Australian Clay Target Association

ACTA Clubhouse Design and PM

Traffic Impact Assessment

27 April 2017

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1. Introduction

1.1 Overview

GHD has been engaged by the Australian Clay Target Association (ACTA) to undertake a review of the traffic impacts and parking provision in support of the application to Wagga Wagga City Council of the proposed club house facility located at 72 Tasman Road, Wagga Wagga.

This Traffic and Parking Impact Assessment report discusses the following:

- **Existing Conditions** – a review of existing road features, adjacent developments, traffic volumes and crash data;
- **Proposed Modification** – a review of additional traffic generated as a result of the proposed club house facility;
- **Development Impact** – assessment of the performance of the existing intersections (delays, and level of service) resulting from the proposed club house facility; and
- **Parking assessment** – a review of the parking provision and layout in relation to relevant Australian Standards (AS2890), Wagga Wagga City Council guidelines and on-site survey information.

1.2 Site location

The subject site is located within the Local Government Area under Wagga Wagga City Council, at 72 Tasman Road on the south-western corner of Copland Street/Tasman Road. Existing vehicle site access is via Tasman Road located east of the site. The site location is shown in Figure 1.

The subject site consists of Lot 10 of DP 1163676 and currently consists of vacant land, with the Wagga Wagga Gun Club located to the east of the site. The total Gross Floor Area (GFA) for the proposed building development is 1,739 m^2 with an outdoor viewing area comprising an additional GFA of 275 m^2. A layout of the proposed site is illustrated in Figure 2.

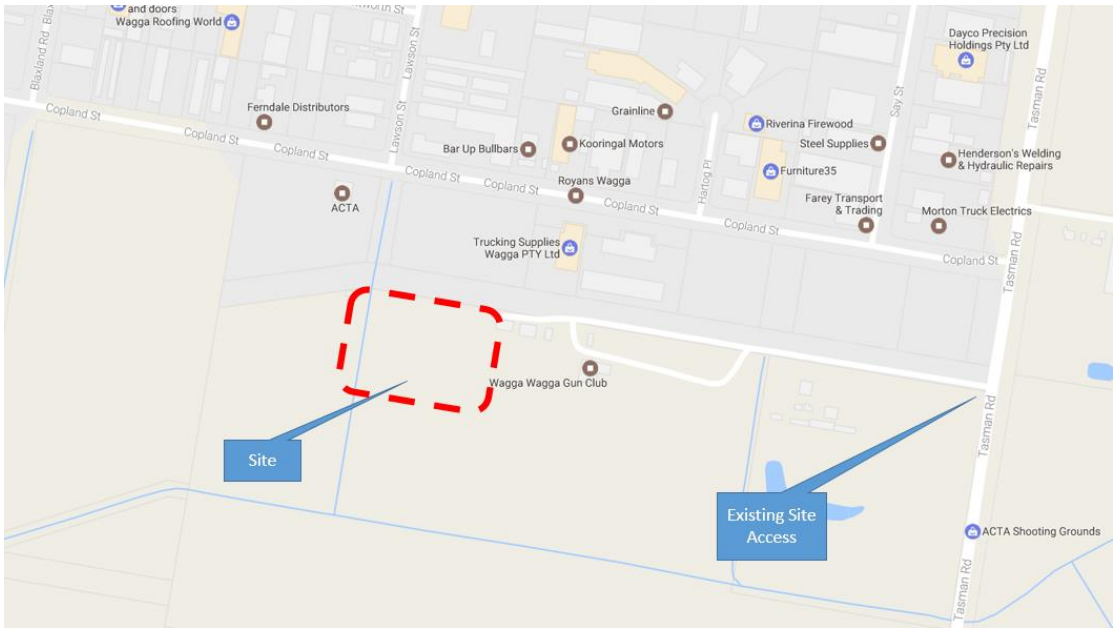


Figure 1 Site location

Source: Google maps – Modified by GHD

1.3 Proposed works

The proposed development consists of the following:

- A new club house facility including bar, food and function room facilities and associated administration offices, with 2014 m^2 GFA.
- Car Parking provision of:
  - 62 new formalised hardstand car spaces (including 2 accessible spaces);
  - 50 existing hardstand car spaces;
  - 140 informal parking spaces; and
  - Additional overflow parking areas.
- Three bicycle racks near the main entry/exit of the facility to promote active and sustainable transport options;
- Three motorcycle spaces to provide alternate transport options to the facility.
- Drop off pick up facilities for up to six cars located in front of the main entrance to the building;
- One loading dock area is provided for loading, waste collection and other service vehicles along the northern edge of the building; and
- A new site access driveway, accessed from Copland Street.
- Retention of the existing site assess from Tasman Road, to be utilised as a secondary access

