

Equinix Australia Pty Ltd

**Sydney Internet
Exchange Facility, 639
Gardeners Road,
Mascot**

Transport Impact
Assessment for Site SY3

REV B

ARUP

Equinix Australia Pty Ltd

**Sydney Internet
Exchange Facility, 639
Gardeners Road,
Mascot**

Transport Impact
Assessment for Site SY3

November 2009

Arup
Arup Pty Ltd ABN 18 000 966 165



Arup
Level 10 201 Kent Street, Sydney NSW 2000
Tel +61 2 9320 9320 Fax +61 2 9320 9321
www.arup.com

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

Job number 206522

Job title	Sydney Internet Exchange Facility, 639 Gardeners Road, Mascot			Job number	206522
Document title	Transport Impact Assessment for Site SY3			File reference	
Document ref					
Revision	Date	Filename	001DraftEquinixTrafficReport.doc		
Draft 1	22/05/09	Description	First draft		
			Prepared by	Checked by	Approved by
		Name	Abdullah Uddin	John Hanlon	Andrew Hulse
		Signature			
Issue	04/11/09	Filename	0002Final Report SY3 Equinix.doc		
		Description	Issue		
			Prepared by	Checked by	Approved by
		Name	Abdullah Uddin	John Hanlon	Andrew Hulse
		Signature			
Rev A	06/11/09	Filename	0004FinalReportSY3 Equinix.doc		
		Description	Emergency Access Included		
			Prepared by	Checked by	Approved by
		Name	Abdullah Uddin	John Hanlon	Andrew Hulse
		Signature			
Rev B	06/11/09	Filename	0005FinalReportSY3Equinix.doc		
		Description	Council's traffic issues considered		
			Prepared by	Checked by	Approved by
		Name	Abdullah Uddin	Tim Brooker	Andrew Hulse
		Signature			
Issue Document Verification with Document <input checked="" type="checkbox"/>					

Contents

	Page
1 Introduction	1
1.1 Scope of the Report	1
2 Existing Conditions	2
2.1 Site Location	2
2.2 Road Hierarchy and Traffic Flows	2
2.3 Vehicular Access	3
2.4 Parking	5
2.5 Public Transport	7
2.6 Pedestrian and Cycle Network	8
3 Proposed Development	10
3.1 The Development	10
3.2 Pedestrian and Vehicular Access	10
3.3 Parking Provision	10
3.4 Service Vehicle Provision	11
4 Transport Impact Assessment	12
4.1 Existing Traffic Generation	12
4.2 Forecast Traffic Generation	12
4.3 External Road Network Impacts	12
4.4 Parking Impact	13
4.5 Pedestrian, Cyclist and Public Transport Impact	13
4.6 Off-street Parking Design	13
5 City of Botany Bay Council Comments	14
6 Conclusions	16

Tables

Table 1: Historical AADT Traffic Volumes

Table 2: Council Traffic Issues on Arup Traffic Report

Figures

Figure 1: Site Location

Figure 2: Bus Routes in the Vicinity of the Site

Photographs

Photograph 1: Existing Vehicular Access at Gardeners Road

Photograph 2: Existing Driveway at Church Street

Photograph 3: Parking for Skilled Engineering

Photograph 4: Existing Parking for Equinix Staff

Photograph 5: Equinix Visitor Parking (looking South)

Photograph 6: Existing Loading Docks at Building SY1

Photograph 7: Pedestrian Access to Equinix Site at Church Avenue

Photograph 8: Wide Pedestrian Footpath on Bourke Road along the Western boundary of the Site

Photograph 9: Skilled Engineering Building (Unit A)

1 Introduction

Arup was appointed by Equinix Australia Pty Ltd. to undertake a transport impact assessment for a proposed development site SY3 at 639 Gardeners Road, Mascot. This transport impact assessment report is a component of a Development Application to be lodged with the City of Botany Bay Council.

The report describes the existing situation, proposed development, forecast traffic generation, transport impact assessment and compliance with relevant standard and Council codes. This report also addresses traffic issues raised by City of Botany Bay Council.

