

Proposed s.75w Application for a
Previously Approved Mixed-Use Development

23-37 Lindfield Avenue, Lindfield

TRAFFIC AND PARKING ASSESSMENT REPORT

10 December 2012

Ref 12135

VARGA TRAFFIC PLANNING Pty Ltd
Transport, Traffic and Parking Consultants 

Suite 6, 20 Young Street, Neutral Bay NSW 2089 - PO Box 1868, Neutral Bay NSW 2089
Ph: 9904 3224 Fax: 9904 3228, Email: varga@vtp.net.au

TABLE OF CONTENTS

1. INTRODUCTION	1
2. PROPOSED DEVELOPMENT	5
3. TRAFFIC ASSESSMENT	12
4. PARKING ASSESSMENT	24

LIST OF ILLUSTRATIONS

Figure 1	Location
Figure 2	Site
Figure 3	Road Hierarchy
Figure 4	Existing Traffic Controls
Figure 5	Existing Parking Restrictions

1. INTRODUCTION

This report has been prepared to accompany a s.75w Application to the Department of Planning to modify a previously approved mixed-use retail/residential development proposal to be located at 23-37 Lindfield Avenue, Lindfield (Figures 1 and 2).

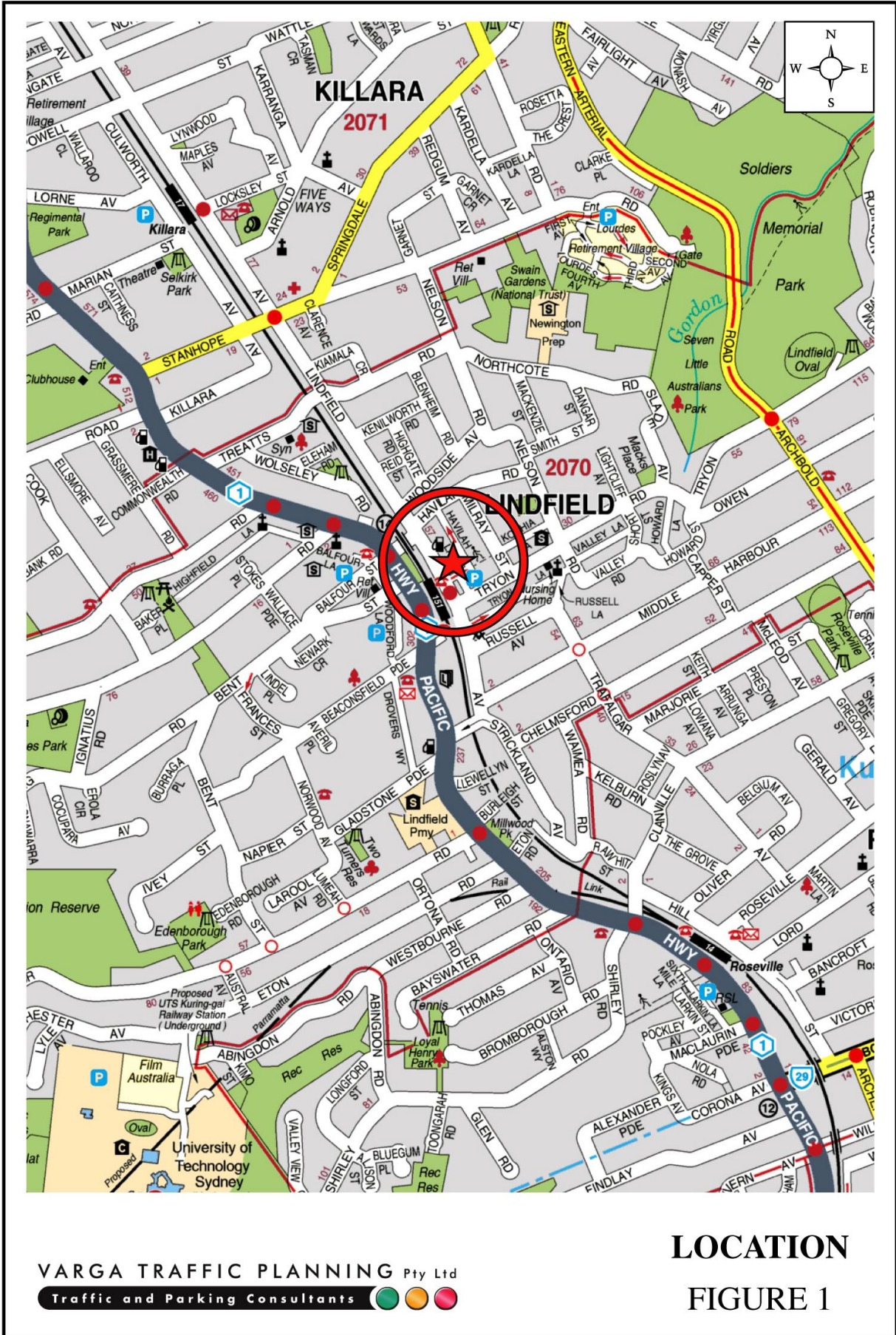
The Department of Planning have previously approved the construction of a new mixed-use retail/residential/medical development on the site (MP08_0244). Off-street parking was approved in a new three-level basement car parking area as well as on the adjacent site in Havilah Lane for which a “contribution in lieu” was made.

The proposed development will involve the demolition of the existing shopping centre building on the site to facilitate the construction of a modified mixed-use retail/residential development and the deletion of the previously approved medical component. Off-street parking is to be provided in a new three-level undercover car parking area and on the adjacent site in Havilah Lane for which a “contribution in lieu” was made, in accordance with Council’s requirements.

The purpose of this report is to assess the traffic and parking implications of the development proposal and to that end this report:

- describes the site and provides details of the development proposal
- reviews the road network in the vicinity of the site, and the traffic conditions on that road network
- estimates the traffic generation potential of the development proposal, and assigns that traffic generation to the road network serving the site
- assesses the traffic implications of the development proposal in terms of road network capacity
- reviews the geometric design features of the proposed basement car parking facilities for compliance with the relevant codes and standards

- assesses the adequacy and suitability of the quantum of off-street car parking provided on the site.



