
| 93       | 22/06/98 | Issue       |
| 94       | 22/06/98 | Issue       |
| 95       | 22/06/98 | Issue       |
| 96       | 22/06/98 | Issue       |
| 97       | 22/06/98 | Issue       |
| 98       | 22/06/98 | Issue       |
| 99       | 22/06/98 | Issue       |
| 100      | 22/06/98 | Issue       |



- 



**DRAWN BY CADD  
DO NOT AMEND MANUALLY**



## MOVEMENTS

## DETECTOR SPECIFICATION

| Detector    | Specifications |           |           |           |  |
|-------------|----------------|-----------|-----------|-----------|--|
|             | FN             | A(L)      | A(E2)     |           |  |
| A           | \$Q/PSE\$      | A         | A         |           |  |
|             | DS             |           | -         |           |  |
|             |                | A(E)      |           |           |  |
| A-C         | \$SO/PSE\$     | A/C       | A         | C(E)      |  |
|             |                | A/C       | A         | C         |  |
|             | DS             | -         | C(NEXT)   | A(NEXT)   |  |
| C           | FN             | Q(L)      | C(E2)     |           |  |
|             | \$SO/PSE\$     | C         | C         |           |  |
|             | DS             | -         |           |           |  |
| D           | FN             | D(L)      | D(E)      |           |  |
|             | \$SO/PSE\$     | D         | D         |           |  |
|             | DS             | -         |           |           |  |
| B-E<br>P.B. | FN             | B(P)      | E(PB)     | A(L)      |  |
|             | \$SO/PSE\$     | B/E(WALK) | B/E(WALK) | B/E(WALK) |  |
|             | DS             | -         | Z+        | A.E.C     |  |

### SPECIAL SIGNAL GROUP DISPLAY SEQUENCE

| SIGNAL GROUP | TABLE TYPE | REMARKS |
|--------------|------------|---------|
| A/C (LT)     | 10         | -       |

## NOTES

1. This site is SCATS linked.
2. Position of supply is underground.
3. Audio-tactile push buttons on all posts.
4. Special regulatory Stop signs (R1-4) placed on posts 2,3,6 & 7.

### POST CHART

| POST No | LENGTH | TYPE | OFFSET | REMARKS  |
|---------|--------|------|--------|----------|
| 1       | 3.2    | 1    | 1.6    | EXISTING |
| 2       | 3.6    | 2    | 1.1    | EXISTING |
| 3       | 3.2    | 1    | 0.8    | EXISTING |
| 4       | 3.2    | 1    | 0.6    | EXISTING |
| 5       | 3.2    | 1    | 0.5    | EXISTING |
| 6       | 4.1    | 2    | 1.2    | EXISTING |
| 7       | 4.1    | 2    | 1.0    | EXISTING |
| 8       | 3.2    | 1    | 0.6    | EXISTING |

## APPENDIX C

### TRAFFIC SURVEY RESULTS

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# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

Client : T.T.P.A.

Job No/Name : 3583 PARRAMATTA Phillip St Counts

Day/Date : Friday 6th May 2011

| All Vehicles | All Vehicles |    |   |     |            |    |   |     |           |    |   |     |             |     |     |     |
|--------------|--------------|----|---|-----|------------|----|---|-----|-----------|----|---|-----|-------------|-----|-----|-----|
|              | NORTH        |    |   |     | WEST       |    |   |     | SOUTH     |    |   |     | EAST        |     |     |     |
|              | Church St    |    |   |     | Phillip St |    |   |     | Church St |    |   |     | Phillip St  |     |     |     |
|              | L            | I  | R | TOT | L          | I  | R | TOT | L         | I  | R | TOT | L           | I   | R   | TOT |
| Time Per     |              |    |   |     |            |    |   |     | Time Per  |    |   |     | Time Per    |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 0720 - 0735 |     |     |     |
| 0700 - 0715  | 19           | 17 | 0 | 81  | 1          | 17 | 0 | 81  | 1         | 15 | 0 | 81  | 51          | 88  | 22  | 4   |
| 0740 - 0755  | 31           | 37 | 0 | 160 | 6          | 33 | 0 | 160 | 2         | 30 | 0 | 160 | 63          | 136 | 34  | 18  |
| 0820 - 0835  | 31           | 35 | 0 | 190 | 6          | 40 | 1 | 190 | 7         | 35 | 1 | 190 | 70          | 111 | 52  | 13  |
| Period End   | 81           | 89 | 0 | 431 | 13         | 90 | 1 | 431 | 10        | 80 | 1 | 431 | 184         | 335 | 108 | 45  |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 0840 - 0855 |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | Period End  |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 184         |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 335         |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 108         |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 45          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 76          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 18          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 47          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 113         |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 26          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 15          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 72          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 43          |     |     |     |
|              |              |    |   |     |            |    |   |     |           |    |   |     | 1082        |     |     |     |

| All Vehicles |     |     |            |    |    |           |    |     |            |    |    |     |      |
|--------------|-----|-----|------------|----|----|-----------|----|-----|------------|----|----|-----|------|
| NORTH        |     |     | WEST       |    |    | SOUTH     |    |     | EAST       |    |    |     |      |
| Church St    |     |     | Phillip St |    |    | Church St |    |     | Phillip St |    |    |     |      |
| L            | I   | R   | L          | I  | R  | L         | I  | R   | L          | I  | R  | TOT |      |
| Peak Time    | 81  | 89  | 0          | 13 | 90 | 1         | 10 | 80  | 1          | 12 | 54 | 0   | 431  |
| Samples      | 184 | 335 | 108        | 45 | 76 | 18        | 47 | 113 | 26         | 15 | 72 | 0   | 1039 |
|              |     |     |            |    |    |           |    |     |            |    |    |     |      |
| PEAK HOUR    | 81  | 89  | 0          | 13 | 90 | 1         | 10 | 80  | 1          | 12 | 54 | 0   | 431  |
|              |     |     |            |    |    |           |    |     |            |    |    |     |      |
| NORTH        |     |     | WEST       |    |    | SOUTH     |    |     | EAST       |    |    |     |      |
| Smith St     |     |     | Phillip St |    |    | Smith St  |    |     | Phillip St |    |    |     |      |
| L            | I   | R   | L          | I  | R  | L         | I  | R   | L          | I  | R  | TOT |      |
| Peak Time    | 184 | 335 | 108        | 45 | 76 | 18        | 47 | 113 | 26         | 15 | 72 | 0   | 1039 |
| Samples      | 184 | 335 | 108        | 45 | 76 | 18        | 47 | 113 | 26         | 15 | 72 | 0   | 1039 |
|              |     |     |            |    |    |           |    |     |            |    |    |     |      |
| PEAK HOUR    | 184 | 335 | 108        | 45 | 76 | 18        | 47 | 113 | 26         | 15 | 72 | 0   | 1039 |



# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

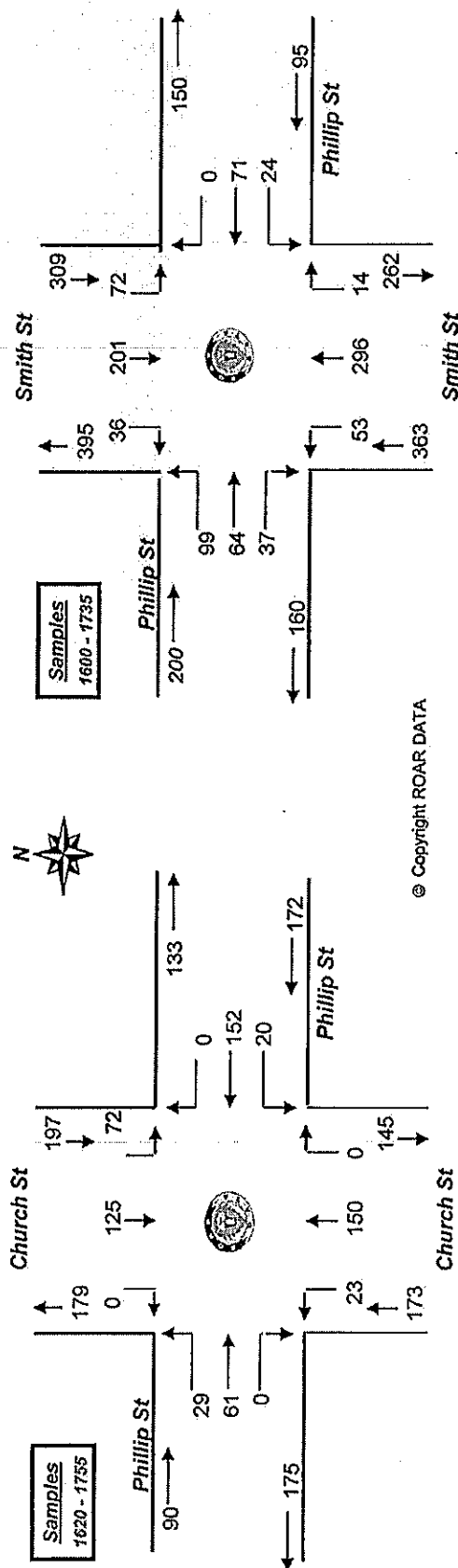
Client : T.T.P.A.

Job No/Name : 3583 PARRAMATTA Phillip St Counts

Day/Date : Friday 6th May 2011

| All Vehicles |    | NORTH |    | WEST |    | SOUTH |    | Church St |    | EAST |    | NORTH |      | WEST |   | SOUTH |   | Phillip St |   | EAST |     |
|--------------|----|-------|----|------|----|-------|----|-----------|----|------|----|-------|------|------|---|-------|---|------------|---|------|-----|
| Time Per     | L  | I     | R  | L    | I  | R     | L  | I         | R  | L    | I  | L     | I    | R    | L | I     | R | L          | I | R    | TOT |
| 1600 - 1615  | 22 | 69    | 10 | 29   | 20 | 10    | 22 | 92        | 2  | 6    | 21 | 42    | 345  |      |   |       |   |            |   |      |     |
| 1640 - 1655  | 21 | 72    | 13 | 27   | 21 | 11    | 14 | 108       | 1  | 8    | 23 | 40    | 359  |      |   |       |   |            |   |      |     |
| 1720 - 1735  | 29 | 60    | 13 | 43   | 23 | 16    | 17 | 96        | 11 | 10   | 27 | 65    | 410  |      |   |       |   |            |   |      |     |
| Period End   | 72 | 201   | 36 | 99   | 64 | 37    | 53 | 296       | 14 | 24   | 71 | 147   | 1114 |      |   |       |   |            |   |      |     |

| All Vehicles |    | NORTH |    | WEST |    | SOUTH |    | Church St |    | EAST |    | NORTH |      | WEST |   | SOUTH |   | Phillip St |   | EAST |     |
|--------------|----|-------|----|------|----|-------|----|-----------|----|------|----|-------|------|------|---|-------|---|------------|---|------|-----|
| Time Per     | L  | I     | R  | L    | I  | R     | L  | I         | R  | L    | I  | L     | I    | R    | L | I     | R | L          | I | R    | TOT |
| 1600 - 1615  | 22 | 69    | 10 | 29   | 20 | 10    | 22 | 92        | 2  | 6    | 21 | 42    | 345  |      |   |       |   |            |   |      |     |
| 1640 - 1655  | 21 | 72    | 13 | 27   | 21 | 11    | 14 | 108       | 1  | 8    | 23 | 40    | 359  |      |   |       |   |            |   |      |     |
| 1720 - 1735  | 29 | 60    | 13 | 43   | 23 | 16    | 17 | 96        | 11 | 10   | 27 | 65    | 410  |      |   |       |   |            |   |      |     |
| Period End   | 72 | 201   | 36 | 99   | 64 | 37    | 53 | 296       | 14 | 24   | 71 | 147   | 1114 |      |   |       |   |            |   |      |     |



# R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.9415 3971, Fax 9403 5338, Mob. 0418 239019

Client : T.T.P.A.

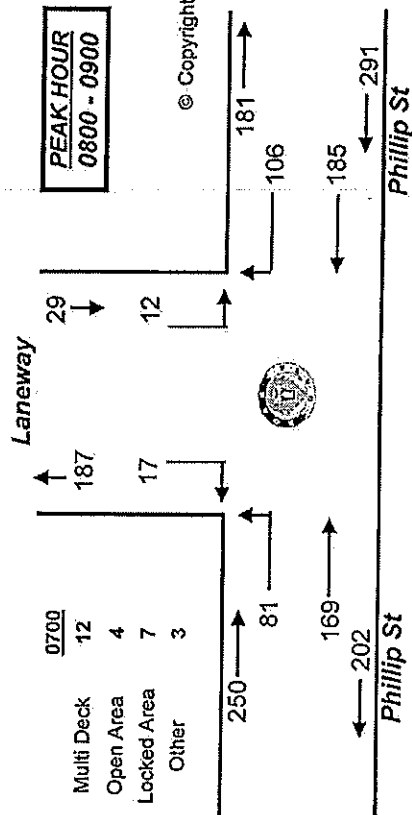
Job No/Name : 3583 PARRAMATTA Phillip St Counts

Day/Date : Friday 6th May 2011

All Vehicles

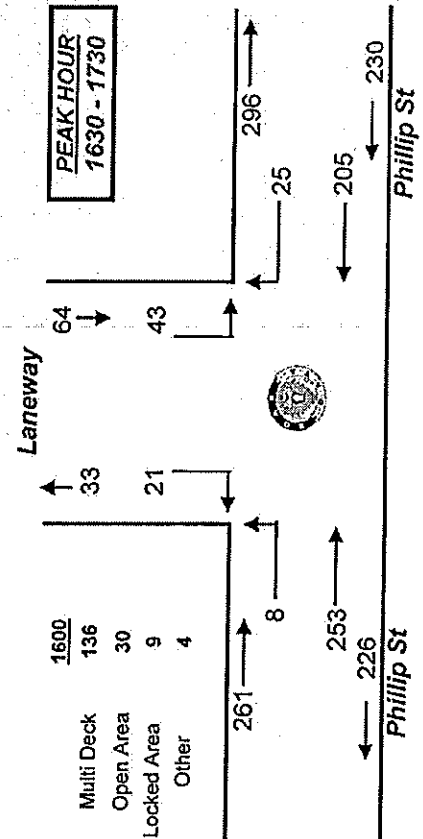
| Time Per    | WEST       |         | NORTH      |         | EAST       |         | TOTAL |
|-------------|------------|---------|------------|---------|------------|---------|-------|
|             | Phillip St | Laneway | Phillip St | Laneway | Phillip St | Laneway |       |
| 0700 - 0715 | 8          | 29      | 2          | 2       | 19         | 10      | 70    |
| 0715 - 0730 | 16         | 40      | 2          | 5       | 24         | 14      | 101   |
| 0730 - 0745 | 14         | 41      | 4          | 1       | 35         | 15      | 110   |
| 0745 - 0800 | 17         | 42      | 2          | 6       | 37         | 19      | 123   |
| 0800 - 0815 | 16         | 35      | 4          | 3       | 47         | 20      | 125   |
| 0815 - 0830 | 24         | 47      | 4          | 3       | 42         | 26      | 146   |
| 0830 - 0845 | 23         | 32      | 6          | 2       | 48         | 31      | 142   |
| 0845 - 0900 | 18         | 55      | 3          | 4       | 48         | 29      | 157   |
| Period End  | 136        | 321     | 27         | 26      | 300        | 164     | 974   |

