

## ATTACHMENT 2

FDC CONSTRUCTION & FITOUT PTY LTD

TRAFFIC REPORT FOR  
PROPOSED HOME  
IMPROVEMENT CENTRE,  
MINCHINBURY

FEBRUARY 2011

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](mailto:cbhk@cbhk.com.au)

REF: 8128

TABLE OF CONTENTS

1. INTRODUCTION .....	1
2. EXISTING CONDITIONS.....	2
3. IMPLICATIONS OF PROPOSED DEVELOPMENT .....	8



## I. INTRODUCTION

- I.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by FDC Construction & Fitout Pty Ltd to prepare a report examining the traffic implications of a proposed home improvement centre on Great Western Highway and Carlisle Avenue at Minchinbury. The site location is shown in Figure 1.
- I.2 The site is currently vacant. It forms part of a larger site which has development consent for a bulky goods development. It is proposed to construct a home improvement centre on the site of some 13,588m<sup>2</sup>, with vehicular access from Great Western Highway, Carlisle Avenue and a new road at the rear of the site which will connect to Kippist Avenue and John Hines Avenue.
- I.3 This report assesses the implications of the proposed development through the following chapters:
- Chapter 2 - describing the existing conditions; and
  - Chapter 3 - assessing the traffic implications of the proposed development.

## 2. EXISTING CONDITIONS

### Site Location and Road Network

- 2.1 The site is located on the south-western corner of the intersection of Great Western Highway and Carlisle Avenue at Minchinbury, as shown in Figure 1. It is currently vacant, and forms part of a larger site which has consent for a bulky goods development of some 17,124m<sup>2</sup> plus a fast food outlet. The larger site also has frontage to Kippist Avenue to the south.
- 2.2 There is bulky goods development east and west of the site, and residential development on the northern side of Great Western Highway. There is a car yard opposite the site on Carlisle Avenue. The Minchinbury industrial area is south-east of the site.
- 2.3 The road network in the vicinity of the site includes Great Western Highway, Carlisle Avenue, Eddie Road, Kippist Avenue and John Hines Avenue. In the vicinity of the site, the Great Western Highway provides a six lane divided carriageway with three traffic lanes in each direction and a central concrete median. It has an 80 kilometre per hour speed limit, with no parking permitted and limited access to adjacent properties.
- 2.4 Carlisle Avenue provides a north-south connection between the Mount Druitt town centre and Minchinbury. It connects to Roper Road at its southern end. The intersection of Carlisle Avenue with Great Western Highway is controlled by traffic signals. All turns are permitted at the intersection. There is a right turn bay in Carlisle Avenue for turns into Great Western Highway.
-

- 2.5 In the vicinity of the site, Carlisle Avenue provides for two traffic lanes in each direction, plus a northbound bus lane, and a central concrete median. It has a 60 kilometre per hour speed limit northbound and a 70 kilometre per hour speed limit southbound. There are bus stops on both sides of the road adjacent to the site. South of Eddie Road, Carlisle Avenue provides one traffic lane in each direction.
- 2.6 Eddie Road is south of the site. It provides access to and from the Minchinbury industrial area. It intersects Carlisle Avenue at a two-lane roundabout. Kippist Avenue forms a fourth (western) approach to the roundabout. Kippist Avenue also provides access to industrial development, and is currently a dead end west of Eddie Road.
- 2.7 West of the site, John Hines Avenue runs south from Great Western Highway at a signalised intersection, before bending west, where it is a dead end. It provides for one traffic lane and one parking lane in each direction, clear of intersections. It provides access to adjacent bulky goods development.

#### Traffic Conditions

- 2.8 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with commuter and other traffic. In order to gauge traffic conditions, traffic counts were undertaken during Friday afternoon and Saturday lunchtime peak periods at the following intersections:
- Great Western Highway/Carlisle Avenue;
  - Great Western Highway/John Hines Avenue; and
  - Carlisle Avenue/Eddie Road/Kippist Avenue.
-

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

<b>Table 2.1: Existing two-way (sum of both directions) peak hour traffic flows</b>			
<b>Road</b>	<b>Location</b>	<b>Friday afternoon peak hour</b>	<b>Saturday midday peak hour</b>
Great Western Highway	East of Carlisle Avenue	2,825	2,535
	East of John Hines Avenue	3,255	3,130
	West of John Hines Avenue	3,100	2,820
Carlisle Avenue	North of Great Western Highway	2,690	2,300
	South of Great Western Highway	1,480	1,325
	South of Eddie Road	1,470	1,400
John Hines Avenue	South of Great Western Highway	645	1,170
Eddie Road	East of Carlisle Avenue	690	490
Kippist Avenue	West of Carlisle Avenue	200	20

- 2.10 Table 2.1 shows that the Great Western Highway carried some 2,550 to 3,250 vehicles per hour two-way during the Friday afternoon and Saturday peak periods. North of Great Western Highway, Carlisle Avenue carried lower flows of some 2,300 to 2,700 vehicles per hour two-way. South of Great Western Highway, Carlisle Avenue carried some 1,300 to 1,500 vehicles per hour two-way. Eddie Road and John Hines Avenue carried some 500 to 1,200 vehicles per hour two-way and Kippist Avenue carried flows of some 200 vehicles per hour two-way during the Friday afternoon peak hour. On the Saturday, flows on Kippist Avenue were lower at less than 100 vehicles per hour two-way.

#### Intersection Operations

- 2.11 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows.