1.1 Scope of the Report

The scope of this report is primarily to assess the following matters:

- Assessment of existing traffic and transport arrangements
- Assessment of the vehicular ingress, egress and circulation into the proposed site
- The likely traffic and parking impact in the locality
- The impact on road network traffic safety and efficiency
- The impact on pedestrian movement, safety and amenity

2 Existing Conditions

2.1 Site Location

The site is located on the south-east corner of Gardeners Road and Bourke Road, Mascot (refer to Figure 1). The existing site comprises the following three buildings:

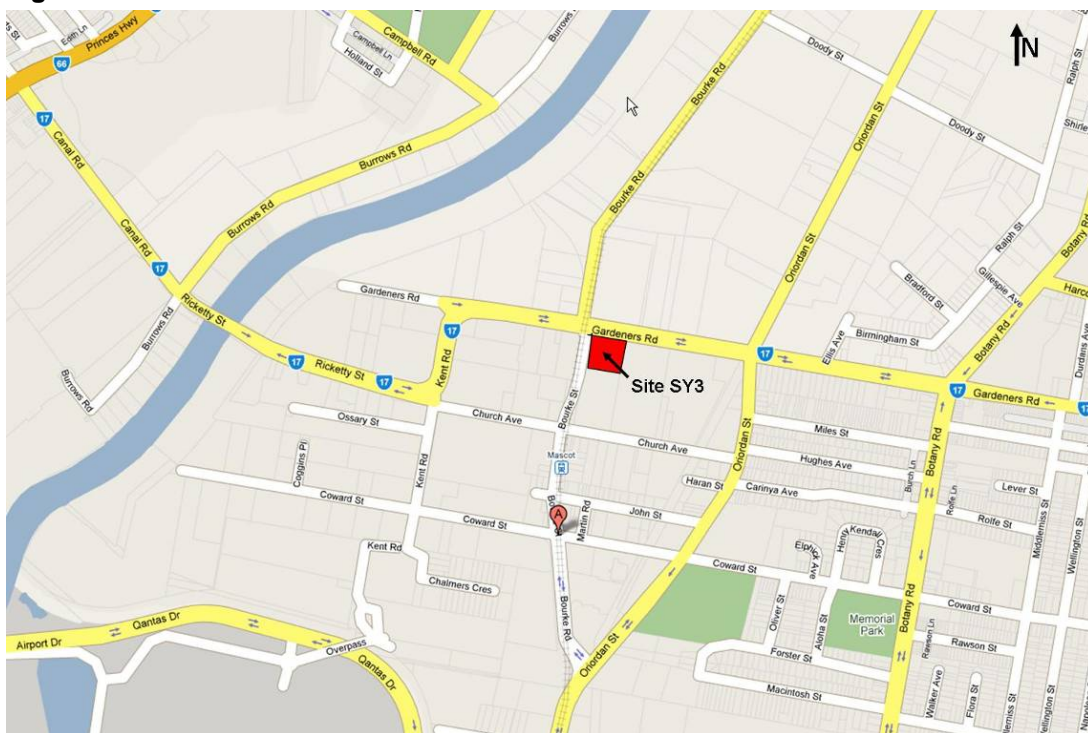
- Unit A (Skilled Engineering) – northern part of the site
- SY1 site and Equinix reception – mid part of the site
- SY2 site – southern part of the site

The surrounding land uses are predominantly commercial, residential and bulky goods retail development along both sides of Gardeners Road and Bourke Road. Specific land uses at the vicinity of the site include:

- Bunnings Warehouse – north-east corner of Gardeners Road and Bourke Road
- Thrifty Car Rental – north-west corner of Gardeners Road and Bourke Road

In addition to the above, it is understood that a DA has been lodged with Council to construct a multi-storey hotel at the south-west corner of the Gardeners Road and Bourke Road intersection.

Figure 1: Site Location



Source: Google Maps

2.2 Road Hierarchy and Traffic Flows

Gardeners Road, a major arterial road, runs along the northern boundary of the site. It is generally a two lane two way road separated by a narrow central median. It provides an east-west connection between Anzac Parade, Kingsford to the east and Princes Highway to the west via Kent Road and Ricketty Street. This RTA controlled road has a posted speed limit of 60km/h.

