AECOM AUSTRALIA PTY LTD

TRAFFIC REPORT FOR PROPPOSED DATA CENTRE, M7 BUSINESS HUB, EASTERN CREEK

SEPTEMBER 2010

COLSTON BUDD HUNT & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Facsimile: (02) 9411 2422
Email: cbhk@cbhk.com.au

REF: 7977/2

TABLE OF CONTENTS

1. INTRODUCTION 1
2. EXISTING CONDITIONS 3
3. IMPLICATIONS OF PROPOSED DEVELOPMENT 9

1. INTRODUCTION

1.1 Colston Budd Hunt & Kafes Pty Ltd has been commissioned by AECOM Australia Pty Ltd to prepare a report examining the transport implications of a proposed data centre at Eastern Creek. This report supports the Part 3A application.

1.2 The site is located within the M7 Business Hub, which is bounded by Old Wallgrove Road and Wallgrove Road. The site is located on the south-eastern corner of the intersection of Roberts Road and Capicure Drive, as shown on Figure 1. The site is currently vacant. The proposed development involves the construction of a new data storage centre of some 14,731m^2 GFA.

1.3 The Director-General's requirements for the project include:-

"Transport and Parking – including:

- *details of the availability of non-car travel modes and the measures to encourage greater use of these travel modes;*
- *predictions of the traffic volumes to be generated and the impacts of this traffic on the safety and capacity of the surrounding road network, including modelling of key intersections; and*
- *access and parking.*

During the preparation of the Environmental Assessment, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.

In particular you must consult with the:

- *Roads and Traffic Authority;*
- *Transgrid;*
- *Sydney Catchment Authority;*
- *Integral Energy;*
- *Sydney Water; and*
- *Blacktown City Council.*

The consultation process and the issues raised must be described in the Environmental Assessment."

1.4 This report has been prepared with reference to the RTA's "Guide to Traffic Generating Developments", and assesses the traffic implications of the proposed development through the following chapters:-

- Chapter 2 - describing existing conditions; and
- Chapter 3 - assessing the implications of the proposed development.

2. EXISTING CONDITIONS

Site Location

2.1 The site of the proposed development is located within the M7 Business Hub at Eastern Creek, which is bounded by Wallgrove Road to the east, Old Wallgrove Road to the north and west and the Warragamba - Prospect water supply pipe-line to the south. The site, which is currently vacant, is located on the south-eastern corner of the intersection of Roberts Road and Capicure Drive, as shown on Figure 1.

2.2 Vehicular access to the industrial precinct is provided from Wallgrove Road and Old Wallgrove Road. Surrounding land use in the vicinity of the site is primarily industrial, comprising a mix of warehouse, distribution and business park uses. Limited sites within the area have been developed.

Road Network

2.3 The road network in the vicinity of the site includes the M4 and M7 Motorways, Wallgrove Road, Old Wallgrove Road, Roberts Road, Capicure Drive and Southridge Street. The M4 Motorway is located to the north of the site and provides a major east-west arterial (RTA State Road) traffic route running from Strathfield in the east to the Blue Mountains in the west. It provides a divided carriageway with three traffic lanes in each direction. The M4 intersects with the M7 Motorway at a major grade separated interchange.

2.4 The M7 Motorway is located to the east of the site and provides a major north-south arterial (RTA State Road) traffic route running from the M2 Motorway at

Baulkham Hills in the north east to the M5 Motorway at Casula in the south. It provides a divided carriageway with generally two traffic lanes in each direction.

2.5 Wallgrove Road is located to the east of the site adjacent to the M7 Motorway. It provides a north-south traffic route from the Great Western Highway to Elizabeth Drive at Cecil Hills. Adjacent to the industrial precinct, it provides a two lane undivided road. To the north of Old Wallgrove Road, it provides an undivided road with two traffic lanes in each direction, clear of intersections. Wallgrove Road intersects with Old Wallgrove Road at a traffic signal controlled intersection.

2.6 Old Wallgrove Road is located to the north of the site and provides access to the northern part of the industrial precinct. It provides an undivided two-way road with one traffic lane in each direction, clear of intersections. Old Wallgrove Road intersects with Roberts Road and Southridge Street at unsignalised priority controlled intersections.