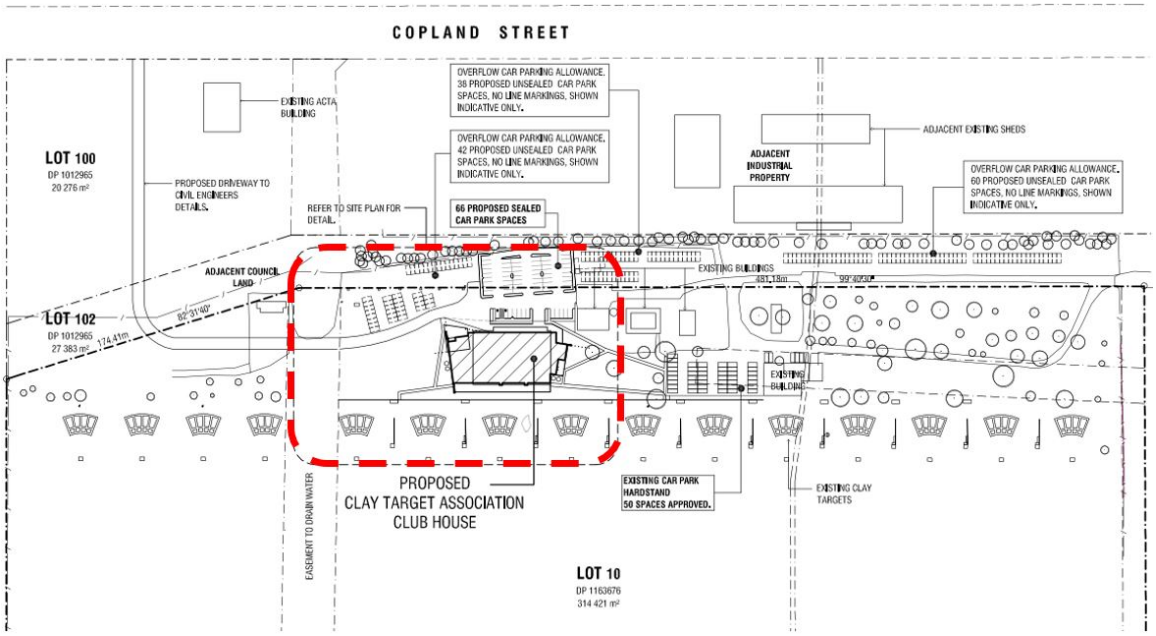


Figure 2 Proposed site layout plan

Source: Icono Building Design Architects drawing

1.4 Study assumptions

This report has been prepared by GHD in support of the development application for Australian Clay Target Association and may only be used and relied on by Australian Clay Target Association for the purpose agreed as set out in the application.

The report is based on information provided by Australian Clay Target Association in relation to:

- A sample event, *Stone the Crows Festival*, will be held on a yearly basis within the site. The event is expected to see 1,000 people and 500 Recreational Vehicles (RV) for the entire duration of the event. The event is carried out over the day with vehicles leaving over a four hour period.
- Conferences held at the proposed site will have a maximum of 1,200 people at a time and dinner functions are expected to see a maximum of 650 patrons.
- It is expected that the proposed site will see approximately 20 events at 500 people each and 10 events at 800-1,000 people over the first two years following construction of the site.
- The proposal includes the provision of a new access driveway from Copland Street to the car parking facility.
- Primary access to the site will be from Copland Street with a proposed secondary access from Tasman Road if required.
- Deliveries and waste collection at the proposed site will be done at a designated area along the north edge of the building with access to and from the site through Copland Street.

This work has been undertaken as a desktop study, with site intersection traffic survey undertaken in 2017 by Matrix Traffic and Transport Data.

The conditions of the surrounding network are based on information either supplied by the traffic surveys and Google Maps / Streetview.

This report and assessment for the proposed development is based upon the following architectural drawings (refer to Table 1) drawings produced by Icono Building Design.

Table 1 Proposal drawings list

Drawing Number	Issue	Title
15-24 ACTA A00	13	Location Plan & Site/Site Analysis Plan
15-24 ACTA A01	9	Landscape & Car Park Set Out Plan

1.5 Report structure

The report is structured as follows:

- Section 2 Existing Conditions;
- Section 3 Traffic Impact and Assessment;
- Section 4 Parking Provision;
- Section 5 Parking layout and Access Review; and
- Section 6 Summary and Conclusions.

2. Existing conditions

2.1 The site

The subject site is located within Wagga Wagga City Council at 72 Tasman Road (Lot 10 DP1163676) on the south-western corner of Copland Street/Tasman Road. Primary access to the site is via Tasman Road, located to the eastern boundary of the site. As part of the works, the primary access to the site is proposed from Copland Street north of the site, with the existing access on Tasman Road, becoming a secondary access.