Another arterial road about 1km east of the site is Botany Road. Botany Road provides a major north-south connection between Bunnerong Road, Matraville to the south and Regent

Street, Redfern to the north. It is generally a two lane two-way road and speed limit is restricted to 60km/h.

Bourke Road is a major local road along the western boundary of the site. It has generally one lane in each direction and provides north-south connection with O'Riordan Street, Mascot (south) and Botany Road, Alexandria (north). Bourke Road provides a connection between Sydney Airport and Sydney CBD. It also provides access to a number of major retail and industrial precincts located along both sides of the road. A heavy vehicle restriction (3 tonne and over) is in place on Bourke Road between Gardeners Road and Coward Street.

Church Avenue, which runs along the southern boundary of the site, is a narrow 6-7m wide east-west local road between Kent Street and O'Riordan Street. Traffic is restricted to eastbound flow with a left turn only from Church Street to O'Riordan Street.

The Gardeners Road / Bourke Road intersection is controlled by traffic signals with pedestrian crossing facilities on north, south and east approaches. An additional right turn bay is provided on the east approach of Gardeners Road. No right turn is permitted for the eastbound vehicles on Gardeners Road into Bourke Road.

The historical trend of Average Annual Daily Traffic (AADT) on Gardeners Road in the vicinity of the site is outlined in Table 1. It can be seen in the table that traffic volume remained consistent on Gardeners Road over the last decade.

Table 1: Historical AADT Traffic Volumes

Street	Location	AADT			
		1991	1993	2002	2005
Gardeners Rd	E of Bourke Rd	-	30,015	25,227	25,221
Bourke Rd	N of Gardeners Rd	10665	-	-	-

Source: RTA

2.3 Vehicular Access

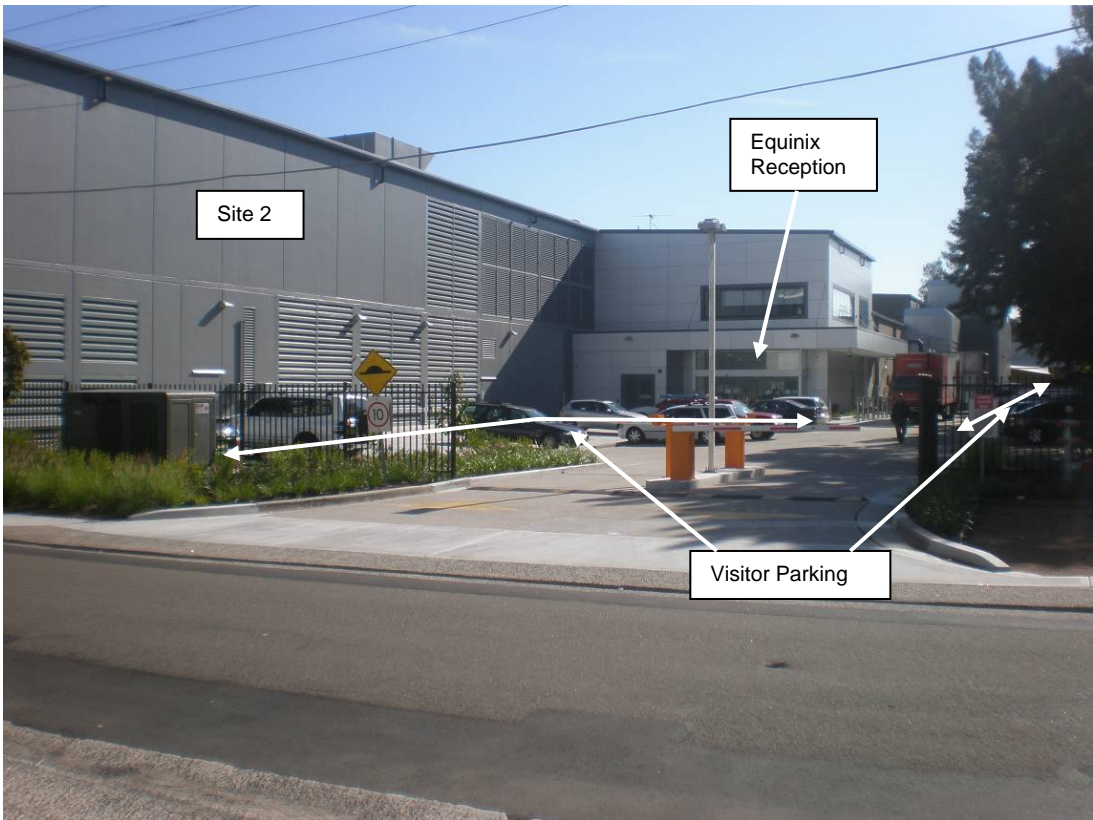
The site is currently served by two existing vehicular accesses. The existing two-way driveway which is currently serving Skilled Engineering site is located approximately 25m east of Gardeners Road and Bourke Road intersection (Photograph 1).

