Preliminary Traffic Assessment

Costco, Crossroads

February 2011

Prepared for

Costco Wholesale Australia Pty Ltd

Halcrow

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This report has been issued and amended as follows:

Rev	Description	Date	Prepared by	Approved by
0	Draft for internal review	16/02/2011	PT	KH
1	Draft for Client review	17/02/2011	PT	KH
2	Second Draft for Client review	09/03/2011	PT	KH
3	Final Report	15/03/2011	PT	KH

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Contents

1 Introduction

Halcrow has been appointed to undertake a preliminary assessment of the likely traffic implications of the introduction of a Costco store at the Crossroads homemaker centre near Liverpool.

This assessment includes a:

- a description of the existing road network;
- a preliminary assessment on the likely impact of a Costco store with at grade parking on traffic generation and local road network;
- the potential need for any road/ intersection upgrades

In order to undertake this appraisal, Halcrow has undertaken the following tasks:

- Site visit;
- Extracted Costco data from the traffic impact assessment report prepared for the Parramatta Road site
- Reviewed Costco data for projected staff numbers, customer data, parking provision and usage data, opening hours and projected peak periods, at the proposed site as available;
- Observed traffic conditions;
- Checked availability of RTA council traffic data at key intersections
- Calculated predicted traffic generation of the proposed site and distributed it onto the road network;
- Formed an opinion on the likely effect of such traffic
- Identify potential intersection deficiencies/constraints (without undertaking modelling)

Based upon this work, we have prepared this initial traffic feasibility report.

2 Existing Conditions

2.1 Site Location

The site is located at the Crossroads Homemaker centre in Casula near Liverpool as shown on **Figure 1**. The site has frontages to Parkers Farm Place to the north, and Beech Road to the east.

The site is currently undeveloped land that is located in an area that comprises of retail and bulky goods stores although there is residential housing nearby.

2.2 Crossroads Homemaker Centre

The Crossroads Homemaker centre is a retail park for mainly retail and bulky goods stores. It is a triangular area that is bounded by Camden Valley Way to the north, M5 South Western Motorway to the west and Campbelltown Road to the south-east.

The area has currently been developed to approximately 40% of its maximum capacity. Beech Road and Parkers Farm Place are located within the Crossroads Homemaker Centre. These two roads provide a link to the main arterial roads in the area.

There are currently approximately 1,600 parking bays in the area for 22 stores. Some of the stores include The Good Guys, The Sleeping Giant, Bunnings and Sleep City. The current trading hours are:

- 9:00am - 5:30pm (Mon, Tues, Weds, & Fri)
- 9:00am - 9:00pm (Thurs)
- 9:00am – 5:00pm (Sat)
- 10:00am – 4:00pm (Sun)

SITE LOCATION PLAN

COSTCO, CROSSROADS

North

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Figure 1

Filename: CTLRQOdi01.ai

Date: 16 February 2011

From previous work undertaken on the Crossroads centre, it is known that there are some existing operational issues at the centre:

- Trucks often use Beech Road as a short cut between Camden Valley Road and Campbelltown Road thereby avoiding the need to negotiate the Camden Valley Road/Campbelltown Road traffic signals. The Centre has considered converting the existing roundabout at Beech Road/Parkers Farm Place Road to a traffic signal to try and make this a less attractive route for trucks. This would also have the benefit of improving pedestrian connectivity between the 3 operational quadrants of the site which is currently relatively poor
- There are a number of trucks who use the section of Parkers Farm Road which will provide access to the Costco centre as overnight stop. This would obviously cease if Costco was built here as it would add a higher level of activity to a currently relatively inactive road

2.3 Road Network

A description of the road network in the vicinity of the site is detailed below:

Beech Road is a collector road, which acts as a connection for local roads to the main arterial roads in the vicinity. Beech Road connects the local roads to Camden Valley Way to the north. The road consists of two travel lanes in each direction with a posted speed limit of 60km/hr.

Camden Valley Way is an arterial road that provides the east-west connection. The road is located to the north of the site and connects to Hume Highway. Camden Valley Way is generally a divided road with two travel lanes in each direction with a posted speed limit of 70km/hr.

Hume Highway is the main east-west arterial road, which provides a link to the Sydney City. The road is generally a divided road with three travel lanes in each direction with a posted speed limit of 70km/hr.