2. PROPOSED DEVELOPMENT

Site

The subject site is located on the north-eastern corner of the Lindfield Avenue and Kochia Lane intersection and has rear access via Havilah Lane. The site has a street frontage approximately 49m in length to Lindfield Avenue, 32m in length to Kochia Lane and 46m in length to Havilah Lane. The site occupies an area of approximately 3,099m².

The ground floor level of the subject site is currently occupied by a shopping centre comprising a Franklins Supermarket (821m² GLFA / 909m² GFA) and specialty stores such as a chemist, travel agency, bakery and green grocer (914m² GLFA / 1,484m² GFA). The cumulative floor area of the existing shopping centre is therefore approximately 1,735m² GLFA or 2,393m² GFA.

The first floor level is currently occupied by the Lindfield Bridge Club (647m² GFA), a research and marketing company office (213m² GFA) and a small yoga, fitness and martial arts gymnasium (378m² GFA). The cumulative floor area of the first floor level is therefore approximately 1,238m² GFA.

Off-street parking is currently provided on the site for 38 cars in two separate undercover carparking areas located towards the rear of the site, with vehicular access provided via Havilah Lane.

The existing development has also paid to Council a “contribution in lieu” for a further 25 parking spaces which are located adjacent to the site at No.9 Havilah Lane. The total parking spaces associated with the existing site is therefore 63 spaces.

Previously Approved Development

The Department of Planning have previously approved the construction of a multi-storey mixed-use retail/residential/medical development on the site comprising two buildings (MP08_0244). A total of 91 residential apartments were approved in the two new buildings as follows:

Studio:	1
1 bedroom apartments:	45
2 bedroom apartments:	38
3 bedroom apartments:	7
TOTAL APARTMENTS:	91

The previous approval also made provision for retail and medical uses with development statistics as follows:

Supermarket:	1,451m ² GLFA (Level 1)
Specialty Retail:	1,726m ² GLFA (Ground & Level 1)
Medical Suites:	293m ² GLFA (Level 1)
TOTAL FLOOR AREA:	3,470m² GLFA

Off-street parking was approved for 196 cars in a new three-level basement car parking area. Additional parking was also provided for a further 25 cars on the adjacent site in Havilah Lane for which a “contribution in lieu” was made. The total off-street parking for the previously approved development was therefore 221 spaces.

Proposed Development

The proposed development will involve the demolition of the existing shopping centre on the site to facilitate the construction of a newly modified multi-storey mixed-use retail/residential development on the site comprising two buildings above a basement car parking area.

A total of 112 residential apartments are proposed in the two new buildings as follows:

Studio:	4
1 bedroom apartments:	53
2 bedroom apartments:	53
3 bedroom apartments:	2
TOTAL APARTMENTS:	112

A new retail component is also proposed on the ground floor level with a cumulative floor area of approximately 1,934m² GLFA (or 2,340m² GFA) as follows:

Supermarket:	1,237m ² GLFA
Specialty Retail:	697m ² GLFA
TOTAL FLOOR AREA:	1,934m² GLFA

Off-street car parking is proposed for 162 cars in a new three-level undercover car parking area (i.e. two basement levels and one lower ground floor level) in accordance with Council's requirements.

With the addition of 25 spaces located adjacent to the site in Havilah Lane for which a "contribution in lieu" was made, the total proposed parking associated with the site is 187 spaces.

Vehicular access to the residential/visitor basement car parking facilities is to be provided via a new entry/exit driveway located at the southern end of the Havilah Lane site frontage.

Vehicular access to the lower ground level retail car parking area is to be provided via two new separate entry and exit driveways also located in Havilah Lane.

A loading dock is also proposed at the rear of the site which is capable of accommodating a variety of trucks up to and including two 8.8m long medium rigid trucks simultaneously. Vehicular access to the loading docks is via the abovementioned separate entry and exit driveways in Havilah Lane.

Plans of the proposed development have been prepared by *Crone Partners* and are reproduced in the following pages.

Notes: Any changes and additions to the office site to be implemented, or omissions or discrepancies to be notified to the architect. Copyright: This drawing is the property of Varga Traffic Planning Pty Ltd and is to be used only for the purposes for which it is intended. This licence is not transferable without the permission of VTP.

Quality Assurance System

Authorised By: _____ Date: _____

Client: **ANKA (CIVIC CENTER) PTY LTD**
 175-176 NEW SOUTH HEAD RD
 NEWCASTLE NSW 2267
 Ph: 491 2 502 3000 Fax: 491 2 502 3005