Photograph 1: Existing Vehicular Access at Gardeners Road



The recently constructed driveway serving Equinix sites SY1 and SY2 is located on Church Avenue (approximately 75m east of Bourke Road intersection). This driveway is controlled by boom gates at the site entrance (Photograph 2).

Photograph 2: Existing Driveway at Church Street



2.4 Parking

2.4.1 On-Site

In total the existing site has 110 parking spaces with 36 spaces allocated for Skilled Engineering for its staff and its visitors. These spaces are located on the northern part of the site accessible via the Gardeners Road driveway (Photograph 3).

Photograph 3: Parking for Skilled Engineering



There are another 30 parking spaces (including one disabled parking space) located just south of the Skilled Engineering parking which are currently allocated for Equinix staff (Photograph 4). However, these parking spaces are also available for Equinix visitors to use if required. These parking spaces are accessible via both Gardeners Road and Church Avenue.

Photograph 4: Existing Parking for Equinix Staff

An additional 44 parking spaces (including one disabled parking space) are located near the main Equinix reception area, accessible via Church Avenue (Photograph 2 and Photograph 5). These spaces are exclusively allocated for the site visitors and staff are encouraged not to park in these spaces.

Photograph 5: Equinix Visitor Parking (looking South)

2.4.2 Loading Dock

There are two existing loading docks attached to building SY1 (Photograph 6). Deliveries generally occur by small rigid vehicles. Due to the expensive and valuable materials, delivery vehicles need to come close to the building entrance to minimise any risk of damaging any equipment during the loading/ unloading activities.

Photograph 6: Existing Loading Docks at Building SY1



2.4.3 On-Street

Generally no parking is permitted on Gardeners Road or Bourke Road. Some time restricted parking is provided on Bourke Road near the Airport Link station.

On the southern boundary of the site on Church Avenue, parking is restricted to one hour between 6am-6pm seven days. Further east on Church Avenue, 15 min parking is provided between 8.30am-6pm Mon-Fri.