Campbelltown Road is an arterial road that links the area to Campbelltown towards the south. The road is generally a divided road with three travel lanes in each direction with a posted speed limit of 70km/hr.

M5 South Western Motorway runs along the western boundary of the site. The motorway provides a link for this area to Sydney City in the northeast. The M5 is a divided road with multiple travel lanes in each direction and a posted speed limit of 100km/hr local to the site.

M7 Westlink Motorway provides an arterial connection to areas north of the site. The M7 joins the M5 north of the site and connects the area to the M4 Western Motorway and the M2 Motorway. The M7 is a fully divided road with multiple travel lanes in each direction and a posted speed limit of 100km/hr local to the site.

Glenfield Road is a collector road that is located to the east of the site commencing from a signalised intersection with Campbelltown Road. The road consists of one travel lane in each direction with a posted variable speed limit up to 60km/hr.

2.4 Existing Traffic Volumes

Intersection turning movement counts were undertaken for intersections in the vicinity of the Crossroads Homemaker site in March 2010. These counts were obtained for the weekday evening peak periods at the following intersections:

- South Western Freeway – Camden Valley Way;
- Beech Road – Camden Valley Way;
- Hume Highway – Campbelltown Road;
- Campbelltown Road – Glenfield Road;
- Campbelltown Road – Beech Road and
- Campbelltown Road – Link to M5.

