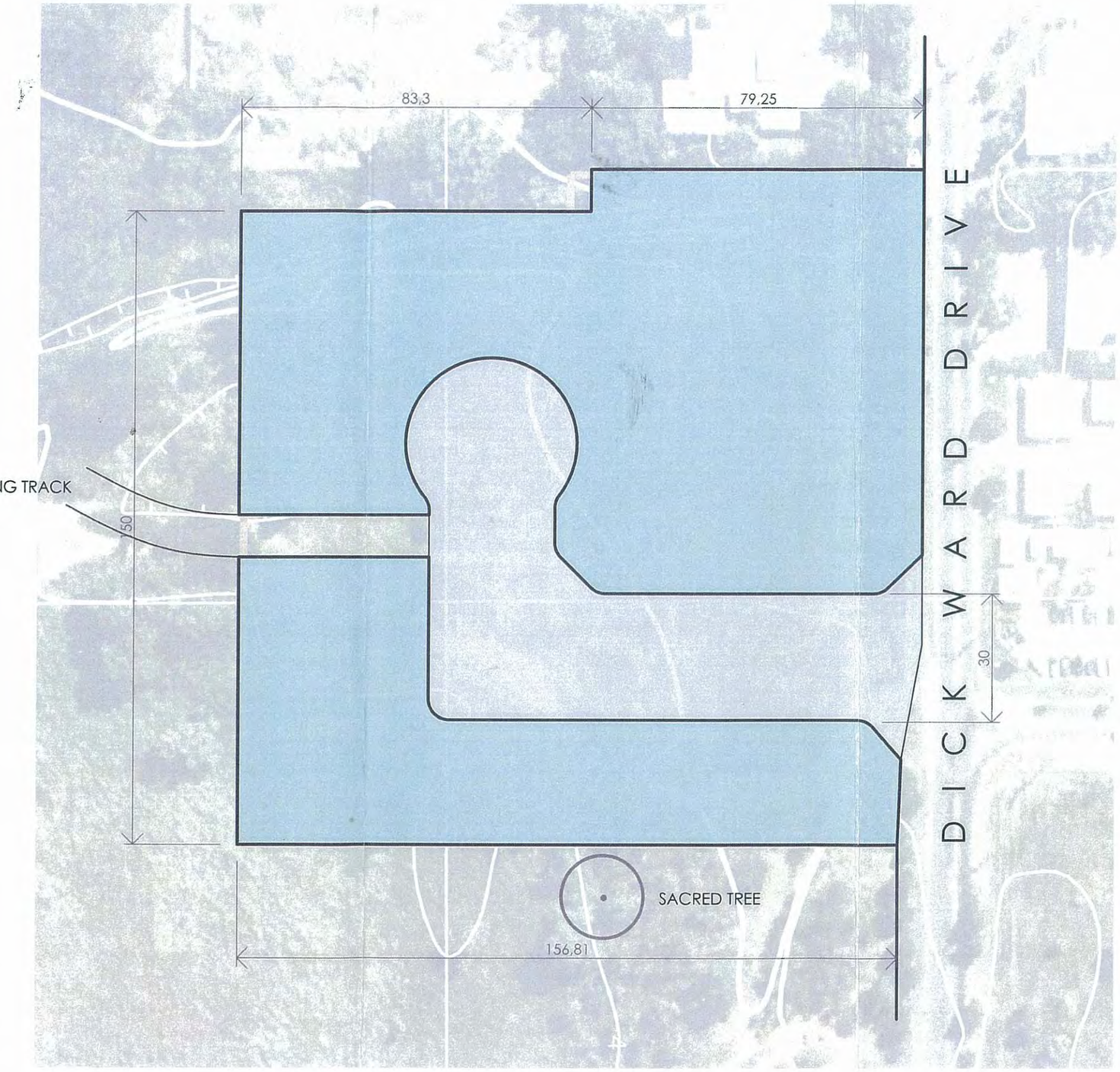
LOCATION MAP



PROPOSED INDUSTRIAL REZONING PLAN

DICK WARD DRIVE NIGHTCLIFF - DARWIN

CLIENT: ARNHEM ESTATES PTY LTD

DATE: JULY 2007

PO Box 1623,
Kingscliff NSW 2487
88 Marine Pde, Kingscliff

Telephone: (02) 6674 5001
Fax: (02) 6674 5003
Email: info@planitconsulting.com.au