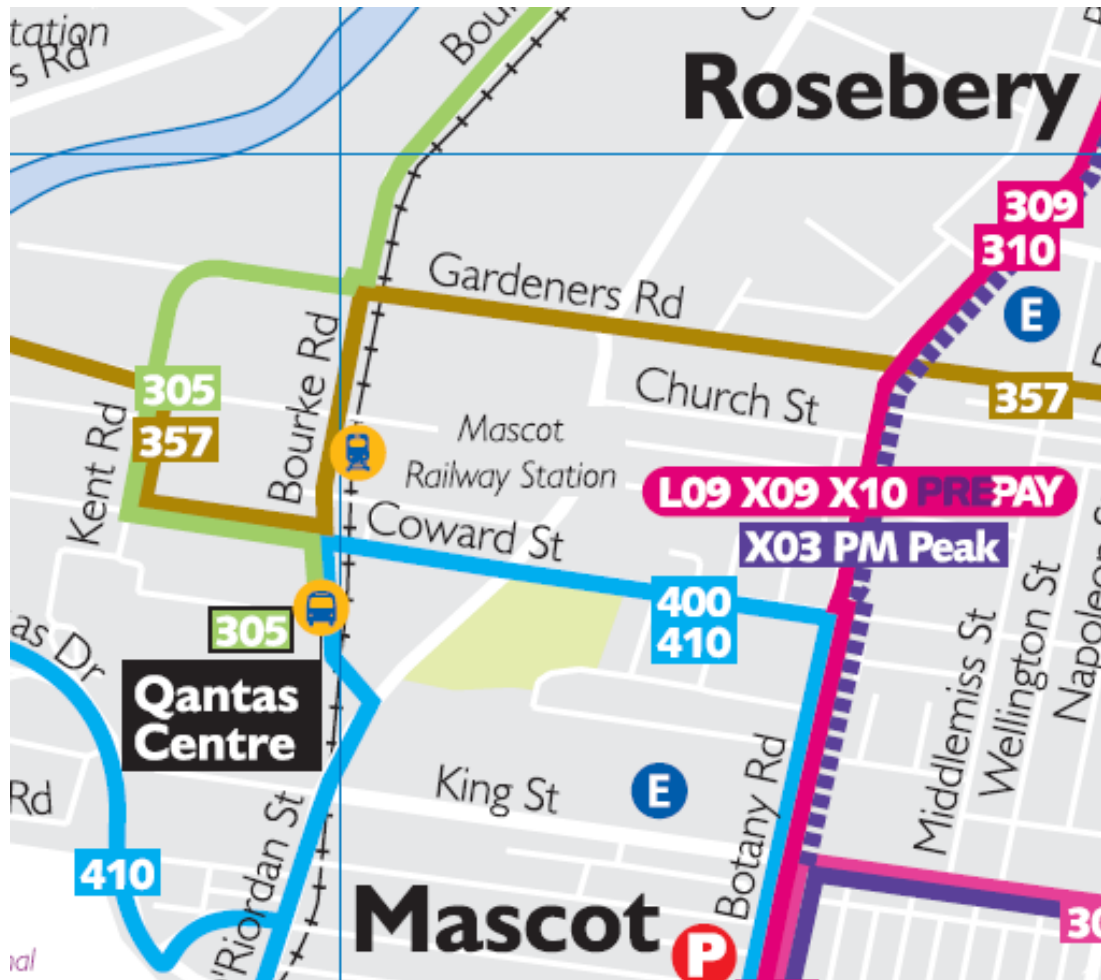
2.5 Public Transport

2.5.1 Buses

Bus stops are located on Bourke Road near the Airport Link station. Route 357 operates between Eastlakes /Sydenham and Bondi Junction via Gardeners Road – Bourke Road in front of the site. Services are available in every 15 minutes in the am peak hours and every half an hour in the pm peak hours. There is no weekend service for this route.

Route 305 provides north-south bus connection between Stamford Plaza Hotel and Railway Square in Lee Street, Sydney. City bound am services and outbound pm services operate in every 15 minute in the peak hours. No weekend/ public holiday service is available.

Route 400 operates between Bondi Junction and Burwood via airports. Route 410 operate at the same route to 400 but terminates at Rockdale from Bondi Junction. High frequency services are available during the weekdays and weekend. The bus routes at the vicinity of the sites are shown in Figure 2.

Figure 2: Bus Routes in the Vicinity of the Site

Source: Sydney Buses website

2.5.2 Train

Mascot railway station, on the Airport Link Line, is located approximately 250m south of the site on Bourke Street. High frequency train services are available during peak hours in both directions between the City and Macarthur via the airports. Trips from this station attract a fare surcharge compared to other stations on the CityRail network.

2.5.3 Taxi

A taxi rank is located on the western side of Bourke Road in front of Airport Link station which can accommodate approximately three taxis.

2.6 Pedestrian and Cycle Network

A separate pedestrian access is provided to the Equinix reception from Church Avenue (Photograph 7).

There are no designated bicycle routes in the vicinity of the site, although local roads around the site are suitable for cycling due to low traffic volume and low speed environments.

Photograph 7: Pedestrian Access to Equinix Site at Church Avenue

Paved footpaths exist on Church Avenue, Bourke Road and Gardeners Road along the boundary of the site (Photograph 8).