| Peak Per    | WEST       |         | NORTH      |         | EAST       |         | TOTAL |
|-------------|------------|---------|------------|---------|------------|---------|-------|
|             | Phillip St | Laneway | Phillip St | Laneway | Phillip St | Laneway |       |
| 0700 - 0800 | 55         | 152     | 10         | 14      | 115        | 58      | 404   |
| 0715 - 0815 | 63         | 158     | 12         | 15      | 143        | 68      | 459   |
| 0730 - 0830 | 71         | 165     | 14         | 13      | 161        | 80      | 504   |
| 0745 - 0845 | 80         | 156     | 16         | 14      | 174        | 96      | 536   |
| 0800 - 0900 | 81         | 169     | 17         | 12      | 185        | 106     | 570   |
| PEAK HR     | 81         | 169     | 17         | 12      | 185        | 106     | 570   |



| Time Per    | WEST       |         | NORTH      |         | EAST       |         | TOTAL |
|-------------|------------|---------|------------|---------|------------|---------|-------|
|             | Phillip St | Laneway | Phillip St | Laneway | Phillip St | Laneway |       |
| 1600 - 1615 | 56         | 3       | 7          | 8       | 48         | 3       | 125   |
| 1615 - 1630 | 5          | 61      | 3          | 10      | 49         | 2       | 130   |
| 1630 - 1645 | 4          | 55      | 4          | 15      | 57         | 7       | 142   |
| 1645 - 1700 | 4          | 39      | 9          | 8       | 39         | 5       | 104   |
| 1700 - 1715 | 0          | 81      | 5          | 14      | 59         | 7       | 166   |
| 1715 - 1730 | 0          | 78      | 3          | 6       | 50         | 6       | 143   |
| 1730 - 1745 | 8          | 63      | 4          | 7       | 31         | 5       | 118   |
| 1745 - 1800 | 11         | 49      | 5          | 8       | 39         | 4       | 116   |
| Period End  | 88         | 429     | 40         | 76      | 372        | 39      | 1044  |

| Peak Per    | WEST       |         | NORTH      |         | EAST       |         | TOTAL |
|-------------|------------|---------|------------|---------|------------|---------|-------|
|             | Phillip St | Laneway | Phillip St | Laneway | Phillip St | Laneway |       |
| 1600 - 1700 | 69         | 158     | 23         | 41      | 193        | 17      | 501   |
| 1615 - 1715 | 13         | 236     | 21         | 47      | 204        | 21      | 542   |
| 1630 - 1730 | 8          | 253     | 21         | 43      | 205        | 25      | 555   |
| 1645 - 1745 | 12         | 261     | 21         | 35      | 179        | 23      | 531   |
| 1700 - 1800 | 19         | 271     | 17         | 35      | 179        | 22      | 543   |
| PEAK HOUR   | 8          | 253     | 21         | 43      | 205        | 25      | 555   |



**R.O.A.R. DATA**

Reliable, Original &amp; Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

Client : T.T.P.A.  
 Job No/Name : 3671 PARRAMATTA George St Samples  
 Day/Date : Monday 18th July 2011

| All Vehicles       |   |   |                   |   |   |                    |   |   |                   |   |   |
|--------------------|---|---|-------------------|---|---|--------------------|---|---|-------------------|---|---|
| NORTH<br>Church St |   |   | WEST<br>George St |   |   | SOUTH<br>Church St |   |   | EAST<br>George St |   |   |
| L                  | I | R | L                 | I | R | L                  | I | R | L                 | I | R |
| Time Per           |   |   |                   |   |   |                    |   |   |                   |   |   |
| 0700 - 0715        |   |   | 19                |   |   | 5                  |   |   | 81                |   |   |
| 0740 - 0755        |   |   | 28                |   |   | 22                 |   |   | 178               |   |   |
| 0820 - 0835        |   |   | 40                |   |   | 14                 |   |   | 164               |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   | 0                  |   |   | 0                 |   |   |
| Period End         |   |   | 87                |   |   |                    |   |   |                   |   |   |

Client : T.I.P.A.

Job No/Name : 3671 PARRAMATTA George St Samples

Day/Date : Monday 18th July 2011

**R.O.A.R. DATA**

Reliable, Original &amp; Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019



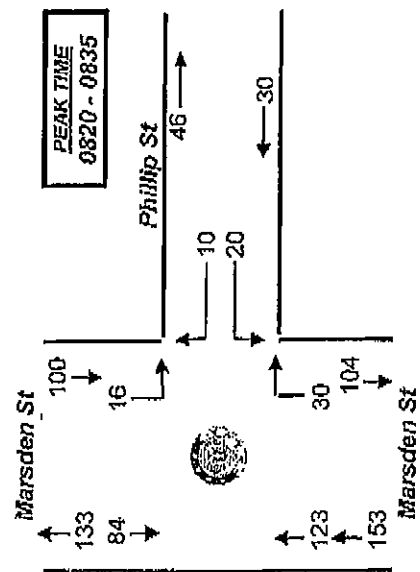
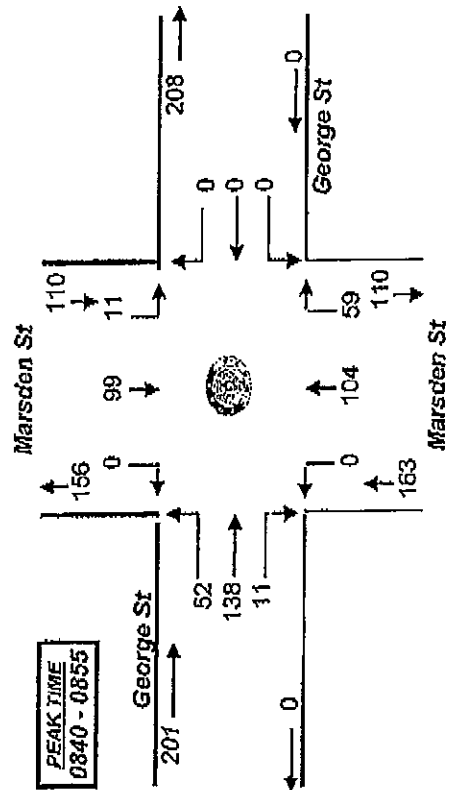
All Vehicles

| Time Per    | NORTH      |            | EAST       |            | SOUTH      |       |
|-------------|------------|------------|------------|------------|------------|-------|
|             | Marsden St | Phillip St | Phillip St | Marsden St | Marsden St | TOTAL |
| 0700 - 0715 | 35         | 9          | 3          | 7          | 20         | 60    |
| 0740 - 0755 | 62         | 12         | 7          | 10         | 49         | 110   |
| 0820 - 0835 | 84         | 16         | 10         | 20         | 30         | 123   |
| Period End  | 181        | 37         | 20         | 37         | 99         | 293   |
|             |            |            |            |            |            | 667   |

| Time Per    | NORTH      |            | EAST       |            | SOUTH      |       |
|-------------|------------|------------|------------|------------|------------|-------|
|             | Marsden St | Phillip St | Phillip St | Marsden St | Marsden St | TOTAL |
| 0820 - 0835 | 181        | 37         | 20         | 37         | 99         | 293   |
| Period End  | 84         | 16         | 10         | 20         | 30         | 123   |
|             |            |            |            |            |            | 283   |

| Time Per    | NORTH      |           | WEST      |            | SOUTH      |           | EAST      |      |
|-------------|------------|-----------|-----------|------------|------------|-----------|-----------|------|
|             | Marsden St | George St | George St | Marsden St | Marsden St | George St | George St | TOT  |
| 0720 - 0735 | 4          | 60        | 22        | 77         | 5          | 90        | 49        | 307  |
| 0800 - 0815 | 3          | 68        | 50        | 128        | 7          | 142       | 66        | 465  |
| 0840 - 0855 | 11         | 99        | 52        | 138        | 11         | 104       | 59        | 474  |
| Period End  | 18         | 227       | 124       | 344        | 23         | 336       | 174       | 1246 |

| Time Per    | NORTH      |           | WEST      |            | SOUTH      |           | EAST      |      |
|-------------|------------|-----------|-----------|------------|------------|-----------|-----------|------|
|             | Marsden St | George St | George St | Marsden St | Marsden St | George St | George St | TOT  |
| 0840 - 0855 | 18         | 227       | 124       | 344        | 23         | 336       | 174       | 1248 |
| Period End  | 11         | 99        | 52        | 138        | 11         | 104       | 59        | 474  |



Client : I.T.P.A.

Job No/Name : 3671 PARRAMATTA George St Samples

Day/Date : Monday 18th July 2011

**R.O.A.R. DATA**

Reliable, Original &amp; Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

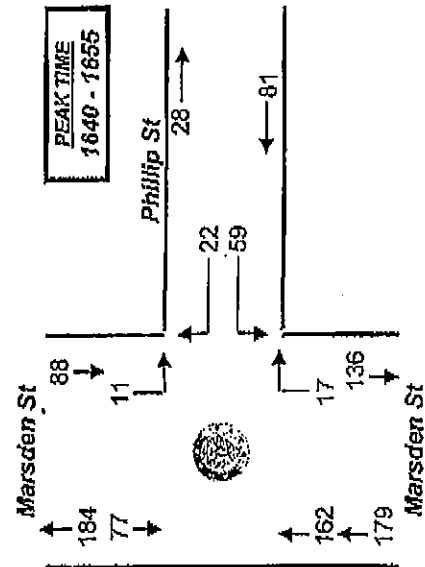


All Vehicles

| Time Per    | NORTH      |            | EAST       |            | SOUTH      |            | TOTAL |
|-------------|------------|------------|------------|------------|------------|------------|-------|
|             | Marsden St | Phillip St | Marsden St | Phillip St | Marsden St | Phillip St |       |
| 1600 - 1615 | 81         | 17         | 20         | 53         | 19         | 158        | 348   |
| 1640 - 1655 | 77         | 11         | 22         | 58         | 17         | 162        | 348   |
| 1720 - 1735 | 50         | 14         | 23         | 47         | 12         | 173        | 319   |
| Period End  | 208        | 42         | 65         | 159        | 48         | 493        | 1015  |

| Time Per    | NORTH      |            | EAST       |            | SOUTH      |            | TOTAL |
|-------------|------------|------------|------------|------------|------------|------------|-------|
|             | Marsden St | Phillip St | Marsden St | Phillip St | Marsden St | Phillip St |       |
| 1640 - 1655 | 208        | 42         | 65         | 159        | 48         | 493        | 1015  |
| Period End  | 208        | 42         | 65         | 159        | 48         | 493        | 1015  |

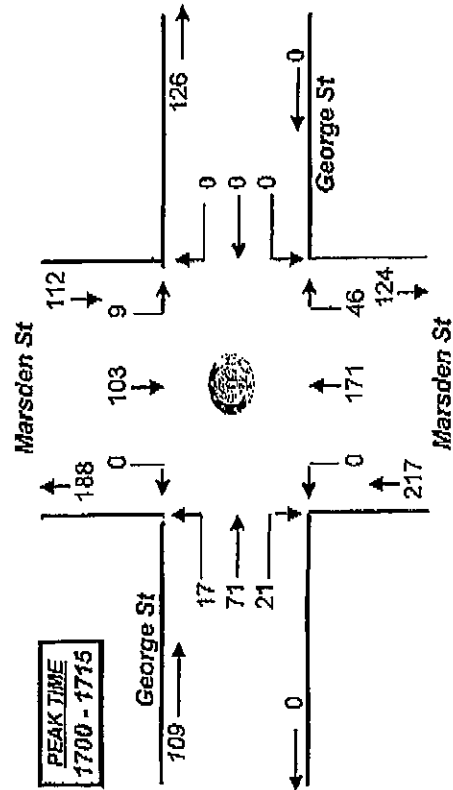
|           |    |    |    |    |    |     |     |
|-----------|----|----|----|----|----|-----|-----|
| PEAK TIME | 77 | 11 | 22 | 59 | 17 | 162 | 348 |
|-----------|----|----|----|----|----|-----|-----|



| Time Per    | NORTH      |           | WEST       |           | SOUTH      |           | EAST       |           | TOTAL |
|-------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|-------|
|             | Marsden St | George St | Marsden St | George St | Marsden St | George St | Marsden St | George St |       |
| 1620 - 1635 | 8          | 122       | 21         | 58        | 14         | 155       | 54         |           | 432   |
| 1700 - 1715 | 9          | 103       | 17         | 71        | 21         | 171       | 46         |           | 438   |
| 1740 - 1755 | 5          | 110       | 27         | 56        | 9          | 154       | 41         |           | 402   |
| Period End  | 22         | 335       | 65         | 185       | 44         | 480       | 141        | 0         | 1272  |

| Time Per    | NORTH      |           | WEST       |           | SOUTH      |           | EAST       |           | TOTAL |
|-------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|-------|
|             | Marsden St | George St | Marsden St | George St | Marsden St | George St | Marsden St | George St |       |
| 1700 - 1715 | 22         | 335       | 65         | 185       | 44         | 480       | 141        | 0         | 1272  |
| Period End  | 22         | 335       | 65         | 185       | 44         | 480       | 141        | 0         | 1272  |

|           |   |     |    |    |    |     |    |  |     |
|-----------|---|-----|----|----|----|-----|----|--|-----|
| PEAK TIME | 9 | 103 | 17 | 71 | 21 | 171 | 46 |  | 438 |
|-----------|---|-----|----|----|----|-----|----|--|-----|



**R.O.A.R. DATA**

Reliable, Original &amp; Authentic Results

Ph.9415-3971, Fax 9403-5338, Mob.0418-239019

Client : T.I.P.A.

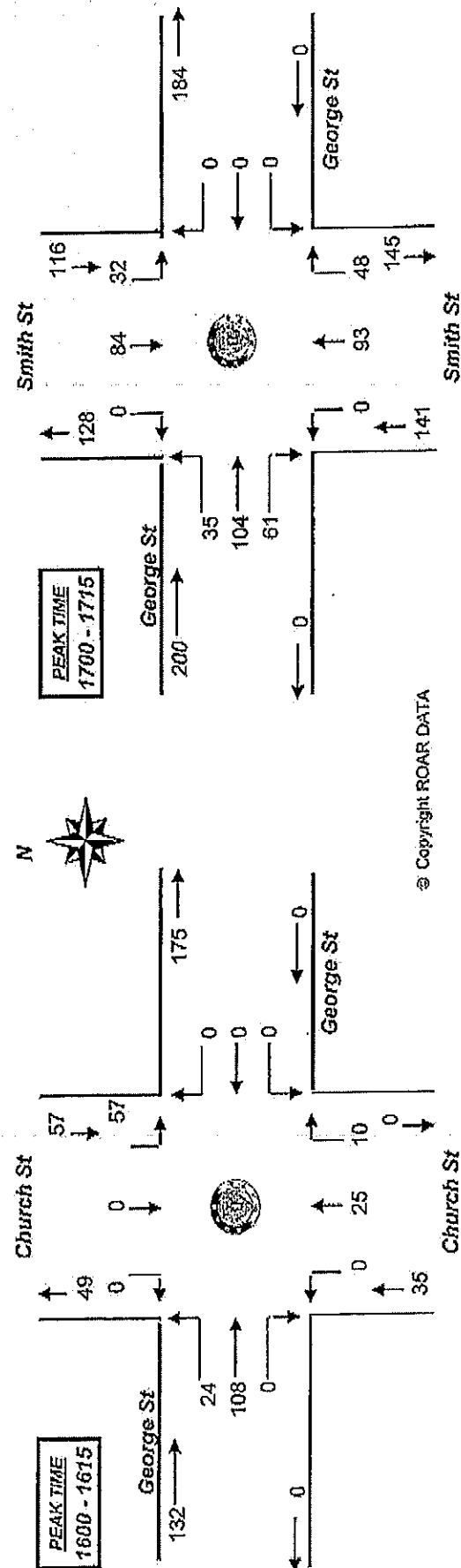
Job No/Name : 3671 PARRAMATTA George St Samples