The Local Environmental Plan (LEP) indicates that the site is located within a Public Recreation Zone (RE1), which extends to developments east of the site. South of the site consists of a Light Industrial Zone (IN2), while the eastern and western boundaries of the site consist of developments within a Primary Production Rural Zone (RU1).

Tasman Road acts as a north-south centralised access point to all the developments within these zones, while Copland Street provides an east-west access.

The road network hierarchy within the vicinity of the proposed site is represented in Figure 3.

2.2 Existing road characteristics

This section provides an understanding of the existing road network surrounding the site.

2.2.1 Road Hierarchy

Roads within NSW are categorised in following two ways:

- By Classification (ownership); and
- By the function that they perform.

Road Classification

Roads are classified (as defined by the *Roads Act 1993*) based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows Roads and Maritime Services (Roads and Maritime) to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways and Transitways.

For management purposes, Roads and Maritime has three administrative classes of roads. These are:

- **State Roads –** Major arterial links through NSW and within major urban areas. They are the principle traffic carrying roads and fully controlled by Roads and Maritime with maintenance fully funded by Roads and Maritime. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, with State Roads provide the main connections to and between smaller towns and perform a sub arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though Roads and Maritime funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from Roads and Maritime. Regional Roads may or all part of all or part of a Main Road, Secondary Road, Tourist Road or State Highway; or other roads as determined by Roads and Maritime.

- **Local Roads** – The remainder of the council controlled roads. Local Roads are the responsibility of councils for maintenance funding. Roads and Maritime may fund some maintenance and improvements based on specific programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from Roads and Maritime.

Functional Hierarchy

Functional road classification involves the relative balance of the mobility and access functions. Roads and Maritime define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by Roads and Maritime, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either Roads and Maritime or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region, or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

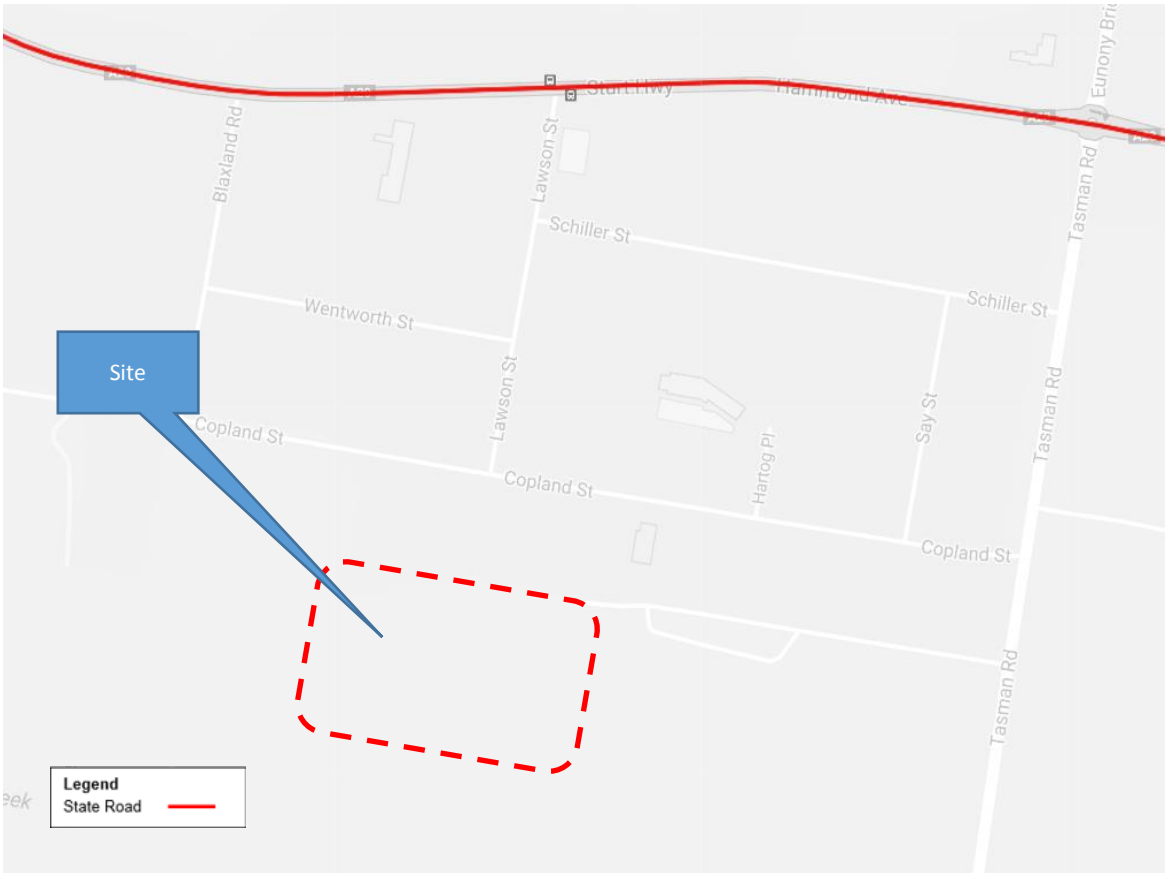


Figure 3 Surrounding road network

Source: Transport for NSW maps – Modified by GHD

2.2.2 Tasman Road

Tasman Road is a local road, which provided direct access to the site in a north-south alignment. It provides a connection between the site and Hammond Avenue (Sturt Highway) to the north. The existing road is shown in Figure 4.