2.7 Roberts Road is located adjacent to the western boundary of the site and provides an undivided industrial road with one traffic lane in each direction, clear of intersections. Roberts Road intersects with Capicure Drive at an unsignalised intersection with priority given to Roberts Road. A turn around facility for large service vehicles is available at the southern end of Roberts Road.

2.8 Capicure Drive is located adjacent to the northern site boundary. Capicure Drive combines with Southridge Street to connect between Old Wallgrove Road to the north and Roberts Road to the west. It provides an undivided industrial road with one traffic lane and one traffic lane in each direction, clear of intersections.

2.9 Southridge Street is located to the east of the site and provides a north-south traffic route between Old Wallgrove Road and Capicure Drive. It provides access

to a number of industrial developments and intersects with Capicure Drive at a roundabout controlled intersection.

Traffic Flows

2.10 Previous studies for the M7 Business Hub at Eastern Creek have identified road works and public transport requirements to cater for future development of the site. Thus this report concentrates on local implications with respect to access, parking provision, servicing and internal layout.

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

- Old Wallgrove Road/Roberts Road;
- Old Wallgrove Road/Southridge Street; and
- Capicure Drive/Southridge Street.

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

2.13 Table 2.1 shows that traffic flows on Old Wallgrove Road, east of Roberts Road, are some 350 to 550 vehicles per hour two-way during the morning and afternoon peak hour periods. West of Roberts Road traffic flows are lower at some 150 to 200 vehicles per hour two-way during peak periods.

Table 2.1: Existing Two-Way (Sum of Both Directions) Peak Hour Traffic Flows		
Road/Location	**Morning Vehicles/Hour**	**Afternoon Vehicles/Hour**
Old Wallgrove Road		
- east of Southridge Street	555	550
- east of Roberts Road	340	365
- west of Roberts Road	180	190
Roberts Road		
- south of Old Wallgrove Road	170	190
Southridge Street		
- south of Old Wallgrove Road	185	185
- north of Capicure Drive	40	75
Capicure Drive		
- west of Southridge Street	10	45

2.14 Traffic flows on Roberts Road and Southridge Street, south of Old Wallgrove Road, are some 150 to 200 vehicles per hour two-way during peak periods. Peak period traffic flows on Capicure Drive are less than 50 vehicles per hour two-way.

Intersection Operation

2.15 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 have been analysed using the SIDRA computer program.

2.16 The SIDRA program simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. 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 delay/(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:-

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 roundabouts, 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 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

2.17 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.

2.18 The SIDRA analysis found that the unsignalised intersections of Old Wallgrove Road with Southridge Street and Roberts Road are operating with average delays, for the movement with the highest average delay, of less than 15 seconds per vehicle during the morning and afternoon peak periods. This represents a level of service A/B, which is a good level of intersection operation.

2.19 The roundabout controlled intersection of Capicure Drive and Southridge Street is also operating at a good level of service during peak periods. Average delays per vehicle, for all movements through the intersection, are less than 15 seconds during the morning and afternoon peak periods. This represents a level of service A, which is a good level of intersection operation.

Public Transport

2.20 Local bus services are provided by Busways. Bus route 738 – Mount Druitt to Eastern Creek Business Park, operates Mondays to Fridays and links the Eastern Creek industrial precinct to Mount Druitt Railway Station. The bus service operates along Wallgrove Road and Old Wallgrove Road linking to Horsley Park. This bus service operates on a 20 to 30 minute service frequency during peak periods.

2.21 Passengers can transfer from bus to rail services at Mount Druitt Railway Station, allowing access to the surrounding Sydney metropolitan rail network.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 It is proposed to construct a new data storage centre comprising data halls, storage space, ancillary office space and associated structure. The proposed development will comprise some 14,731m^2 GFA.

3.2 The proposed development will have a small number of employees on-site (some 5 employees). Vehicular access will be provided from Roberts Road. On-site parking is proposed for some 28 spaces. Provision for service vehicles has also been made.

3.3 The implications of the proposed development are assessed through the following sections:-

- public transport;
- work place travel plan;
- parking provision;
- access, internal layout and servicing;
- traffic effects;
- principles of construction traffic management;
- Director General's requirements; and
- summary.

Public Transport

3.4 The proposed development is consistent with government objectives. These objectives are to ensure that urban structure, built forms, land use locations,

development designs, subdivision locations and street layouts help achieve the following planning principles:-

(a) improving accessibility to housing, employment and services by walking, cycling, and public transport;

(b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

(c) moderating growth in the demand for travel and the distances travelled, especially by car; and

(d) supporting the efficient and viable operation of public transport services.