Day/Date : Monday 18th July 2011



| All Vehicles | NORTH       |     |   |     | WEST      |     |   |     | SOUTH       |    |     |     | EAST      |     |     |     |     |     |     |   |      |
|--------------|-------------|-----|---|-----|-----------|-----|---|-----|-------------|----|-----|-----|-----------|-----|-----|-----|-----|-----|-----|---|------|
|              | Church St   |     |   |     | George St |     |   |     | Church St   |    |     |     | George St |     |     |     |     |     |     |   |      |
|              | L           | T   | R | TOT | L         | T   | R | TOT | L           | T  | R   | TOT | L         | T   | R   | TOT |     |     |     |   |      |
|              | Time Per    |     |   |     | Time Per  |     |   |     | Time Per    |    |     |     | Time Per  |     |     |     |     |     |     |   |      |
|              | 1600 - 1615 | 57  |   |     | 24        | 108 |   | 224 | 1620 - 1635 | 17 | 69  |     | 86        | 32  | 88  | 49  | 169 | 67  | 44  |   | 366  |
|              | 1640 - 1655 | 39  |   |     | 28        | 108 |   | 206 | 1700 - 1715 | 32 | 84  |     | 116       | 35  | 104 | 61  | 200 | 93  | 48  |   | 457  |
|              | 1720 - 1735 | 47  |   |     | 13        | 82  |   | 167 | 1740 - 1755 | 15 | 73  |     | 88        | 38  | 107 | 60  | 195 | 69  | 35  |   | 397  |
|              | Period End  | 143 | 0 | 0   | 65        | 298 | 0 | 597 | Period End  | 64 | 226 | 0   | 290       | 105 | 299 | 170 | 574 | 229 | 127 | 0 | 1220 |

| All Vehicles |     |   |     |             |     |   |     |             |    |    |     |           |   |   |     |
|--------------|-----|---|-----|-------------|-----|---|-----|-------------|----|----|-----|-----------|---|---|-----|
| NORTH        |     |   |     | WEST        |     |   |     | SOUTH       |    |    |     | EAST      |   |   |     |
| Church St    |     |   |     | George St   |     |   |     | Church St   |    |    |     | George St |   |   |     |
| L            | T   | R | TOT | L           | T   | R | TOT | L           | T  | R  | TOT | L         | T | R | TOT |
| TOTALS       | 143 | 0 | 0   | 65          | 298 | 0 | 65  | 0           | 66 | 25 | 0   | 0         | 0 | 0 | 0   |
| 1600 - 1615  | 143 | 0 | 0   | 65          | 298 | 0 | 65  | 0           | 66 | 25 | 0   | 0         | 0 | 0 | 0   |
| TOTALS       |     |   |     | 1700 - 1715 |     |   |     | 597         |    |    |     |           |   |   |     |
| TOTALS       |     |   |     | 1700 - 1715 |     |   |     | 597         |    |    |     |           |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
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| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     | 1700 - 1715 |    |    |     | 597       |   |   |     |
| 1700 - 1715  |     |   |     | 597         |     |   |     |             |    |    |     |           |   |   |     |



## APPENDIX D

### RMS CIRCULAR

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# Technical Direction

For traffic, safety and transport practitioners

OPERATIONAL POLICY – GUIDELINES – ADVICE



Transport  
Roads & Maritime  
Services

Published May 2013

Supersedes/Amends None

TDT 2013/

04

## Guide to Traffic Generating Developments

### Updated traffic surveys

#### Introduction

The *Guide to Traffic Generating Developments* was first released in 1991. It was revised in 2001 and is in the process of being further revised. It provides guidance on a number of matters related to the traffic impacts of land use developments, most notably on matters relating to traffic generation and parking. Its audience extends beyond that of traffic authorities (RMS and Councils) and is widely used throughout Australia.

Over the past few years a number of surveys have been undertaken to update trip generation and parking information as part of the *Guide*. This Technical Direction provides a summary of the updated information. The information herein should be used to supplement the current *Guide* and replace those sections of the *Guide* indicated. The information is provided in two parts; (i) a very brief summary below and (ii) more extended summaries in Appendices A-H. More detailed information may be obtained by referral to the RMS Library where reports on each land use may be found.

#### Summaries of land use traffic generation

##### High density residential flat dwellings

Ten surveys were conducted in 2012, eight within Sydney, and one each in the Hunter and Illawarra. All developments were (i) close to public transport, (ii) greater than six storeys and (iii) almost exclusively residential in nature. The weekday trip generation rates were as follows:

| Weekday Rates                                | Sydney Average | Sydney Range | Regional Average | Regional Range |
|----------------------------------------------|----------------|--------------|------------------|----------------|
| AM peak (1 hour) vehicle trips per unit      | 0.19           | 0.07-0.32    | 0.53             | 0.39-0.67      |
| AM peak (1 hour) vehicle trips per car space | 0.15           | 0.09-0.29    | 0.35             | 0.32-0.37      |
| AM peak (1 hour) vehicle trips per bedroom   | 0.09           | 0.03-0.13    | 0.21             | 0.20-0.22      |
| PM peak (1 hour) vehicle trips per unit      | 0.15           | 0.06-0.41    | 0.32             | 0.22-0.42      |
| PM peak (1 hour) vehicle trips per car space | 0.12           | 0.05-0.28    | 0.26             | 0.11-0.40      |
| PM peak (1 hour) vehicle trips per bedroom   | 0.07           | 0.03-0.17    | 0.15             | 0.07-0.22      |
| Daily vehicle trips per unit                 | 1.52           | 0.77-3.14    | 4.58             | 4.37-4.78      |
| Daily vehicle trips per car space            | 1.34           | 0.56-2.16    | 3.22             | 2.26-4.18      |
| Daily vehicle trips per bedroom              | 0.72           | 0.35-1.29    | 1.93             | 1.59-2.26      |

##### Distribution List:

Director, Infrastructure Development; RMS Development Managers; RMS Land use/Planning Officers; Councils; Land & Environment Court Officers and Consultants.

For further enquiries

[www.rms.nsw.gov.au](http://www.rms.nsw.gov.au) | E [technical.directions.publication@rms.nsw.gov.au](mailto:technical.directions.publication@rms.nsw.gov.au)

# APPENDIX E

## SIDRA RESULTS

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# MOVEMENT SUMMARY

Site: Phillip and Marsden AM  
Existing

Phillip and Marsden AM

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Marsden Street south     |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 2                               | T    | 518                  | 2.0     | 0.459            | 7.7                  | LOS A            | 10.4                                 | 73.7                   | 0.61         | 0.54                           | 40.7                  |
| 3                               | R    | 115                  | 2.0     | 0.234            | 17.7                 | LOS B            | 3.1                                  | 22.3                   | 0.75         | 0.75                           | 34.2                  |
| Approach                        |      | 633                  | 2.0     | 0.459            | 9.5                  | LOS A            | 10.4                                 | 73.7                   | 0.64         | 0.58                           | 39.4                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 4                               | L    | 82                   | 2.0     | 0.109            | 16.9                 | LOS B            | 2.2                                  | 15.8                   | 0.64         | 0.71                           | 30.7                  |
| 6                               | R    | 40                   | 2.0     | 0.191            | 33.0                 | LOS C            | 1.7                                  | 12.2                   | 0.94         | 0.73                           | 24.8                  |
| Approach                        |      | 122                  | 2.0     | 0.191            | 22.2                 | LOS B            | 2.2                                  | 15.8                   | 0.74         | 0.71                           | 28.5                  |
| North: Marsden Street north     |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 7                               | L    | 64                   | 2.0     | 0.215            | 18.7                 | LOS B            | 1.9                                  | 13.3                   | 0.67         | 0.71                           | 33.6                  |
| 8                               | T    | 351                  | 2.0     | 0.481            | 15.3                 | LOS B            | 9.6                                  | 68.5                   | 0.80         | 0.69                           | 35.0                  |
| Approach                        |      | 415                  | 2.0     | 0.481            | 15.9                 | LOS B            | 9.6                                  | 68.5                   | 0.78         | 0.69                           | 34.8                  |
| All Vehicles                    |      | 1169                 | 2.0     | 0.481            | 13.1                 | LOS A            | 10.4                                 | 73.7                   | 0.70         | 0.63                           | 36.2                  |

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P3                                 | Across E approach | 63                | 16.1              | LOS B            | 0.1                                  | 0.1        | 0.73         | 0.73                        |
| P5                                 | Across N approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 189               | 21.6              |                  |                                      |            | 0.84         | 0.84                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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SIDRA  
INTERSECTION

# MOVEMENT SUMMARY

Site: Phillip and Marsden PM  
Existing

Phillip and Marsden AM

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |                                |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|--------------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Back of Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Marsden Street south     |      |                      |         |                  |                      |                  |                                      |                                |              |                                |                       |
| 2                               | T    | 640                  | 2.0     | 0.567            | 8.4                  | LOS A            | 13.3                                 | 94.5                           | 0.67         | 0.60                           | 39.9                  |
| 3                               | R    | 71                   | 2.0     | 0.138            | 16.5                 | LOS B            | 1.9                                  | 13.2                           | 0.70         | 0.73                           | 34.9                  |
| Approach                        |      | 711                  | 2.0     | 0.567            | 9.2                  | LOS A            | 13.3                                 | 94.5                           | 0.67         | 0.61                           | 39.4                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |                                |              |                                |                       |
| 4                               | L    | 224                  | 2.0     | 0.299            | 18.1                 | LOS B            | 5.9                                  | 42.3                           | 0.71         | 0.76                           | 30.2                  |
| 6                               | R    | 43                   | 2.0     | 0.207            | 33.0                 | LOS C            | 1.8                                  | 13.2                           | 0.94         | 0.73                           | 24.7                  |
| Approach                        |      | 267                  | 2.0     | 0.299            | 20.5                 | LOS B            | 5.9                                  | 42.3                           | 0.74         | 0.75                           | 29.1                  |
| North: Marsden Street north     |      |                      |         |                  |                      |                  |                                      |                                |              |                                |                       |
| 7                               | L    | 39                   | 2.0     | 0.130            | 18.5                 | LOS B            | 1.1                                  | 8.1                            | 0.66         | 0.69                           | 33.8                  |
| 8                               | T    | 324                  | 2.0     | 0.445            | 15.1                 | LOS B            | 8.9                                  | 63.3                           | 0.79         | 0.67                           | 35.2                  |
| Approach                        |      | 363                  | 2.0     | 0.445            | 15.4                 | LOS B            | 8.9                                  | 63.3                           | 0.78         | 0.67                           | 35.0                  |
| All Vehicles                    |      | 1341                 | 2.0     | 0.567            | 13.2                 | LOS A            | 13.3                                 | 94.5                           | 0.71         | 0.66                           | 35.7                  |

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).  
Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).  
Approach LOS values are based on average delay for all vehicle movements.

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |                          |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|--------------------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Back of Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1                      | 0.90         | 0.90                        |
| P3                                 | Across E approach | 63                | 16.1              | LOS B            | 0.1                                  | 0.1                      | 0.73         | 0.73                        |
| P5                                 | Across N approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1                      | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 189               | 21.6              |                  |                                      |                          | 0.84         | 0.84                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).  
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: Phillip and Church AM Existing

Phillip and Church

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |      |                  |                      |                  |                                      |                        |              |                                |                       |
|---------------------------------|------|----------------------|------|------------------|----------------------|------------------|--------------------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV % | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |      |                  |                      |                  |                                      |                        |              |                                |                       |
| 1                               | L    | 19                   | 2.0  | 0.344            | 25.8                 | LOS B            | 5.4                                  | 38.1                   | 0.88         | 0.79                           | 26.8                  |
| 2                               | T    | 137                  | 2.0  | 0.344            | 21.3                 | LOS B            | 5.4                                  | 38.1                   | 0.88         | 0.71                           | 27.0                  |
| Approach                        |      | 156                  | 2.0  | 0.344            | 21.9                 | LOS B            | 5.4                                  | 38.1                   | 0.88         | 0.72                           | 27.0                  |
| East: Phillip Street east       |      |                      |      |                  |                      |                  |                                      |                        |              |                                |                       |
| 4                               | L    | 21                   | 2.0  | 0.451            | 32.0                 | LOS C            | 4.6                                  | 33.0                   | 0.96         | 0.78                           | 24.8                  |
| 5                               | T    | 95                   | 2.0  | 0.451            | 27.5                 | LOS B            | 4.6                                  | 33.0                   | 0.96         | 0.76                           | 24.8                  |
| Approach                        |      | 116                  | 2.0  | 0.451            | 28.3                 | LOS B            | 4.6                                  | 33.0                   | 0.96         | 0.76                           | 24.8                  |
| North: Church Street north      |      |                      |      |                  |                      |                  |                                      |                        |              |                                |                       |
| 7                               | L    | 131                  | 2.0  | 0.643            | 28.2                 | LOS B            | 9.6                                  | 68.2                   | 0.95         | 0.85                           | 25.8                  |
| 8                               | T    | 152                  | 2.0  | 0.643            | 23.7                 | LOS B            | 9.6                                  | 68.2                   | 0.95         | 0.82                           | 25.9                  |
| Approach                        |      | 282                  | 2.0  | 0.643            | 25.8                 | LOS B            | 9.6                                  | 68.2                   | 0.95         | 0.84                           | 25.9                  |
| West: Phillip Street west       |      |                      |      |                  |                      |                  |                                      |                        |              |                                |                       |
| 10                              | L    | 25                   | 2.0  | 0.106            | 30.4                 | LOS C            | 1.1                                  | 7.6                    | 0.91         | 0.70                           | 24.8                  |
| 11                              | T    | 154                  | 2.0  | 0.618            | 28.7                 | LOS C            | 6.1                                  | 43.7                   | 0.99         | 0.83                           | 24.5                  |
| Approach                        |      | 179                  | 2.0  | 0.618            | 29.0                 | LOS C            | 6.1                                  | 43.7                   | 0.98         | 0.81                           | 24.6                  |
| All Vehicles                    |      | 733                  | 2.0  | 0.643            | 26.1                 | LOS B            | 9.6                                  | 68.2                   | 0.95         | 0.79                           | 25.6                  |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |                  |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1              | 0.90         | 0.90                        |
| P3                                 | Across E approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1              | 0.90         | 0.90                        |
| P5                                 | Across N approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1              | 0.90         | 0.90                        |
| P7                                 | Across W approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1              | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 212               | 24.3              |                  |                                      |                  | 0.90         | 0.90                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: Phillip and Church PM Existing