- 
- 
- 2.12 The surveyed intersections shown in Figure 2 have been analysed using the SIDRA computer program. SIDRA analyses isolated intersections controlled by traffic signals, roundabouts and signs.
- 2.13 SIDRA provides a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.
- 2.14 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 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

- 2.15 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.
- 2.16 The analysis found that the signalised intersection of Great Western Highway with Carlisle Avenue is operating with average delays of less than 50 seconds per vehicle during Friday afternoon and Saturday peak periods. This represents LOS D, a satisfactory level of service for a busy intersection during peak periods.
- 2.17 The signalised intersection of Great Western Highway with John Hines Avenue is operating with average delays of less than 20 seconds per vehicle during peak periods. This represents level of service B, a good level of service.
- 2.18 The roundabout controlled intersection of Carlisle Avenue with Eddie Road and Kippist Avenue is operating with average delays for the highest delayed movement of less than 20 seconds per vehicle during peak periods. This represents level of service B, a good level of service.
- 
-



Public Transport

- 2.19 Local bus services are provided by Westbus. There are bus stops on Great Western Highway and Carlisle Avenue, close to the site. Route 770 operates along Great Western Highway between Mount Druitt and Penrith via Colyton, St Marys, Claremont Meadows and UWS Kingswood. It operates on a 30 minute headway in each direction, Monday to Friday, and a 60 minute headway in each direction on weekends. Services include links to Penrith, St Marys and Mount Druitt railway stations.
- 2.20 Route 771 operates along Great Western Highway, connecting Mount Druitt and St Marys. It operates on a 60 minute headway in each direction, seven days per week, with more frequent services during weekday peak periods. Services include links to Mount Druitt and St Marys railway stations.
- 2.21 Routes 775 and 776 operate along Carlisle Avenue between Mount Druitt and Penrith, via Erskine Park, St Clair, St Marys, UWS Kingswood and Nepean Hospital. Each service operates on a 30 minute headway in each direction on weekdays and a 60 minute headway in each direction on Sundays. Services include links to Penrith, St Marys and Mount Druitt railway stations.

### 3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 It is proposed to construct a home improvement centre on the site of some 13,588m<sup>2</sup>. The proposed development includes general sales (some 8,004m<sup>2</sup>), garden area (2,228m<sup>2</sup>), trade (2,162m<sup>2</sup>), back of house (851m<sup>2</sup>) and mezzanine (342m<sup>2</sup>) areas. On site parking is proposed for some 387 cars, with vehicular access from Great Western Highway (for customers), Carlisle Avenue (for customers) and a new road at the rear of the site which will connect to Kippist Avenue and John Hines Avenue (for service vehicles).

3.2 This chapter assesses the traffic implications of the proposed development through the following sections:

- public transport;
- parking provision;
- access, servicing and internal layout;
- traffic generation and effects; and
- summary.

#### Public Transport

3.2 As previously discussed, bus services operate along Great Western Highway and Carlisle Avenue, adjacent to the site, and provide links to surrounding areas, including Mount Druitt, Erskine Park, St Clair, Colyton, St Marys, Claremont Meadows, UWS Kingswood, Nepean Hospital and Penrith. The site is therefore accessible by public transport.

---

3.3 It is unlikely that a large proportion of customers would use public transport. However, employees could use public transport. The proposed development would therefore increase employment densities close to existing public transport services. The proposal would therefore strengthen the existing demand for these services. This is consistent with government policy and the planning principles of:

- (a) improving accessibility to 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.

#### Parking Provision

- 3.4 The Blacktown Development Control Plan 2006 does not have a specific requirement for home improvement centres. The DCP indicates that bulky goods developments should provide one space per 45m<sup>2</sup> GFA. Based on this rate, the proposed development would require 302 spaces.
- 3.5 The proposed parking provision of 387 spaces satisfies this requirement and is considered appropriate.
-

- 
- 
- 3.6 The proposed parking provision includes eight disabled spaces at the front of the store. This represents a provision of some two per cent.

Access, Servicing and Internal Layout

- 3.7 Vehicular access to the development is proposed from Great Western Highway (for customers), Carlisle Avenue (for customers) and a new road connecting Kippist Avenue and John Hines Avenue (for service vehicles).
- 3.8 The access from Great Western Highway would provide for vehicles entering by left turns. It would be facilitated by a slip lane along the site frontage. The left turn slip lane and access driveway from Great Western Highway is similar to the arrangements for the approved bulky goods development on the site.
- 3.9 The Carlisle Avenue access driveway will provide separate entry and exit lanes, separated by a median. Turns at the Carlisle Avenue access will be left in/left out due to the median in Carlisle Avenue. Traffic from the north on Carlisle Avenue would be able to use the Eddie Road roundabout to turn around to reach the site. These arrangements are also similar to the approved bulky goods development.
- 3.10 Inside the Carlisle Avenue access, a roundabout will distribute traffic between the various areas in the main car park and the entry/exit to the trade area of the building.
- 3.11 Vehicle access, including service access, is proposed in two locations from an extension to John Hines Avenue, which will connect to Kippist Avenue. This road will be constructed to serve the proposed development, similar to that in the approved bulky goods development.
- 
-

- 
- 
- 3.12 The road will be constructed with a 13.5 metre carriageway and 3.5 metre verges, in accordance with Council's controls for industrial roads.
- 3.13 Three loading bays are proposed for the development, plus a separate garbage collection bay. The driveways, circulation areas and loading bays will accommodate 19 metre semi trailers, the largest vehicles which will service the development. Service vehicles will be able to enter and exit the site in a forward direction. Service vehicle swept paths are shown in Figures 4 to 6.
- 3.14 Within the customer parking area, parking spaces will be a minimum of 2.6 metres wide by 5.4 metres long, with 6.6 metre wide circulation aisles. Spaces with adjacent obstructions will be 0.3 metres wider to provide for doors to open. Disabled spaces will be a minimum of 2.4 metres wide, with a 2.4 metre wide adjacent area for loading/unloading wheelchairs. These dimensions are considered appropriate, being in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 6: Off-street parking for people with disabilities), AS 2890.1:2004 and AS 2890.6:2009.