PLANIT
CONSULTING

Proposed Rezoning Parcels - Dick Ward Drive, Darwin

PROPOSED INDUSTRIAL REZONING PLAN

PROJECT: DICKWARD DRIVE NIGHTCLIFF - DARWIN

CLIENT: GWALWA DRANIKI
REF:
DATE: FEBRUARY 2008

PO Box 1623,
Kingscliff NSW 2487
88 Marine Pde, Kingscliff

Telephone: (02) 6674 5001
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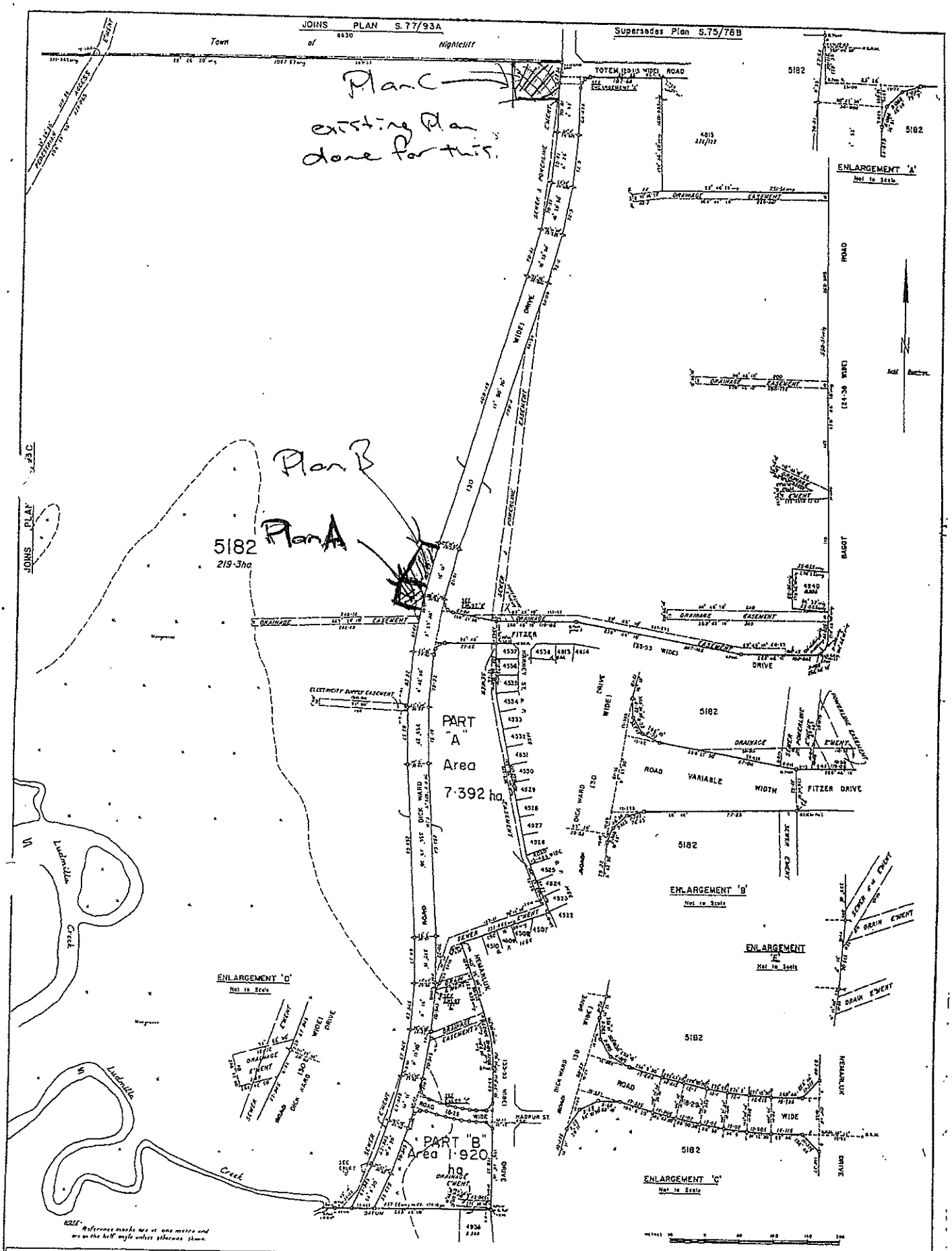
PLANIT
CONSULTING



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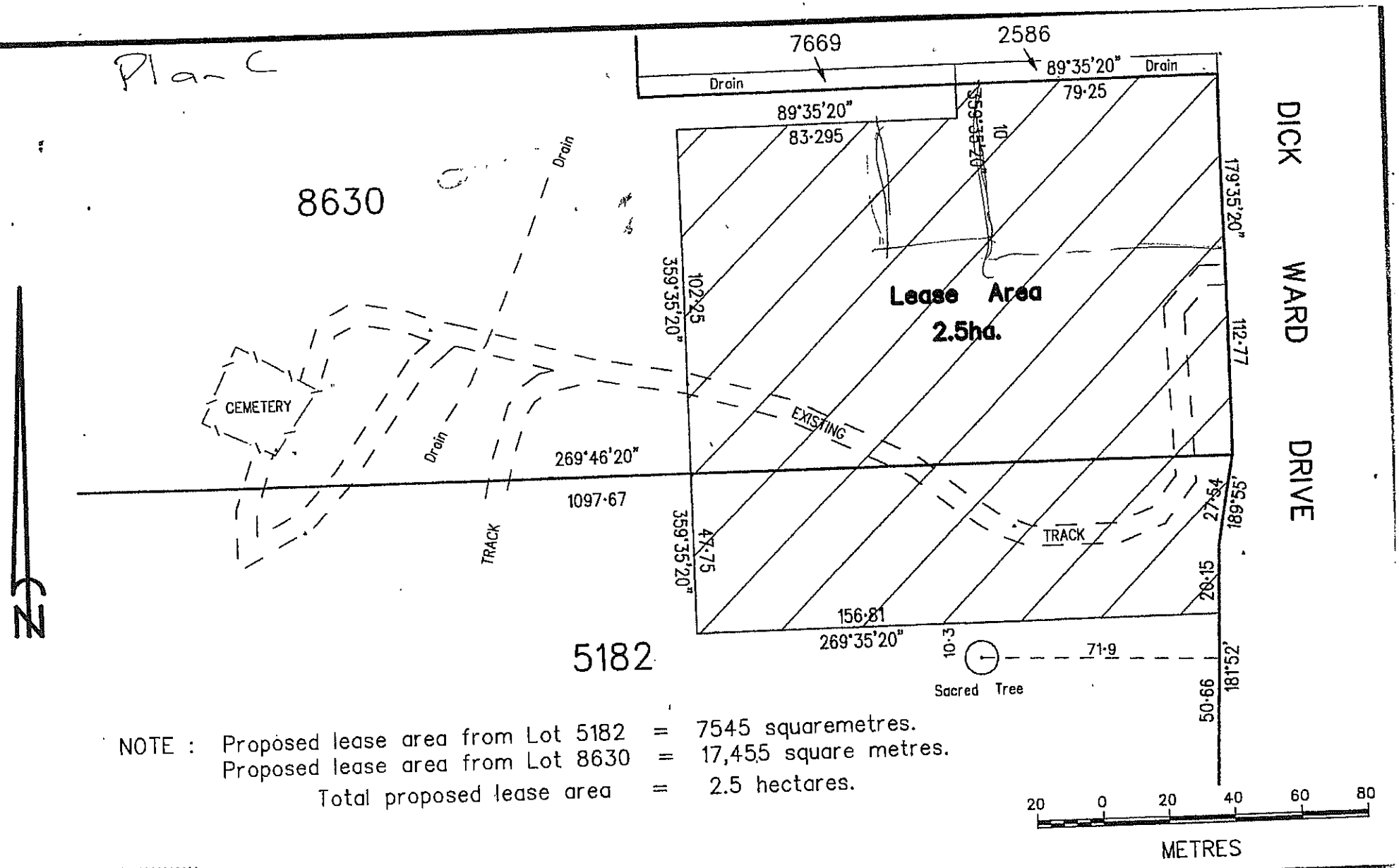
Plan C



NOTE : Proposed lease area from Lot 5182 = 7545 squaremetres.
Proposed lease area from Lot 8630 = 17,455 square metres.
Total proposed lease area = 2.5 hectares.