Phillip and Church

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 1                               | L    | 36                   | 2.0     | 0.716            | 31.2                 | LOS C            | 10.0                                 | 71.2          | 0.99         | 0.92                           | 25.1                  |
| 2                               | T    | 242                  | 2.0     | 0.715            | 26.7                 | LOS B            | 10.0                                 | 71.2          | 0.99         | 0.91                           | 25.1                  |
| Approach                        |      | 278                  | 2.0     | 0.716            | 27.3                 | LOS B            | 10.0                                 | 71.2          | 0.99         | 0.91                           | 25.1                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 4                               | L    | 17                   | 2.0     | 0.697            | 32.5                 | LOS C            | 8.5                                  | 60.5          | 0.99         | 0.90                           | 24.7                  |
| 5                               | T    | 208                  | 2.0     | 0.697            | 28.0                 | LOS B            | 8.5                                  | 60.5          | 0.99         | 0.90                           | 24.7                  |
| Approach                        |      | 225                  | 2.0     | 0.698            | 28.3                 | LOS B            | 8.5                                  | 60.5          | 0.99         | 0.90                           | 24.7                  |
| North: Church Street north      |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 109                  | 2.0     | 0.709            | 31.1                 | LOS C            | 9.7                                  | 68.9          | 0.99         | 0.91                           | 24.9                  |
| 8                               | T    | 158                  | 2.0     | 0.709            | 26.6                 | LOS B            | 9.7                                  | 68.9          | 0.99         | 0.90                           | 24.9                  |
| Approach                        |      | 267                  | 2.0     | 0.709            | 28.5                 | LOS B            | 9.7                                  | 68.9          | 0.99         | 0.91                           | 24.9                  |
| West: Phillip Street west       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 46                   | 2.0     | 0.155            | 28.6                 | LOS C            | 1.8                                  | 13.1          | 0.89         | 0.72                           | 25.4                  |
| 11                              | T    | 78                   | 2.0     | 0.251            | 24.5                 | LOS B            | 3.0                                  | 21.6          | 0.91         | 0.70                           | 25.9                  |
| Approach                        |      | 124                  | 2.0     | 0.251            | 26.0                 | LOS B            | 3.0                                  | 21.6          | 0.90         | 0.71                           | 25.7                  |
| All Vehicles                    |      | 895                  | 2.0     | 0.716            | 27.7                 | LOS B            | 10.0                                 | 71.2          | 0.98         | 0.88                           | 25.0                  |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P3                                 | Across E approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P5                                 | Across N approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P7                                 | Across W approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 212               | 24.3              |                  |                                      |            | 0.90         | 0.90                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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SIDRA  
INTERSECTION

# MOVEMENT SUMMARY

Site: Phillip and Smith AM Existing

Phillip, Smith and Wilde

Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

| 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 | Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Smith Street             |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 1                               | L    | 78                | 2.0  | 0.329         | 37.2              | LOS C            | 5.7                            | 40.8             | 0.81         | 0.78                        | 25.9               |
| 2                               | T    | 192               | 2.0  | 0.329         | 31.4              | LOS C            | 6.6                            | 46.8             | 0.81         | 0.65                        | 27.4               |
| 3                               | R    | 42                | 2.0  | 0.146         | 22.5              | LOS B            | 1.4                            | 10.2             | 0.72         | 0.70                        | 31.7               |
| Approach                        |      | 312               | 2.0  | 0.329         | 31.6              | LOS C            | 6.6                            | 46.8             | 0.80         | 0.69                        | 27.5               |
| East: Phillip Street east       |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 4                               | L    | 25                | 2.0  | 0.314         | 39.1              | LOS C            | 6.0                            | 42.7             | 0.90         | 0.78                        | 23.4               |
| 5                               | T    | 120               | 2.0  | 0.314         | 34.4              | LOS C            | 6.0                            | 42.7             | 0.90         | 0.72                        | 22.8               |
| 6                               | R    | 67                | 2.0  | 0.314         | 41.6              | LOS C            | 5.2                            | 37.0             | 0.92         | 0.77                        | 22.6               |
| Approach                        |      | 213               | 2.0  | 0.314         | 37.3              | LOS C            | 6.0                            | 42.7             | 0.91         | 0.74                        | 22.8               |
| North: Wilde Avenue             |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 7                               | L    | 280               | 2.0  | 0.598         | 20.0              | LOS B            | 11.1                           | 79.1             | 0.83         | 0.85                        | 33.3               |
| 8                               | T    | 520               | 2.0  | 0.598         | 23.2              | LOS B            | 16.0                           | 114.1            | 0.86         | 0.75                        | 30.6               |
| 9                               | R    | 181               | 2.0  | 0.467         | 21.0              | LOS B            | 6.2                            | 44.1             | 0.75         | 0.75                        | 32.4               |
| Approach                        |      | 981               | 2.0  | 0.598         | 21.9              | LOS B            | 16.0                           | 114.1            | 0.83         | 0.78                        | 31.6               |
| West: Phillip Street west       |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 10                              | L    | 65                | 2.0  | 0.533         | 28.2              | LOS B            | 4.2                            | 30.2             | 0.98         | 0.78                        | 26.5               |
| 11                              | T    | 109               | 2.0  | 0.532         | 34.8              | LOS C            | 5.4                            | 38.4             | 0.99         | 0.77                        | 22.6               |
| 12                              | R    | 29                | 2.0  | 0.532         | 49.9              | LOS D            | 5.4                            | 38.4             | 1.00         | 0.77                        | 20.9               |
| Approach                        |      | 204               | 2.0  | 0.532         | 34.9              | LOS C            | 5.4                            | 38.4             | 0.99         | 0.77                        | 23.4               |
| All Vehicles                    |      | 1709              | 2.0  | 0.598         | 27.1              | LOS B            | 16.0                           | 114.1            | 0.85         | 0.76                        | 28.3               |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |                  |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3              | 0.93         | 0.93                        |
| P3                                 | Across E approach | 105               | 25.7              | LOS C            | 0.2                                  | 0.2              | 0.76         | 0.76                        |
| P5                                 | Across N approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3              | 0.93         | 0.93                        |
| P7                                 | Across W approach | 105               | 34.7              | LOS D            | 0.2                                  | 0.2              | 0.88         | 0.88                        |
| All Pedestrians                    |                   | 420               | 34.7              |                  |                                      |                  | 0.88         | 0.88                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: Phillip and Smith PM Existing

Phillip, Smith and Wilde

Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

| 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 | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Smith Street             |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 1                               | L    | 65                | 2.0  | 0.757         | 46.8              | LOS D            | 12.1                           | 86.0       | 0.98         | 0.90                        | 23.5               |
| 2                               | T    | 429               | 2.0  | 0.756         | 40.9              | LOS C            | 12.7                           | 90.7       | 0.98         | 0.88                        | 24.1               |
| 3                               | R    | 25                | 2.0  | 0.095         | 24.3              | LOS B            | 1.0                            | 6.8        | 0.71         | 0.67                        | 30.8               |
| Approach                        |      | 520               | 2.0  | 0.756         | 40.8              | LOS C            | 12.7                           | 90.7       | 0.97         | 0.88                        | 24.3               |
| East: Phillip Street east       |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 4                               | L    | 38                | 2.0  | 0.292         | 33.9              | LOS C            | 6.6                            | 47.3       | 0.84         | 0.79                        | 24.8               |
| 5                               | T    | 105               | 2.0  | 0.293         | 28.6              | LOS C            | 6.6                            | 47.3       | 0.84         | 0.68                        | 24.5               |
| 6                               | R    | 326               | 2.0  | 0.806         | 46.0              | LOS D            | 16.3                           | 116.3      | 1.00         | 0.95                        | 21.5               |
| Approach                        |      | 469               | 2.0  | 0.806         | 41.1              | LOS C            | 16.3                           | 116.3      | 0.95         | 0.88                        | 22.3               |
| North: Wilde Avenue             |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 105               | 2.0  | 0.342         | 20.1              | LOS B            | 5.8                            | 41.0       | 0.80         | 0.80                        | 33.5               |
| 8                               | T    | 278               | 2.0  | 0.342         | 23.1              | LOS B            | 8.5                            | 60.3       | 0.82         | 0.67                        | 30.7               |
| 9                               | R    | 55                | 2.0  | 0.152         | 23.9              | LOS B            | 2.2                            | 15.3       | 0.81         | 0.72                        | 30.9               |
| Approach                        |      | 438               | 2.0  | 0.342         | 22.5              | LOS B            | 8.5                            | 60.3       | 0.81         | 0.71                        | 31.4               |
| West: Phillip Street west       |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 147               | 2.0  | 0.730         | 28.8              | LOS C            | 6.2                            | 44.4       | 1.00         | 0.87                        | 26.2               |
| 11                              | T    | 93                | 2.0  | 0.729         | 36.6              | LOS C            | 6.6                            | 46.8       | 1.00         | 0.88                        | 22.0               |
| 12                              | R    | 57                | 2.0  | 0.729         | 53.6              | LOS D            | 6.6                            | 46.8       | 1.00         | 0.89                        | 20.1               |
| Approach                        |      | 297               | 2.0  | 0.729         | 36.0              | LOS C            | 6.6                            | 46.8       | 1.00         | 0.88                        | 23.5               |
| All Vehicles                    |      | 1724              | 2.0  | 0.806         | 35.4              | LOS C            | 16.3                           | 116.3      | 0.93         | 0.84                        | 25.0               |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 33.8              | LOS D            | 0.2                                  | 0.2        | 0.87         | 0.87                        |
| P3                                 | Across E approach | 105               | 29.6              | LOS C            | 0.2                                  | 0.2        | 0.81         | 0.81                        |
| P5                                 | Across N approach | 105               | 33.8              | LOS D            | 0.2                                  | 0.2        | 0.87         | 0.87                        |
| P7                                 | Across W approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3        | 0.93         | 0.93                        |
| All Pedestrians                    |                   | 420               | 34.1              |                  |                                      |            | 0.87         | 0.87                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: George and Marsden AM  
Existing

George and Marsden Streets  
Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| 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 | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Marsden Street south     |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 2                               | T    | 422               | 2.0  | 0.397         | 5.7               | LOS A            | 6.2                            | 44.2       | 0.40         | 0.35                        | 42.8               |
| 3                               | R    | 222               | 2.0  | 0.520         | 22.8              | LOS B            | 6.3                            | 44.6       | 0.82         | 0.81                        | 32.2               |
| Approach                        |      | 644               | 2.0  | 0.520         | 11.6              | LOS A            | 6.3                            | 44.6       | 0.55         | 0.51                        | 38.5               |
| North: Marsden Street north     |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 47                | 2.0  | 0.092         | 20.0              | LOS B            | 1.2                            | 8.7        | 0.58         | 0.70                        | 33.8               |
| 8                               | T    | 395               | 2.0  | 0.586         | 16.6              | LOS B            | 10.4                           | 73.9       | 0.78         | 0.67                        | 34.3               |
| Approach                        |      | 442               | 2.0  | 0.586         | 16.9              | LOS B            | 10.4                           | 73.9       | 0.76         | 0.67                        | 34.2               |
| West: George Street west        |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 201               | 2.0  | 0.550         | 28.6              | LOS C            | 7.0                            | 49.9       | 0.92         | 0.81                        | 29.6               |
| 11                              | T    | 581               | 2.0  | 0.440         | 21.1              | LOS B            | 7.0                            | 49.8       | 0.89         | 0.73                        | 31.6               |
| 12                              | R    | 39                | 2.0  | 0.440         | 27.9              | LOS B            | 6.7                            | 47.5       | 0.89         | 0.83                        | 31.0               |
| Approach                        |      | 821               | 2.0  | 0.550         | 23.3              | LOS B            | 7.0                            | 49.9       | 0.90         | 0.75                        | 31.1               |
| All Vehicles                    |      | 1907              | 2.0  | 0.586         | 17.9              | LOS B            | 10.4                           | 73.9       | 0.75         | 0.65                        | 34.0               |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 22.5              | LOS C            | 0.2                                  | 0.2        | 0.87         | 0.87                        |
| P3                                 | Across E approach | 105               | 20.0              | LOS C            | 0.1                                  | 0.1        | 0.82         | 0.82                        |
| P5                                 | Across N approach | 105               | 22.5              | LOS C            | 0.2                                  | 0.2        | 0.87         | 0.87                        |
| P7                                 | Across W approach | 105               | 11.4              | LOS B            | 0.1                                  | 0.1        | 0.62         | 0.62                        |
| All Pedestrians                    |                   | 420               | 19.1              |                  |                                      |            | 0.79         | 0.79                        |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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SIDRA  
INTERSECTION

# MOVEMENT SUMMARY

Site: George and Marsden PM  
Existing

George and Marsden Streets

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Marsden Street south     |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 2                               | T    | 719                  | 2.0     | 0.637            | 5.5                  | LOS A            | 11.0                                 | 78.4          | 0.47         | 0.43                           | 42.8                  |
| 3                               | R    | 191                  | 2.0     | 0.402            | 20.6                 | LOS B            | 5.0                                  | 35.5          | 0.73         | 0.79                           | 33.4                  |
| Approach                        |      | 909                  | 2.0     | 0.637            | 8.7                  | LOS A            | 11.0                                 | 78.4          | 0.53         | 0.50                           | 40.4                  |
| North: Marsden Street north     |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 37                   | 2.0     | 0.072            | 19.9                 | LOS B            | 0.9                                  | 6.7           | 0.57         | 0.69                           | 33.8                  |
| 8                               | T    | 422                  | 2.0     | 0.627            | 16.9                 | LOS B            | 11.2                                 | 79.8          | 0.80         | 0.69                           | 34.1                  |
| Approach                        |      | 459                  | 2.0     | 0.627            | 17.1                 | LOS B            | 11.2                                 | 79.8          | 0.79         | 0.69                           | 34.1                  |
| West: George Street west        |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 71                   | 2.0     | 0.302            | 28.7                 | LOS C            | 3.8                                  | 27.1          | 0.88         | 0.78                           | 29.9                  |
| 11                              | T    | 299                  | 2.0     | 0.302            | 22.0                 | LOS B            | 4.5                                  | 31.8          | 0.88         | 0.70                           | 31.1                  |
| 12                              | R    | 84                   | 2.0     | 0.302            | 29.0                 | LOS C            | 3.7                                  | 26.1          | 0.88         | 0.78                           | 29.6                  |
| Approach                        |      | 454                  | 2.0     | 0.302            | 24.3                 | LOS B            | 4.5                                  | 31.8          | 0.88         | 0.73                           | 30.7                  |
| All Vehicles                    |      | 1822                 | 2.0     | 0.637            | 14.7                 | LOS B            | 11.2                                 | 79.8          | 0.68         | 0.61                           | 35.9                  |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 24.3                 | LOS C            | 0.2                                        | 0.2           | 0.90         | 0.90                           |
| P3                                 | Across E approach | 105                  | 20.0                 | LOS C            | 0.1                                        | 0.1           | 0.82         | 0.82                           |
| P5                                 | Across N approach | 105                  | 24.3                 | LOS C            | 0.2                                        | 0.2           | 0.90         | 0.90                           |
| P7                                 | Across W approach | 105                  | 10.2                 | LOS B            | 0.1                                        | 0.1           | 0.58         | 0.58                           |
| All Pedestrians                    |                   | 420                  | 19.7                 |                  |                                            |               | 0.80         | 0.80                           |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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INTERSECTION

# MOVEMENT SUMMARY

Site: George and Church AM  
Existing

George and Church Streets  
Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                   |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|---------|-------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Sat'n<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |         |                   |                      |                  |                                      |               |              |                                |                       |
| 2                               | T    | 67                   | 2.0     | 0.400             | 35.1                 | LOS C            | 3.4                                  | 24.1          | 0.98         | 0.74                           | 22.7                  |
| 3                               | R    | 37                   | 2.0     | 0.230             | 40.7                 | LOS C            | 1.9                                  | 13.6          | 0.97         | 0.72                           | 22.6                  |
| Approach                        |      | 104                  | 2.0     | 0.400             | 37.1                 | LOS C            | 3.4                                  | 24.1          | 0.98         | 0.74                           | 22.7                  |
| North: Church Street north      |      |                      |         |                   |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 118                  | 2.0     | 0.751             | 43.9                 | LOS D            | 6.0                                  | 42.4          | 1.00         | 0.92                           | 21.9                  |
| Approach                        |      | 118                  | 2.0     | 0.751             | 43.9                 | LOS D            | 6.0                                  | 42.4          | 1.00         | 0.92                           | 21.9                  |
| West: George Street west        |      |                      |         |                   |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 87                   | 2.0     | 0.166             | 17.3                 | LOS B            | 2.1                                  | 14.7          | 0.69         | 0.71                           | 34.5                  |
| 11                              | T    | 643                  | 2.0     | 0.840             | 34.5                 | LOS C            | 13.5                                 | 95.8          | 1.00         | 0.99                           | 26.2                  |
| Approach                        |      | 731                  | 2.0     | 0.840             | 32.5                 | LOS C            | 13.5                                 | 95.8          | 0.96         | 0.95                           | 27.0                  |
| All Vehicles                    |      | 953                  | 2.0     | 0.840             | 34.4                 | LOS C            | 13.5                                 | 95.8          | 0.97         | 0.93                           | 25.7                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).  
Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).  
Approach LOS values are based on average delay for all vehicle movements.