Work Place Travel Plan

3.5 In association with the development of the overall M7 Business Hub and to encourage travel modes other than private vehicles for the industrial precinct, a work place travel plan should be developed to meet the needs of future industrial uses and their employees. The specific requirements and needs of the tenants and employees, hours of work, shift times, etc., should be incorporated in the work place travel plan to encourage the use of public transport.

3.6 The principles of the work place travel plan, to be developed for the overall industrial precinct in consultation with Council, RTA and other stakeholders, shall include the following:-

- encourage the use of public transport;

- encourage public transport by employees through the provision of information, maps and timetables;

- raise awareness of health benefits of walking (including maps showing safe walking routes);

- encourage cycling by providing safe and secure bicycle parking, including the provision of lockers and change facilities;

- provide parking consistent with government's objective of reducing traffic generation and encouraging public transport.

Parking Provision

3.7 Blacktown City Council's SEPP 59 – Eastern Creek Precinct Plan specifies the following requirements for the provision of on-site parking for industrial developments:-

- Buildings 7,500m^2 or less – 1 space per 100m^2 GFA;

- Buildings greater than 7,500m^2 – 1 space per 200m^2 GFA only for the area in excess of 7,500m^2 where there is a specific end user which would not demand a higher rate and where employee parking is adequately catered for.

3.8 Application of these rates would lead to a requirement for 111 spaces. However, bearing in mind the proposed development will have a small number of employees on-site (some 5 employees), a provision of 111 spaces would be excessive. The proposed provision of 28 spaces is considered more appropriate and would readily cater for the parking demands of employees and visitors.

3.9 In addition to car parking, appropriate bicycle parking will be provided within the proposed data storage centre.

Access, internal layout and servicing

3.10 Vehicular access will be provided via a combined entry and exit driveway some 14 metres wide from Roberts Road, along the western boundary of the site. The access driveway is located away from the intersection with Capicure Drive. Boomgates and a security control office would control access to the site. A turn around area for unauthorised vehicles is located adjacent to the entry driveway. This turning area will allow unauthorised vehicles to recirculate back to Roberts Road.

3.11 A separate access will be provided to the south of the main access on Roberts Road at the south-western corner of the site, which will provide heavy vehicle access to the Integral Energy substation.

3.12 The entry and exit boomgates and access controls would be located some 20 to 25 metres within the site. This provides queuing area for one articulated truck or three to four cars. The driveway will be used by employee vehicles and service vehicles.

3.13 The driveway will provide appropriate sight lines for exiting vehicles and will be designed to accommodate two-way traffic. The driveway will be designed to accommodate the swept paths of semi trailers, the largest vehicles expected to service the site, in accordance with the Australian Standards for Parking Facilities (Part 2: Off-street commercial vehicle facilities), AS2890.2-2002.

3.14 The internal layout will provide for maintenance and service vehicles to circulate within the development. Internal circulation roads will be provided around the data centre storage facilities. Loading docks will be provided adjacent to these buildings. The loading facilities and internal circulation roads will provide for articulated vehicles to enter the site, manoeuvre within the site and exit in a forward direction.

3.15 Parking is proposed to be provided in an at-grade car park adjacent to the administration building. Within parking areas, parking bay dimensions and aisle widths will be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking) AS2890.1-2004. Parking bay dimensions will be a minimum of 2.4 metres wide by 5.4 metres long. Circulation aisles will be a minimum of 5.8 metres wide (where parking spaces are accessed) and wider where service vehicles will circulate and manoeuvre. Disabled parking spaces will be 2.4 metres wides with an additional 2.4 metres adjacent to the space, by 5.4 metres long.

3.16 These dimensions are considered appropriate being in accordance with AS2890.1-2004 and AS2890.2-2002.

Traffic Effects

3.17 The proposed development forms part of the overall M7 Business Hub at Eastern Creek. Previous studies have identified appropriate road and transport works to cater for development of the overall industrial precinct.

3.18 The proposed development is expected to generate relatively low volumes of traffic. Estimated typical daily traffic movements (in plus out) will comprise:-

- staff vehicles – some 10 to 20 movements per day;
- maintenance vehicles – some 10 to 20 movements per day; and
- delivery vehicles – some 5 to 10 movements per day.