Tasman Road has the following key features within proximity of the site as outlined in Table 2.

Table 2 Tasman Road key features

Feature	Description
Carriageway	There is one travel lane in each direction with a divided carriageway. No shoulder is provide on either side of the road.
Parking	Unrestricted
Speed Limit	100 km/h (60 km/hr on approach to Sturt Highway)
Pedestrian Facilities	No dedicated facilities
Bicycle Facilities	No dedicated facilities
Public Transport	No dedicated facilities

Figure 4 Tasman Road west of the site

Source: Google Maps Street view

2.2.3 Copland Street

Copland Street is a local road which will form a direct access direct access as part of the prosed works. Copland Street provide an east-west connection Tasman Road to the east and east Wagga Wagga. The existing road is shown in Figure 5.

Copland Street has the following key features within proximity of the site as outlines in Table 3.

Table 3 Copland Street key features

Feature	Description
Carriageway	There is one travel lane in each direction with an undivided carriageway.
Parking	Unrestricted
Speed Limit	60 km/h
Pedestrian Facilities	No dedicated facilities
Bicycle Facilities	No dedicated facilities
Public Transport	No dedicated facilities

Figure 5 Copland Street north-west of the site

Source: Google Maps Street view

2.2.4 Hammond Avenue (Sturt Highway)

Hammond Avenue (Sturt Highway) is an arterial road (State road) providing east-west vehicular access through the Wagga Wagga district. It forms a roundabout intersection with Tasman Road, as shown at Figure 6.

Hammond Avenue (Sturt Highway) has the key features within proximity of the site as outlined in Table 4.

Table 4 Sturt Highway key features

Feature	Description
Carriageway	There are two travel lanes westbound and one travel lane eastbound; with a divided carriageway on approach to Tasman Road. After passing Tasman Road roundabout intersection, Sturt Highway has one travel lane in each direction; with a divided carriageway. Turn lanes are provided on approaches to Tasman Road
Parking	Unrestricted
Speed Limit	60 km/h
Pedestrian Facilities	No dedicated facilities
Bicycle Facilities	No dedicated facilities
Public Transport	Nearest bus stops are located on both sides of the road at intersection with Lawson Street

Figure 6 Hammond Avenue (Sturt Highway) north of the site

Source: Google Maps Street view

2.3 Existing road network performance

This section provides and understanding of the current traffic volumes.

2.3.1 Existing peak hour traffic volumes

GHD engaged Matrix Traffic Solutions to undertake intersection traffic turning counts on Wednesday 5 April 2017 between 4:00 pm and 6:00 pm and Saturday 9 April 2017 between 11:00 am and 1:00 pm to coincide with anticipated peak site operational periods. The traffic counts were undertaken at the following intersection, which is shown in Figure 7:

- Australian Clay Target Association site access / Tasman Road

Concurrently with the intersection traffic survey, an automatic "tube" traffic count was undertaken between Wednesday 5 April 2017 and Saturday the 9 April 2017 at Copland Street, west of Lawson Street. This count was located at the future proposed site access on Copland Street.

Figure 7 Traffic survey locations

Source: Google maps – Modified by GHD

The intersection survey indicated that the Wednesday (weekday) evening peak hour (of the survey period) along Tasman Road was 4:00 pm to 5:00 pm, while on Saturday the peak hour survey period was 11:00 am to 12:00 pm.

An automatic tube count survey on Copland Street indicated that the Wednesday (weekday) evening peak hour (of the survey period) along Copland Street was 4:00 pm to 5:00 pm, while on Saturday the peak hour survey period was 9:00 am to 10:00 am.

Table 5 summaries the average peak hour traffic volumes along the road networks with the details of the survey data in Appendix B.