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P3                                 | Across E approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P5                                 | Across N approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P7                                 | Across W approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| All Pedestrians                    |                   | 420               | 29.3              |                  |                                      |            | 0.91         | 0.91                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).  
Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: George and Church PM  
Existing

George and Church Streets

Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                     |                         |                     |                                      |                                |                 |                                   |                          |
|---------------------------------|------|----------------------|---------|---------------------|-------------------------|---------------------|--------------------------------------|--------------------------------|-----------------|-----------------------------------|--------------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg.<br>Satn<br>v/c | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Back of Queue<br>Distance<br>m | Prop.<br>Queued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: Church Street south      |      |                      |         |                     |                         |                     |                                      |                                |                 |                                   |                          |
| 2                               | T    | 106                  | 2.0     | 0.631               | 36.6                    | LOS C               | 5.3                                  | 37.4                           | 1.00            | 0.83                              | 22.3                     |
| 3                               | R    | 39                   | 2.0     | 0.243               | 40.8                    | LOS C               | 2.0                                  | 14.3                           | 0.97            | 0.73                              | 22.6                     |
| Approach                        |      | 145                  | 2.0     | 0.631               | 37.7                    | LOS C               | 5.3                                  | 37.4                           | 0.99            | 0.80                              | 22.4                     |
| North: Church Street north      |      |                      |         |                     |                         |                     |                                      |                                |                 |                                   |                          |
| 7                               | L    | 214                  | 2.0     | 0.817               | 42.8                    | LOS D               | 9.9                                  | 70.2                           | 1.00            | 1.00                              | 22.2                     |
| Approach                        |      | 214                  | 2.0     | 0.817               | 42.8                    | LOS D               | 9.9                                  | 70.2                           | 1.00            | 1.00                              | 22.2                     |
| West: George Street west        |      |                      |         |                     |                         |                     |                                      |                                |                 |                                   |                          |
| 10                              | L    | 96                   | 2.0     | 0.182               | 17.1                    | LOS B               | 2.2                                  | 15.6                           | 0.70            | 0.72                              | 34.6                     |
| 11                              | T    | 435                  | 2.0     | 0.795               | 35.5                    | LOS C               | 9.7                                  | 68.8                           | 1.00            | 0.93                              | 25.9                     |
| Approach                        |      | 531                  | 2.0     | 0.795               | 32.2                    | LOS C               | 9.7                                  | 68.8                           | 0.95            | 0.89                              | 27.1                     |
| All Vehicles                    |      | 889                  | 2.0     | 0.817               | 35.6                    | LOS C               | 9.9                                  | 70.2                           | 0.97            | 0.90                              | 24.9                     |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                         |                     |                                            |                                |                 |                                   |
|------------------------------------|-------------------|----------------------|-------------------------|---------------------|--------------------------------------------|--------------------------------|-----------------|-----------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average<br>Delay<br>sec | Level of<br>Service | Average Back of Queue<br>Pedestrian<br>ped | Back of Queue<br>Distance<br>m | Prop.<br>Queued | Effective<br>Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 29.3                    | LOS C               | 0.2                                        | 0.2                            | 0.91            | 0.91                              |
| P3                                 | Across E approach | 105                  | 29.3                    | LOS C               | 0.2                                        | 0.2                            | 0.91            | 0.91                              |
| P5                                 | Across N approach | 105                  | 29.3                    | LOS C               | 0.2                                        | 0.2                            | 0.91            | 0.91                              |
| P7                                 | Across W approach | 105                  | 29.3                    | LOS C               | 0.2                                        | 0.2                            | 0.91            | 0.91                              |
| All Pedestrians                    |                   | 420                  | 29.3                    |                     |                                            |                                | 0.91            | 0.91                              |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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INTERSECTION

# MOVEMENT SUMMARY

Site: George and Smith AM Existing

George and Smith Streets

Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Smith Street south       |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 2                               | T    | 139                  | 2.0     | 0.153            | 18.8                 | LOS B            | 3.7                                  | 26.3                   | 0.57         | 0.45                           | 33.4                  |
| 3                               | R    | 177                  | 2.0     | 0.769            | 49.1                 | LOS D            | 9.4                                  | 66.8                   | 1.00         | 0.97                           | 22.9                  |
| Approach                        |      | 316                  | 2.0     | 0.770            | 35.8                 | LOS C            | 9.4                                  | 66.8                   | 0.81         | 0.74                           | 26.6                  |
| North: Smith Street north       |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 7                               | L    | 205                  | 2.0     | 0.748            | 43.2                 | LOS D            | 15.0                                 | 106.5                  | 0.95         | 0.88                           | 24.8                  |
| 8                               | T    | 449                  | 2.0     | 0.748            | 36.7                 | LOS C            | 15.1                                 | 107.4                  | 0.95         | 0.86                           | 25.4                  |
| Approach                        |      | 655                  | 2.0     | 0.748            | 38.8                 | LOS C            | 15.1                                 | 107.4                  | 0.95         | 0.86                           | 25.2                  |
| West: George Street west        |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 10                              | L    | 82                   | 2.0     | 0.268            | 42.6                 | LOS D            | 4.5                                  | 32.1                   | 0.91         | 0.76                           | 24.7                  |
| 11                              | T    | 455                  | 2.0     | 0.746            | 41.8                 | LOS C            | 12.2                                 | 86.9                   | 1.00         | 0.91                           | 23.9                  |
| 12                              | R    | 244                  | 2.0     | 0.746            | 48.5                 | LOS D            | 12.2                                 | 86.7                   | 1.00         | 0.89                           | 23.1                  |
| Approach                        |      | 781                  | 2.0     | 0.746            | 44.0                 | LOS D            | 12.2                                 | 86.9                   | 0.99         | 0.89                           | 23.7                  |
| All Vehicles                    |      | 1752                 | 2.0     | 0.770            | 40.6                 | LOS C            | 15.1                                 | 107.4                  | 0.94         | 0.85                           | 24.7                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3        | 0.93         | 0.93                        |
| P3                                 | Across E approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3        | 0.93         | 0.93                        |
| P5                                 | Across N approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3        | 0.93         | 0.93                        |
| P7                                 | Across W approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3        | 0.93         | 0.93                        |
| All Pedestrians                    |                   | 420               | 39.2              |                  |                                      |            | 0.93         | 0.93                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Smith PM Existing

George and Smith Streets

Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

| 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 | Queue Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Smith Street south       |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 2                               | T    | 391               | 2.0  | 0.487         | 22.1              | LOS B            | 10.2                           | 72.6             | 0.73         | 0.61                        | 31.5               |
| 3                               | R    | 202               | 2.0  | 0.758         | 43.7              | LOS D            | 9.3                            | 66.1             | 0.99         | 0.98                        | 24.4               |
| Approach                        |      | 593               | 2.0  | 0.758         | 29.5              | LOS C            | 10.2                           | 72.6             | 0.82         | 0.74                        | 28.6               |
| North: Smith Street north       |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 7                               | L    | 118               | 2.0  | 0.731         | 43.5              | LOS D            | 10.4                           | 73.9             | 0.98         | 0.88                        | 24.8               |
| 8                               | T    | 328               | 2.0  | 0.731         | 37.1              | LOS C            | 10.4                           | 74.2             | 0.98         | 0.87                        | 25.2               |
| Approach                        |      | 446               | 2.0  | 0.731         | 38.8              | LOS C            | 10.4                           | 74.2             | 0.98         | 0.87                        | 25.1               |
| West: George Street west        |      |                   |      |               |                   |                  |                                |                  |              |                             |                    |
| 10                              | L    | 146               | 2.0  | 0.530         | 41.8              | LOS C            | 7.1                            | 50.8             | 0.97         | 0.80                        | 24.9               |
| 11                              | T    | 433               | 2.0  | 0.778         | 39.8              | LOS C            | 10.9                           | 77.4             | 1.00         | 0.94                        | 24.5               |
| 12                              | R    | 224               | 2.0  | 0.778         | 46.5              | LOS D            | 10.9                           | 77.3             | 1.00         | 0.92                        | 23.6               |
| Approach                        |      | 803               | 2.0  | 0.778         | 42.0              | LOS C            | 10.9                           | 77.4             | 0.99         | 0.91                        | 24.3               |
| All Vehicles                    |      | 1842              | 2.0  | 0.778         | 37.2              | LOS C            | 10.9                           | 77.4             | 0.94         | 0.84                        | 25.8               |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |                  |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2              | 0.93         | 0.93                        |
| P3                                 | Across E approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2              | 0.93         | 0.93                        |
| P5                                 | Across N approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2              | 0.93         | 0.93                        |
| P7                                 | Across W approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2              | 0.93         | 0.93                        |
| All Pedestrians                    |                   | 420               | 34.2              |                  |                                      |                  | 0.93         | 0.93                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

# MOVEMENT SUMMARY

Site: Phillip and Marsden AM

Phillip and Marsden AM

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                         |                     |                                      |               |                 |                                   |                          |
|---------------------------------|------|----------------------|---------|------------------|-------------------------|---------------------|--------------------------------------|---------------|-----------------|-----------------------------------|--------------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average<br>Delay<br>sec | Level of<br>Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop/<br>Queued | Effective<br>Stop Rate<br>per veh | Average<br>Speed<br>km/h |
| South: Marsden Street south     |      |                      |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 2                               | T    | 518                  | 2.0     | 0.459            | 7.7                     | LOS A               | 10.4                                 | 73.7          | 0.61            | 0.54                              | 40.7                     |
| 3                               | R    | 123                  | 2.0     | 0.251            | 17.8                    | LOS B               | 3.4                                  | 24.0          | 0.75            | 0.76                              | 34.2                     |
| Approach                        |      | 641                  | 2.0     | 0.459            | 9.6                     | LOS A               | 10.4                                 | 73.7          | 0.64            | 0.58                              | 39.3                     |
| East: Phillip Street east       |      |                      |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 4                               | L    | 114                  | 2.0     | 0.152            | 17.2                    | LOS B               | 3.1                                  | 21.7          | 0.65            | 0.72                              | 30.6                     |
| 6                               | R    | 61                   | 2.0     | 0.292            | 33.5                    | LOS C               | 2.6                                  | 18.5          | 0.95            | 0.75                              | 24.6                     |
| Approach                        |      | 175                  | 2.0     | 0.292            | 22.9                    | LOS B               | 3.1                                  | 21.7          | 0.76            | 0.73                              | 28.2                     |
| North: Marsden Street north     |      |                      |         |                  |                         |                     |                                      |               |                 |                                   |                          |
| 7                               | L    | 64                   | 2.0     | 0.215            | 18.7                    | LOS B               | 1.9                                  | 13.3          | 0.67            | 0.71                              | 33.6                     |
| 8                               | T    | 351                  | 2.0     | 0.481            | 15.3                    | LOS B               | 9.6                                  | 68.5          | 0.80            | 0.69                              | 35.0                     |
| Approach                        |      | 415                  | 2.0     | 0.481            | 15.9                    | LOS B               | 9.6                                  | 68.5          | 0.78            | 0.69                              | 34.8                     |
| All Vehicles                    |      | 1231                 | 2.0     | 0.481            | 13.6                    | LOS A               | 10.4                                 | 73.7          | 0.70            | 0.64                              | 35.7                     |

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 63                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| P3                                 | Across E approach | 63                   | 16.1                 | LOS B            | 0.1                                        | 0.1           | 0.73         | 0.73                           |
| P5                                 | Across N approach | 63                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| All Pedestrians                    |                   | 189                  | 21.6                 |                  |                                            |               | 0.84         | 0.84                           |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: Phillip and Marsden PM

Phillip and Marsden AM

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Marsden Street south     |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 2                               | T    | 640                  | 2.0     | 0.567            | 8.4                  | LOS A            | 13.3                                 | 94.5                   | 0.67         | 0.60                           | 39.9                  |
| 3                               | R    | 123                  | 2.0     | 0.231            | 17.7                 | LOS B            | 3.4                                  | 23.9                   | 0.75         | 0.75                           | 34.2                  |
| Approach                        |      | 763                  | 2.0     | 0.567            | 9.9                  | LOS A            | 13.3                                 | 94.5                   | 0.68         | 0.62                           | 38.9                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 4                               | L    | 256                  | 2.0     | 0.316            | 16.9                 | LOS B            | 6.4                                  | 45.7                   | 0.68         | 0.75                           | 30.7                  |
| 6                               | R    | 60                   | 2.0     | 0.287            | 33.4                 | LOS C            | 2.6                                  | 18.2                   | 0.95         | 0.74                           | 24.6                  |
| Approach                        |      | 316                  | 2.0     | 0.316            | 20.0                 | LOS B            | 6.4                                  | 45.7                   | 0.73         | 0.75                           | 29.3                  |
| North: Marsden Street north     |      |                      |         |                  |                      |                  |                                      |                        |              |                                |                       |
| 7                               | L    | 39                   | 2.0     | 0.136            | 19.9                 | LOS B            | 1.2                                  | 8.5                    | 0.70         | 0.70                           | 33.0                  |
| 8                               | T    | 324                  | 2.0     | 0.487            | 16.8                 | LOS B            | 9.3                                  | 66.3                   | 0.83         | 0.71                           | 34.1                  |
| Approach                        |      | 363                  | 2.0     | 0.487            | 17.2                 | LOS B            | 9.3                                  | 66.3                   | 0.82         | 0.71                           | 34.0                  |
| All Vehicles                    |      | 1442                 | 2.0     | 0.567            | 13.9                 | LOS A            | 13.3                                 | 94.5                   | 0.73         | 0.67                           | 35.1                  |

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P3                                 | Across E approach | 63                | 17.6              | LOS B            | 0.1                                  | 0.1        | 0.77         | 0.77                        |
| P5                                 | Across N approach | 63                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 189               | 22.1              |                  |                                      |            | 0.86         | 0.86                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: Phillip and Church AM

Phillip and Church

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 1                               | L    | 19                   | 2.0     | 0.344            | 25.8                 | LOS B            | 5.4                                  | 38.1          | 0.88         | 0.79                           | 26.8                  |
| 2                               | T    | 137                  | 2.0     | 0.344            | 21.3                 | LOS B            | 5.4                                  | 38.1          | 0.88         | 0.71                           | 27.0                  |
| Approach                        |      | 156                  | 2.0     | 0.344            | 21.9                 | LOS B            | 5.4                                  | 38.1          | 0.88         | 0.72                           | 27.0                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 4                               | L    | 21                   | 2.0     | 0.652            | 33.6                 | LOS C            | 6.7                                  | 47.7          | 1.00         | 0.86                           | 24.4                  |
| 5                               | T    | 147                  | 2.0     | 0.654            | 29.1                 | LOS C            | 6.7                                  | 47.7          | 1.00         | 0.86                           | 24.3                  |
| Approach                        |      | 168                  | 2.0     | 0.654            | 29.7                 | LOS C            | 6.7                                  | 47.7          | 1.00         | 0.86                           | 24.3                  |
| North: Church Street north      |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 136                  | 2.0     | 0.655            | 28.4                 | LOS B            | 9.8                                  | 69.7          | 0.96         | 0.86                           | 25.8                  |
| 8                               | T    | 152                  | 2.0     | 0.656            | 23.9                 | LOS B            | 9.8                                  | 69.7          | 0.96         | 0.84                           | 25.8                  |
| Approach                        |      | 287                  | 2.0     | 0.655            | 26.0                 | LOS B            | 9.8                                  | 69.7          | 0.96         | 0.85                           | 25.8                  |
| West: Phillip Street west       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 25                   | 2.0     | 0.106            | 30.4                 | LOS C            | 1.1                                  | 7.6           | 0.91         | 0.70                           | 24.8                  |
| 11                              | T    | 162                  | 2.0     | 0.652            | 29.2                 | LOS C            | 6.5                                  | 46.2          | 1.00         | 0.86                           | 24.4                  |
| Approach                        |      | 187                  | 2.0     | 0.652            | 29.3                 | LOS C            | 6.5                                  | 46.2          | 0.98         | 0.84                           | 24.4                  |
| All Vehicles                    |      | 799                  | 2.0     | 0.655            | 26.8                 | LOS B            | 9.8                                  | 69.7          | 0.96         | 0.82                           | 25.4                  |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 53                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| P3                                 | Across E approach | 53                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| P5                                 | Across N approach | 53                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| P7                                 | Across W approach | 53                   | 24.3                 | LOS C            | 0.1                                        | 0.1           | 0.90         | 0.90                           |
| All Pedestrians                    |                   | 212                  | 24.3                 |                  |                                            |               | 0.90         | 0.90                           |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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**SIDRA  
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# MOVEMENT SUMMARY

