

Appendix B Traffic Assessment

ROADS AND TRAFFIC AUTHORITY

TRAFFIC REPORT FOR
PROPOSED PUBLIC CAR PARK,
BLUE STREET, NORTH SYDNEY

JULY 2009

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I. INTRODUCTION

- 1.1 Colston Budd Hunt & Kafes Pty Ltd has been commissioned by the Roads and Traffic Authority to prepare a report on the traffic implications of a proposed public car park in North Sydney. The site is located at the eastern end of Blue Street and has previously operated as a car park. The site location is shown in Figure 1.
- 1.2 The site has recently been used as a construction compound, and is currently fenced off and closed. The proposed car park would provide some 95 spaces with access from Blue Street. There would be minor physical alterations to the site including fencing, boom gate and lighting.
- 1.3 The traffic implications of the proposed development have been assessed through the following chapters:-
- Chapter 2 - describing the existing conditions, and
 - Chapter 3 - assessing the implications of the proposed development.

2. EXISTING CONDITIONS

Site Location and Road Network

- 2.1. The site is located at the eastern end of Blue Street, as shown in Figure 1. It has previously operated as a public car park. More recently it has been used as a construction compound, and is currently fenced off and closed. Vehicular access to the site is provided from Blue Street.
- 2.2. Blue Street connects Walker Street in the east with Edward Street in the west. It provides access to North Sydney railway station and bus interchange as well as commercial and retail development. Blue Street provides for one traffic lane in each direction with parking permitted clear of intersections. East of Walker Street, Blue Street has a short dead end section which provides access to the site and the Harbourview Hotel. There is a taxi rank on both sides of the road in this section of Blue Street. West of the site, Blue Street intersects Miller Street at a signalised intersection. Miller Street provides a north-south connection through the CBD, and provides for one traffic lane and one parking lane in each direction, clear of intersections. Parking is banned during peak periods in the direction of peak traffic flow. South of Blue Street, Miller Street continues as Blues Point Road.
- 2.3. Walker Street provides a north-south connection through the North Sydney CBD. It provides for one traffic lane and one parking lane in each direction, clear of intersections. Parking is banned during peak periods in the direction of peak traffic flow. The intersection of Walker Street with Blue Street is an unsignalised t-intersection, with Walker Street and the western part of Blue Street having priority.
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- 2.4 The Pacific Highway is a major road through North Sydney. It provides for two to three traffic lanes in each direction, with parking permitted outside peak periods. It provides access to commercial and retail development. The intersection of Pacific Highway with Walker Street is controlled by traffic signals. There are slip lanes on the highway in both directions for left turns into Walker Street.

Traffic Flows

- 2.5 In order to gauge traffic conditions, traffic counts were undertaken during the weekday morning and afternoon peak periods at the following intersections:

- Pacific Highway/Walker Street;
- Walker Street/Blue Street; and
- Blue Street/Miller Street.

- 2.6 The results of the surveys are shown in Figures 2 and 3, and summarised in Table 2.1.

Road	Location	AM peak hour	PM peak hour
Pacific Highway	East of Walker Street	3,385	2,550
	West of Walker Street	2,165	1,710
Walker Street	North of Pacific Highway	1,455	1,215
	South of Pacific Highway	615	645
Blue Street	West of Miller Street	280	210
	West of Walker Street	610	645
	East of Walker Street	125	100
Miller Street	North of Blue Street	1,230	1,125
Blues Point Road	South of Blue Street	950	1,000

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- 2.7 Table 2.1 shows that the highest flows occurred on Pacific Highway, which carried some 1,700 to 3,400 vehicles per hour two-way during the morning and afternoon peak hours. Walker Street (north of Pacific Highway), Miller Street and Blues Point Road carried lower flows of some 950 to 1,450 vehicles per hour two-way.
- 2.8 Blue Street (between Walker Street and Miller Street) and Walker Street (south of Pacific Highway) carried some 600 to 650 vehicles per hour two-way during the surveyed peak hours. Blue Street carried less than 300 vehicles per hour two-way west of Miller Street and less than 150 vehicles per hour two-way in the dead end section in the vicinity of the site. Most traffic in this section of Blue Street was taxis and traffic to and from the Harbourview Hotel.