#### Traffic Generation and Effects

- 3.15 Traffic generated by the proposed development will have its greatest effects during weekday afternoon and Saturday peak periods when it combines with commuter and other traffic.
- 3.16 The proposed home improvement centre would be expected to generate some 2.5 and 4.5 vehicles per hour per 100m<sup>2</sup> during weekday afternoon and Saturday peak hours respectively.
- 
-

- 
- 
- 3.17 On this basis, the proposed development would generate some 340 and 610 vehicles per hour two-way during weekday afternoon and Saturday peak hours.
- 3.18 Based on the approved development plan, some 8,000m<sup>2</sup> of the approved some 18,000m<sup>2</sup> bulky goods could be accommodated on the remaining part of the site. The traffic report<sup>1</sup> submitted with the previous application assessed traffic generations of 280 and 440 vehicles per hour two-way for the weekday afternoon and Saturday peak hours respectively.
- 3.19 We have therefore assessed additional traffic generations of 125 and 200 vehicles per hour two-way for the remainder of the site, for the weekday afternoon and Saturday peak hours respectively.
- 3.20 The RTA guidelines note that for retail type activities a significant proportion of the traffic generation is passing trade, i.e. customers who would have passed the site regardless of their visit. This is typically some 20 per cent.
- 3.21 Allowing for 20 per cent passing trade, the net increases would be some 370 and 650 vehicles per hour two-way during the weekday afternoon and Saturday peak hours respectively.
- 3.22 The additional traffic has been assigned to the road network. Existing peak hour traffic flows plus development traffic are shown in Figures 2 and 3, and summarised in Table 3.1.

---

<sup>1</sup> "Proposed Bulky Goods Development Cnr Great Western Highway and Carlisle Avenue, Minchinbury Assessment of Traffic and Parking Implications". Prepared by Transport and Traffic Planning Associates, May 2006.

---

---

**Table 3.1: Existing two-way peak hour traffic flows plus development traffic**

Road	Location	Friday afternoon peak hour		Saturday midday peak hour	
		Existing	Plus development	Existing	Plus development
Great Western Highway	East of Carlisle Avenue	2,825	+ 50	2,535	+ 160
	East of John Hines Avenue	3,255	-50	3,130	-80
	West of John Hines Avenue	3,100	+ 100	2,820	+ 170
Carlisle Avenue	North of Great Western Highway	2,690	+ 70	2,300	+ 150
	South of Great Western Highway	1,480	+ 105	1,325	+ 235
	South of Eddie Road	1,470	+ 150	1,400	+ 170
John Hines Avenue	South of Great Western Highway	645	+ 150	1,170	+ 250
Eddie Road	East of Carlisle Avenue	690	-	490	-
Kippist Avenue	West of Carlisle Avenue	200	+ 75	20	+ 85

- 3.23 Table 3.1 shows that traffic increases on Carlisle Avenue and John Hines Avenue would be some 70 to 250 vehicles per hour two-way during peak hours. Increases on Great Western Highway and Kippist Avenue would be lower at some 50 to 170 vehicles per hour two-way.
- 3.24 The intersections previously analysed in Chapter 2 have been re-analysed with SIDRA for the additional development traffic flows shown in Figures 2 and 3.
- 3.25 The analysis found that the signalised intersection of Great Western Highway with Carlisle Avenue would operate with average delays of less than 50 seconds per vehicle during Friday afternoon and Saturday peak periods. This represents LOS D, a satisfactory level of service for a busy intersection during peak periods.
- 3.26 The signalised intersection of Great Western Highway with John Hines Avenue would operate with average delays of less than 25 seconds per vehicle during peak periods. This represents LOS B, a good level of service.

3.27 The roundabout controlled intersection of Carlisle Avenue with Eddie Road and Kippist Avenue would continue to operate with average delays for the highest delayed movement of less than 20 seconds per vehicle during peak periods. This represents level of service B, a good level of service.