Site: Phillip and Church PM

Phillip and Church

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                 |                      |                  |                                      |                        |              |                                |                       |
|---------------------------------|------|----------------------|---------|-----------------|----------------------|------------------|--------------------------------------|------------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Des Satn<br>V/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue<br>Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |         |                 |                      |                  |                                      |                        |              |                                |                       |
| 1                               | L    | 36                   | 2.0     | 0.716           | 31.2                 | LOS C            | 10.0                                 | 71.2                   | 0.99         | 0.92                           | 25.1                  |
| 2                               | T    | 242                  | 2.0     | 0.715           | 26.7                 | LOS B            | 10.0                                 | 71.2                   | 0.99         | 0.91                           | 25.1                  |
| Approach                        |      | 278                  | 2.0     | 0.716           | 27.3                 | LOS B            | 10.0                                 | 71.2                   | 0.99         | 0.91                           | 25.1                  |
| East: Phillip Street east       |      |                      |         |                 |                      |                  |                                      |                        |              |                                |                       |
| 4                               | L    | 17                   | 2.0     | 0.849           | 37.7                 | LOS C            | 11.0                                 | 78.0                   | 1.00         | 1.09                           | 23.2                  |
| 5                               | T    | 257                  | 2.0     | 0.847           | 33.2                 | LOS C            | 11.0                                 | 78.0                   | 1.00         | 1.09                           | 23.2                  |
| Approach                        |      | 274                  | 2.0     | 0.847           | 33.5                 | LOS C            | 11.0                                 | 78.0                   | 1.00         | 1.09                           | 23.2                  |
| North: Church Street north      |      |                      |         |                 |                      |                  |                                      |                        |              |                                |                       |
| 7                               | L    | 145                  | 2.0     | 0.807           | 34.4                 | LOS C            | 11.4                                 | 81.4                   | 1.00         | 1.02                           | 23.9                  |
| 8                               | T    | 158                  | 2.0     | 0.806           | 29.9                 | LOS C            | 11.4                                 | 81.4                   | 1.00         | 1.02                           | 23.9                  |
| Approach                        |      | 303                  | 2.0     | 0.807           | 32.0                 | LOS C            | 11.4                                 | 81.4                   | 1.00         | 1.02                           | 23.9                  |
| West: Phillip Street west       |      |                      |         |                 |                      |                  |                                      |                        |              |                                |                       |
| 10                              | L    | 46                   | 2.0     | 0.155           | 28.6                 | LOS C            | 1.8                                  | 13.1                   | 0.89         | 0.72                           | 25.4                  |
| 11                              | T    | 131                  | 2.0     | 0.420           | 25.4                 | LOS B            | 5.0                                  | 35.4                   | 0.94         | 0.74                           | 25.6                  |
| Approach                        |      | 177                  | 2.0     | 0.420           | 26.2                 | LOS B            | 5.0                                  | 35.4                   | 0.93         | 0.74                           | 25.6                  |
| All Vehicles                    |      | 1032                 | 2.0     | 0.847           | 30.1                 | LOS C            | 11.4                                 | 81.4                   | 0.98         | 0.96                           | 24.3                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P3                                 | Across E approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P5                                 | Across N approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| P7                                 | Across W approach | 53                | 24.3              | LOS C            | 0.1                                  | 0.1        | 0.90         | 0.90                        |
| All Pedestrians                    |                   | 212               | 24.3              |                  |                                      |            | 0.90         | 0.90                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: Phillip and Smith AM

Phillip, Smith and Wilde

Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |                     |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|---------------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV<br>% | Seg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Queue Distance<br>m | Prod. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Smith Street             |      |                      |         |                  |                      |                  |                                      |                     |              |                                |                       |
| 1                               | L    | 81                   | 2.0     | 0.438            | 42.5                 | LOS D            | 6.4                                  | 45.4                | 0.89         | 0.79                           | 24.3                  |
| 2                               | T    | 192                  | 2.0     | 0.437            | 36.6                 | LOS C            | 7.3                                  | 52.2                | 0.90         | 0.72                           | 25.5                  |
| 3                               | R    | 42                   | 2.0     | 0.165            | 25.9                 | LOS B            | 1.6                                  | 11.7                | 0.81         | 0.71                           | 30.0                  |
| Approach                        |      | 315                  | 2.0     | 0.437            | 36.7                 | LOS C            | 7.3                                  | 52.2                | 0.88         | 0.74                           | 25.7                  |
| East: Phillip Street east       |      |                      |         |                  |                      |                  |                                      |                     |              |                                |                       |
| 4                               | L    | 25                   | 2.0     | 0.320            | 39.2                 | LOS C            | 6.1                                  | 43.6                | 0.90         | 0.79                           | 23.4                  |
| 5                               | T    | 125                  | 2.0     | 0.321            | 34.5                 | LOS C            | 6.1                                  | 43.6                | 0.90         | 0.72                           | 22.8                  |
| 6                               | R    | 67                   | 2.0     | 0.321            | 41.7                 | LOS C            | 5.3                                  | 37.9                | 0.92         | 0.77                           | 22.6                  |
| Approach                        |      | 218                  | 2.0     | 0.321            | 37.3                 | LOS C            | 6.1                                  | 43.6                | 0.91         | 0.74                           | 22.8                  |
| North: Wilde Avenue             |      |                      |         |                  |                      |                  |                                      |                     |              |                                |                       |
| 7                               | L    | 280                  | 2.0     | 0.701            | 25.9                 | LOS B            | 13.0                                 | 92.3                | 0.91         | 0.90                           | 30.4                  |
| 8                               | T    | 520                  | 2.0     | 0.701            | 28.4                 | LOS B            | 17.2                                 | 122.5               | 0.94         | 0.83                           | 28.3                  |
| 9                               | R    | 186                  | 2.0     | 0.522            | 24.4                 | LOS B            | 6.9                                  | 49.5                | 0.82         | 0.77                           | 30.7                  |
| Approach                        |      | 986                  | 2.0     | 0.701            | 26.9                 | LOS B            | 17.2                                 | 122.5               | 0.91         | 0.84                           | 29.3                  |
| West: Phillip Street west       |      |                      |         |                  |                      |                  |                                      |                     |              |                                |                       |
| 10                              | L    | 86                   | 2.0     | 0.428            | 24.6                 | LOS B            | 4.4                                  | 31.7                | 0.93         | 0.78                           | 27.8                  |
| 11                              | T    | 131                  | 2.0     | 0.428            | 30.8                 | LOS C            | 6.4                                  | 45.3                | 0.95         | 0.75                           | 23.7                  |
| 12                              | R    | 40                   | 2.0     | 0.427            | 44.3                 | LOS D            | 6.4                                  | 45.3                | 0.96         | 0.78                           | 22.1                  |
| Approach                        |      | 257                  | 2.0     | 0.428            | 30.8                 | LOS C            | 6.4                                  | 45.3                | 0.94         | 0.77                           | 24.7                  |
| All Vehicles                    |      | 1776                 | 2.0     | 0.701            | 30.5                 | LOS C            | 17.2                                 | 122.5               | 0.91         | 0.80                           | 26.9                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |                  |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Queue Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3              | 0.93         | 0.93                        |
| P3                                 | Across E approach | 105               | 29.6              | LOS C            | 0.2                                  | 0.2              | 0.81         | 0.81                        |
| P5                                 | Across N approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3              | 0.93         | 0.93                        |
| P7                                 | Across W approach | 105               | 39.2              | LOS D            | 0.3                                  | 0.3              | 0.93         | 0.93                        |
| All Pedestrians                    |                   | 420               | 36.8              |                  |                                      |                  | 0.90         | 0.90                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: Phillip and Smith PM

Phillip, Smith and Wilde

Signals - Fixed Time Cycle Time = 100 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                   |      |              |                   |                  |                                |            |              |                             |                    |
|---------------------------------|------|-------------------|------|--------------|-------------------|------------------|--------------------------------|------------|--------------|-----------------------------|--------------------|
| Mov ID                          | Turn | Demand Flow veh/h | HV % | Deq Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Smith Street             |      |                   |      |              |                   |                  |                                |            |              |                             |                    |
| 1                               | L    | 82                | 2.0  | 0.737        | 49.4              | LOS D            | 13.1                           | 93.5       | 0.97         | 0.88                        | 22.7               |
| 2                               | T    | 429               | 2.0  | 0.738        | 43.5              | LOS D            | 14.0                           | 100.0      | 0.97         | 0.86                        | 23.4               |
| 3                               | R    | 25                | 2.0  | 0.107        | 26.8              | LOS B            | 1.1                            | 7.7        | 0.71         | 0.67                        | 29.6               |
| Approach                        |      | 537               | 2.0  | 0.738        | 43.6              | LOS D            | 14.0                           | 100.0      | 0.96         | 0.86                        | 23.5               |
| East: Phillip Street east       |      |                   |      |              |                   |                  |                                |            |              |                             |                    |
| 4                               | L    | 38                | 2.0  | 0.340        | 36.4              | LOS C            | 8.7                            | 61.9       | 0.84         | 0.80                        | 24.1               |
| 5                               | T    | 141               | 2.0  | 0.340        | 31.0              | LOS C            | 8.7                            | 61.9       | 0.84         | 0.69                        | 23.8               |
| 6                               | R    | 326               | 2.0  | 0.746        | 45.5              | LOS D            | 16.8                           | 119.5      | 0.98         | 0.89                        | 21.6               |
| Approach                        |      | 505               | 2.0  | 0.746        | 40.8              | LOS C            | 16.8                           | 119.5      | 0.93         | 0.83                        | 22.4               |
| North: Wilde Avenue             |      |                   |      |              |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 105               | 2.0  | 0.344        | 21.6              | LOS B            | 6.1                            | 43.7       | 0.80         | 0.80                        | 32.7               |
| 8                               | T    | 278               | 2.0  | 0.344        | 25.6              | LOS B            | 9.2                            | 65.8       | 0.82         | 0.68                        | 29.6               |
| 9                               | R    | 91                | 2.0  | 0.280        | 27.2              | LOS B            | 3.9                            | 28.0       | 0.84         | 0.75                        | 29.4               |
| Approach                        |      | 474               | 2.0  | 0.344        | 25.0              | LOS B            | 9.2                            | 65.8       | 0.82         | 0.72                        | 30.2               |
| West: Phillip Street west       |      |                   |      |              |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 168               | 2.0  | 0.702        | 29.2              | LOS C            | 7.3                            | 52.0       | 0.99         | 0.85                        | 26.1               |
| 11                              | T    | 109               | 2.0  | 0.702        | 39.9              | LOS C            | 8.3                            | 59.4       | 1.00         | 0.86                        | 21.3               |
| 12                              | R    | 65                | 2.0  | 0.703        | 55.8              | LOS D            | 8.3                            | 59.4       | 1.00         | 0.87                        | 19.7               |
| Approach                        |      | 343               | 2.0  | 0.702        | 37.7              | LOS C            | 8.3                            | 59.4       | 1.00         | 0.86                        | 23.0               |
| All Vehicles                    |      | 1859              | 2.0  | 0.746        | 37.0              | LOS C            | 16.8                           | 119.5      | 0.92         | 0.81                        | 24.4               |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 35.3                 | LOS D            | 0.3                                        | 0.3           | 0.84         | 0.84                           |
| P3                                 | Across E approach | 105                  | 32.0                 | LOS D            | 0.2                                        | 0.2           | 0.80         | 0.80                           |
| P5                                 | Across N approach | 105                  | 35.3                 | LOS D            | 0.3                                        | 0.3           | 0.84         | 0.84                           |
| P7                                 | Across W approach | 105                  | 41.4                 | LOS E            | 0.3                                        | 0.3           | 0.91         | 0.91                           |
| All Pedestrians                    |                   | 420                  | 36.0                 |                  |                                            |               | 0.85         | 0.85                           |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS E. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Marsden AM

George and Marsden Streets

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV % | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Marsden Street south     |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 2                               | T    | 422                  | 2.0  | 0.385            | 5.1                  | LOS A            | 5.8                                  | 41.0          | 0.37         | 0.32                           | 43.5                  |
| 3                               | R    | 222                  | 2.0  | 0.521            | 22.1                 | LOS B            | 6.2                                  | 44.0          | 0.80         | 0.81                           | 32.6                  |
| Approach                        |      | 644                  | 2.0  | 0.521            | 10.9                 | LOS A            | 6.2                                  | 44.0          | 0.52         | 0.49                           | 39.0                  |
| North: Marsden Street north     |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 47                   | 2.0  | 0.088            | 19.1                 | LOS B            | 1.2                                  | 8.3           | 0.56         | 0.70                           | 34.3                  |
| 8                               | T    | 426                  | 2.0  | 0.604            | 15.8                 | LOS B            | 10.9                                 | 77.8          | 0.77         | 0.67                           | 34.8                  |
| Approach                        |      | 474                  | 2.0  | 0.604            | 16.1                 | LOS B            | 10.9                                 | 77.8          | 0.75         | 0.67                           | 34.7                  |
| West: George Street west        |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 206                  | 2.0  | 0.605            | 30.1                 | LOS C            | 7.4                                  | 52.7          | 0.94         | 0.83                           | 29.0                  |
| 11                              | T    | 581                  | 2.0  | 0.472            | 22.2                 | LOS B            | 7.1                                  | 50.9          | 0.91         | 0.75                           | 31.1                  |
| 12                              | R    | 39                   | 2.0  | 0.472            | 28.9                 | LOS C            | 6.8                                  | 48.5          | 0.91         | 0.83                           | 30.5                  |
| Approach                        |      | 826                  | 2.0  | 0.605            | 24.5                 | LOS B            | 7.4                                  | 52.7          | 0.92         | 0.77                           | 30.5                  |
| All Vehicles                    |      | 1944                 | 2.0  | 0.605            | 17.9                 | LOS B            | 10.9                                 | 77.8          | 0.75         | 0.65                           | 34.0                  |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 23.4                 | LOS C            | 0.2                                        | 0.2           | 0.88         | 0.88                           |
| P3                                 | Across E approach | 105                  | 19.2                 | LOS B            | 0.1                                        | 0.1           | 0.80         | 0.80                           |
| P5                                 | Across N approach | 105                  | 23.4                 | LOS C            | 0.2                                        | 0.2           | 0.88         | 0.88                           |
| P7                                 | Across W approach | 105                  | 10.8                 | LOS B            | 0.1                                        | 0.1           | 0.60         | 0.60                           |
| All Pedestrians                    |                   | 420                  | 19.2                 |                  |                                            |               | 0.79         | 0.79                           |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Marsden PM