3.19 The majority of staff vehicle movements will occur during the morning and afternoon peak periods (some five vehicles per hour two-way), with maintenance and delivery vehicle movements generally spread out over the day (typically less than five vehicles per hour two-way). This is a low traffic generation equivalent to only one vehicle every six minutes during peak periods.

3.20 The surrounding road network and intersections in the vicinity of the site, with the additional development traffic flows, will continue to operate at the same levels of service, with similar average delays compared to today.

3.21 Traffic from the proposed development will be considerably less than that assumed for the site in previous studies. Thus the traffic effects of the proposed development are consistent with the overall traffic planning of the area.

Principles of Construction Traffic Management

3.22 The appointed builder will be responsible for the preparation of a construction traffic management plan, which will be prepared prior to the commencement of construction work, taking into account relevant consent conditions.

3.23 Construction of the development will commence with site preparation works and excavation. Construction access will be provided to/from Roberts Road, via a combined entry/exit driveway. It is anticipated that on-site materials handling will occur at the northern end of the site and a works zone will be required on the

north-western part of the site. Mobile cranes will be used to transport material on the site.

3.24 Class A construction fencing will be erected around the perimeter of the site. Openings in the construction fencing and the construction access driveway will be managed and controlled by traffic controllers. The movement of trucks entering and exiting the site will be managed and controlled by traffic marshals.

3.25 The overall principles of traffic management during construction are as follows:-

- provide a convenient and appropriate environment for pedestrians/workers;
- minimise effects on pedestrian movement and amenity;
- manage and control construction traffic on the adjacent road network and truck movements to and from the construction activity;
- construction work will commence with the construction of the internal access roads and its connection onto Roberts Road;
- security gates and appropriate construction fencing will be located around the perimeter of the industrial area;
- construction access will be controlled onto Roberts Road adjacent to the western boundary of the site;
- construction vehicles to enter and exit the site in a forward direction;

- traffic capacity will be maintained at intersections and mid-block on the surrounding road network in the vicinity of the site;
- maintain safety for workers;
- restrict construction activity to designated truck routes through the area;
- work zones to be managed and controlled by qualified site personnel;
- provide appropriate parking adjacent to the construction compound for construction workers; and
- construction activity to be carried out in accordance with the approved hours of work.

3.26 The preparation of the construction traffic management plan, signage detail, traffic management measures, control of pedestrians and control and management of construction activity/vehicles in the vicinity of the site will be the responsibility of the appointed builder.

Director General's Requirements

3.27 The traffic report has been prepared to respond to the requirements of the Director General of Planning with respect to the Environmental Assessment of the project. These requirements included:-

- *details of the availability of non-car travel modes and the measures to encourage greater use of these travel modes.*

3.28 Matters relating to promote public transport and encourage greater use of non-car travel modes are discussed in paragraphs 3.4 to 3.6.

- *predictions of the traffic volumes to be generated and the impacts of this traffic on the safety and capacity of the surrounding road network, including modelling of key intersections.*

3.29 Matters relating to traffic generation and its effects on the operation of the surrounding road network are discussed in paragraphs 3.17 to 3.21.

- *access and parking.*

3.30 Matters relating to the proposed access arrangements and internal circulation are described in paragraphs 3.10 to 3.16 and matters relating to parking are described in paragraphs 3.7 to 3.9.

3.31 In regards to traffic matters associated with the proposed development, we have consulted with the Roads and Traffic Authority. Matters raised and discussed with the authority included:-

- *transport measures to manage demand for car use and to increase the use of walking, cycling and public transport.*

3.32 This matter has been addressed in paragraphs 3.4 to 3.6.

- *daily and peak traffic movements likely to be generated by the proposed development including the impact on nearby intersections and the need/ associated funding for upgrading or road improvement works (if required).*

3.33 This matter has been described in paragraphs 3.17 to 3.21.

- *details of the accesses and the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian Standards.*

3.34 Matters relating to access and compliance with the Australian Standards are described in paragraphs 3.10 to 3.16 and matters relating to parking provision are described in paragraphs 3.7 to 3.9.