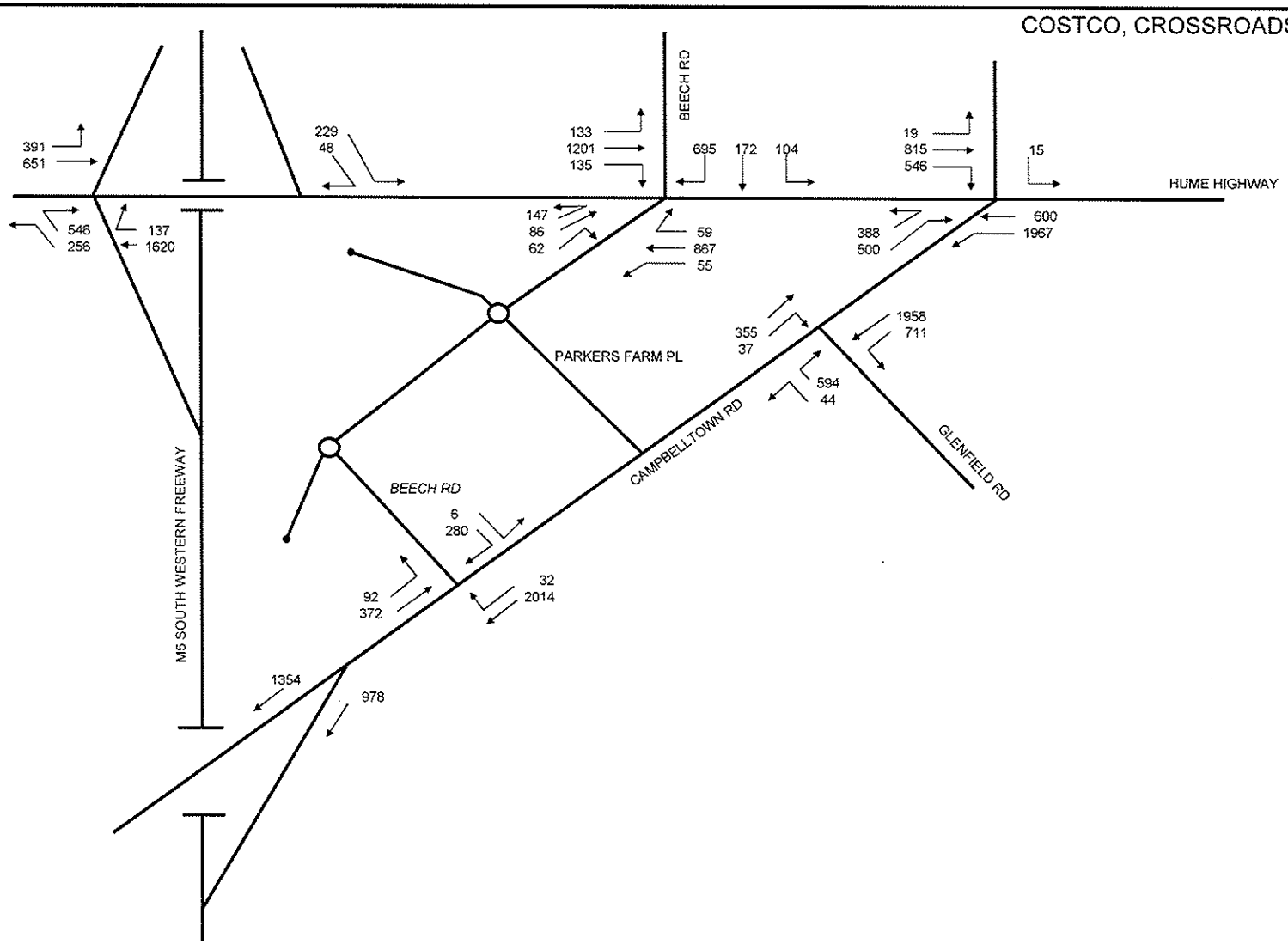
Table 2.1

Location	Thursday Evening Peak
Camden Valley Way, East of Beach Road	3,050
Beech Road, North of Camden Valley Way	1,250
Site access, South of Camden Valley Way	660
Camden Valley Way, East of Beech Road	2,360
Hume Highway, East of Campbelltown	3,300
Campbelltown Road, South of Hume Highway	2,950
Glenfield Road, East of Campbelltown Road	1,390

NOTE: The figures are rounded to the nearest ten units.

The above link counts were extracted from these intersection counts. The actual weekday PM peak period traffic counts on the local road network around the site are shown on **Figure 2.**

We do not at present have any traffic count information for a Saturday but it is anticipated that the traffic would be less peaky and the hourly traffic flows would generally be lower than during a weekday.



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EXISTING TRAFFIC VOLUMES

Figure 2

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3 Impacts of the Proposed Development

3.1 Proposed Development

An indicative scheme for the proposed Costco store is attached at **Appendix A**. For the purpose of this preliminary traffic assessment, the following development schedule has been assessed:

- Costco warehouse store with a:
  - Leasable Floor Area (LFA) of about 13,700m^2;
  - Gross Floor Area (GFA) of about 14,500 m^2, based on the Leasable to Gross floor ratio of the proposed Lidcombe store; and
- Approximately 890 parking spaces.

3.2 Traffic Generation

The RTA's Guide to Traffic Generating Developments (Oct. 2002), does not contain trip rate data for Discount Club retail stores. The retail use covered by the document that would most closely correspond to a Costco store is bulky goods retail. The RTA has recently carried out surveys of a number of bulky goods retail stores. The trip rates calculated are shown below and the methodology for their calculation is attached at **Appendix B**.

There are numerous Costco stores in North America and so the trip generation rates from the U.S. Institute of Transportation Engineers (ITE) Trip Generation Handbook were considered as part of this study. The average trip generation rates for discount club stores are 4.76 and 6.85 vehicle trips per 1000ft^2 for the weekday evening and Saturday peak hours, respectively (which are considered to be the busiest periods). This is equivalent to 5.12 and 7.37 vehicle trips per 100m^2.

Halcrow recently prepared a Traffic Impact assessment for the proposed Costco site at Lidcombe. As part of the negotiations with the RTA regarding the Lidcombe store, it was agreed to use a Saturday peak hour traffic generation that was 10% lower (6.63 vehicle trips per 100m^2) than the rate stipulated in the ITE Handbook.

This reduction was based on daily profile data which indicated that Costco stores are busiest between 3.00-4.00pm, two hours after the traditional weekend road network peak between 12.00-1.00pm. The profile data showed that store trading between the hours of 12.00-1.00pm was 13-14% lower than trading during the 3.00-4.00pm hour. Accordingly, the trip rate was reduced by 10%.

In addition, trip rate data was obtained for a Costco site at Chingford, London in the UK. Similar to the proposed Auburn store, the Chingford store is located off a Regional Arterial Road (A406 North Circular) and is located in a fairly industrial area of north London.

Finally, we considered an average trip rate for Costco stores that have been surveyed in the UK.