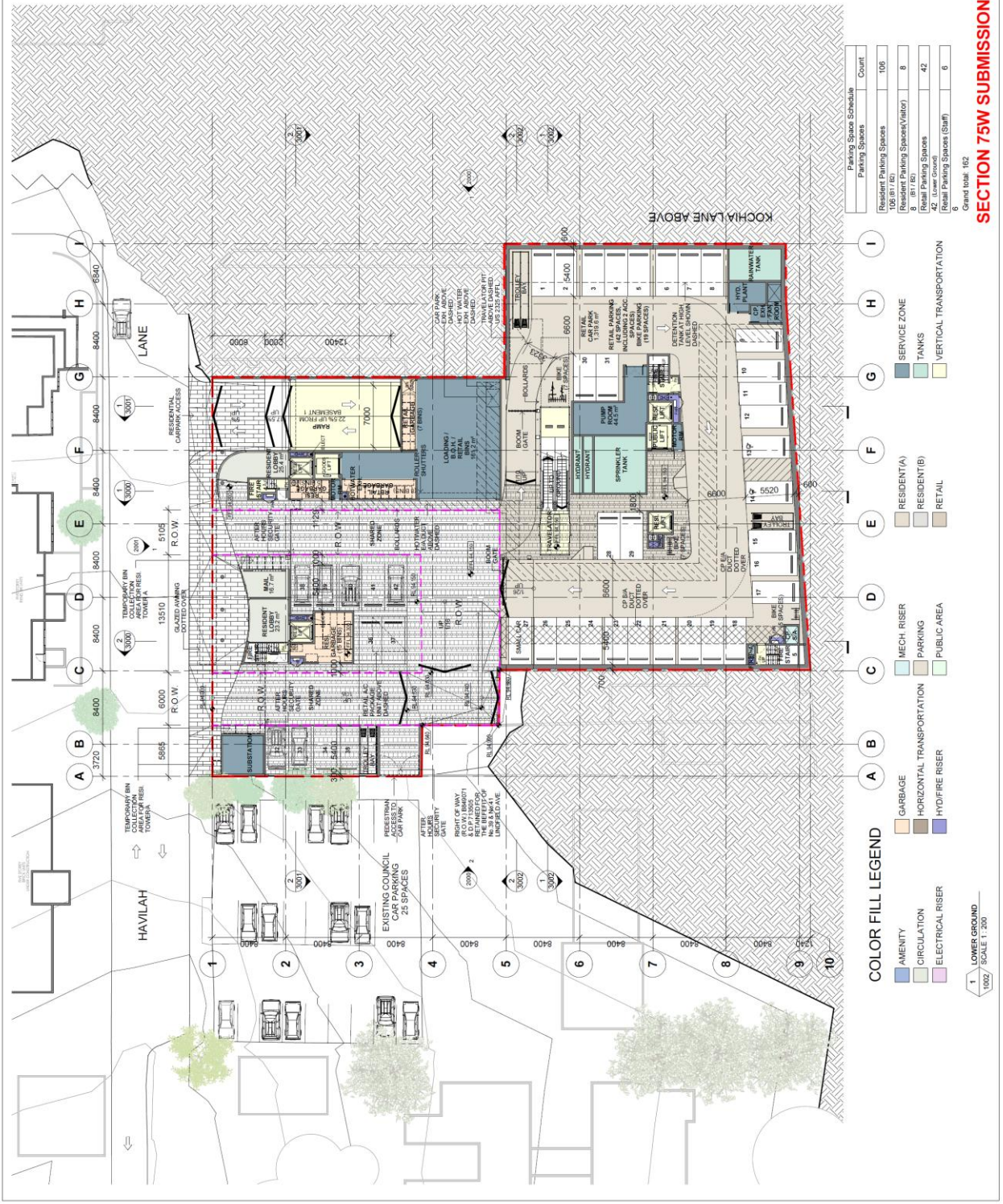
Builder: _____

Project: **LOWER GROUND FLOOR PLAN**

Scale: 1:200 @A1

Project: **LINDFIELD MIXED-USE DEVELOPMENT**
 23-37 LINDFIELD AVE & 11 HAVILAH
 LINDFIELD NSW 2070
 Ph: 491 2 8205 5000
 Fax: 491 2 8205 5351

Project: **SECTION 75W SUBMISSION**
 CA 2924/ADAZ 1002 A
 Drawing No. _____



Plot Date: 19/11/2012 5:42:16 PM

Notes:
 All dimensions and setbacks to be verified prior to commencement.
 The copyright of this drawing together with any other documents
 property of the client and shall remain the property of the client and shall not be
 transmittable without the permission of the architect.
 Copyright
 The copyright of this drawing together with any other documents
 property of the client and shall remain the property of the client and shall not be
 transmittable without the permission of the architect.
 Copyright
 The copyright of this drawing together with any other documents
 property of the client and shall remain the property of the client and shall not be
 transmittable without the permission of the architect.
 Copyright

AREA COLOR LEGEND:
 DENOTES GROSS
 LETTABLE AREA - RETAIL
 (G.L.A.)

Level	Name	Area
GROUND	MAJOR RETAIL	1,238.6 m ²
GROUND	RETAIL 1	65.0 m ²
GROUND	RETAIL 2	53.3 m ²
GROUND	RETAIL 3	84.6 m ²
GROUND	RETAIL 4	65.2 m ²
GROUND	RETAIL 5	79.0 m ²
GROUND	RETAIL 6	39.3 m ²
GROUND	RETAIL 7	228.7 m ²
GROUND	RETAIL 8	1,934.4 m ²
Grand total		1,934.4 m ²



1 GROUND
 1/20 SCALE 1:200

NOTE:
 1. GROSS LETTABLE AREA (G.L.A.) IS MEASURED IN ACCORDANCE WITH THE PROPERTY COUNCIL OF AUSTRALIA'S METHOD FOR MEASURING GROSS LETTABLE AREA (G.L.A.)
 2. THE FIGURES SHOULD BE CHECKED IN COLOUR TO CLEARLY IDENTIFY THE DIAGRAM

PRELIMINARY

ANKA (CIVIC CENTER) PTY LTD
 LEVEL 3
 110-112 AVONDALE AVENUE
 EDGECRAFT SYDNEY NSW 2027
 Ph: +61 2 8300 3000
 Fax: +61 2 8300 3000
 Email: info@anka.com.au
 Website: www.anka.com.au



KEY



Scale 1:200 @A1

COMPARTNERS
 CONSULTANTS
 Level 2, 284 Pitt Street
 Sydney NSW 2000
 Ph: +61 2 8256 5300
 Fax: +61 2 8256 5301
 Email: info@comparters.com.au
 Website: www.comparters.com.au

LINDFIELD MIXED USE DEVELOPMENT
 23-37 LINDFIELD AVE & 11 HAVILAH
 LINDFIELD NSW 2070
 Project No: 2008/0001
 Drawing No: 1720
 Drawing Title: SECTION 75W SUBMISSION
 Drawing Phase: PRELIMINARY
 Date: 19/11/2012

Cad File No: C:\Users\michaels\Documents\CA-2924-2-M3-AR-Main_Model-Central_michael.rvt

3. TRAFFIC ASSESSMENT

Road Hierarchy

The road hierarchy allocated to the road network in the vicinity of the site by the Roads and Maritime Services is illustrated on Figure 3.

The Pacific Highway is classified by the RMS as a *State Road* and provides the key north-south road link in the area, linking the City to Wahroonga and the F3 Freeway. It typically carries three traffic lanes in each direction in the vicinity of the site, with opposing traffic flows separated by a centre median island. Kerbside parking is permitted at selected locations outside of commuter peak periods.

Stanhope Road, Springdale Road, Eastern Arterial Road and Archbold Road are all classified by the RMS as *Regional Roads*. Eastern Arterial Road and Archbold Road typically carry two traffic lanes in each direction in the vicinity of the site, whilst Stanhope Road and Springdale Road typically carry one traffic lane in each direction.