.....
Peter Graham Bateman (Licensed Surveyor)

Network Surveys
Unit 2 18 Caryota Court
COCONUT GROVE N.T. 0810
PHONE 89 855422

PROPOSED LEASE AREA

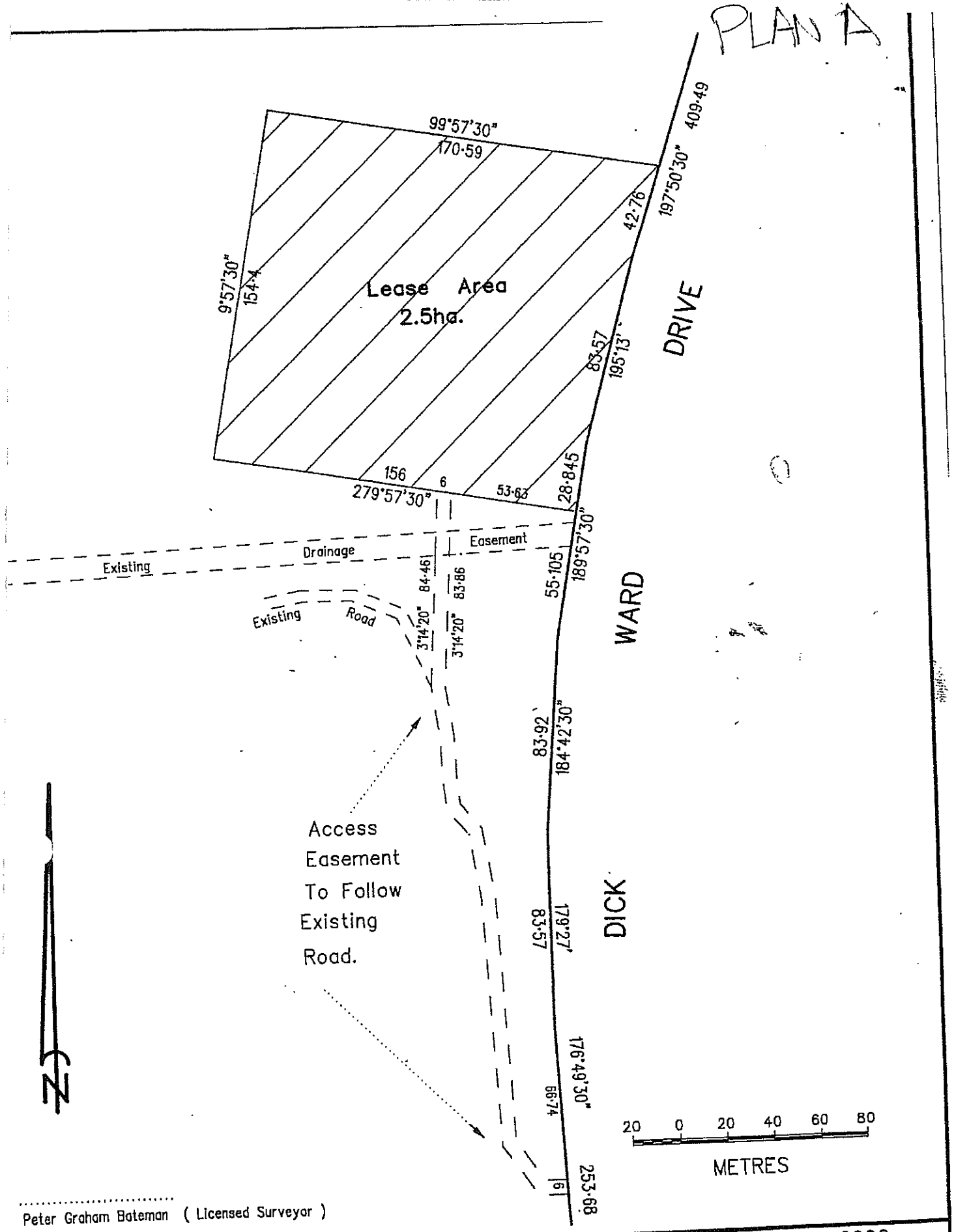
Part Lot 5182 Town of Darwin and
Part Lot 8630 Town of Nightcliff.

Scale 1 : 1500 | Job No. 2037 | V.0

Drawn By:..... | Checked ..... | DATE :.....

Ref. 2037-04.