George and Marsden Streets

Signals - Fixed Time Cycle Time = 60 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
|---------------------------------|------|-------------------|------|---------------|-------------------|------------------|--------------------------------|------------|--------------|-----------------------------|--------------------|
| Mov ID                          | Turn | Demand Flow veh/h | HV % | Seg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Marsden Street south     |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 2                               | T    | 719               | 2.0  | 0.637         | 5.5               | LOS A            | 11.0                           | 78.4       | 0.47         | 0.43                        | 42.8               |
| 3                               | R    | 191               | 2.0  | 0.426         | 21.5              | LOS B            | 5.2                            | 36.8       | 0.76         | 0.79                        | 32.9               |
| Approach                        |      | 909               | 2.0  | 0.637         | 8.9               | LOS A            | 11.0                           | 78.4       | 0.53         | 0.50                        | 40.3               |
| North: Marsden Street north     |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 37                | 2.0  | 0.068         | 19.0              | LOS B            | 0.9                            | 6.4        | 0.55         | 0.69                        | 34.3               |
| 8                               | T    | 447               | 2.0  | 0.634         | 16.0              | LOS B            | 11.6                           | 82.4       | 0.79         | 0.68                        | 34.6               |
| Approach                        |      | 484               | 2.0  | 0.634         | 16.2              | LOS B            | 11.6                           | 82.4       | 0.77         | 0.68                        | 34.6               |
| West: George Street west        |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 106               | 2.0  | 0.336         | 29.0              | LOS C            | 3.9                            | 28.0       | 0.89         | 0.77                        | 29.5               |
| 11                              | T    | 299               | 2.0  | 0.329         | 22.2              | LOS B            | 4.8                            | 34.4       | 0.89         | 0.71                        | 31.1               |
| 12                              | R    | 84                | 2.0  | 0.329         | 29.1              | LOS C            | 4.1                            | 28.8       | 0.88         | 0.78                        | 29.6               |
| Approach                        |      | 489               | 2.0  | 0.336         | 24.8              | LOS B            | 4.8                            | 34.4       | 0.89         | 0.73                        | 30.5               |
| All Vehicles                    |      | 1883              | 2.0  | 0.637         | 14.9              | LOS B            | 11.6                           | 82.4       | 0.69         | 0.61                        | 35.8               |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS C. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 24.3              | LOS C            | 0.2                                  | 0.2        | 0.90         | 0.90                        |
| P3                                 | Across E approach | 105               | 19.2              | LOS B            | 0.1                                  | 0.1        | 0.80         | 0.80                        |
| P5                                 | Across N approach | 105               | 24.3              | LOS C            | 0.2                                  | 0.2        | 0.90         | 0.90                        |
| P7                                 | Across W approach | 105               | 10.2              | LOS B            | 0.1                                  | 0.1        | 0.58         | 0.58                        |
| All Pedestrians                    |                   | 420               | 19.5              |                  |                                      |            | 0.80         | 0.80                        |

Level of Service (Aver. Int. Delay): LOS B. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Church AM

George and Church Streets

Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>veh/h | HV % | Deg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Church Street south      |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 2                               | T    | 67                   | 2.0  | 0.400            | 35.1                 | LOS C            | 3.4                                  | 24.1          | 0.98         | 0.74                           | 22.7                  |
| 3                               | R    | 37                   | 2.0  | 0.230            | 40.7                 | LOS C            | 1.9                                  | 13.6          | 0.97         | 0.72                           | 22.6                  |
| Approach                        |      | 104                  | 2.0  | 0.400            | 37.1                 | LOS C            | 3.4                                  | 24.1          | 0.98         | 0.74                           | 22.7                  |
| North: Church Street north      |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 118                  | 2.0  | 0.751            | 43.9                 | LOS D            | 6.0                                  | 42.4          | 1.00         | 0.92                           | 21.9                  |
| Approach                        |      | 118                  | 2.0  | 0.751            | 43.9                 | LOS D            | 6.0                                  | 42.4          | 1.00         | 0.92                           | 21.9                  |
| West: George Street west        |      |                      |      |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 87                   | 2.0  | 0.166            | 17.3                 | LOS B            | 2.1                                  | 14.7          | 0.69         | 0.71                           | 34.5                  |
| 11                              | T    | 643                  | 2.0  | 0.840            | 34.5                 | LOS C            | 13.5                                 | 95.8          | 1.00         | 0.99                           | 26.2                  |
| Approach                        |      | 731                  | 2.0  | 0.840            | 32.5                 | LOS C            | 13.5                                 | 95.8          | 0.96         | 0.95                           | 27.0                  |
| All Vehicles                    |      | 953                  | 2.0  | 0.840            | 34.4                 | LOS C            | 13.5                                 | 95.8          | 0.97         | 0.93                           | 25.7                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 29.3                 | LOS C            | 0.2                                        | 0.2           | 0.91         | 0.91                           |
| P3                                 | Across E approach | 105                  | 29.3                 | LOS C            | 0.2                                        | 0.2           | 0.91         | 0.91                           |
| P5                                 | Across N approach | 105                  | 29.3                 | LOS C            | 0.2                                        | 0.2           | 0.91         | 0.91                           |
| P7                                 | Across W approach | 105                  | 29.3                 | LOS C            | 0.2                                        | 0.2           | 0.91         | 0.91                           |
| All Pedestrians                    |                   | 420                  | 29.3                 |                  |                                            |               | 0.91         | 0.91                           |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Church PM

George and Church Streets

Signals - Fixed Time Cycle Time = 70 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
|---------------------------------|------|-------------------|------|---------------|-------------------|------------------|--------------------------------|------------|--------------|-----------------------------|--------------------|
| Mov ID                          | Turn | Demand Flow veh/h | HV % | Des. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Church Street south      |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 2                               | T    | 106               | 2.0  | 0.631         | 36.6              | LOS C            | 5.3                            | 37.4       | 1.00         | 0.83                        | 22.3               |
| 3                               | R    | 39                | 2.0  | 0.243         | 40.8              | LOS C            | 2.0                            | 14.3       | 0.97         | 0.73                        | 22.6               |
| Approach                        |      | 145               | 2.0  | 0.631         | 37.7              | LOS C            | 5.3                            | 37.4       | 0.99         | 0.80                        | 22.4               |
| North: Church Street north      |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 214               | 2.0  | 0.817         | 42.8              | LOS D            | 9.9                            | 70.2       | 1.00         | 1.00                        | 22.2               |
| Approach                        |      | 214               | 2.0  | 0.817         | 42.8              | LOS D            | 9.9                            | 70.2       | 1.00         | 1.00                        | 22.2               |
| West: George Street west        |      |                   |      |               |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 96                | 2.0  | 0.182         | 17.1              | LOS B            | 2.2                            | 15.6       | 0.70         | 0.72                        | 34.6               |
| 11                              | T    | 435               | 2.0  | 0.795         | 35.5              | LOS C            | 9.7                            | 68.8       | 1.00         | 0.93                        | 25.9               |
| Approach                        |      | 531               | 2.0  | 0.795         | 32.2              | LOS C            | 9.7                            | 68.8       | 0.95         | 0.89                        | 27.1               |
| All Vehicles                    |      | 889               | 2.0  | 0.817         | 35.6              | LOS C            | 9.9                            | 70.2       | 0.97         | 0.90                        | 24.9               |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P3                                 | Across E approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P5                                 | Across N approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| P7                                 | Across W approach | 105               | 29.3              | LOS C            | 0.2                                  | 0.2        | 0.91         | 0.91                        |
| All Pedestrians                    |                   | 420               | 29.3              |                  |                                      |            | 0.91         | 0.91                        |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS C. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Smith AM

George and Smith Streets

Signals - Fixed Time Cycle Time = 90 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
|---------------------------------|------|----------------------|---------|------------------|----------------------|------------------|--------------------------------------|---------------|--------------|--------------------------------|-----------------------|
| Mov ID                          | Turn | Demand Flow<br>Veh/h | HV<br>% | Seg. Satn<br>v/c | Average Delay<br>sec | Level of Service | 95% Back of Queue<br>Vehicles<br>veh | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per veh | Average Speed<br>km/h |
| South: Smith Street south       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 2                               | T    | 142                  | 2.0     | 0.157            | 18.8                 | LOS B            | 3.8                                  | 26.8          | 0.57         | 0.45                           | 33.4                  |
| 3                               | R    | 177                  | 2.0     | 0.769            | 49.1                 | LOS D            | 9.4                                  | 66.8          | 1.00         | 0.97                           | 22.9                  |
| Approach                        |      | 319                  | 2.0     | 0.770            | 35.6                 | LOS C            | 9.4                                  | 66.8          | 0.81         | 0.74                           | 26.6                  |
| North: Smith Street north       |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 7                               | L    | 205                  | 2.0     | 0.748            | 43.2                 | LOS D            | 15.0                                 | 106.5         | 0.95         | 0.88                           | 24.8                  |
| 8                               | T    | 449                  | 2.0     | 0.748            | 36.7                 | LOS C            | 15.1                                 | 107.4         | 0.95         | 0.86                           | 25.4                  |
| Approach                        |      | 655                  | 2.0     | 0.748            | 38.8                 | LOS C            | 15.1                                 | 107.4         | 0.95         | 0.86                           | 25.2                  |
| West: George Street west        |      |                      |         |                  |                      |                  |                                      |               |              |                                |                       |
| 10                              | L    | 82                   | 2.0     | 0.268            | 42.6                 | LOS D            | 4.5                                  | 32.1          | 0.91         | 0.76                           | 24.7                  |
| 11                              | T    | 455                  | 2.0     | 0.746            | 41.8                 | LOS C            | 12.2                                 | 86.9          | 1.00         | 0.91                           | 23.9                  |
| 12                              | R    | 244                  | 2.0     | 0.746            | 48.5                 | LOS D            | 12.2                                 | 86.7          | 1.00         | 0.89                           | 23.1                  |
| Approach                        |      | 781                  | 2.0     | 0.746            | 44.0                 | LOS D            | 12.2                                 | 86.9          | 0.99         | 0.89                           | 23.7                  |
| All Vehicles                    |      | 1755                 | 2.0     | 0.770            | 40.5                 | LOS C            | 15.1                                 | 107.4         | 0.94         | 0.85                           | 24.8                  |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                      |                      |                  |                                            |               |              |                                |
|------------------------------------|-------------------|----------------------|----------------------|------------------|--------------------------------------------|---------------|--------------|--------------------------------|
| Mov ID                             | Description       | Demand Flow<br>ped/h | Average Delay<br>sec | Level of Service | Average Back of Queue<br>Pedestrian<br>ped | Distance<br>m | Prop. Queued | Effective Stop Rate<br>per ped |
| P1                                 | Across S approach | 105                  | 39.2                 | LOS D            | 0.3                                        | 0.3           | 0.93         | 0.93                           |
| P3                                 | Across E approach | 105                  | 39.2                 | LOS D            | 0.3                                        | 0.3           | 0.93         | 0.93                           |
| P5                                 | Across N approach | 105                  | 39.2                 | LOS D            | 0.3                                        | 0.3           | 0.93         | 0.93                           |
| P7                                 | Across W approach | 105                  | 39.2                 | LOS D            | 0.3                                        | 0.3           | 0.93         | 0.93                           |
| All Pedestrians                    |                   | 420                  | 39.2                 |                  |                                            |               | 0.93         | 0.93                           |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

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# MOVEMENT SUMMARY

Site: George and Smith PM

George and Smith Streets

Signals - Fixed Time Cycle Time = 80 seconds (Practical Cycle Time)

| Movement Performance - Vehicles |      |                   |      |             |                   |                  |                                |            |              |                             |                    |
|---------------------------------|------|-------------------|------|-------------|-------------------|------------------|--------------------------------|------------|--------------|-----------------------------|--------------------|
| Mov ID                          | Turn | Demand Flow veh/h | HV % | Seg Sat v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate per veh | Average Speed km/h |
| South: Smith Street south       |      |                   |      |             |                   |                  |                                |            |              |                             |                    |
| 2                               | T    | 407               | 2.0  | 0.508       | 22.3              | LOS B            | 10.7                           | 75.9       | 0.74         | 0.62                        | 31.4               |
| 3                               | R    | 202               | 2.0  | 0.758       | 43.7              | LOS D            | 9.3                            | 66.1       | 0.99         | 0.98                        | 24.4               |
| Approach                        |      | 609               | 2.0  | 0.758       | 29.4              | LOS C            | 10.7                           | 75.9       | 0.82         | 0.74                        | 28.6               |
| North: Smith Street north       |      |                   |      |             |                   |                  |                                |            |              |                             |                    |
| 7                               | L    | 118               | 2.0  | 0.731       | 43.5              | LOS D            | 10.4                           | 73.9       | 0.98         | 0.88                        | 24.8               |
| 8                               | T    | 328               | 2.0  | 0.731       | 37.1              | LOS C            | 10.4                           | 74.2       | 0.98         | 0.87                        | 25.2               |
| Approach                        |      | 446               | 2.0  | 0.731       | 38.8              | LOS C            | 10.4                           | 74.2       | 0.98         | 0.87                        | 25.1               |
| West: George Street west        |      |                   |      |             |                   |                  |                                |            |              |                             |                    |
| 10                              | L    | 146               | 2.0  | 0.530       | 41.8              | LOS C            | 7.1                            | 50.8       | 0.97         | 0.80                        | 24.9               |
| 11                              | T    | 433               | 2.0  | 0.778       | 39.8              | LOS C            | 10.9                           | 77.4       | 1.00         | 0.94                        | 24.5               |
| 12                              | R    | 224               | 2.0  | 0.778       | 46.5              | LOS D            | 10.9                           | 77.3       | 1.00         | 0.92                        | 23.6               |
| Approach                        |      | 803               | 2.0  | 0.778       | 42.0              | LOS C            | 10.9                           | 77.4       | 0.99         | 0.91                        | 24.3               |
| All Vehicles                    |      | 1859              | 2.0  | 0.778       | 37.1              | LOS C            | 10.9                           | 77.4       | 0.94         | 0.84                        | 25.8               |

Level of Service (Aver. Int. Delay): LOS C. Based on average delay for all vehicle movements. LOS Method: Delay (RTA NSW).

Level of Service (Worst Movement): LOS D. LOS Method for individual vehicle movements: Delay (RTA NSW).

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

| Movement Performance - Pedestrians |                   |                   |                   |                  |                                      |            |              |                             |
|------------------------------------|-------------------|-------------------|-------------------|------------------|--------------------------------------|------------|--------------|-----------------------------|
| Mov ID                             | Description       | Demand Flow ped/h | Average Delay sec | Level of Service | Average Back of Queue Pedestrian ped | Distance m | Prop. Queued | Effective Stop Rate per ped |
| P1                                 | Across S approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2        | 0.93         | 0.93                        |
| P3                                 | Across E approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2        | 0.93         | 0.93                        |
| P5                                 | Across N approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2        | 0.93         | 0.93                        |
| P7                                 | Across W approach | 105               | 34.2              | LOS D            | 0.2                                  | 0.2        | 0.93         | 0.93                        |
| All Pedestrians                    |                   | 420               | 34.2              |                  |                                      |            | 0.93         | 0.93                        |

Level of Service (Aver. Int. Delay): LOS D. Based on average delay for all pedestrian movements. LOS Method: Delay (HCM).

Level of Service (Worst Movement): LOS D. LOS Method for individual pedestrian movements: Delay (HCM).