The following table compares all of these different trip rates

Table 3.1 – Weekday Evening Peak Hour Trip Rates (per 100m^2 of GFA)

	Arrivals	Departures	TOTAL
ITE Discount warehouse	2.51	2.61	5.12
Chingford Costco	1.54	1.84	3.38
UK AVERAGE Costco	1.25	1.31	2.56
RTA Bulky Goods	0.71	0.75	1.46

Table 3.2 – Saturday Peak Hour Trip Rates (per 100m^2 of GFA)

	Arrivals	Departures	TOTAL
ITE Discount warehouse	3.45	3.18	6.63
Chingford Costco	2.93	2.96	5.89
UK AVERAGE Costco	3.00	2.68	5.68
RTA Bulky Goods	1.52	1.36	2.88

As can be seen from **Table 3.1** and **Table 3.2**, the ITE U.S. average trip rates are higher than the average UK trip rates and trip rates for the Chingford store. Furthermore, all trip rates are higher than the RTA rate for bulky goods.

For the purpose of the traffic analysis undertaken for the Lidcombe traffic impact study, the ITE trip rates were used as it is considered these trip rates would provide a robust assessment of the likely traffic generation for the first Costco store in Sydney. However, it is considered that, in time, as more Costco stores were developed in Sydney, the traffic generation of the store would be more in line with that of the Chingford store in London.

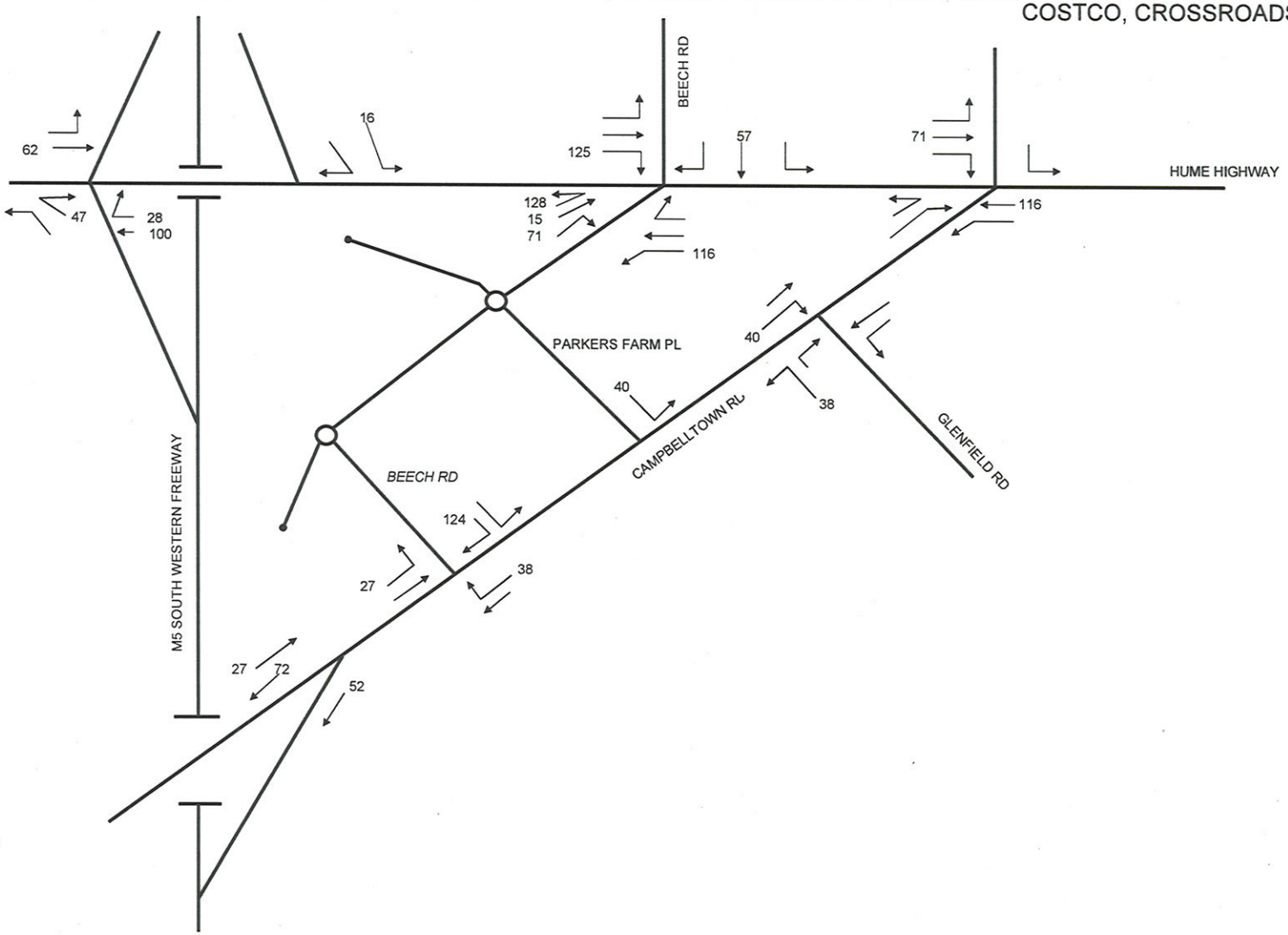
The traffic generated by the proposed Costco at Crossroads, based upon the Lidcombe data, would therefore be as follows