Intersection Operations

- 2.9 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections shown in Figures 2 and 3 have been analysed using the SIDRA program. The SIDRA program simulates the operations of the intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.
- 2.10 Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):
- ☐ For traffic signals, the average delay per vehicle in seconds is calculated as $\text{delay}/(\text{all vehicles})$, for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:
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0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode
>70	=	"F"	Unsatisfactory and requires additional capacity

- ☐ For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

- 2.11 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

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- 2.12 The SIDRA analysis found that the signalised intersections of Pacific Highway with Walker Street and of Blue Street with Miller Street/Blues Point Road are operating with average delays of 45 seconds per vehicle or less during the morning and afternoon peak periods. This represents a level of service C/D, a satisfactory level of intersection operation.
- 2.13 The intersection of Walker Street with Blue Street is operating with average delays for all movements of less than 15 seconds per vehicle during morning and afternoon peak periods. This represents level of service A/B, a good level of service.
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3. IMPLICATIONS OF PROPOSED DEVELOPMENT

- 3.1. The proposed car park would provide some 95 spaces with access from the eastern end of Blue Street. There would be minor physical alterations to the site including fencing, boom gate and lighting. The car park is expected to have a mix of long term leased spaces and casual parking.
- 3.2. This chapter assesses the implications of the proposed development through the following sections:
- access, internal layout and circulation;
 - traffic generation and effects; and
 - summary.

Access, Internal Circulation and Layout

- 3.3. Access to the car park is proposed to be provided from the eastern part of Blue Street, east of Walker Street, in the location of the current vehicular access to the site. The access point will include minor alterations, including installation of a boom gate. The boom gate will be located to provide for appropriate queuing within the site (some three vehicles) in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004.
- 3.4. Within the parking area, parking spaces will be provided at grade and will be a minimum of 2.4 metres wide by 5.4 metres long. These dimensions are considered appropriate, being in accordance with AS 2890.1:2004.
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- 3.5. A turning area will be provided at the eastern end of the car park to allow vehicles to turn around. Drivers exiting the car park will be able to pay at an automatic pay station to be located within the car park.
 - 3.6. The proposed access and internal layout arrangements are considered to be appropriate.