- *details of service vehicle movements.*

3.35 This matter is described in paragraph 3.18.

- *encourage non-car travel modes (including public transport use, walking and cycling) and the potential to implement a location specific travel plan.*

3.36 The principles of a work place travel plan are described in Paragraphs 3.5 and 3.6.

Summary

3.37 In summary, the main points relating to the transport implications of the proposed data storage centre are as follows:-

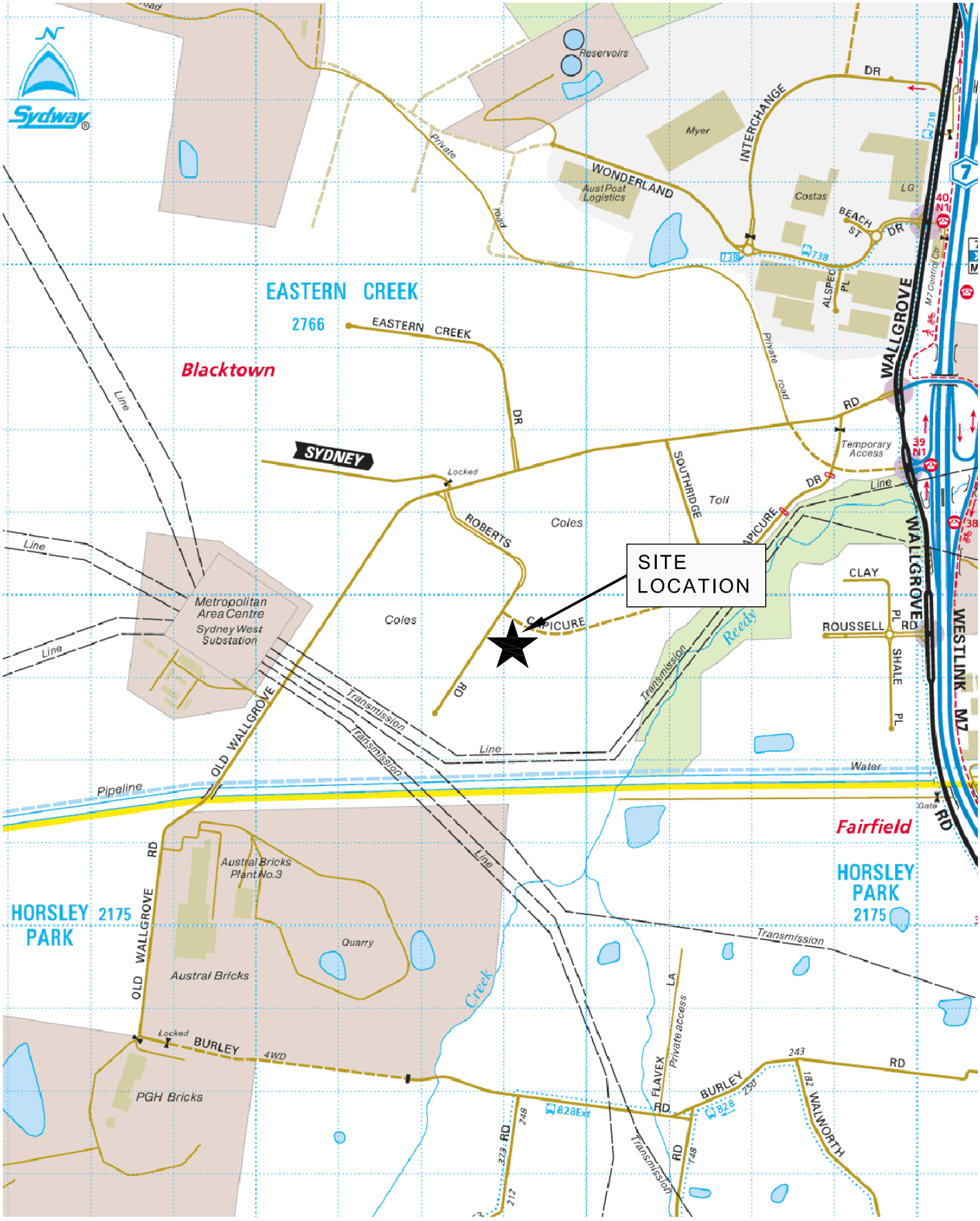
i) previous studies have identified appropriate road works to cater for development traffic;

ii) parking provision is considered appropriate;

iii) access, internal layout and servicing will be provided in accordance with Australian Standard for Parking Facilities Part 1: Off-street car parking facilities (AS2890.1-2004) and Part 2: Off-street commercial vehicle facilities (AS2890.2-2002) to cater for cars and service vehicles;

iv) the surrounding road network can cater for the traffic generated by the proposed development;

v) the Director General's requirements and matters raised by the Roads and Traffic Authority are discussed in paragraphs 3.27 to 3.36.