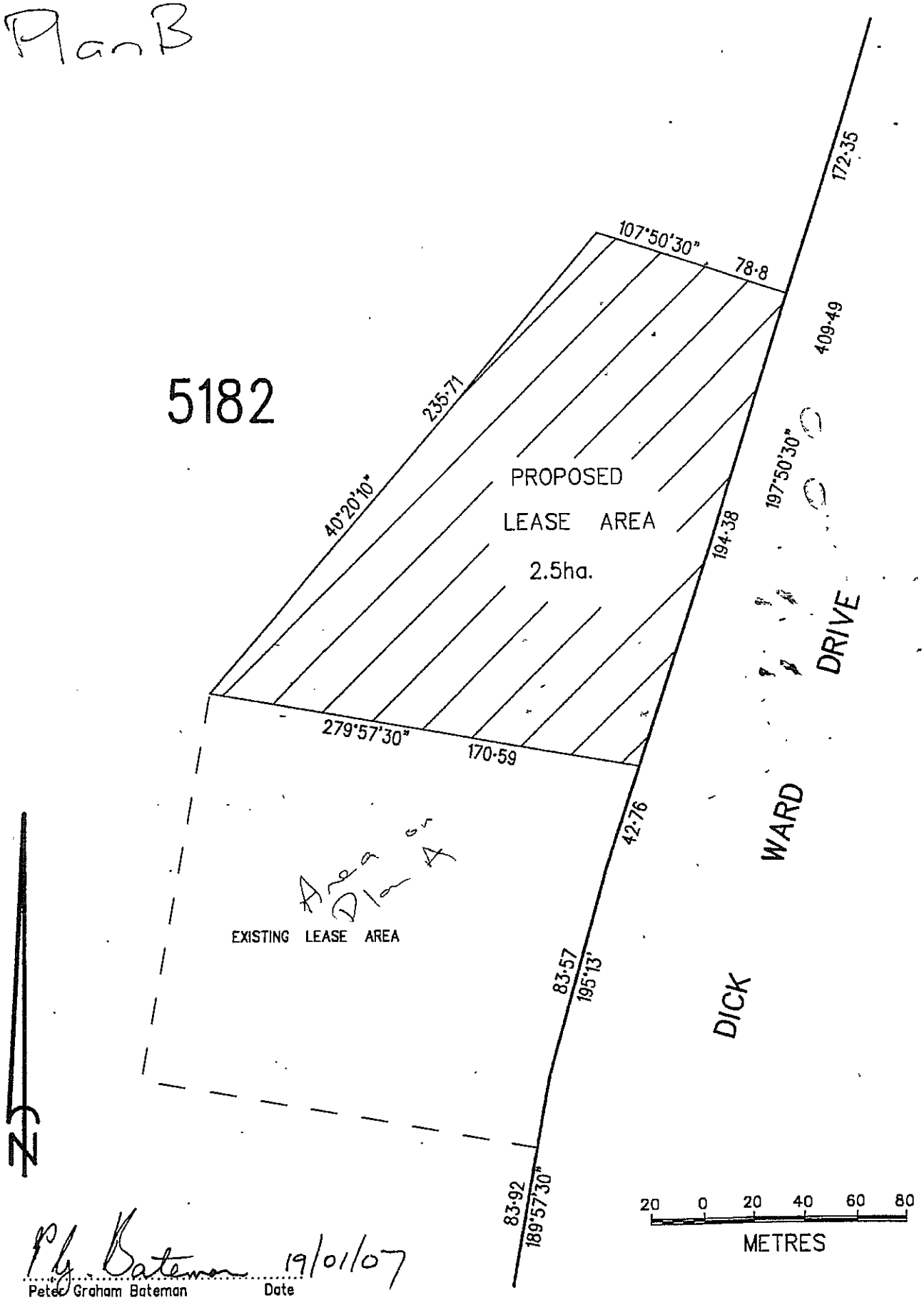
PLAN A



.....
Peter Graham Bateman (Licensed Surveyor)

Network Surveys Unit 2 18 Caryota Court COCONUT GROVE N.T. 0810 PHONE 89 855422	PROPOSED LEASE AREA Part Lot 5182 Town of Darwin	SCALE 1 : 2000 Job. No. 2037 | Version : 06. Date ..... | Checked ..... Ref 2037 – 06

Plan B



P G Bateman 19/01/07

Peter Graham Bateman Date
Licensed Surveyor

Network Surveys Unit 2 18 Caryota Court	PROPOSED LEASE AREA	SCALE 1 : 2000 Job: No. 2037 | Version : 12.

Appendix **B**

Zoning Instrument (DRAFT)

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New South Wales – Queensland - Australia

Schedule of Amendment

Northern Territory Consolidated Planning Scheme 2007

Amendment No.	Gazette No.	Gazette Date.	Amendment
#	#	#	Amends the planning scheme to permit the carrying out of development on part Lot 5182, Dick Ward Drive, Darwin in accord with the Light Industry provisions of the NT Planning Scheme 2007.

Appendix C

Traffic Impact Assessment – CRG Group

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New South Wales – Queensland - Australia

CARTER RYTENSKILD GROUP
Traffic and Acoustical Consultants

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2563 Gold Coast Highway
Mermaid Beach Queensland 4218

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PO Box 441
Mermaid Beach Queensland 4218

BRISBANE
90 Vulture Street
West End Queensland 4101

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South Brisbane BC Queensland 4101

CRG Traffic & Acoustics Pty Ltd ACN 118 733 734

T 1300 798 830 F 1300 798 831 E info@crg.net.au **www.crg.net.au**

Proposed Industrial Subdivision
Dick Ward Drive, Nightcliff

TRAFFIC IMPACT ASSESSMENT

Prepared For

Planit Consulting

12 June 2007
crgref: 06396t

TABLE OF CONTENTS

1 INTRODUCTION

CRG has been engaged by Planit Consulting to undertake a Traffic Engineering Assessment of its proposal to subdivide a property for industrial purposes, at Milner in Darwin.

As shown in Figure 1.1, the subject site is located on the western side of Dick Ward Drive, opposite Totem Road.

The purpose of this report is to assess the potential impact of traffic generated by the proposed development upon the local road network, particularly at the proposed access point with Dick Ward Drive.

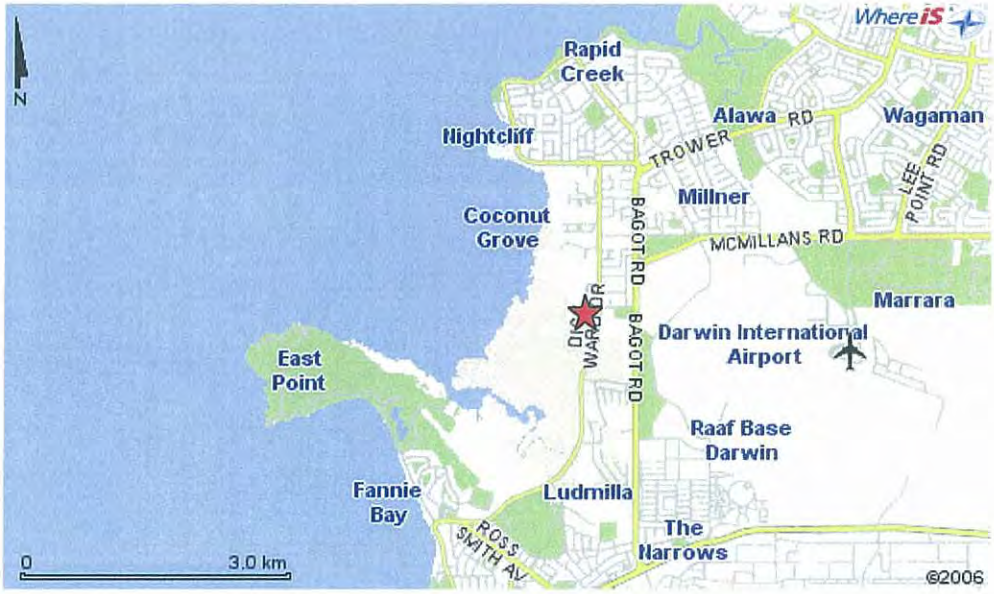


FIGURE 1.1 – LOCATION OF SUBJECT SITE

2 SUBJECT SITE

The subject site is currently vacant and located approximately ten kilometers north east of the Darwin city centre, and directly west of the Darwin International Airport.

As shown in Figure 2.1, the subject site is surrounded by a variety of land uses.

To the south of the site is an existing residential neighbourhood including an Aboriginal community (adjacent to Bagot Road).