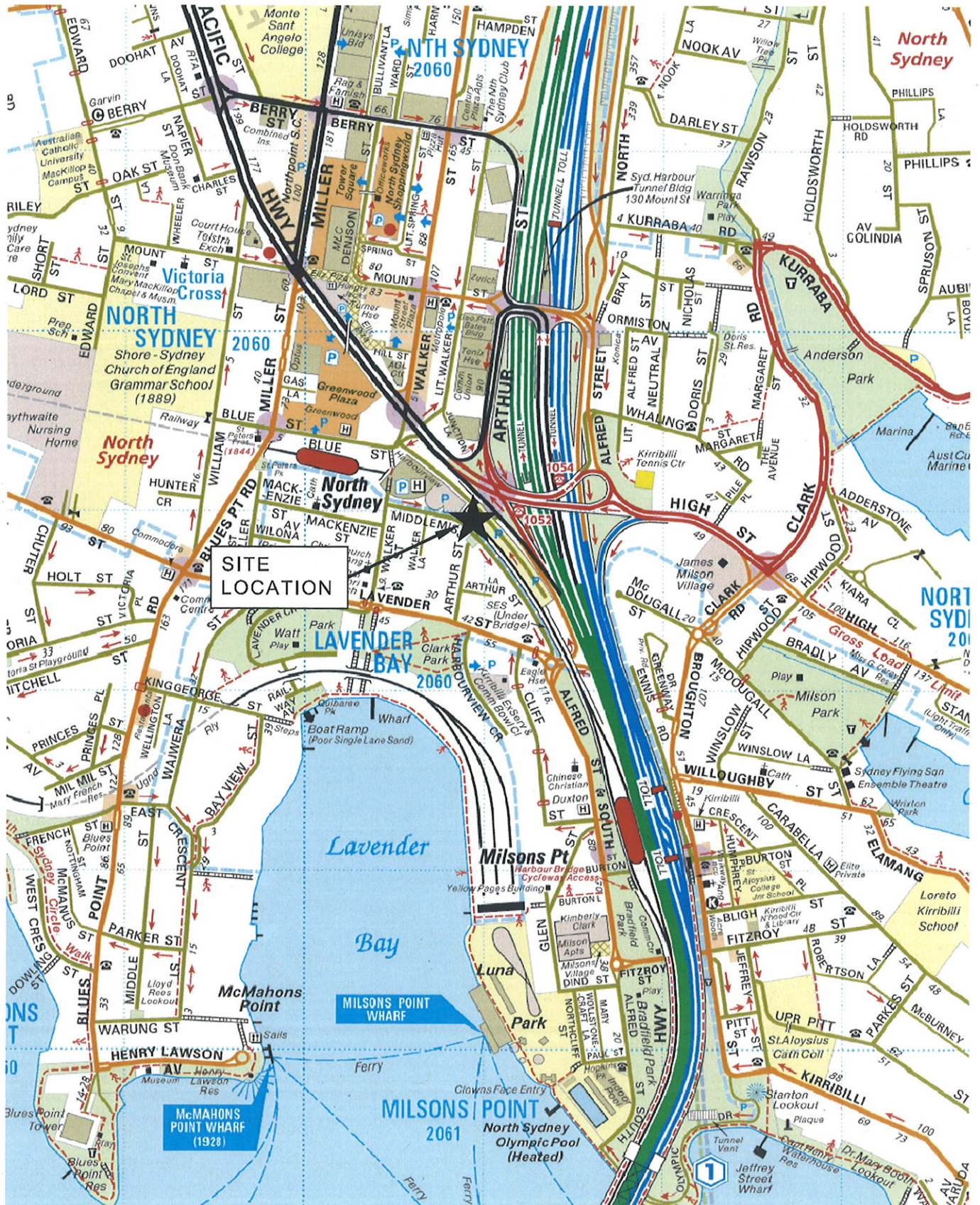
Traffic Generation and Effects

- 3.7. Traffic generated by the proposed development will have its greatest effects during the morning and afternoon peak periods when it combines with commuter traffic on the surrounding road network. Surveys of other commuter car parks in North Sydney have found traffic generations of 0.4 to 0.6 vehicles per hour per spaces during morning and afternoon peak periods.
 - 3.8. Based on these rates, the proposed car park, with some 95 spaces, would generate some 38 to 57 vehicles per hour two-way during the