Table 5 Survey Traffic Volumes (two-way)

Location	Weekday Evening Peak Hour (veh/h)*	Saturday Peak Hour (veh/h)*
Tasman Road	104 (42 NB / 62 SB)	96 (28 NB / 44 SB)
Copland Street	494 (188 EB / 306 WB)	251 (126 EB / 125 WB)

Notes:
(*) veh/h = vehicles per hour
EB = Eastbound; WB = Westbound; NB = Northbound; SB = Southbound

2.3.2 Heavy and light vehicle ratio

Based on the traffic survey data, the average heavy vehicle percentage for each road within the immediate access to the proposed parking areas is outlined below:

- Tasman Road:
  - Weekday average: 7%
  - Weekend average: 12%
- Copland Street:
  - Weekday average: 11%
  - Weekend average: 4%

2.4 Existing intersection network performance

2.4.1 Intersection capacity

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network.

The criteria for evaluating the operational performance of intersections is provided by the Guide to Traffic Generating Developments (Roads and Maritime Services, 2002) and reproduced in Table 6. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

Table 6 Level of service criteria for intersections

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

Source: Guide to Traffic Generating Developments (Roads and Maritime Services 2002)

Existing traffic flows at the site access and Tasman Road intersection, (refer to Figure 8 and Figure 9), was analysed using SIDRA7 to obtain the current operation during the peak hour surveys of 4:00 pm to 5:00 pm for a weekday peak and 11:00 am to 12:00 pm for a Saturday peak.

A summary of the results is outlined in Table 7 and detailed in Appendix A.