A light industrial area is located immediately east of the subject site, on the opposite side of Dick Ward Drive.

On the eastern side of Bagot Road is the Darwin International Airport and a number of other commercial uses including a golf course.

3 PLAN OF DEVELOPMENT

As shown in Figure 3.1, it is proposed that the site be developed for industrial purposes. The subject site has an area of approximately 19,000m^2.

It is proposed that the site be divided into a number of allotments, each served by a new cul-de-sac street. The proposed new road will intersect with Dick Ward Drive to the north of the existing Totem Road intersection.

All lots will gain access via the proposed new road, rather than Dick Ward Drive.

TO BE INSERTED

FIGURE 3.1 – PROPOSED PLAN OF DEVELOPMENT

FIGURE 2.1 – LOCATIONAL CONTEXT & SURROUNDING LAND USES

4 SURROUNDING ROAD & TRAFFIC CONDITIONS

Road Network

Dick Ward Drive functions as a two lane Sub-Arterial road and provides for north-south travel between Coconut Grove and Fannie Bay. Recent traffic counts indicate that Dick Ward Drive currently carries in the order of 10,000 vehicles per day. It is a two lane undivided road with a 70km/h speed limit. Intersections are generally priority controlled with Austroads Type C style turning treatments.

Bagot Road is a major arterial road providing for through travel between the Stuart Highway to the south and the northern suburbs of Darwin including the Darwin Airport. Recent traffic counts indicate that Bagot road currently carries in the order of 35,000 vehicles per day. Bagot Road is generally a six lane divided road with major intersections controlled by traffic signals or grade separated ramps, however, there are some priority controlled intersections located in the vicinity of the site including the Fitzer Drive intersection.

Totem Road extends between Bagot Road and Dick Ward Drive. It carries in the order of 5,000 vehicles per day, and functions as an Industrial Collector Road. Its intersection with Dick Ward Drive is a priority T junction, with a dedicated right turning lane provided for traffic turning right into Totem Road. The Bagot Road / Totem Road intersection is controlled by traffic signals, with a 'seagull' style treatment provided for southbound traffic.

Images of existing road conditions in the vicinity of the subject site are shown in Figure 4.2.

CRG conducted a traffic count at the intersection of Dick Ward Drive and Totem Road during the morning and afternoon peak periods on a typical weekday. The results are presented in Figure 4.3.

Road Network Performance

Dick Ward Drive currently operates at approximately Level of Service B. Priority intersections are generally performing satisfactorily; however, the Totem Road intersection experiences isolated levels of congestion during the afternoon peak period.

The Bagot Road / Totem Road intersection appears to be operating satisfactorily during peak periods, with queue lengths on Totem Road reaching a maximum of 10 vehicle lengths during the afternoon peak period.

FIGURE 4.1 – ROAD NETWORK CHARACTERISTICS

Dick Ward Drive / Totem Road Intersection

Dick Ward Drive / Fitzer Drive Intersection

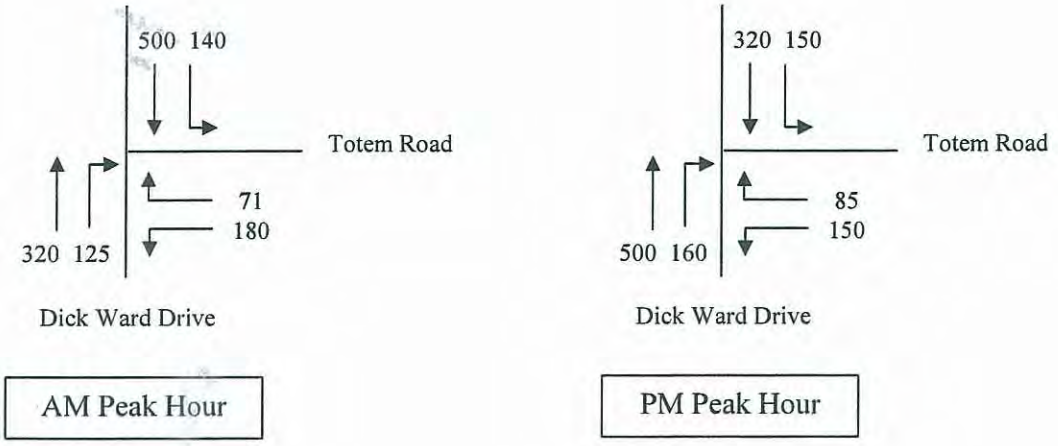
Bagot Road

Totem Road – looking east from Dick Ward

Totem Road - Mid-block

Totem Road approach to Bagot Road

FIGURE 4.2 – IMAGES OF THE LOCAL ROAD NETWORK IN THE VICINITY OF THE SITE



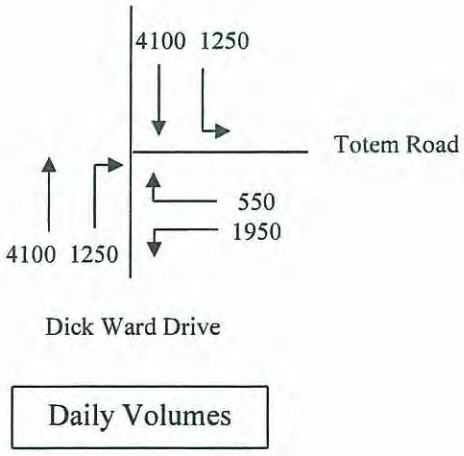
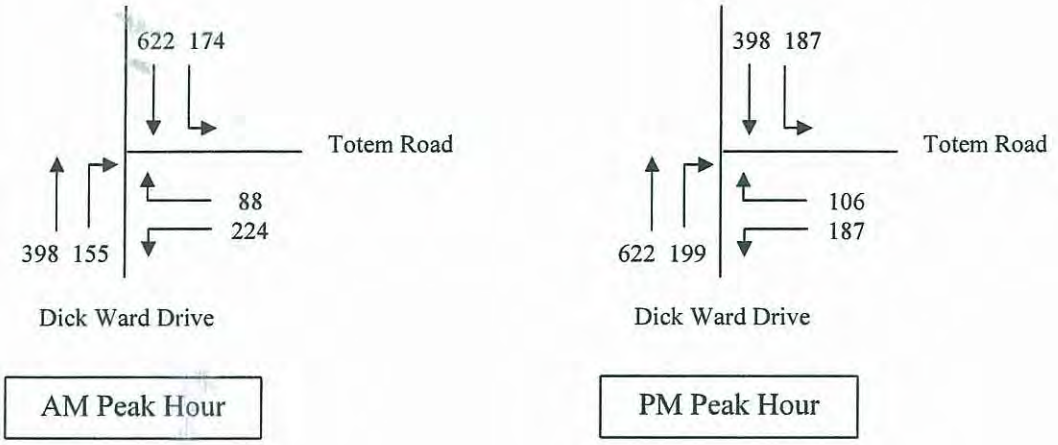