Photograph 8: Wide Pedestrian Footpath on Bourke Road along the Western boundary of the Site

3 Proposed Development

3.1 The Development

The proposed development includes demolition of the existing Skilled Engineering building (Photograph 9) and its associated carpark, and construction of a 3-storey data centre with a GFA of approximately 7675 m² (refer to drawings prepared by Drew Dickson Architect).

It is proposed to allocate CO-LO in the ground floor (GFA approximately 3330 m²), electrical equipment on level 1 (GFA approximately 3370 m²) and mechanical equipment on level 2 (GFA approximately 975 m²).

Photograph 9: Skilled Engineering Building (Unit A)



3.2 Pedestrian and Vehicular Access

All three buildings of the site (buildings SY1, SY2 and SY3) will be served by the existing left-in/ left-out driveway at Church Avenue. In addition, a new emergency vehicular access is proposed on Bourke Street about 60m south of Gardeners Road. This access will be generally closed and will only be opened for emergency vehicle access (e.g. Fire Trucks).

As discussed earlier, there is an existing separate pedestrian entrance to the site from Church Avenue (Photograph 7).

3.3 Parking Provision

As discussed in section 2.4.1, there are currently 110 parking spaces for Equinix and Skilled Engineering sites. Due to the demolition of the Skilled Engineering building, 42 parking spaces will be removed and in total 68 parking spaces will be provided for the Equinix staff and their visitors. The Equinix staff work on a shift basis. With the proposed development there will be a maximum of 30 Equinix staff be parking their vehicles at the site at any one time.

All site vehicular access will be controlled by the existing boom gates at Church Avenue.

3.4 Service Vehicle Provision

A loading zone will be provided on the southern end of the proposed SY3 building to load/unload data storage equipment associated with this building.

4 Transport Impact Assessment

4.1 Existing Traffic Generation

The existing Skilled Engineering facility employs approximately 15-20 permanent staff. In addition, other staff occasionally come to the site for training. Assuming a maximum of 5 training staff on any particular day, the maximum number of staff at the site is 25.

The existing Equinix (site SY1 and SY2) employs approximately 25-30 staff who generally arrive at the site in the AM peak hour. There are also some visitors to the site in the peak traffic periods. It is estimated that about 80% of the staff access the site by cars and the remaining 20% by public transport. Similarly, the majority of the visitors to the site come by car although their arrival times are dispersed across the whole day rather than in the peak traffic hours. As a conservative approach assuming 10 Equinix visitors in the peak hour, there may be a maximum of 35 persons (25 staff and 10 visitors) accessing the Equinix site in the peak hours.

Therefore, in total approximately 60 persons (25 Skilled Engineering and 35 Equinix) access the site in the peak hours.

Assuming 80% inbound trips in the AM peak hour and 70% outbound trips in the PM peak hour, the existing site generates approximately **50** (50 Skilled and Equinix staff X 0.8+10 Equinix visitors) inbound vehicular trips in the AM peak hour and **45** (50 Skilled and Equinix staff X 0.7+10 Equinix visitor) outbound vehicular trips in the PM peak hour.

4.2 Forecast Traffic Generation

The proposed development of SY3 will extend the Equinix data storage capacity at the site. However, the large floor space will be allocated for storage of electrical and mechanical equipments. It is not expected that due to the development of SY3 the Equinix staff number would significantly increase. Equinix advised that the existing permanent Equinix staff generally work long shifts and due to the additional development of site SY3 there may be a small increase of approximately 4-5 technical staff and 1-2 security staff. Similarly there will be more site visitors once site SY3 is in full operation.

Due to the development of site SY3, assuming an additional 10 permanent staff and 5 visitors in the peak hour, the whole site (SY1, SY2 and SY3) will be accessed by 50 persons (35 existing and 15 future) in the peak hours.

As estimated in previous section, with removal of the Skilled Engineering workforce there will be reduction of 25 trips in the peak hour. Therefore during the operation of SY3 in total 50 persons (existing Equinix 35 persons + proposed Equinix 15 persons) will access the site in the peak hours.