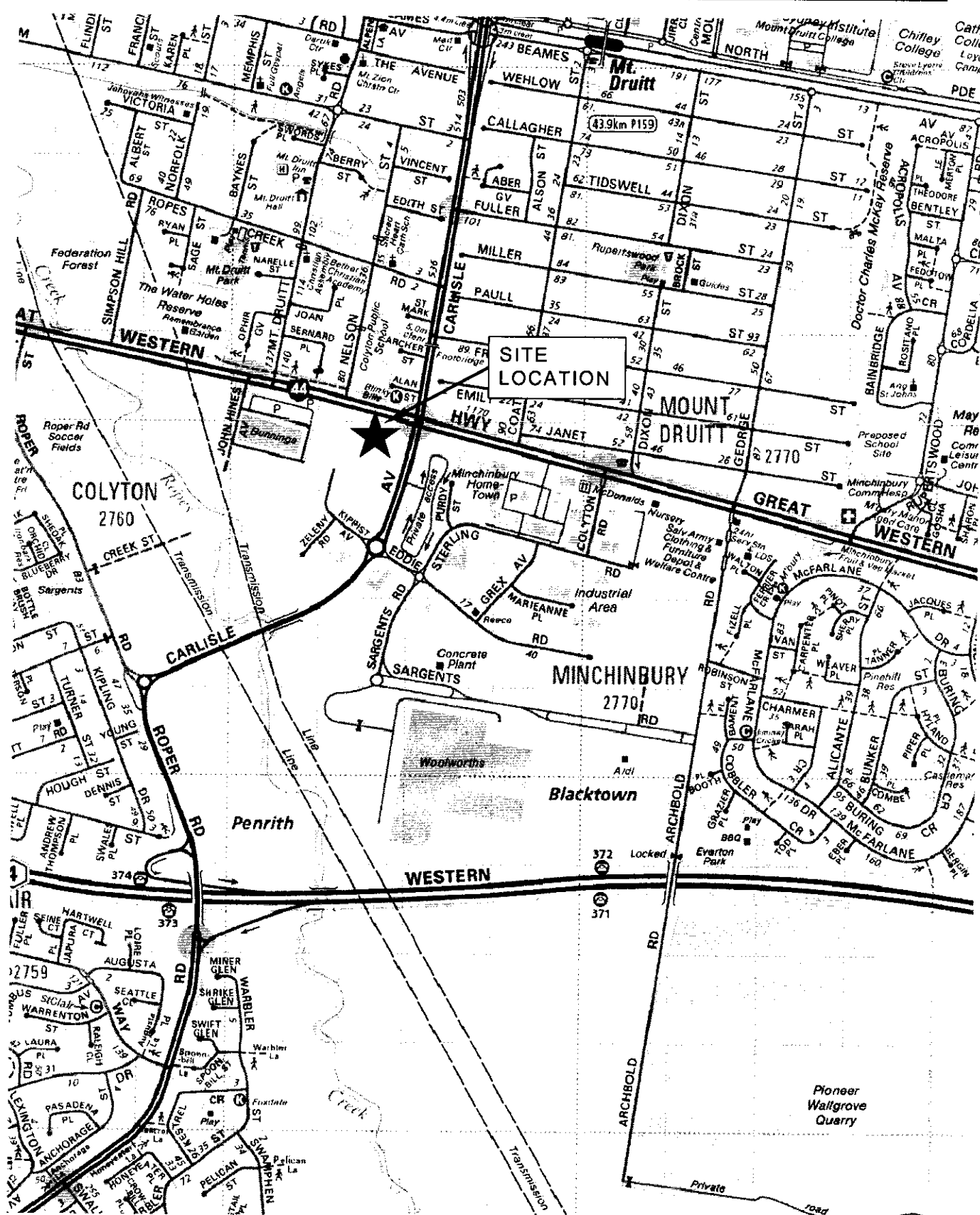
3.28 Therefore, the road network will be able to cater for the additional traffic from the proposed development.

#### Summary

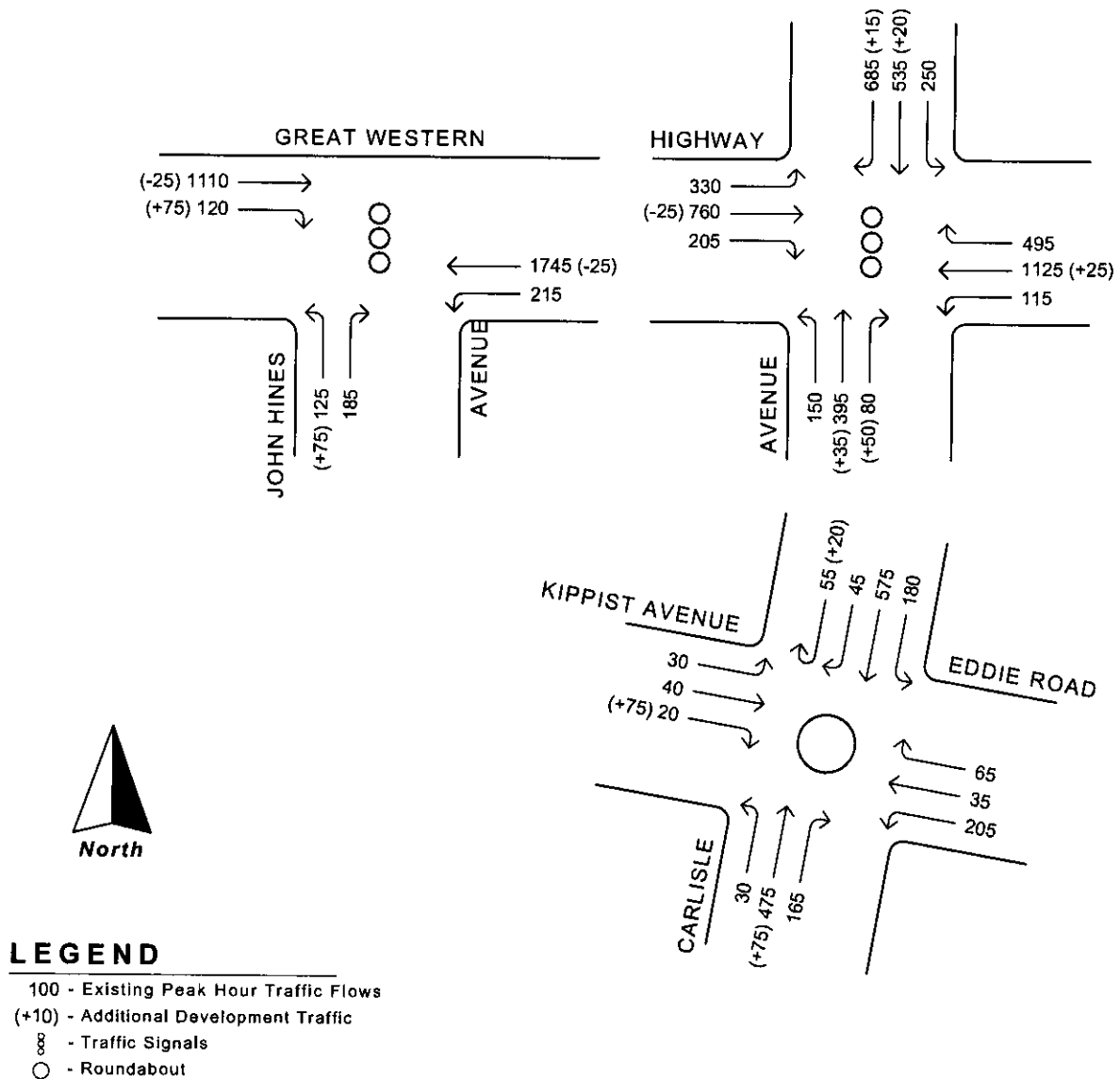
3.29 In summary, the main points relating to the traffic implications of the proposed development are as follows:

- i) the proposed development would increase employment densities close to public transport services;
- ii) the proposed parking provision is considered appropriate;
- iii) access, servicing arrangements and internal layout will be provided in accordance with AS 2890.1:2004 and AS 2890.2 – 2002; and
- iv) the road network will be able to cater for the additional traffic from the proposed development.

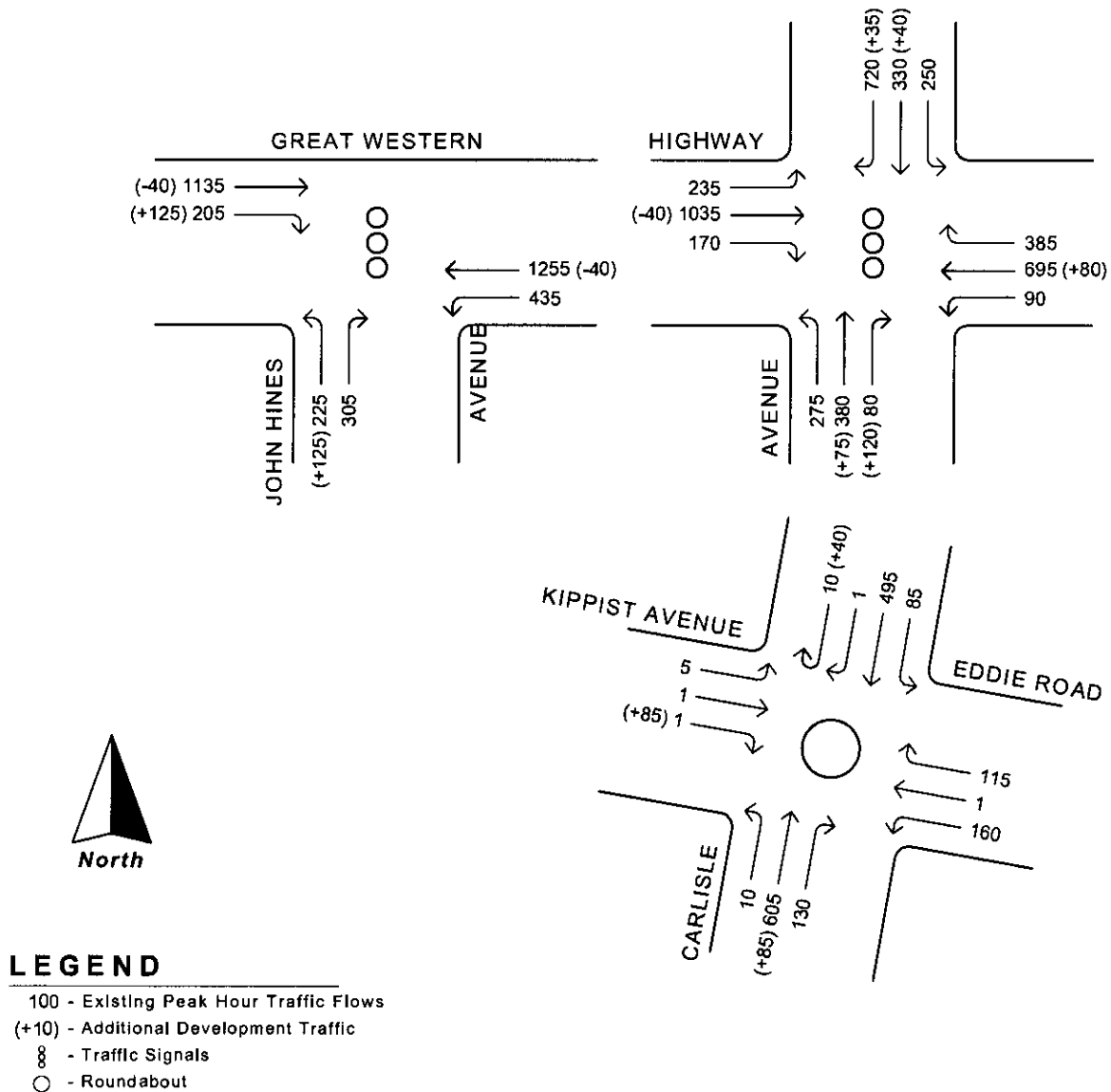




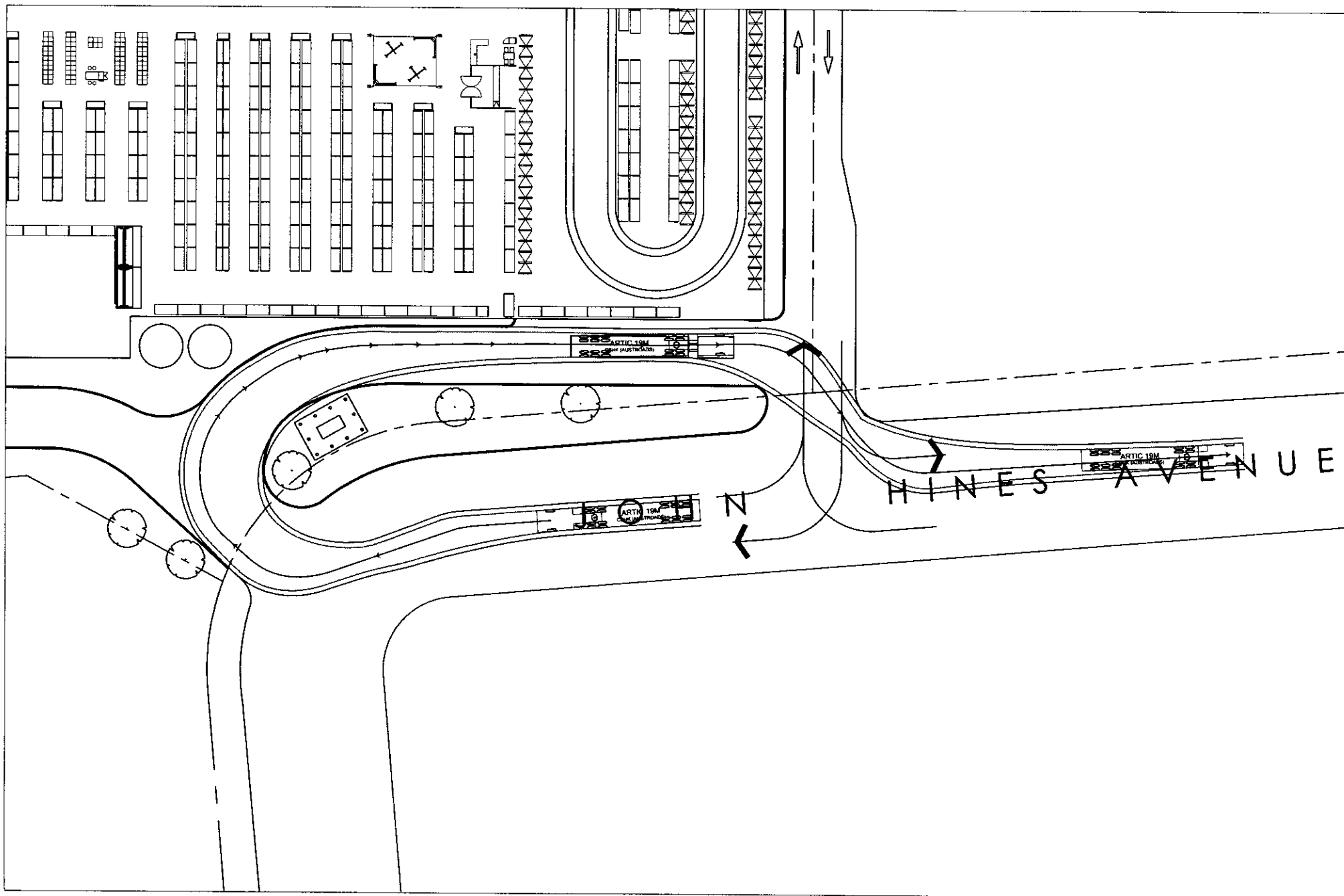
## Location Plan



**Existing Friday afternoon peak hour  
traffic flows plus development traffic**



**Existing Saturday midday peak hour  
traffic flows plus development traffic**