Figure 4.3: Existing (2007) Traffic Volumes
Dick Ward Drive & Totem Road



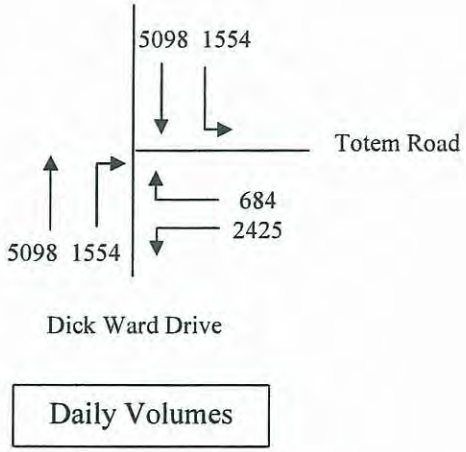


Figure 4.4: Estimated Future (2018) Traffic Volumes
Dick Ward Drive & Totem Road

Public Transport

Public bus services currently use Dick Ward Drive. Bus stops are located to the north and south, adjacent to industrial and residential development, respectively.

Road Planning

The Department of Infrastructure and Planning has recently approved an application for a Bunnings Warehouse to be located on the eastern side of the Bagot Road / Totem Road intersection.

As shown in Figure 4.5, a new road connection extending from the Totem Road signals will service the Bunnings development. This road will ultimately be extended to service future industrial development to the north east. The road will also provide an indirect access to the Darwin Airport. As part of the Bunnings project, the Bagot Road / Totem Road intersection is planned to be updated to the form shown in Figure 4.6.

Projected Future Traffic Conditions

It is estimated that future traffic growth will occur at a rate of approximately 2% per annum. Consequently, it is estimated that Dick Ward Drive will carry in the order of 12,500 vehicles per day by the year 2018 as shown in Figure 4.4.