Assuming 80% staff trips inbound in the am peak hour and 70% staff trips outbound in the pm peak hour, the whole site would generate approximately **43** (35 staff X 0.8+15 visitors) inbound trips in the am peak and **40** (35 staff X 0.7+15 visitors) outbound trips in the pm peak hour.

4.3 External Road Network Impacts

Due to the development of site SY3 and demolition of the Skilled Engineering building, there will be no additional traffic impact on the external road network e.g. Gardeners Road, Bourke Road and Church Avenue. As estimated in section 4.2, due to the proposed development there will be small net reductions of trips in the AM and PM peak hours **7** and **5** vehicles respectively.

There will be some slight increases of traffic in Church Avenue; however these minor increases of traffic will not be noticeable and should have minimal impact.

Also, due to the minor traffic diversion from the Gardeners Road to the Church Avenue driveway, there will be a minor positive impact on the Gardeners Road/ Bourke Road intersection in the peak hour traffic conditions.

4.4 Parking Impact

As discussed in previous sections in total 68 parking spaces at the site will be allocated for Equinix staff and their visitors. Assuming a maximum 30 Equinix staff at any one time who will be required to park on site, there will be 38 remaining spaces allocated for the Equinix visitors. This is likely to be sufficient to provide for forecast demand.

Due to the high security at Equinix site, all visitors are required to report to reception upon arrival and departure of the site. During the site inspection it was observed that all visitors have to disclose their identity and purpose of their visit to the security at the boom gate at Church Avenue. It is unlikely therefore that a significant number of site visitors would park on-street and then walk into the site. Consequently, it is considered that due to the development of site SY3, there will be minimal or negligible on-street parking impact in Church Avenue.

There also will be no loss of on – street parking due to the proposed emergency vehicular access on Bourke Street.

4.5 Pedestrian, Cyclist and Public Transport Impact

The proposed development will have minimal impact on pedestrian and cyclist safety in the local area. Gardeners Road, Bourke Road and Church Avenue all currently have paved footpaths and the existing pedestrian crossing facilities in the area are in good condition and generally safe and adequate.

The low pedestrian volume generated by the development will have minimal impact on pedestrian activity in the surrounding streets. The development is unlikely to result in any significant impact on cyclists and public transport facilities and services. The availability of the public transport services should help the proposed facility to operate with relatively low levels of site traffic generation and parking activity.

4.6 Off-street Parking Design


Most of the existing site parking facilities and the site driveway at Church Avenue are currently in operation. With the redevelopment of site SY3, all new car parking space dimensions, vehicular manoeuvre path, aisle width, disabled parking space etc. will be designed in accordance with the Council code and relevant standards.

5 City of Botany Bay Council Comments

The following is a summary of traffic issues raised by the Council (letter dated 3 November 2009) and the responses in the Arup traffic report for the proposed development (Letter Reference No. DA/10/92):