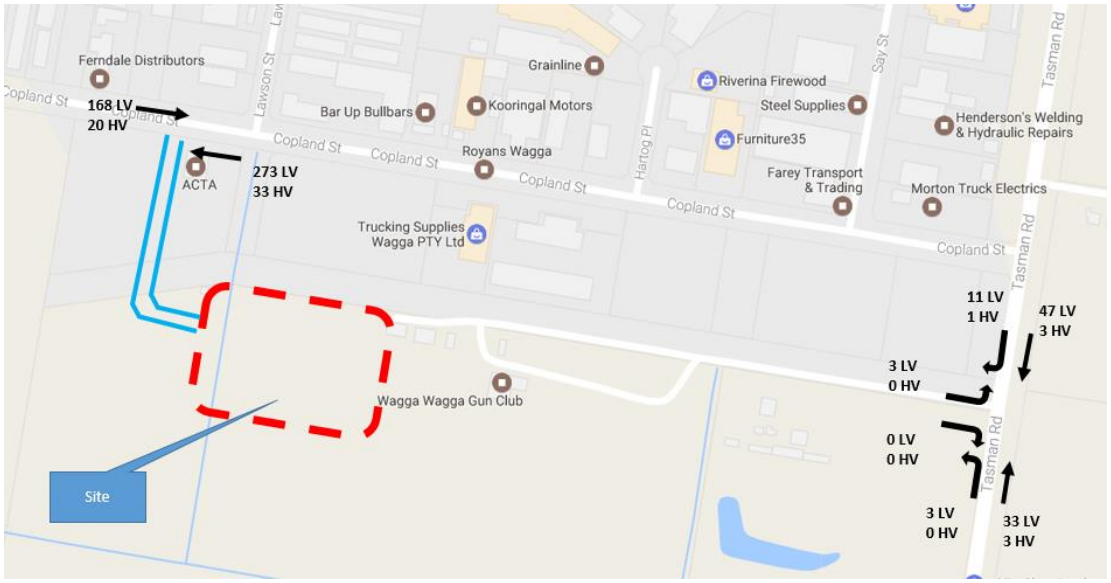


Figure 8 Existing Weekday peak hour traffic flows

Source: Google maps – Modified by GHD

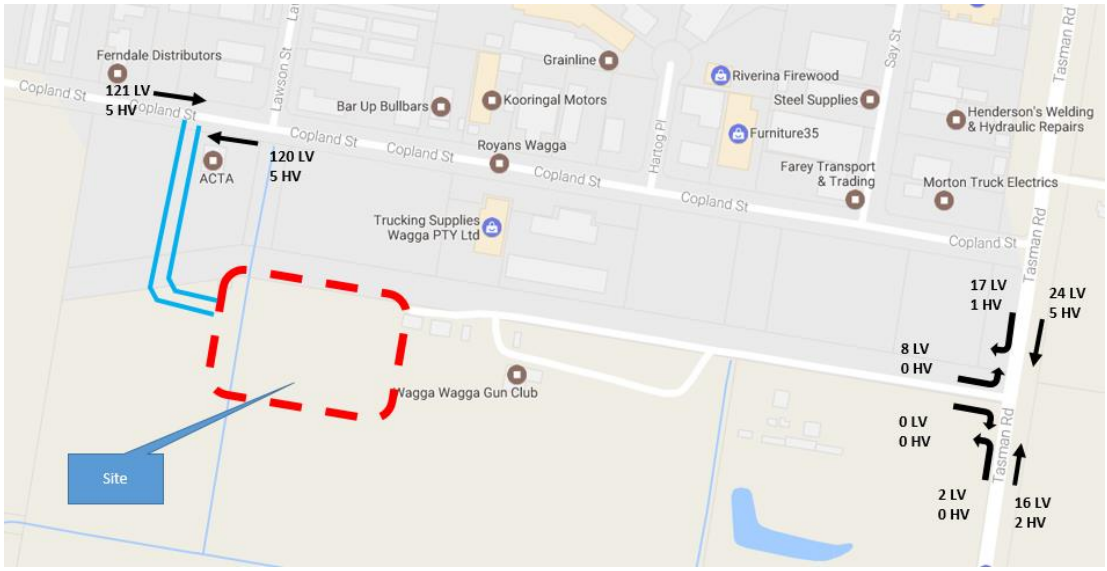


Figure 9 Existing Saturday peak hour traffic flows

Source: Google maps – Modified by GHD

Table 7 Existing intersection operations (2017)

Intersection	Weekday Peak				Saturday Peak			
	Average Delay (s)	LoS	Control Type	Degree of Saturation	Average Delay (s)	LoS	Control Type	Degree of Saturation
Existing Site Access / Tasman Road	5.4	A	Priority	0.034	5.3	A	Priority	0.027

Notes:

a) The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.

b) The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.

c) The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.

d) Average delay is given in seconds per vehicle.

The results of the SIDRA modelling shown in Table 7 indicates that the intersection currently has an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in peak periods. Detailed SIDRA results of these intersections is provided in Appendix A.

2.4.2 Mid-block Capacity

Roads and Maritime Services Guide to Generating Developments (2002) outlines mid-block road capacity Levels of Service based on traffic flows per direction per lane to guide on the road capacity Level of Service as outlined in Table 8.

Table 8 Urban road peak flows per direction

Level of Service	Peak Hour Volume (vph*) One Lane	Peak Hour Volume (vph*) Two Lane
A	200	900
B	380	1,400
C	600	1,800
D	900	2,200
E	1,400	2,800

Source: Guide to Traffic Generating Developments (Roads and Maritime Services 2002)

**Note vph = vehicles per hour*

Based on the existing traffic volumes shown in Copland Street outlined in Table 5 and illustrated in Figure 8 and Figure 9 with reference to peak flow capacity in Table 8, Copland Street currently performs at an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in peak periods.

2.5 Existing on-site parking arrangement

The site currently provides a hardstand parking area at grade west of the existing building and located east of the proposed club facility suitable to accommodate 50 vehicles.

Additional informal parking areas are available around the site with the existing primary informal parking area located along the northern boundary suitable to accommodate nominally a minimum of 100 vehicles. Other informal parking area west of the existing building is available which will incorporate the proposed formal parking area as part of the proposed development (refer to Figure 10).

It is noted that the site currently has additional large areas of open area which could be utilised for additional informational parking for special event activities.

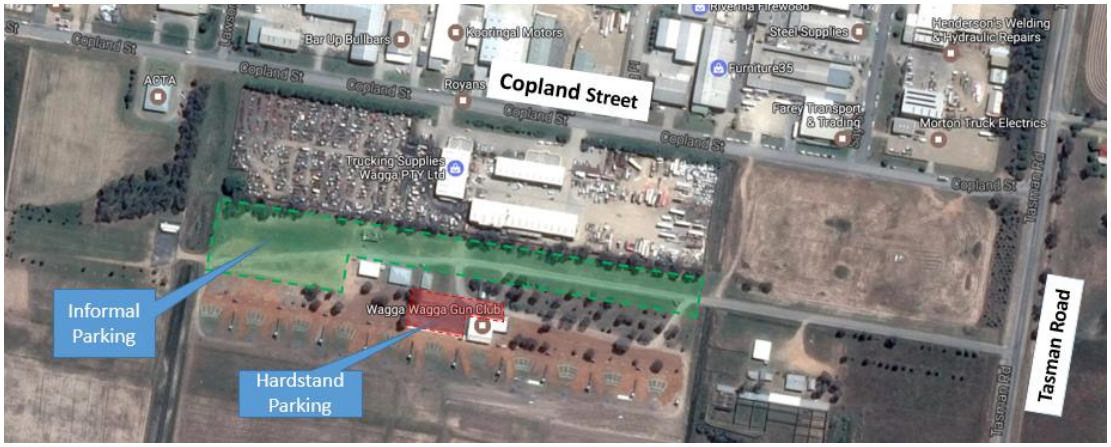


Figure 10 Current parking areas

Source: Google maps – Modified by GHD

2.6 Crash data review

GHD utilised the Transport for NSW Centre for Road safety website top review the crash statistic for a five-year period (2011-2015) for roads within proximity of the proposed club house facility.

Crash locations within proximity of the Sturt Highway / Tasman Road are illustrated in Figure 11. A summary of the findings of the crash data review is providing in the following sections.