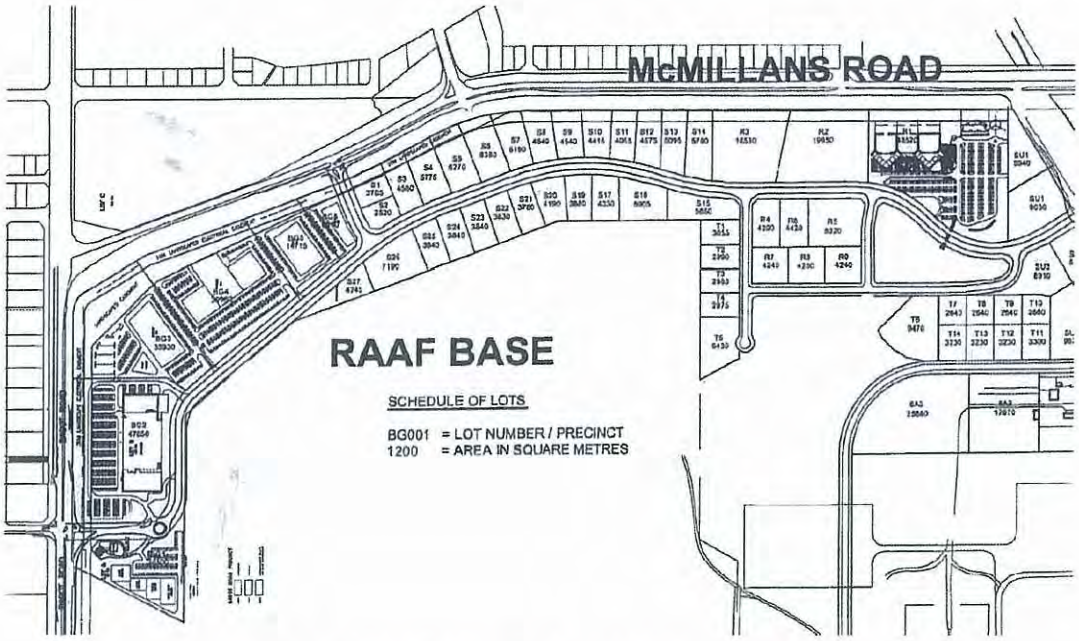


FIGURE 4.4 – PLANNED NEW ROAD CONNECTION WEST OF BAGOT ROAD AT TOTEM ROAD INTERSECTION

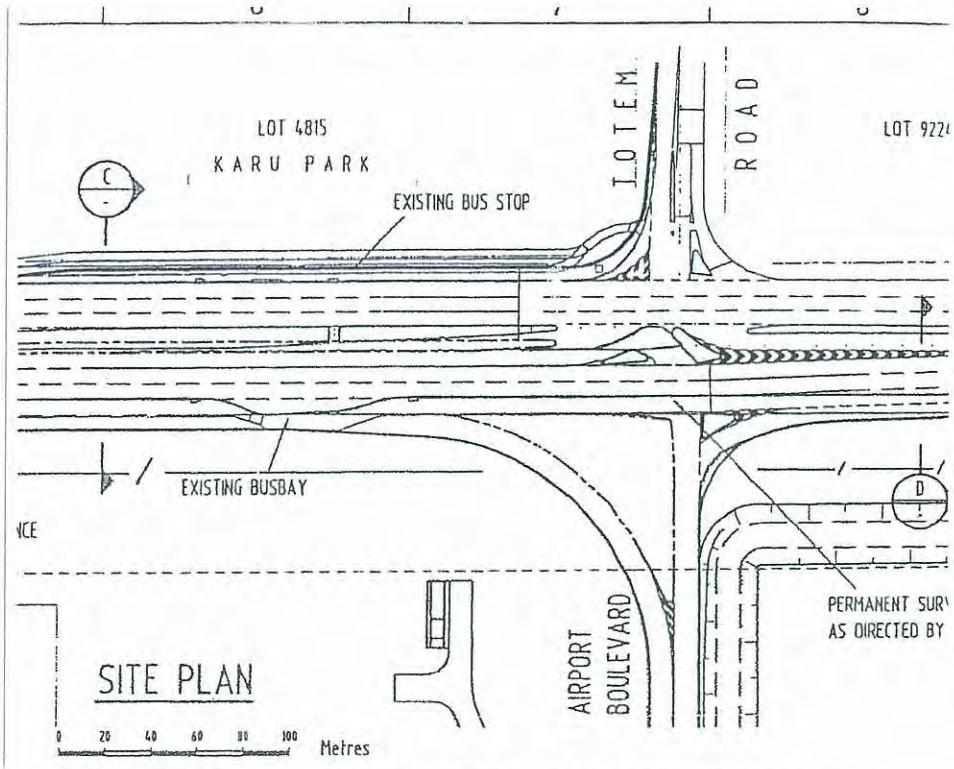


FIGURE 4.5 – PLANNED BAGOT ROAD / TOTEM ROAD INTERSECTION LAYOUT

5 DEVELOPMENT TRAFFIC ESTIMATES

Trip Generation

According to sources such as the NSW RTA *Guide to Traffic Generating Developments* and the Queensland Department of Main Roads' *Road Planning and Design Manual*, industrial land such as that proposed generates traffic in accordance with the following rates:

Industrial
Peak hour trips: 0.9 trips / 100m^2 GFA / peak hour
Daily Trips: 9 trips / 100m^2 GFA / peak hour

Application of the above rates to the proposal results in the traffic generation estimates shown in Table 5.1.

Table 5.1 - Estimated Development Traffic Generation (Excl. Internal Trips)

Component	Daily	Morning Peak Hour			Afternoon Peak Hour		
		In	Out	Total	In	Out	Total
18,842m^2 site area × 45% = 8479m^2 GFA	763	53	23	76	30	46	76

Note: Assumes the following directional splits - 70% in / 30% out during morning peak and 40% in / 60% out during afternoon peak

Trip Distribution

The existing pattern of residential development and the location of the site with respect to the surrounding road network suggest that development traffic will distribute to and from the site approximately as follows:

To / from the north via Bagot Road	15%
To / from the north via Dick Ward Drive	35%
To / from the south via Bagot Road	15%
To / from the south via Dick Ward Drive	35%

Resultant estimates of development traffic volumes on the local road network are shown below in Figure 5.1.

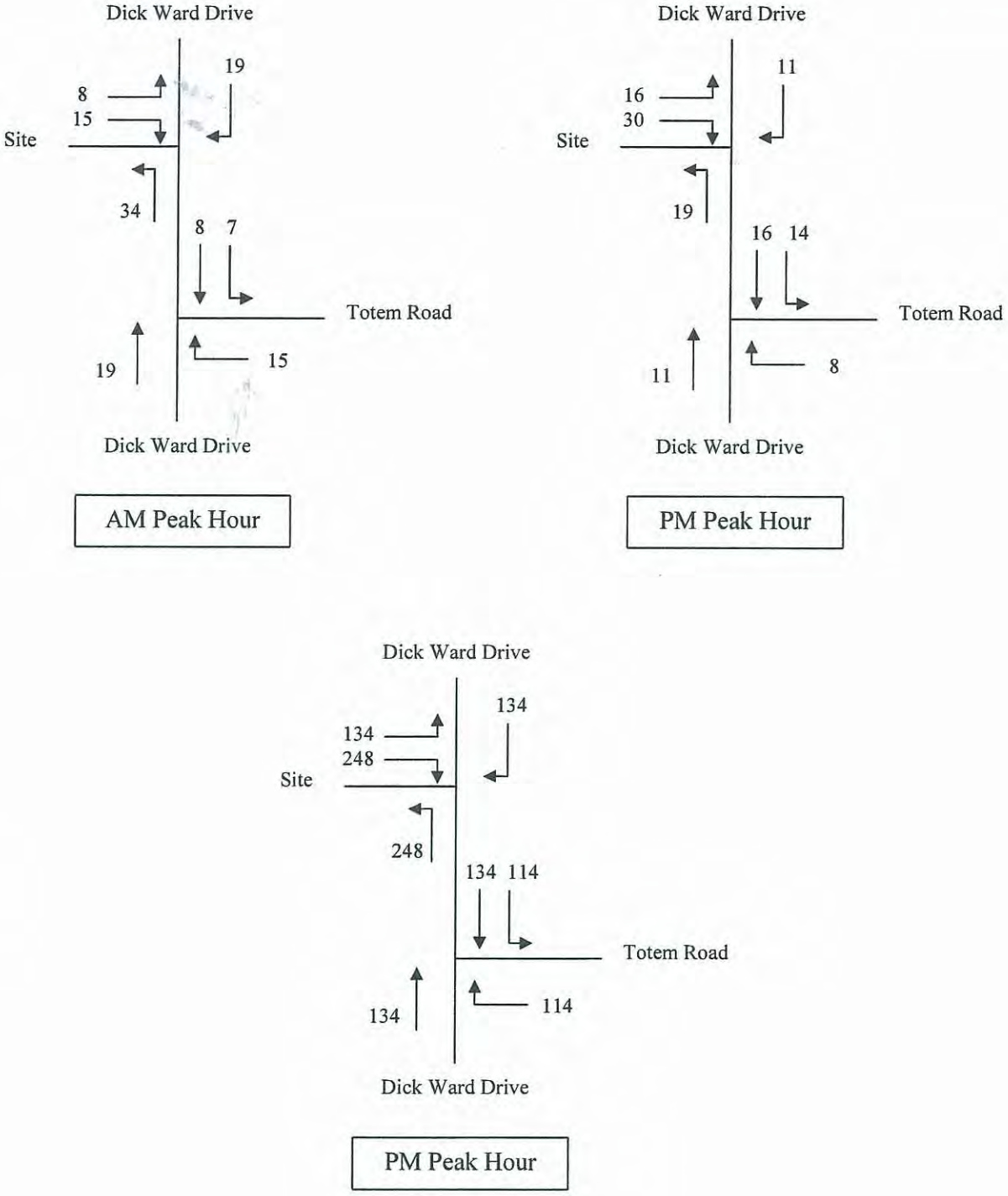


Figure 5.1: Estimated Development Traffic Volumes

6 ROAD NETWORK IMPACT

6.1 Scope of Assessment

The traffic implications of development proposals primarily concern the effects that any additional traffic flows may have on the operational performance of the nearby road network. Those effects can be assessed using the SIDRA Intersection program which is widely used by Main Roads and many local Councils for this purpose.