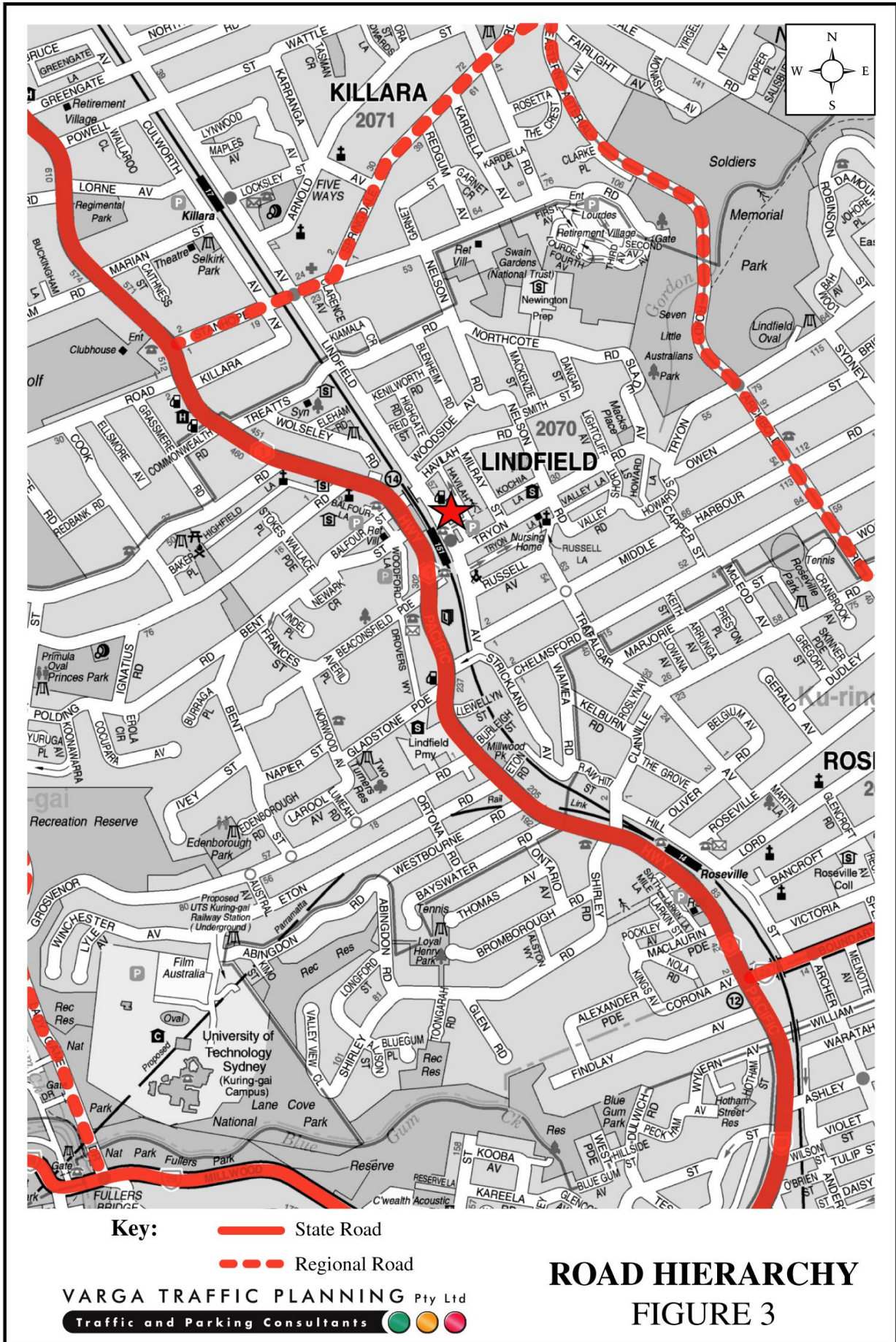
Lindfield Ave and Tryon Road are local, unclassified roads which perform the function of a “*collector route*”, providing a link between the local road network and the higher order classified RMS road network. Kerbside parking is generally permitted on both sides of both roads.

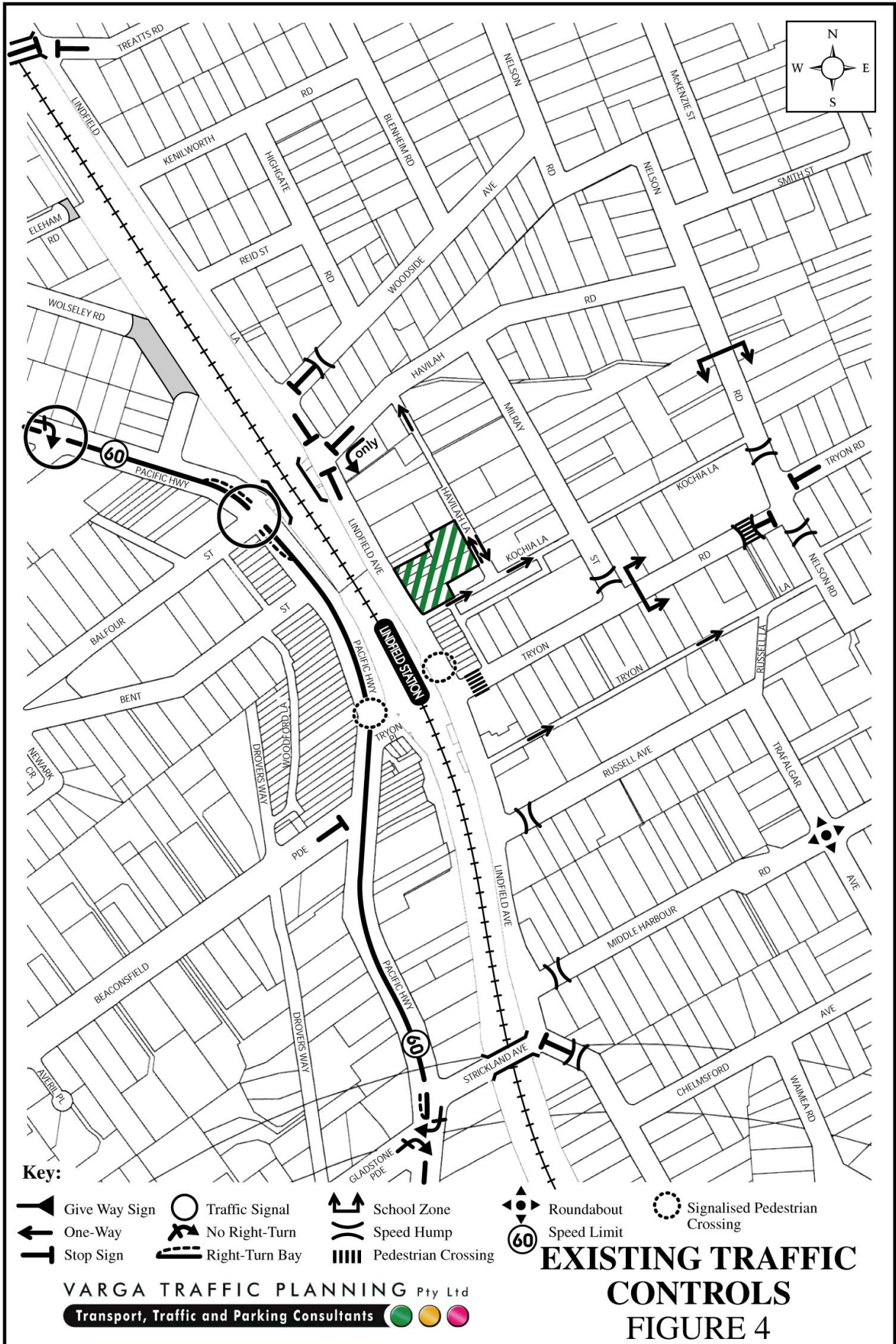
Kochia Lane and Havilah Lane are local, unclassified laneways which are primarily used to provide rear vehicular and pedestrian access to properties fronting Lindfield Avenue and Milray Street, as well as the Council carparking area. Kerbside parking is not permitted on either side of both laneways.