Table 3.3 – Traffic Generated by proposed 14500m^2 GFA Costco store

	Arrivals	Departures	TOTAL
Weekday Trip Rate	2.51	2.61	5.12
Saturday Trip Rate	3.45	3.18	6.63
Weekday No. of Vehicles	364	378	742
Saturday No. of Vehicles	500	461	961

Based on the weekday evening survey data, a likely distribution of this generated traffic is shown on **Figure 3**. A similar distribution for the Saturday peak would be derived once the relevant traffic flows have been surveyed.

This does represent a worst case scenario as the catchment for the Lidcombe store is likely to be larger than that for a store at Crossroads.



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TRAFFIC GENERATION

Figure 3

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4 Preliminary Assessment

4.1 Intersections Likely to Be Affected

Observation of the road network suggests that even in the peak hours, the intersections are operating less than capacity. The Crossroads centre sits within the M5/Campbelltown Road/Camden Valley Way triangle which are all high quality roads.

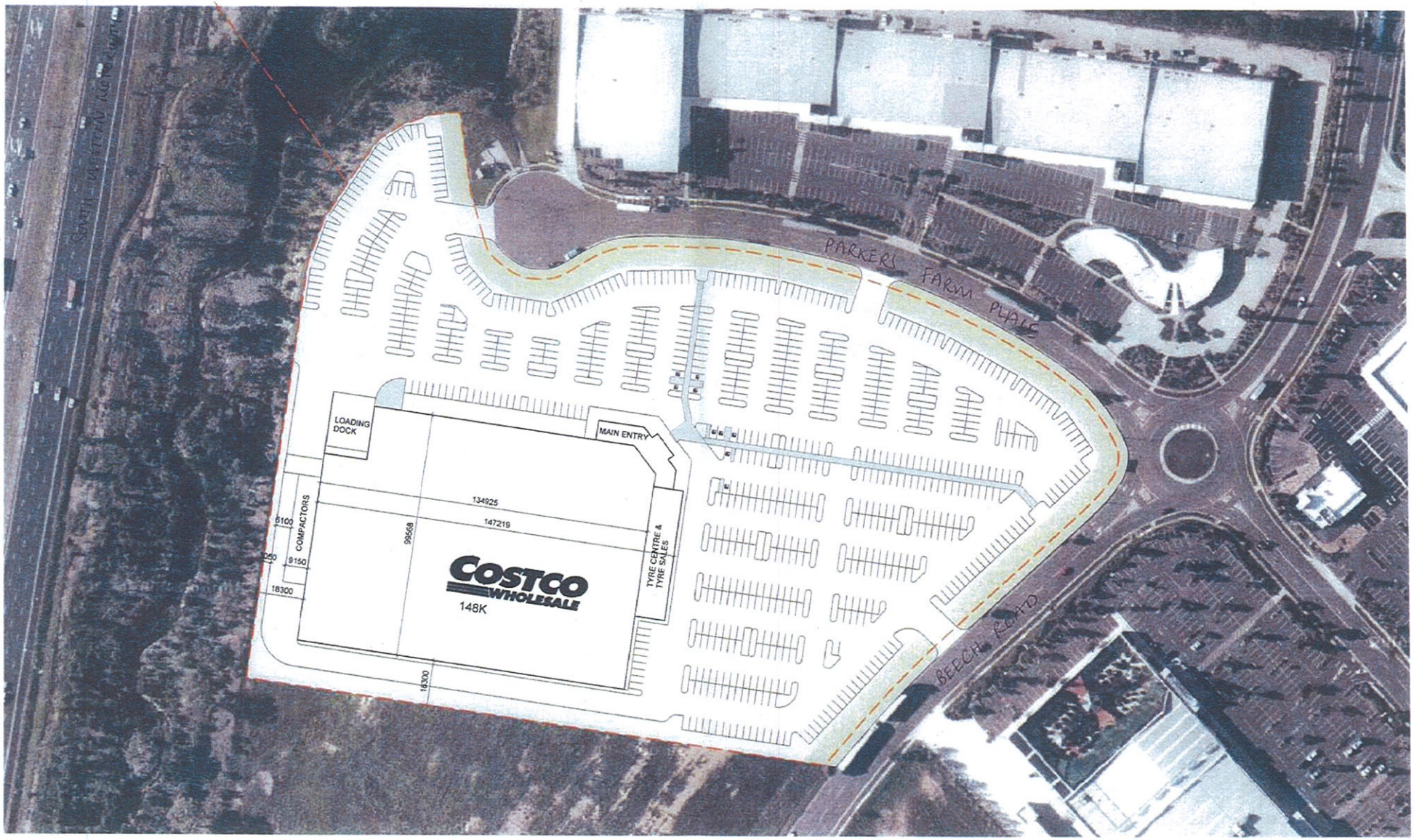
The traffic distributions shown in **Figures 3** show those intersections which will experience the most traffic generated by the Costco store during a typical weekday.