morning and afternoon peak hours. This is a low generation, equivalent to one vehicle every one to two minutes during peak hours.
 - 3.9. Such a low traffic generation would not have significant effects on the operation of the surrounding road network, with increases of some 10 to 30 vehicles per hour two-way on surrounding roads. Adjacent intersections would continue to operate at their existing satisfactory or better levels of service, with similar average delays per vehicle.
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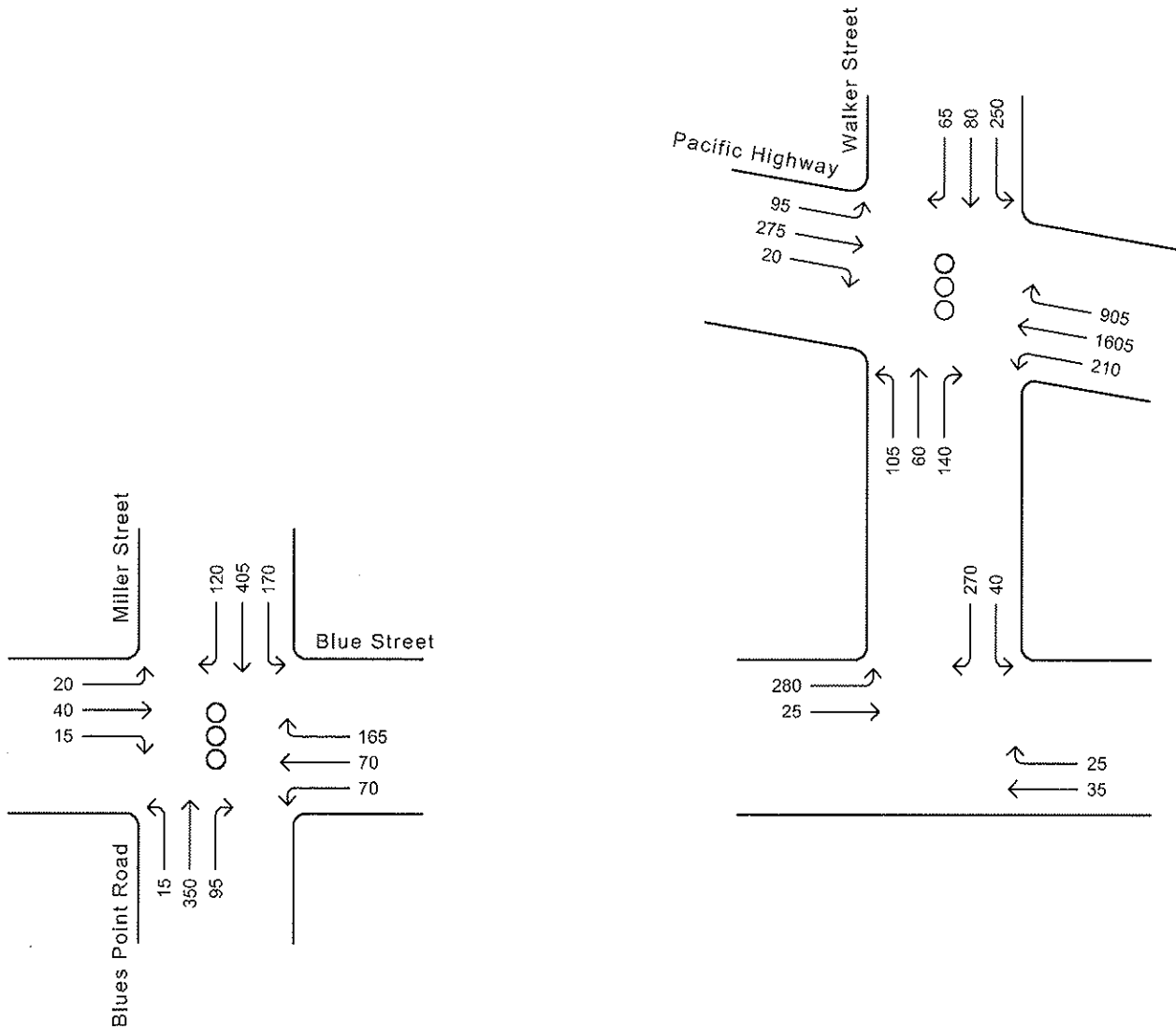
Summary