Existing Traffic Controls

The existing traffic controls which apply to the road network in the vicinity of the site are illustrated on Figure 4. Key features of those traffic controls are:

- a 60 km/h SPEED LIMIT which applies to the Pacific Highway





- a 50 km/h SPEED LIMIT which applies to Lindfield Avenue and all other local roads in the area
- TRAFFIC SIGNALS in the Pacific Highway where it intersects with Balfour Street / Havilah Road
- PEDESTRIAN TRAFFIC SIGNALS in Lindfield Avenue just north of Tryon Road
- a ONE-WAY eastbound restriction in Kochia Lane (between Lindfield Avenue and Chapman Lane)
- a ONE-WAY northbound restriction in Havilah Lane (north of the site where the roadway reduces in width only)

Existing Traffic Conditions

An indication of the existing traffic conditions on the road network in the vicinity of the site is provided by reference to the RMS's *Annual Average Daily Traffic* data. The relevant count stations nearest to the subject site are summarised below.

Roads & Maritime Services of NSW
Annual Average Daily Traffic Volumes

Station No.	Location	1996	1999	2002	2005
00.925	Pacific Highway & Highfield Rd (TCS)	-	54,696	-	54,938
00.924	Pacific Highway & Havilah Rd (TCS)	-	58,902	-	-
00.923	Pacific Highway & Grosvenor Rd (TCS)	58,077	31,289	56,746	-

A more detailed indication of the existing traffic conditions on the road network in the vicinity of the site is provided by peak period traffic surveys undertaken at the following intersections:

- 1) The Pacific Highway & Balfour Street / Havilah Lane (AM & PM Peak)
- 2) Lindfield Avenue & Tryon Avenue (AM & PM Peak)
- 3) Havilah Street & Havilah Lane (PM Peak Only)
- 4) Kochia Lane & Havilah Lane (PM Peak Only)

The results of the traffic surveys and reveal that:

- two-way traffic flows in the Pacific Highway are typically in the order of 3,300-3,800 vehicles per hour (vph) during the *morning* and *afternoon* peak periods
- two-way traffic flows in Havilah Street are typically in the order of 500-700 vph during the *morning* and *afternoon* peak periods
- two-way traffic flows in Lindfield Avenue are typically in the order of 750-1,200 vph during the *morning* and *afternoon* peak periods
- two-way traffic flows in Tryon Avenue are typically in the order of 400 vph during the *morning* and *afternoon* peak periods
- two-way traffic flows in Kochia Lane are typically in the order of 70-100 vph during the *afternoon* peak period
- northbound traffic flows in Havilah Lane are typically in the order of 60 vph during the *afternoon* peak period.

Projected Traffic Generation

An indication of the traffic generation potential of the development proposal is provided by reference to the former Roads and Traffic Authority's publication *Guide to Traffic Generating Developments, Section 3 - Landuse Traffic Generation (October 2002)*.

The RTA *Guidelines* are based on extensive surveys of a wide range of land uses and nominates the following traffic generation rates which are applicable to the development proposal:

High Density Residential Flat Buildings in Sub-Regional Centres

0.29 peak hour vehicle trips per dwelling

The RTA *Guidelines* also make the following observation in respect of high density residential flat buildings:

Definition

A *high density residential flat building* refers to a building containing 20 or more dwellings. This does not include aged or disabled persons housing. *High density residential flat buildings* are usually more than 5 levels, have basement level carparking and are located in close proximity to public transport services. The building may contain a component of commercial use.

Factors

The above rates include visitors, staff, service/delivery and on-street movements such as taxis and pick-up/set-down activities.

Reference is also made to the *Trip Generation and Parking Demand Surveys of Shopping Centre Analysis Report (September 2011)* report prepared by *Halcrow*. The *Halcrow* report provides an update of the traffic generation rates nominated in the RTA *Guidelines* for shopping centres, and was prepared on behalf of the then Roads and Traffic Authority.