2.6.1 Hammond Avenue (Sturt Highway) / Tasman Road intersection

There were a total of 12 recorded crashes at and on the approach of Hammond Avenue (Sturt Highway) and Tasman Road intersection over a five-year period resulting in a total of nine reported injuries (two serious, four moderate and three minor).

Of the 12 recorded crashes, nine recorded crashes occurred at the intersection of Sturt Highway / Tasman Road resulting in seven reported injuries (two serious, three moderate and two minor).

- Six of the crashes resulting in injury occurred as a result of cross traffic accidents where drivers turning right from Tasman Road into Hammond Avenue (Sturt Highway) impacted vehicles travelling east along Hammond Avenue (Sturt Highway); and
- One accident involved a rear end collision between vehicles travelling in the same direction along Hammond Avenue (Sturt Highway).

2.6.2 Copland Street / Tasman Road intersection

There was one recorded crash at the intersection of Copland Street and Tasman Road over a five-year period resulting in no reported injuries. This accident involved a rear end collision between vehicles turning right on Tasman Road from Copland Street.

2.6.3 Copland Street

There was a total of two crashes were recorded along Copland Street, east of Lawson Street, within approximately 150 m of the proposed new intersection sit access road over a five-year period resulting in no reported injuries.

The accidents involved a vehicle colliding off the road to the right, and an unknown other manoeuvre.

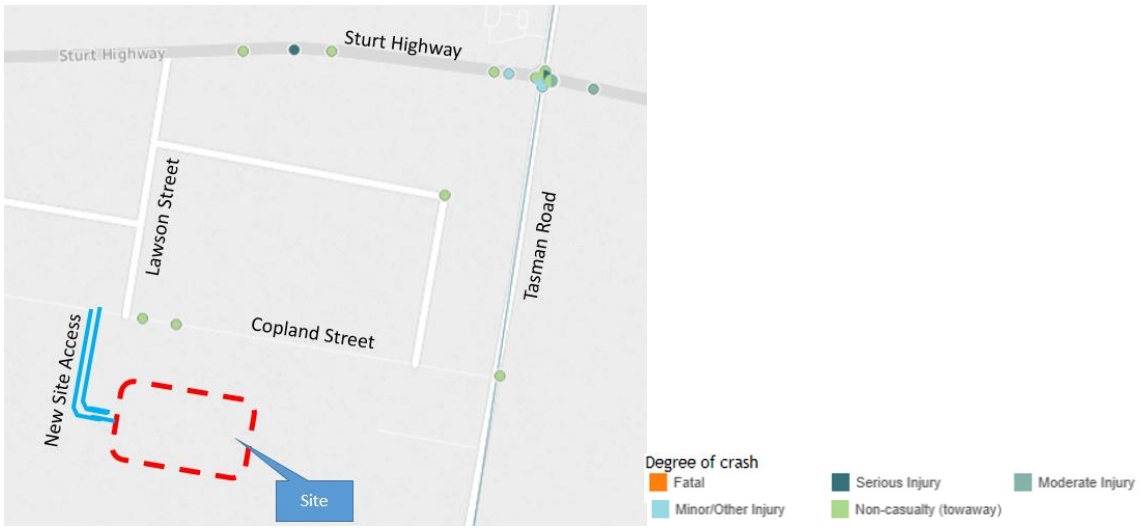


Figure 11 Study area crash data: Hammond Avenue (Sturt Highway) / Tasman Road

Source: Transport for NSW Centre for Road Safety – Modified by GHD

2.7 Public transport and active transport

In reviewing the site and its accessibility to public transport opportunity, reference is made to the NSW Planning Guidelines for Walking and Cycling (2004). This document outlines a recommended walkable distance of 400 m to 800 m to public transport and other local amenities or a 1.5 km bicycle riding distance.

Details of the accessibility to public transport, walking and bicycle riding access is provided in the following sections.

2.7.1 Walking access

The site proposed club house development is to be constructed south of the existing headquarters of the Australian Clay Target Association (ACTA) and west of the existing buildings currently uses as the ATCA club facility. Currently, the site consists of vacant land, and as such, no dedicated pedestrian facilities are provided within the vicinity of the site. Currently, patrons to the site utilise the formed road network from the car park to the buildings.

Primary pedestrian access to the site is through the north of the site on Copland Street. Copland Street is a local road with an undivided carriageway and contains no formalised footpaths.

2.7.2 Bus services

The nearest bus stops to the site are located approximately 900 m to the north of the site, at Hammond Avenue (Sturt Highway) at the intersection with Lawson Street. The location of these bus stops is shown at Figure 13, with the bus routes serving the stops outlined in Table 9.