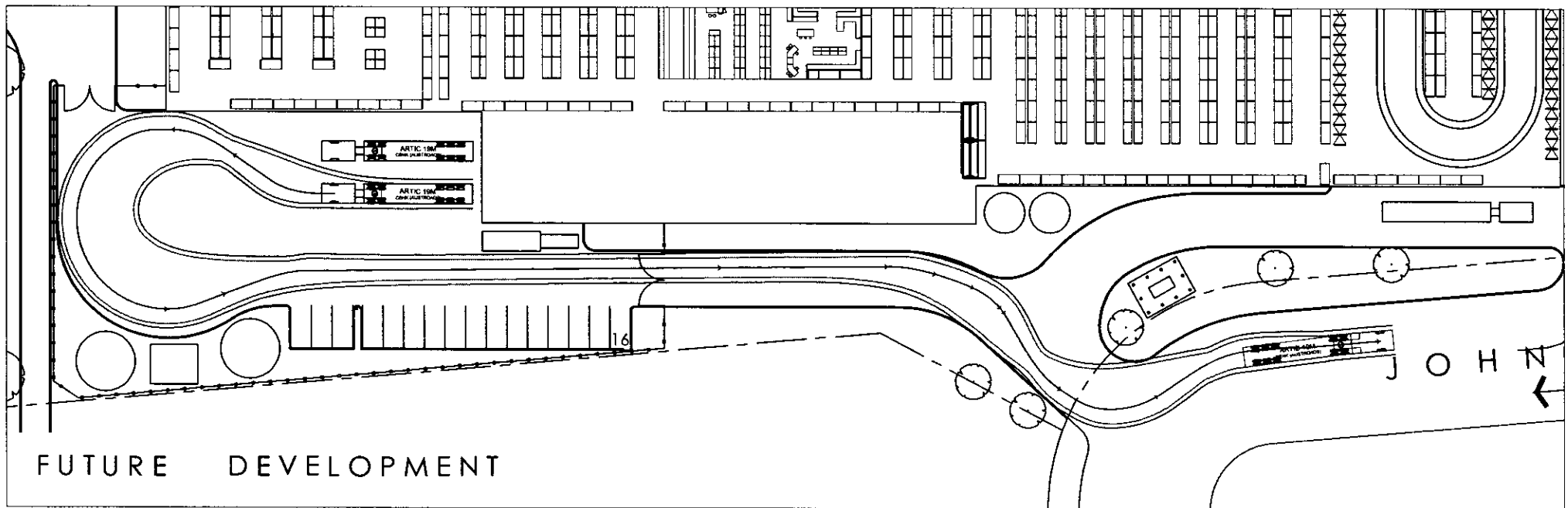
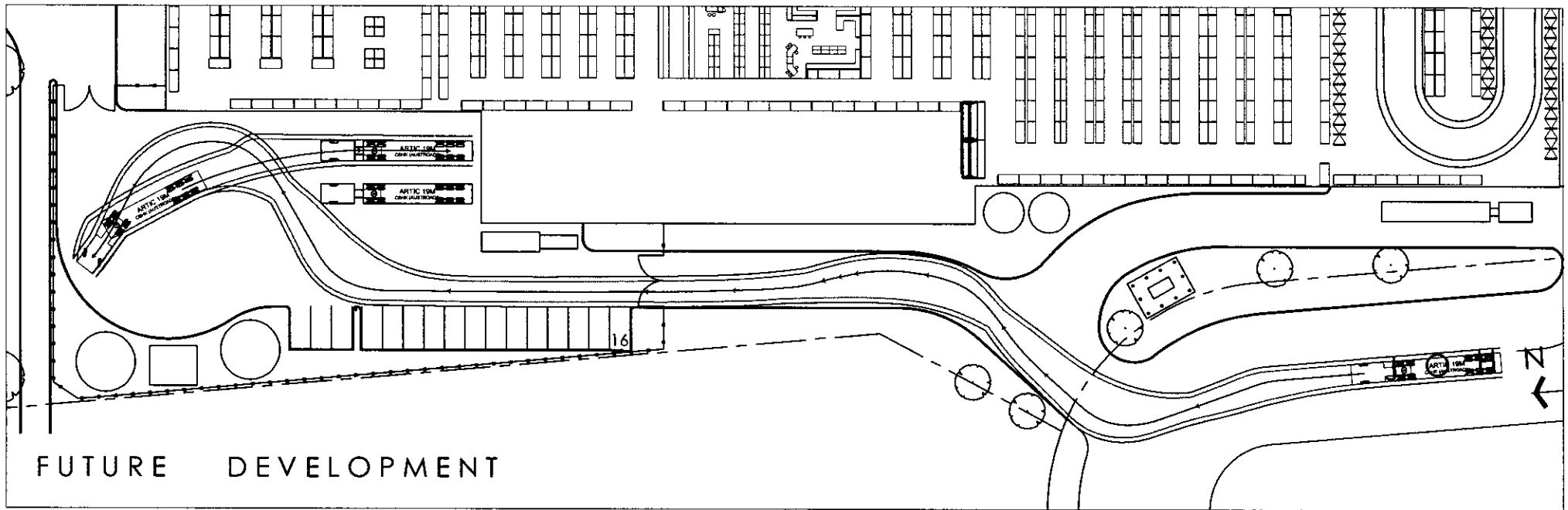


**NOTE:**  
 SKETCH PLAN ONLY. PROPERTY BOUNDARIES,  
 UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO  
 SURVEY AND FINAL DESIGN. TRAFFIC MEASURES  
 PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND  
 ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