The *Halcrow* report is based on extensive surveys of a wide range of shopping centres in developed areas and nominates the following traffic generation rates which are applicable to the retail component of the development proposal:

Shopping Centres (0-20,000m² GLFA)

AM: 1.86 peak hour vehicle trips per 100m² GLFA

PM: 3.88 peak hour vehicle trips per 100m² GLFA

Application of the above traffic generation rates to the retail and residential components of the development proposal yields a traffic generation potential of approximately 68 vehicle trips per hour during the *morning* commuter peak period and 107 vehicle trips per hour during the *afternoon* commuter peak period as set out below:

Projected Future Traffic Generation Potential – Sydney Metropolitan Area		
Peak Network Hour Vehicle Trips		
	Thursday Morning	Thursday Afternoon
Supermarket (1,237m ² GLFA)	23 vph	48 vph
Specialty Retail (697m ² GLFA)	13 vph	27 vph
Residential (112 Apartments)	32 vph	32 vph
TOTAL	68 vph	107 vph

In practice however, it is likely that the traffic generation potential of the proposed development will be considerably less than is suggested in the tables above because:

- a substantial proportion of customers of the supermarket and retail shops are likely to be residents of the proposed development, and
- traffic generated by the retail component is likely to include an element of “passing trade” or “linked trips” drawn from *existing* traffic flows which are already using the adjacent road network; for example, a person calling into the shopping the centre on the way home from work. Surveys conducted for the *Halcrow* report found that 46% of shopping centre trips were “linked trips”.

That projected future level of traffic generation potential should however, be offset or *discounted* by the volume of traffic which could reasonably be expected to be generated by the previously approved development of the site, in order to determine the *nett increase (or decrease)* in traffic generation potential expected to occur as a consequence of this development proposal.

The RTA *Guidelines* do not nominate a traffic generation rate for small medical suites, referring only to extended hours medical centres. For the purposes of this assessment therefore, the traffic generation rate of “2.0 peak hour vehicle trips/100m² GFA” nominated in the RTA *Guidelines* for “commercial premises” has been adopted in respect of the medical suites component of the previously approved development.

Application of the above traffic generation rates to the various components of the previously approved development yields a traffic generation potential of approximately 91 vehicle trips per hour during the *morning* commuter peak period and 155 vehicle trips per hour during the *afternoon* commuter peak period as set out below:

Previously Approved Development – Peak hour Traffic Generation Potential		
	Thursday Morning	Thursday Afternoon
Supermarket (1,451m ² GLFA)	27 vph	56 vph
Specialty Retail (1,726m ² GLFA)	32 vph	67 vph
Medical (293m ² GLFA)	6 vph	6 vph
Residential (91 Apartments)	26 vph	26 vph
TOTAL	91 vph	155 vph

Accordingly, it is likely that the proposed development will result in a *reduction* in the traffic generation potential the site of approximately 23 vph during the *morning* commuter peak, and 47 vph during the *afternoon* commuter peak period as set out below:

Projected Nett <i>Decrease</i> in Peak Hour Traffic Generation Potential of the Site as a consequence of the development proposal when compared with the previously approved development		
	Thursday Morning	Thursday Afternoon
Projected Future Traffic Generation Potential	68 vph	108 vph
Previously Approved Traffic Generation Potential	91 vph	155 vph
NETT DECREASE IN TRAFFIC GENERATION POTENTIAL:	-23 vph	-47 vph

Notwithstanding the above, for the purposes of providing a more *rigorous* traffic assessment, it has been assumed that the site is currently vacant and that all of the projected future traffic flows will be new or *additional* to the existing traffic flows on the adjacent road network.

Traffic Implications - Road Network Capacity

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 program which is widely used by the RTA and many LGA's for this purpose. Criteria for evaluating the results of SIDRA analysis are reproduced in the following pages.

The results of the SIDRA analysis of the Pacific Highway & Havilah Street / Balfour Street intersection are summarised on Table 3.1 below, revealing that:

- under the projected future traffic demands expected to be generated by the previously approved development proposal, the Pacific Highway & Havilah Street / Balfour Street intersection is expected to operate at *Level of Service "B"*, with average vehicle delays in the order of 22-26 seconds/vehicle.
- under the projected future traffic demands expected to be generated by the s.75w development proposal, the Pacific Highway & Havilah Street / Balfour Street intersection is also expected to operate at *Level of Service "B"*, with average vehicle delays in the order of 22-23 seconds/vehicle.

The results of the SIDRA analysis of the Lindfield Avenue & Tryon Avenue intersection are summarised on Table 3.2 below, revealing that:

- under the projected future traffic demands expected to be generated by the previously approved development proposal, the Lindfield Avenue & Tryon Avenue intersection is expected to operate at *Level of Service "A"*, with average vehicle delays in the order of 6-7 seconds/vehicle.
- under the projected future traffic demands expected to be generated by the s.75w development proposal, the Lindfield Avenue & Tryon Avenue intersection is also expected to operate at *Level of Service "A"*, with average vehicle delays in the order of 6 seconds/vehicle.

In the circumstances, it is clear that:

- the proposed development will not have any unacceptable traffic implications in terms of road network capacity, and
- the proposed development does not require any upgrades to nearby roads and intersections.

TABLE 3.1 - RESULTS OF SIDRA ANALYSIS OF PACIFIC HIGHWAY & HAVILAH STREET & BALFOUR STREET					
Key Indicators	Previously Approved Traffic Demand		Projected s.75w Development Traffic Demand		
	AM	PM	AM	PM	
Level of Service	B	B	B	B	
Degree of Saturation	0.768	0.706	0.769	0.719	
Average Vehicle Delay (secs/veh)					
Pacific Highway (north)	L	23.4	17.3	22.7	14.7
	T	16.8	21.5	16.1	17.2
	R	48.1	56.4	48.1	51.2
Balfour Street (west)	L	49.7	41.9	52.3	47.1
	T	63.0	47.8	66.7	53.9
	R	69.9	54.7	73.6	60.9
Pacific Highway (south)	L	13.2	28.1	13.0	23.9
	T	14.7	21.1	14.1	16.8
	R	50.5	45.3	49.5	37.6
Havilah Street (east)	L	48.8	41.0	51.6	46.1
	T	57.3	49.6	51.0	55.1
	R	64.3	56.6	67.9	62.0
TOTAL AVERAGE VEHICLE DELAY		22.5	26.1	22.1	22.6

PAC_HAVQ

PAC_HAVR

Criteria for Interpreting Results of Sidra Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good operation.	Good operation.
'B'	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD=s listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
B	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by traffic signals¹ both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a roundabout or GIVE WAY or STOP signs, satisfactory intersection operation is indicated by a DS of 0.8 or less.

¹ The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.