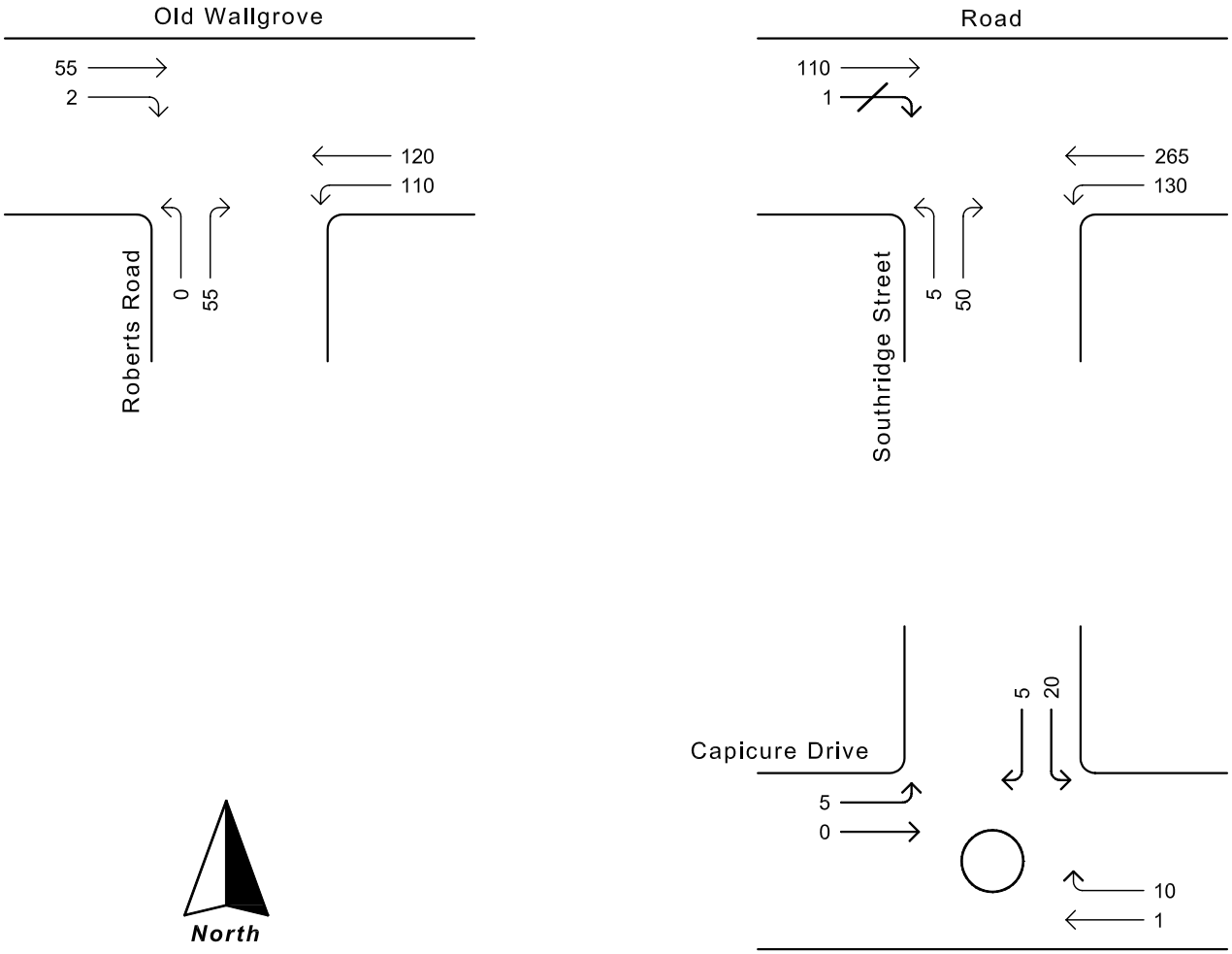


Location Plan

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 7977 23 August 2010

Figure 1



LEGEND

100 - Existing Peak Hour Traffic Flows

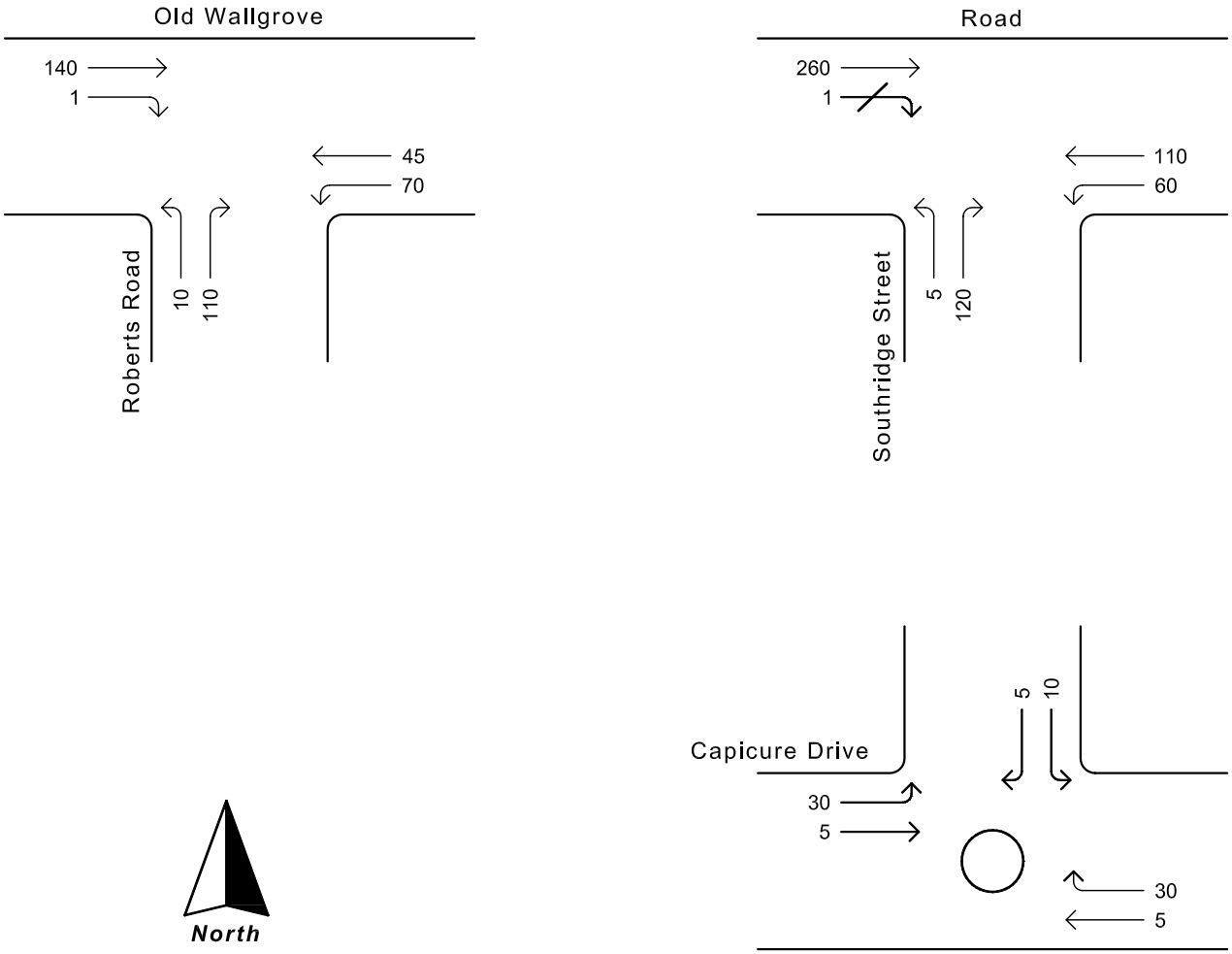
○ - Roundabout

Existing morning peak hour traffic flows

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 7977 23 August 2010

Figure 2



LEGEND

100 - Existing Peak Hour Traffic Flows

○ - Roundabout

Existing afternoon peak hour traffic flows

Colston Budd Hunt & Kafes Pty Ltd

DRAWN BY CBHK Pty Ltd_hs Ref: 7977 23 August 2010

Figure 3