—— Swept Path of Vehicle Body  
 —— Swept Path of Clearance to Vehicle Body

**19.0m ARTICULATED  
 VEHICLE SWEEP PATHS**

DRAWN BY CB&K Pty Ltd. No. Ref 8128 28 JANUARY 2011



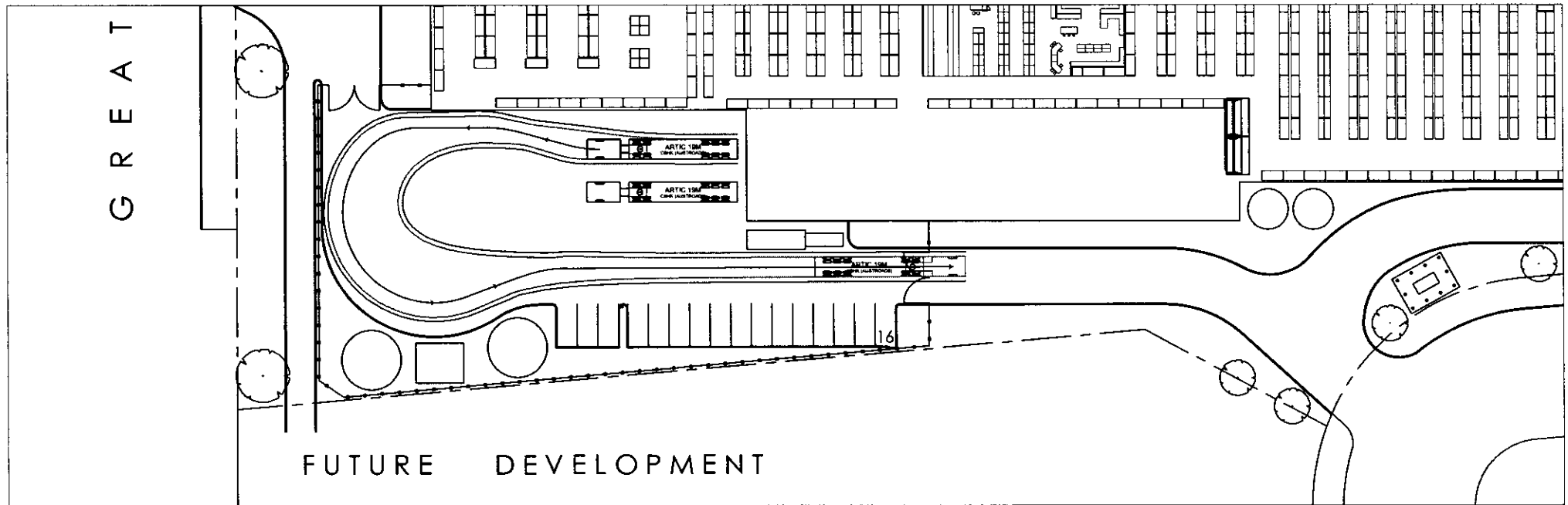
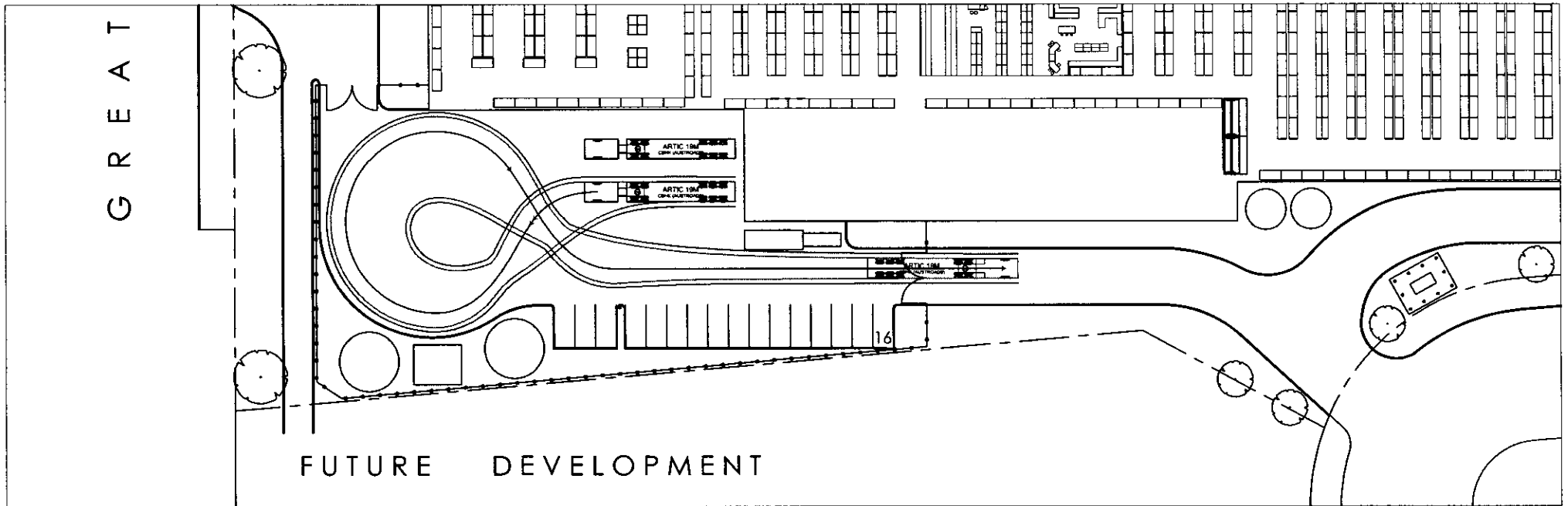
**NOTE:**  
 SKETCH PLAN ONLY. PROPERTY BOUNDARIES,  
 UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO  
 SURVEY AND FINAL DESIGN. TRAFFIC MEASURES  
 PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND  
 ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

—— Swept Path of Vehicle Body  
 —— Swept Path of Clearance to Vehicle Body

19.0m ARTICULATED  
 VEHICLE SWEEP PATHS

DRAWN BY CBHK Pty Ltd, No. REC 8128

26 JANUARY 2011



**NOTE:**  
 SKETCH PLAN ONLY. PROPERTY BOUNDARIES,  
 UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO  
 SURVEY AND FINAL DESIGN. TRAFFIC MEASURES  
 PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND  
 ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

————— Swept Path of Vehicle Body  
 - - - - - Swept Path of Clearance to Vehicle Body

**19.0m ARTICULATED  
 VEHICLE SWEEP PATHS**

DRAWN BY CBRK Pty Ltd, No. Ref: 8126

28 JANUARY 2011