4. PARKING IMPLICATIONS

Existing Kerbside Parking Restrictions

The existing kerbside parking restrictions which apply to the road network in the vicinity of the site are illustrated on Figure 5 and comprise:

- NO STOPPING / NO PARKING restrictions along both sides of Kochia Lane (in between Lindfield Avenue and Chapman Lane) and also Havilah Lane
- ½ HOUR PARKING restrictions along both sides of Lindfield Avenue including along the site frontage
- 1 HOUR PARKING restrictions in Kochia Lane, adjacent to the Council car parking area, in a sawtooth arrangement
- 2 HOUR PARKING restrictions in the Council car parking area located on the northern side of Tryon Avenue
- 2 HOUR PARKING restrictions along both sides of Tryon Avenue
- 4 HOUR PARKING restrictions in the car parking area to the north of the site on No.9 Havilah Lane
- BUS ZONES located on both sides of the Pacific Highway and also Lindfield Avenue

Parking Accumulation Surveys

In order to gain an accurate appreciation of the general availability of car parking on the subject site and on the adjacent road network, a detailed survey of car parking accumulation was undertaken between 8:00am-8:00pm on a Thursday and Saturday as part of the previously approved traffic study for the site.

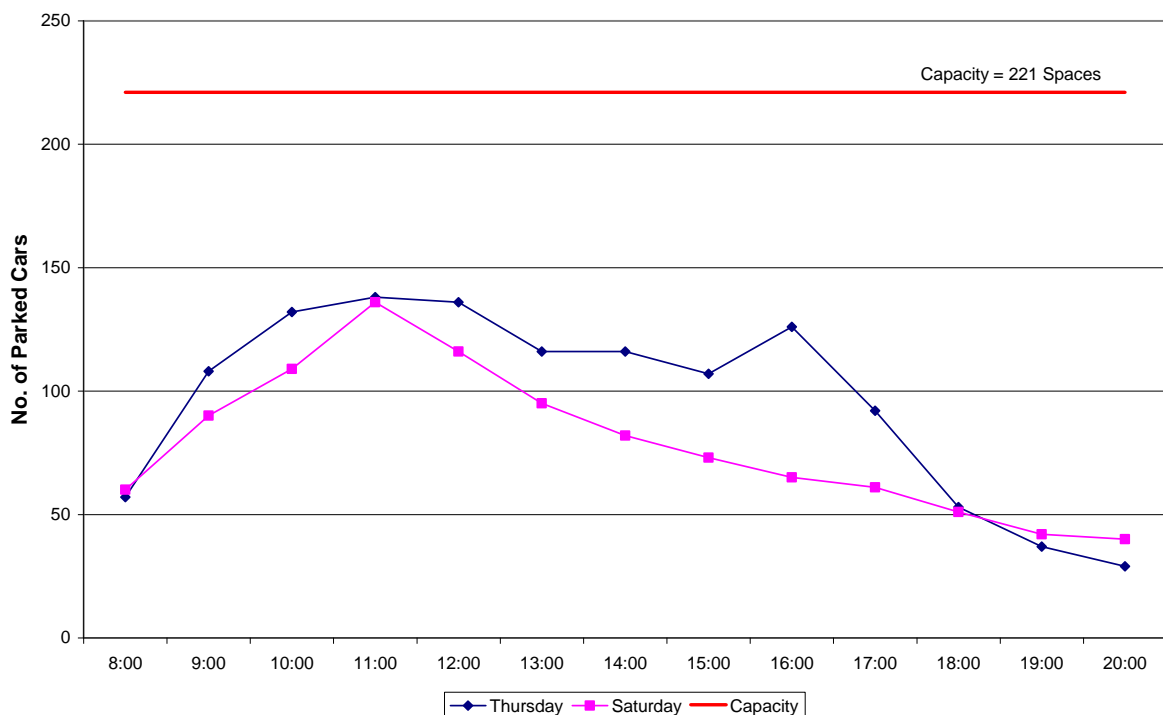
The results of the parking accumulation surveys are reproduced in full in Appendix A and reveal that:



- the site has a car parking capacity of approximately 38 spaces
- there are an additional 25 spaces adjacent to the site at No.9 Havilah Lane (which are associated with the site)
- there are 122 spaces in the Tryon Avenue and Kochia Lane public car parking areas
- there are a further 36 kerbside spaces along both sides of Lindfield Avenue in the vicinity of the site
- Thursday’s peak parking demand occurred at 11:00am when there was 138 parked cars recorded, leaving 83 vacant spaces
- Saturday’s peak parking demand also occurred at 11:00am when there was 136 parked cars recorded, leaving 85 vacant spaces

The cumulative results of the parking accumulation surveys are summarised on the graph below, confirming that substantial spare car parking capacity is readily available in the vicinity of the site at all times, both during business hours and after hours.

Lindfield Parking Accumulation Survey Results



Off-Street Parking Provisions

The off-street parking requirements applicable to the development proposal are specified in Council's *Development Control Plan No.43 – Car Parking (1998)* document in the following terms:

High Density Residential Flat Buildings

1 bedroom apartments:	1.0 space per dwelling
2 bedroom apartments:	1.0 space per dwelling
3 bedroom apartments:	1.5 spaces per dwelling
Visitors:	1.0 space per 4 dwellings

Retail – Shops (within 400m of a Railway Station):

1 space per 26m² GFA

Application of the above parking requirements to the retail and residential components of the development proposal yields an off-street parking requirement of 231 spaces as set out below:

Proposed Development - DCP No.43 Parking Requirements

Residential (112 Apartments):	113.0 spaces
Residential Visitors:	28.0 spaces
Retail (2,340m ² GFA):	90.0 spaces
TOTAL:	231.0 spaces

The proposed development makes provision for a total of 187 off-street car parking spaces, comprising 106 residential spaces, 8 residential visitor spaces, 42 retail spaces and 6 retail staff spaces within the basement/lower ground car parking area, plus a further 25 parking spaces in the existing car parking area located adjacent to the site as part of the “contribution in lieu” scheme. The total parking proposed to be provided results in a “shortfall” of 44 spaces when assessed under Council's *DCP No.43*.

By way of comparison, it is pertinent to note that the *existing* uses of the site generate a substantial greater *shortfall* of 77 in car parking spaces when assessed under Council's Parking Code.