Criteria for evaluating the results of SIDRA analysis are provided on the following page.

For the purposes of this assessment, a capacity analysis has been undertaken during the morning and afternoon peak periods of the Dick Ward Drive / Proposed Access Road intersection.

6.2 Intersection Analysis

The results of the aaSIDRA analysis of the intersection are summarised in Table 6.1 and 6.2, revealing that:

- The intersection will operate at Degree of Saturation 0.346 during the morning peak period and 0.328 during the afternoon peak period in 2007. Total average vehicle delays at the intersection will be less than 1 second per vehicle. Average vehicle delays for the right turn ingress movement will be in the order of 25 – 27 seconds per vehicle with associated queue lengths of up to 1 vehicle length.

- In 2018, the intersection will operate at Degree of Saturation 0.430 during the morning peak period and 0.404 during the afternoon peak period. Total average vehicle delays will be in the order of 1.0 – 1.5 seconds per vehicle. Average vehicle delays for the right turn ingress movement will be in the order of 38 - 44 seconds per vehicle with associated queue lengths of approximately 1 vehicle length.

TABLE 6.1 - RESULTS OF SIDRA ANALYSIS OF DICK WARD DRIVE & NEW ACCESS ROAD

AVERAGE VEHICLE DELAYS

Key Indicators		With Development (2007)		With Development (2018)	
		AM	PM	AM	PM
Degree of Saturation		0.346	0.328	0.430	0.404
Average Vehicle Delay (sec/veh)					
Dick Ward Drive (south)	L	8.2	8.2	8.2	8.2
	T	0.0	0.0	0.0	0.0
Dick Ward Drive (north)	T	0.0	0.0	0.0	0.0
	R	10.4	11.9	11.1	13.7
New Access Road (west)	L	10.6	12.8	11.6	15.3
	R	25.7	27.1	38.1	44.1
TOTAL AVERAGE VEHICLE DELAY		**0.9**	**1.2**	**0.9**	**1.4**

TABLE 6.2 - RESULTS OF SIDRA ANALYSIS OF DICK WARD DRIVE & NEW ACCESS ROAD

AVERAGE VEHICLE DELAYS

Key Indicators		With Development (2007)		With Development (2018)	
		AM	PM	AM	PM
95%^{ile} Queue Length (m)					
Dick Ward Drive (south)	L	0	0	0	0
	T	0	0	0	0
Dick Ward Drive (north)	T	0	0	0	0
	R	1	1	1	1
New Access Road (west)	L	0	1	0	1
	R	2	5	4	8

7 ACCESS DESIGN

As shown below, it is proposed that the new road will form a priority controlled T-junction with Dick Ward Drive, to the north of the existing Totem Road intersection. It is proposed that all movements be permitted at the proposed intersection. Type C right turn treatment would be provided in Dick Ward Drive.

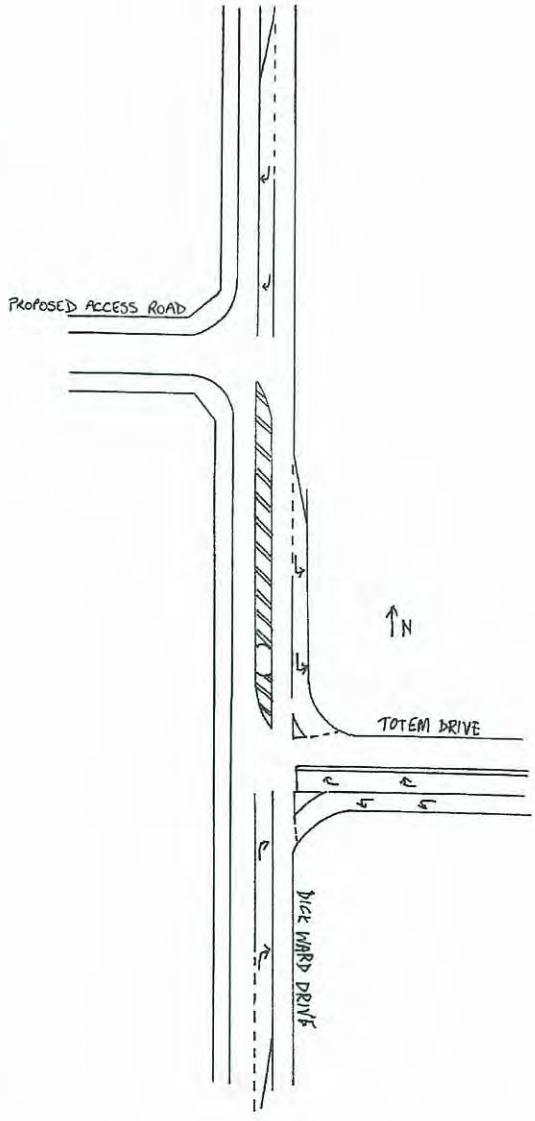


FIGURE 7.1 – PROPOSED ACCESS ARRANGEMENT (CONCEPT ONLY)

8 SUMMARY OF CONCLUSIONS & RECOMMENDATIONS

- The subject site is located on the western side of Dick Ward Drive in the vicinity of Totem Road. The site is currently vacant and located approximately ten kilometers north east of the Darwin city centre, and directly west of the Darwin International Airport.

- It is proposed that the site be developed for industrial purposes. The site is to be divided into a number of allotments, each served by a new cul-de-sac street. The proposed new road will intersect with Dick Ward Drive to the north of the existing Totem Road intersection. All lots will gain access via the proposed new road, rather than Dick Ward Drive.

- Recent traffic counts indicate that Dick Ward Drive currently carries in the order of 10,000 vehicles per day. It is a two lane undivided road with a 70km/h speed limit. Intersections are generally priority controlled with Austroads Type C style turning treatments.

- It is estimated that the proposed development will generate in the order of 763 vehicle trips per day, including 76 peak hour vehicle trips.

- It is proposed that the new intersection with Dick Ward Drive consist of an Austroads Type 'C' right turn treatment. Capacity analysis of the proposed intersection with Dick Ward Drive indicates that the intersection will perform satisfactorily during commuter peak periods, with minimal delays and queuing.

Appendix **D**

Australian Standard AS-2021

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New South Wales – Queensland - Australia

Appendix E

Darwin International Airport Master Plan (Excerpts)

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New South Wales – Queensland - Australia