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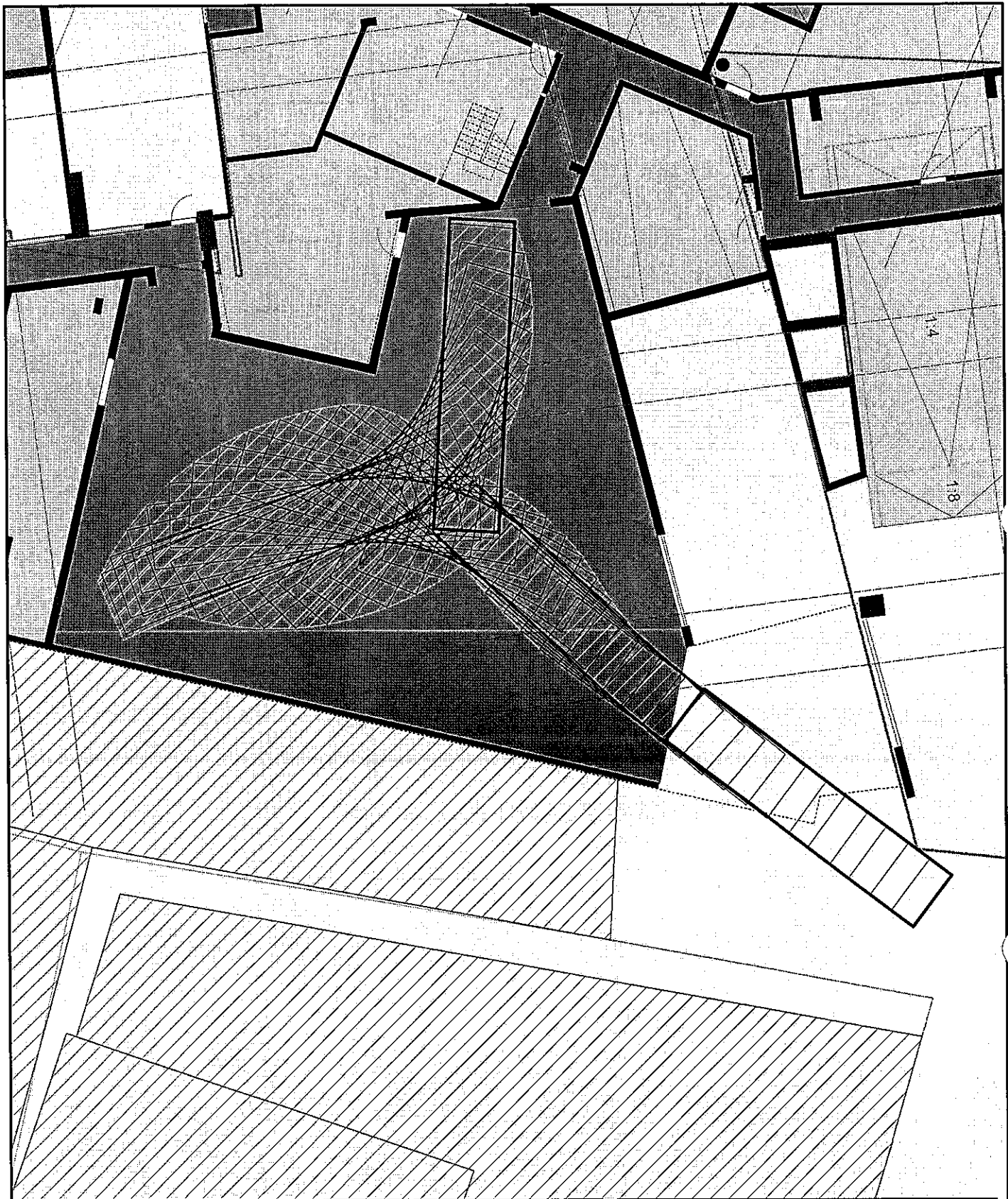
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## **APPENDIX F**

### **SWEPT PATH ANALYSIS**

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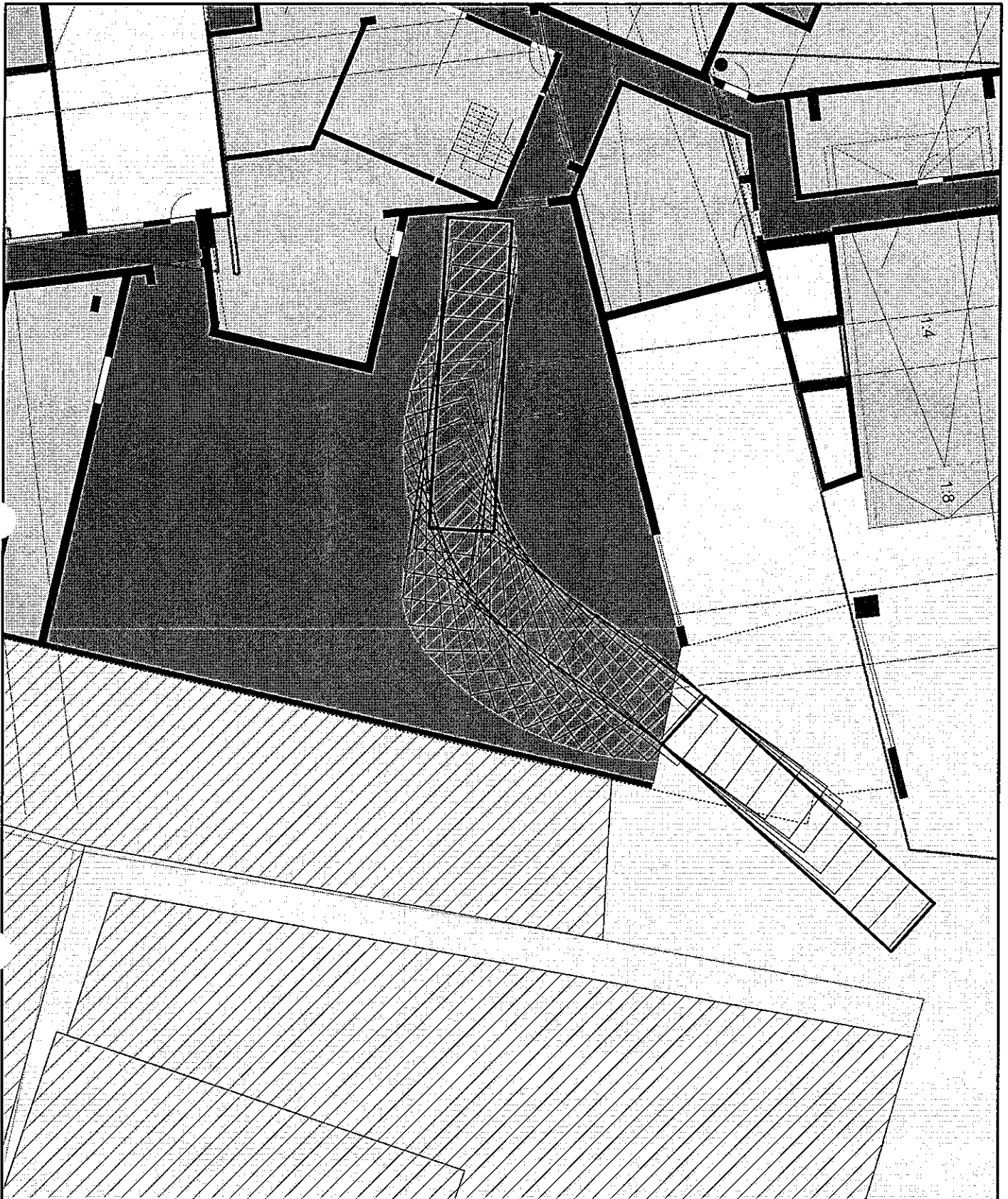
## LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS  
OF AN 12m REFUSE  
VEHICLE ENTERING THE SITE**

**SP 1**



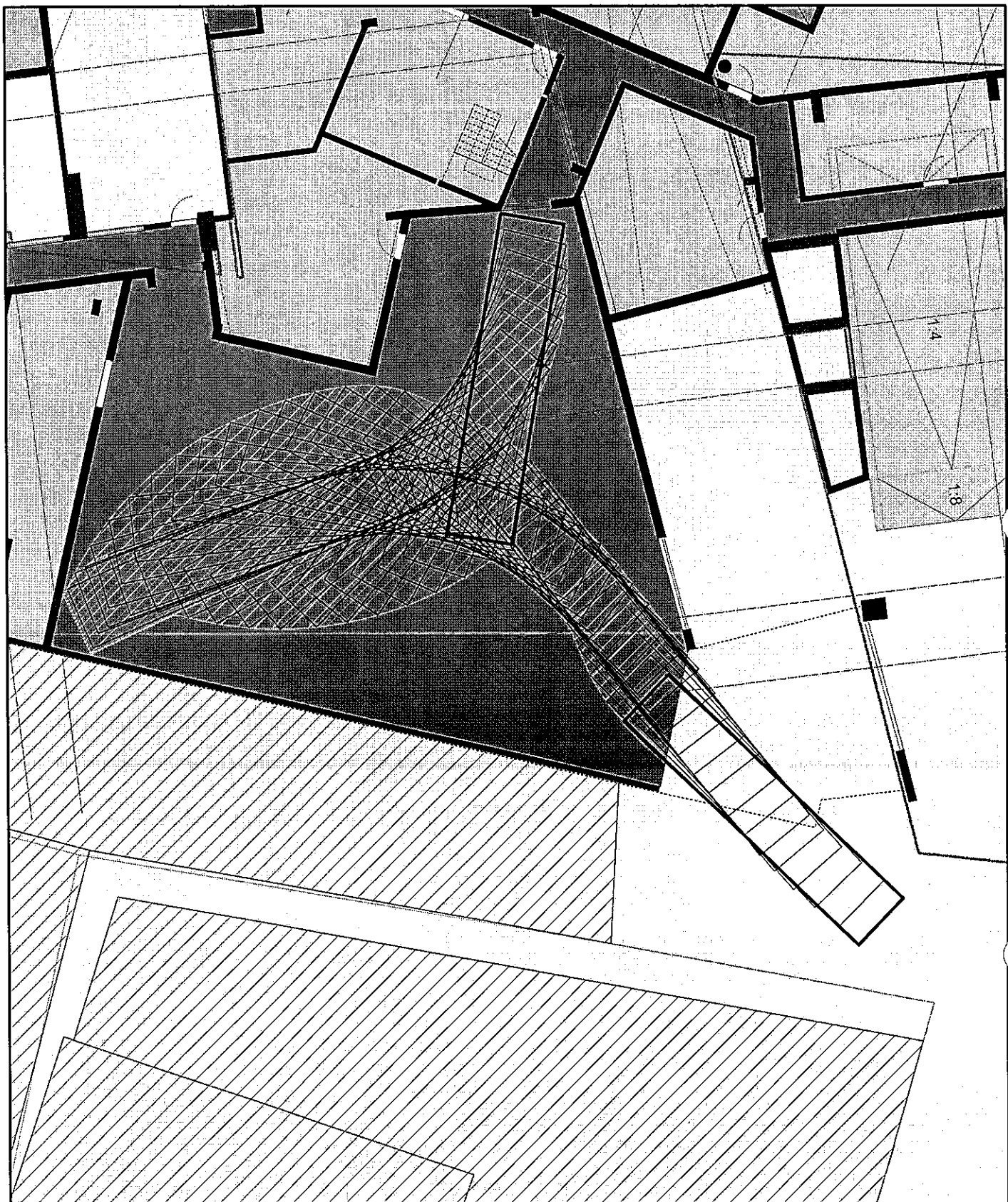
## LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS  
OF AN 12m REFUSE  
VEHICLE EXITING THE SITE**

**SP 2**



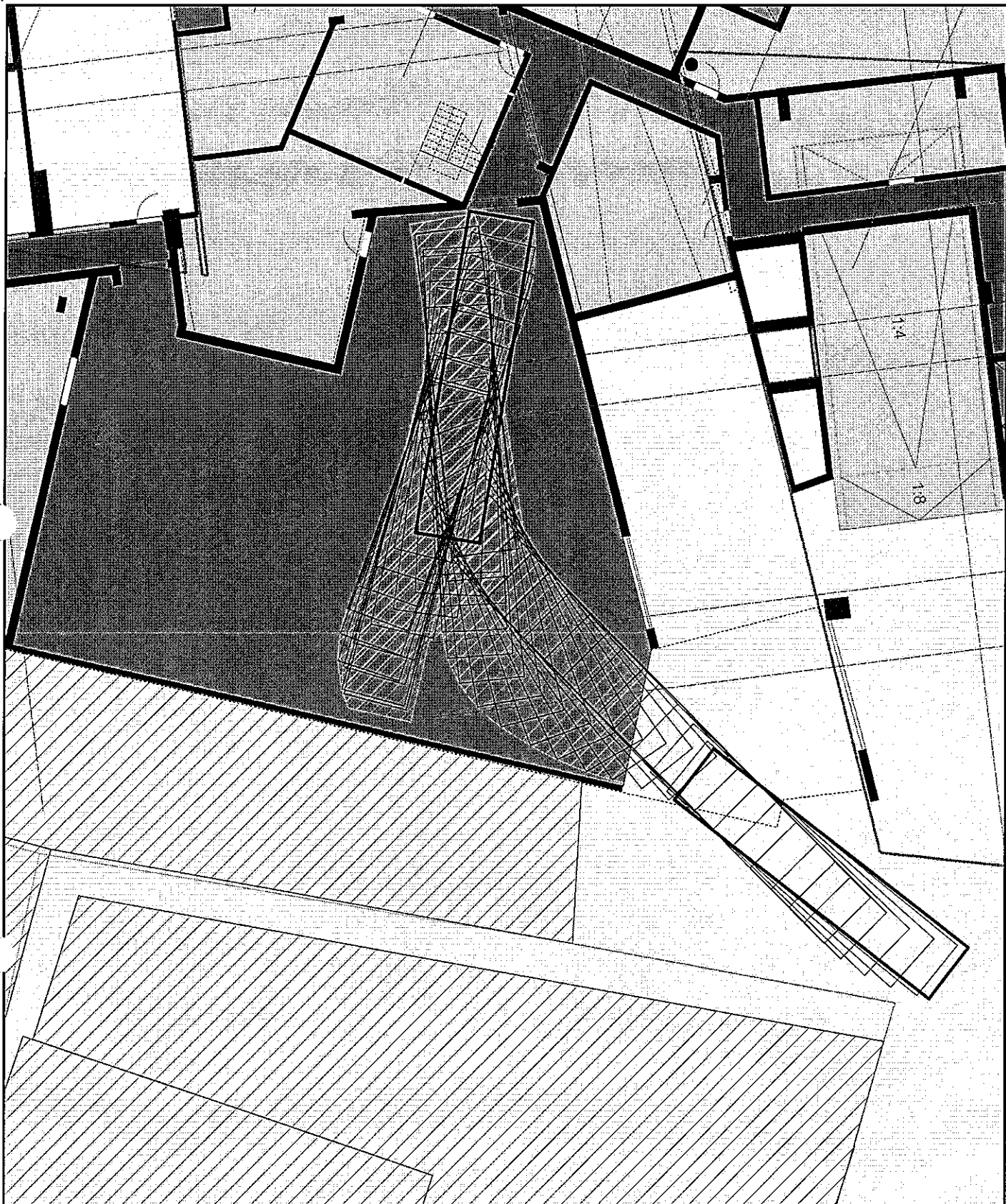
## LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, It is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS  
OF A 12.5m RIGID  
VEHICLE ENTERING THE SITE**

**SP 3**



## LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V9.21 in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.



**SWEPT PATH ANALYSIS  
OF A 12.5m RIGID  
VEHICLE EXITING THE SITE**

**SP 4**