Table 2: Council Traffic Issues on Arup Traffic Report

Issue No.	Issue	Arup's Response
4 (g)	Arup traffic report makes no reference to the proposed vehicular access off Bourke Street.	The proposed vehicular access to Bourke Road is now identified as being for emergency service vehicle use on as discussed in Section 3.2. The reason for this entrance is because NSW Fire Brigade require to enter and exit the site in one forward direction i.e. they can not turn around within the site and use the same entrance to exit the site.
4 (j)	Plans supplied only show approximately 17 car parking spaces. This is conflicting with the traffic report indicating 68 parking spaces remaining. A clarification is required.	As discussed in section 3.3, a total 68 parking spaces will be provided for Equinix staff and visitors (for sites SY1, SY2 and SY3). Out of 68 spaces 17 spaces will be allocated for SY3. This parking supply inside the site would be generous. During the site inspection it was observed that many parking spaces near the front reception were generally occupied.
4 (k)	Arup traffic report has no information about the volume of traffic in Bourke Street for the peak hours.	In Table 1 traffic volume on Bourke Road at the vicinity of the site is now included. The latest RTA counts were undertaken on 1991. No more recent RTA traffic data is available. In 1991 Bourke Road, north of Gardeners Road, carried 10665 vehicles per day. Generally the peak hour traffic volume is about 10% of the daily volume on urban roads. A current estimate of about 1100 vehicles on that section of the road in the peak hour is considered reasonable by observations during the site visit.
4 (l)	The proposed development is likely to have significant traffic impact to Bourke St/ Church Ave, Church Ave/ O'Riordan St and Gardeners Rd/ O'Riordan St intersection. These intersections need to be analysed both morning and evening peak periods to determine the performances, level of service.	In current situation, the Skilled Engineering site is generally accessed by the driveway at Gardeners Road and the Equinix site is accessed by driveway at Church Avenue. As per the estimation in sections 4.1 and 4.2, the current site peak hour traffic generation on Church Avenue in the am peak hour (for site SY1 and SY2) is 30 vehicles (25 staff X0.8+10 visitors). The proposed site (SY1+SY2+SY3) would generate 43 vehicles (35 staff X0.8 + 15 visitors). Therefore the net increase of traffic in the am peak hour on Church Avenue would be 13 vehicles/ h or one vehicle in every 4.6 minutes, which is minimal. Similarly, in the pm peak hour the existing site traffic generation of the Equinix site are 27.5 vehicles (25 staff X .7 + 10 visitors). The forecast pm peak traffic generation of the site via Church Avenue is 39.5

Issue No.	Issue	Arup's Response
		<p>vehicles (35 staff X 0.7 + 15 visitors). Therefore the net increase of traffic in the pm peak hour on Church Avenue is 12 vehicles/ h or one vehicle in every 5 minutes, which is minimal.</p> <p>The additional Equinix site traffic at the Bourke Road/ Church Avenue intersection and Gardeners Road/ O'Riordan Street intersection in either peak hour will not be noticeable and unlikely to have any significant impact to the road network in the vicinity. It can be envisaged that any detailed intersection modelling of these two intersections with such a minor increase of traffic volume would not reveal any significant impact.</p>
4 (m)	The pedestrian crossing on Church Avenue will be affected by the inbound traffic into the site.	<p>The subject pedestrian crossing in Church Avenue was observed during the am peak periods. Pedestrian volumes in the crossing were relatively minor. Most pedestrians currently crossing Church Avenue were observed to cross at the corner of Bourke Road and were not using the pedestrian crossing currently.</p>  <p>Church Ave from Bourke Street (looking east)</p>
4 (n)	Currently there are at least ten 1-hour (6am – 6pm) on – street parking spaces available on Church Avenue at the vicinity of the site. It is likely that site visitors would park in these parking areas and walk into the site.	<p>The development will provide sufficient parking provision (approximately 38 visitor parking spaces) for its visitors. Visitors to the site would be distributed across the whole business day. As estimated in section 4.2, site SY3 would generate an additional five visitors in the peak hour. Due to high security in the site, all visitors in the site are monitored by security cameras and required to report at the reception. Therefore, it is unlikely that the additional visitors for SY3 would create any significant impact by parking in Church Avenue.</p>

6 Conclusions

This report has addressed the anticipated transport impacts for the proposed development of site SY3 at 639 Gardeners Road, Mascot. The key issues of the transport impact assessment are summarised below:

- The forecast additional site vehicular traffic generated by the proposed development site SY3 in Church Avenue is relatively low and can be accommodated by the surrounding road network with minimal impact. In fact, the forecast traffic generation for the development overall will be less than for the existing situation.
- Parking for all the site related traffic will be accommodated within the site and there will be minimal on-street parking impact in Church Avenue or any other street.
- All the new site parking spaces associated with the development of site SY3 will be designed according to Council code and relevant standard (AS 2890).
- The site is well-served by public transport. It is located within 250m of Mascot railway station and is close to a number of bus routes, 305, 357 and 400/410.
- A new emergency vehicular access is proposed for the site on Bourke Street about 60m south of Gardeners Road intersection.
- City of Botany Bay Council's traffic issues have been addressed in this report.

Appendix A

**Plans for Proposed
Development**