The off-street parking requirements applicable to the *existing* development are specified in Council's *Development Control Plan No.43 – Car Parking* document in the following terms:

Retail – Shops (within 400m of a Railway Station):1 space per 26m² GFA**Office & Commercial:**1 space per 33m² GFA**Gymnasiums:**1 space per 17m² GFA

Application of the above parking requirements to the *existing* development on the site yields an off-street parking requirement of 140 spaces as set out below:

Existing Development - DCP No.43 Parking Requirements

Retail (2,393m ² GFA):	92.0 spaces
Gymnasium (378m ² GFA):	22.2 spaces
Bridge Club & Office (860m ² GFA):	26.0 spaces
TOTAL	140.2 spaces

The existing development makes provision for a total of only 63 off-street parking spaces, comprising 38 spaces located on-site, plus a further 25 spaces located adjacent to the site provided by the existing development as part of the “contribution in lieu” scheme, yielding **an existing “shortfall” of 77 parking spaces** when assessed under Council’s Parking.

Accordingly, the proposed development will reduce that existing shortfall in car parking by 33 parking spaces – ie; from 77 spaces to 44 spaces.

Reference is also made to the parking rates which were applicable to the approved development. Those parking rates are specified in Council’s former *Development Control Plan (Town Centres) 2010, Section 3A.27 – Mixed-Use Development Car Parking Provision* document in the following terms:

Residential Component within Mixed-Use Development

Studio:	0.0 spaces per dwelling (min)	0.5 spaces per dwelling (max)
1-Bedroom Apartments:	0.6 spaces per dwelling (min)	1.0 spaces per dwelling (max)
2-Bedroom Apartments:	1.0 spaces per dwelling (min)	1.25 spaces per dwelling (max)
3-Bedroom Apartments:	1.0 spaces per dwelling (min)	1.5 spaces per dwelling (max)
Visitors:	1.0 spaces per 6 dwellings	1.0 spaces per 6 dwellings
Shops	1.0 spaces per 33m ² GFA (min)	1.0 spaces per 26m ² GFA (max)

Application of the above parking requirements to the retail and residential components of the development proposal yields an off-street parking requirement of between 176 spaces and 233 spaces as set out below:

Proposed Development – Former Town Centres DCP 2010 Parking Requirements

Residential (112 Apartments):	86.8 spaces (min)	124.3 spaces (max)
Residential Visitors:	18.6 spaces (min)	18.6 spaces (max)
Retail (2,340m ² GFA):	70.9 spaces (min)	90.0 spaces (max)
TOTAL	176.3 spaces (min)	232.9 spaces (max)

The proposed development makes provision for a total of 187 off-street car parking spaces, thereby satisfying the former *Town Centre DCP* parking requirements.

By way of further comparison, reference is made to the parking rates nominated in the former Roads and Traffic Authority's (now RMS) publications *Guide to Traffic Generating Developments, Section 5 – Parking Requirements for Specific Land Uses (October 2002)* and in the *Halcrow report Trip Generation and Parking Demand Surveys of Shopping Centre Analysis Report (September 2011)*

The parking rates nominated in the *RTA Guidelines* and in the *Halcrow* report are based on extensive surveys of a wide range of land uses and nominates the following off-street parking requirements which are relevant to the development proposal.

High Density Residential Flat Buildings (Metropolitan Sub-Regional Centres)

1 bedroom apartments:	0.6 spaces per dwelling
2 bedroom apartments:	0.9 spaces per dwelling
3 bedroom apartments:	1.4 spaces per dwelling
Visitors:	1.0 space per 5 dwellings

Shopping Centres (0-20,000m² GLFA)

4.9 spaces per 100m² GLFA

Application of the above parking rates to the various components of the development proposal yields an off-street parking requirement of 202 parking spaces as set out below:

Proposed Development – RTA Parking Requirements

Residential (112 Apartments):	84.7 spaces
Residential Visitors:	22.4 spaces
Retail (1,934m ² GLFA):	94.7 spaces
TOTAL:	201.8 spaces

The proposed development makes provision for a total of 187 off-street car parking spaces, therefore resulting in a nominal “shortfall” of 15 spaces when assessed under the RTA requirements. However as mentioned above, the existing development on the site has an existing “shortfall” of 77 parking spaces.

In summary therefore, the parking provisions incorporated in the development proposal:

- result in a shortfall of 44 spaces when assessed under Council’s *DCP No. 43*, compared with an existing shortfall of 77 spaces
- satisfies the parking requirements of the former *Town Centre’s DCP*, and
- results in a shortfall of 15 spaces when assessed in accordance with the RTA *Guidelines*.

In practice however, it is likely that any “shortfall” in parking at the proposed development will be considerably less than is suggested above because:

- a substantial proportion of customers of the supermarket and retail shops are likely to be residents of the proposed development, and
- traffic generated by the retail component is likely to include an element of “passing trade” or “linked trips” drawn from *existing* traffic flows which are already using the adjacent road network; for example, a person calling into the shopping the centre on the way home from work. Surveys conducted for the *Halcrow* report found that 46% of shopping centre trips were “linked trips”

In any event, the *actual* parking demands likely to be generated by the site is expected to be somewhat *less* than is suggested by the car parking code, as a substantial proportion of retail customers are expected to be railway and bus commuters who will stop at the shops or supermarket when walking home from the bus/rail station to purchase smaller, “daily needs” items such as bread, milk or fresh food and vegetables which may be required for the evening meal.

In the circumstances, it is reasonable to conclude that the proposed provision of 187 off-street car parking spaces will comfortably satisfy the needs of the development.

The geometric design layout of the proposed car parking facilities have been designed to comply with the relevant requirements specified in the Standards Australia publication *Parking Facilities Part 1 - Off-Street Car Parking AS2890.1* in respect of parking bay dimensions, ramp gradients and aisle widths.

Loading/servicing for the proposed development is expected to be undertaken by vehicles up to and including 8.8m long medium rigid trucks. The loading dock is to be located at the rear of the site in Havilah Lane and is capable of holding two 8.8m long medium rigid truck side by side. The loading dock has been designed to accommodate the swept path turning requirements of these trucks.

In summary, the proposed parking facilities satisfy the relevant requirements specified in both Council's Parking Code as well as the Australian Standards and it is therefore concluded that the proposed development will not have any unacceptable parking implications.