3.10. In summary, the main points relating to the traffic implications of the proposed public car park are as follows:

- i) the proposed car park will provide some 95 parking spaces;
- ii) the site has previously operated as a public car park;
- iii) access will be provided from the eastern end of Blue Street, as at present;
- iv) access, internal circulation and layout will be provided in accordance with AS 2890.1:2004;
- v) the proposed car park would have a low traffic generation, equivalent to one vehicle every one to two minutes during peak hours; and
- vi) such a low traffic generation would not have significant effects on the operation of the surrounding road network.



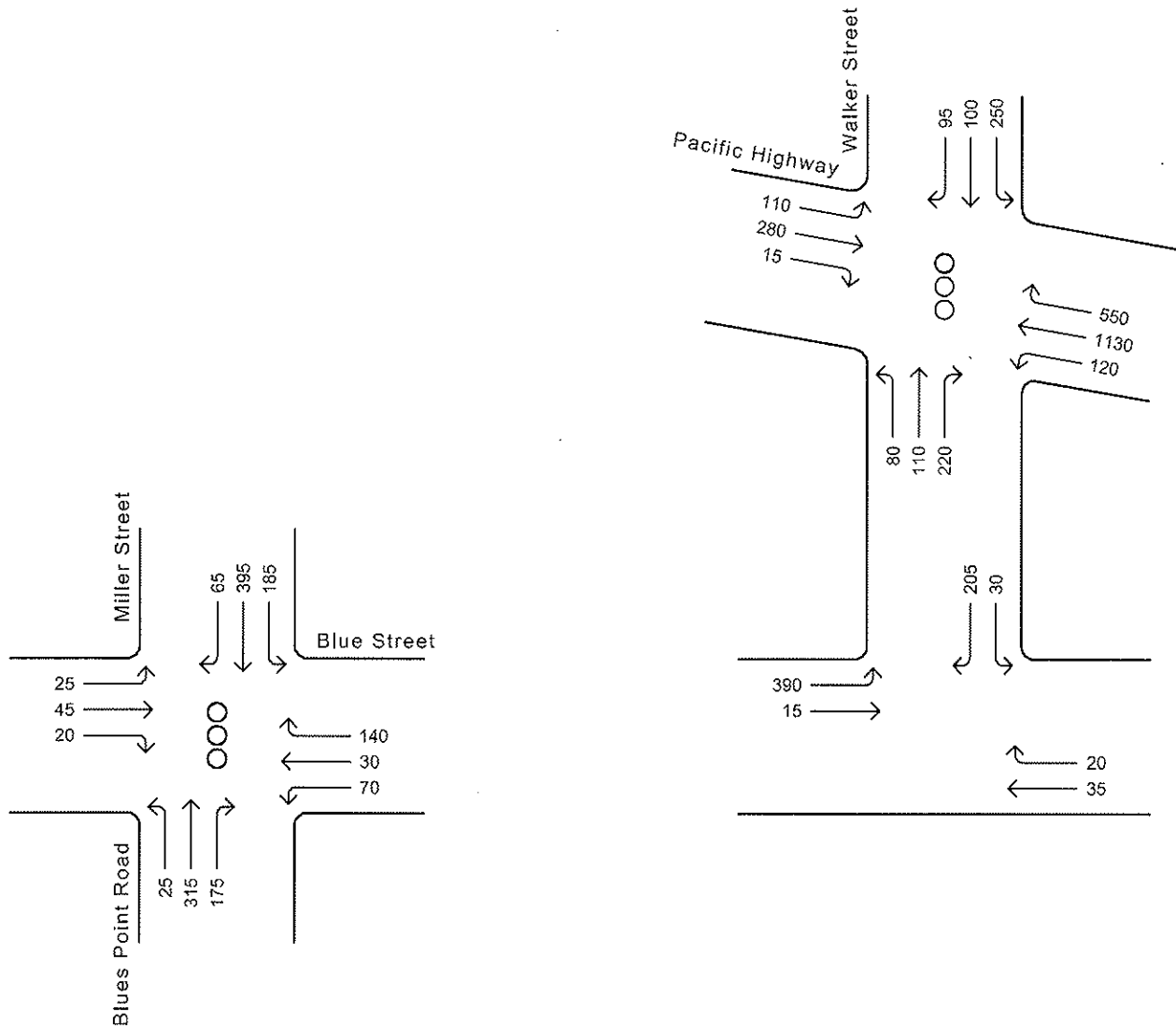
Location Plan



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- ⊗ - Traffic Signals

Existing morning peak hour traffic flows



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- ⌘ - Traffic Signals

Existing afternoon peak hour
traffic flows



Wednesday 4 August 2010

Northern Line: Hornsby or Epping to the City

Station	pm	pm	pm	pm	pm	pm	pm
<u>Hornsby</u>	3.39	---	3.47	---	3.56	3.58	---
<u>Normanhurst</u>	---	---	3.49	---	---	4.01	---
<u>Thornleigh</u>	---	---	3.52	---	---	4.08	---
<u>Pennant Hills</u>	---	---	3.54	---	---	4.10	---
<u>Beecroft</u>	---	---	3.57	---	---	4.12	---
<u>Cheltenham</u>	---	---	3.59	---	---	4.15	---
<u>Epping (UG)</u>	---	---	4.02	---	---	4.17	---
<u>Macquarie Universi</u>	---	---	4.06	---	---	4.21	---
<u>Macquarie Park</u>	---	---	4.08	---	---	4.23	---
<u>North Ryde</u>	---	---	4.10	---	---	4.26	---
<u>Chatswood</u>	---	---	4.20	---	---	4.35	---
<u>Artarmon</u>	---	---	4.22	---	---	4.37	---
<u>St Leonards</u>	---	---	4.24	---	---	4.39	---
<u>Wollstonecraft</u>	---	---	4.27	---	---	4.42	---
<u>Waverton</u>	---	---	4.29	---	---	4.44	---
<u>North Sydney</u>	---	---	4.33	---	---	4.48	---
<u>Milsons Point</u>	---	---	4.35	---	---	4.50	---
<u>Wynyard</u>	---	---	4.39	---	---	4.54	---
<u>Town Hall</u>	---	---	4.43	---	---	4.58	---
<u>Central</u>	---	---	4.47	---	---	5.02	---
<u>Epping (AG)</u>	3.48	3.54	---	4.04	4.06	---	4.24
<u>Eastwood</u>	3.51	3.57	---	4.07	4.09	---	4.27
<u>Denistone</u>	---	3.59	---	4.09	---	---	4.29
<u>West Ryde</u>	---	4.01	---	4.18	4.12	---	4.32
<u>Meadowbank</u>	---	4.03	---	4.20	---	---	4.34
<u>Rhodes</u>	---	4.05	---	4.22	---	---	4.36
<u>Concord West</u>	---	4.08	---	4.25	---	---	4.38
<u>North Strathfield</u>	---	4.10	---	4.27	---	---	4.40
<u>Strathfield</u>	4.02	4.16	---	4.33	4.25	---	4.46
<u>Burwood</u>	---	4.18	---	4.35	---	---	4.48
<u>Redfern</u>	---	4.28	---	4.45	4.37	---	4.59
<u>Central</u>	4.15i	4.31	---	4.48	4.40	---	5.02
<u>Town Hall</u>	---	4.34	---	4.51	4.43	---	5.05
<u>Wynyard</u>	---	4.37	---	4.54	4.46	---	5.08
<u>Milsons Point</u>	---	4.40	---	4.57	4.49	---	5.11
<u>North Sydney</u>	---	4.44	---	5.01	4.53	---	5.15
<u>St Leonards</u>	---	4.51	---	5.08	5.00	---	5.22
<u>Chatswood</u>	---	4.57	---	5.14	5.06	---	5.28
Proceeds to	---	HBV	EPG	HBV	WYG	EPG	HBV

Definitions

- i Arrives or departs from Central Station, intercity platforms 4 to 15
- u Stops to pick up only
- AG Above ground
- UG Underground
- BEW Berowra