As stated previously, the site has not been fully developed and is operating at about 40% of what was originally anticipated. Consequently, the road network within the site, and the connections onto the wider road network, have been designed to accommodate higher levels of traffic.

The rezoning of the land would be unlikely to have a significant traffic impact on the road network but for any subsequent development application; traffic modelling work will be undertaken. If intersection improvements are required, they would probably be required at the connections onto the wider road network (i.e. the traffic signals onto Camden Valley Way and Campbelltown Road) where additional lanes may be necessary. The internal intersection at Beech Road/Parkers Farm Place might also need to be changed to a traffic signal.

Appendix A Indicative Scheme Plans

SITE AREA = 59 910 sqm APPROX.



TOTAL CARS = 737

Typical = 14,000. 0.23:1

0 10m 50m 100m

PLEASE NOTE THAT SCALE IS APPROXIMATE ONLY

DRAWING	NUMBER	REVISION	DATE	SCALE	NORTH	COST
OPTION 01	SK-01	02	17 May 10	REFER SCALE BAR		CROSSROA

Appendix B Traffic Generation of Bulky Goods Development

Traffic Generation of Bulky Goods Development

The adopted bulky retail traffic generation rate was sourced from recent surveys of existing bulky goods developments undertaken by the RTA. The surveys were conducted in March 2009 by the RTA as part of its effort to progressively update their *Guide to Traffic Generating Development*, 2002. The survey results were published in the report "*Trip Generation and Parking Generation Surveys (Bulky Goods/Hardware Stores)*" prepared by Hyder. The survey results are summarised in **Table A.1.**

Table A.1- Summary of RTA's Surveys of Bulky Goods Retail Developments

Name		Sleep City Balgowlah	Harvey Norman, Auburn	Retravision, Springwood	Domayne, Kotara	Bing Lee, Warilla	Fantastic Furniture, South Nowra
Floor Area (m^2 GFA)		4,300	14,850	600	6,000	1,200	1,700
Weekday Morning Period (7am-9am)		Not Surveyed					
Weekday Evening Period (4pm-6pm)	No. of Trips (vph)	58	180	25	107	35	14
	Rate (per 100m^2 GFA)	1.3	1.2	4.2	1.8	2.9	0.8
Weekday Site Peak Activity	No. of Trips (vph)	61	232	26	118	57	35
	Rate (per 100m^2 GFA)	1.4	1.6	4.3	2.0	4.8	2.1
Weekend Morning (11am-2pm)	No. of Trips (vph)	84	398	37	205	66	37
	Rate (per 100m^2 GFA)	2.0	2.7	6.2	3.4	5.5	2.2
Weekend Site Peak Activity	No. of Trips (vph)	96	425	37	205	68	47
	Rate (per 100m^2 GFA)	2.2	2.9	6.2	3.4	5.7	2.8
Weekday Evening Weighted Average		***1.46 trips per peak hour per 100m^2 GFA***					
Weekend Morning Weighted Average		***2.88 trips per peak hour per 100m^2 GFA***					