Table 9 Bus Services

Route	Frequency	Coverage
965	Weekday: Approx. 30 minute intervals (AM/PM peak only), 60 minute intervals (off peak) Saturday: Approx. 60 minute intervals Sunday: No services	Sutherland – Woronora Loop Service

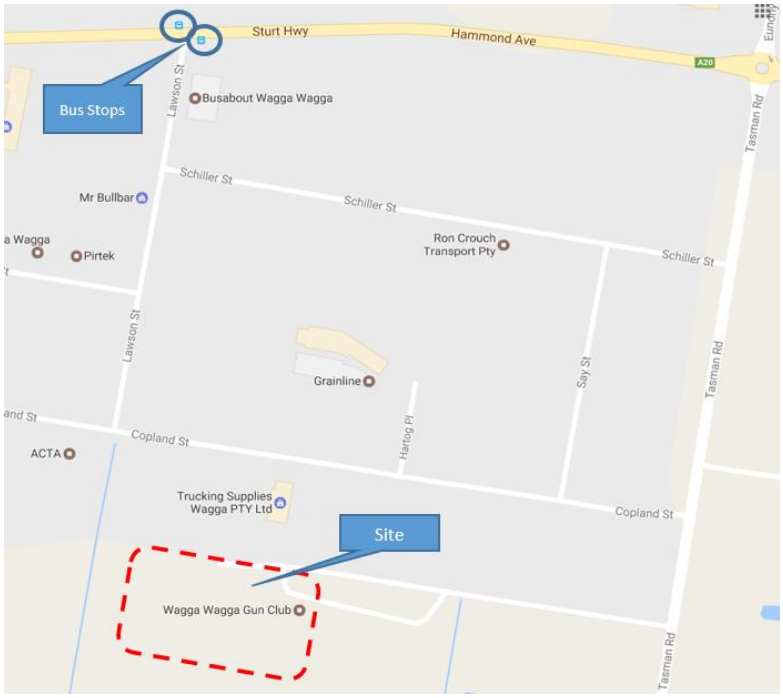


Figure 12 Location of bus stops

Source: Google maps – Modified by GHD

2.7.3 Bicycle access

Figure 14 illustrates the current off-road bicycle facilities within proximity of the site, as identified from the Roads and Maritime Services Cycleway Finder website. As shown, there are currently limited off-road bicycle routes within close proximity to the site.

However, the *Wagga Wagga City Council Bicycle Plan 2011* proposed new bike paths along Kooringal Road, which were constructed in 2016. Although, these newly introduced bike paths fall outside the 1.5 km cycle distance radius, their presence can encourage the use of more active transport to the proposed club house with the use of on street mix use environment along Copland Street.

The existing site does not currently provide for formal bicycle parking provisions

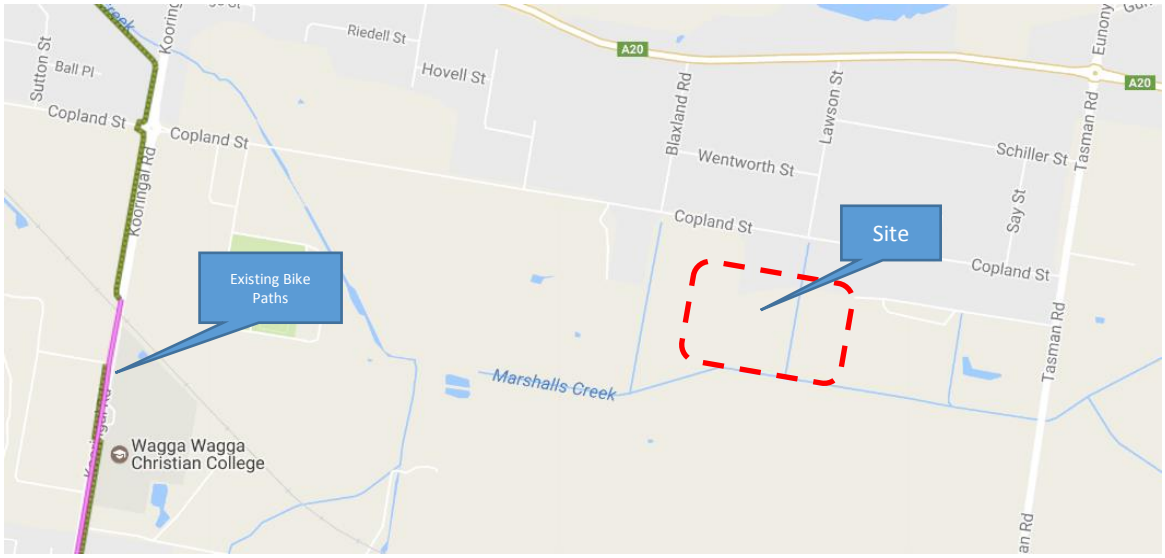


Figure 14 Existing cycle network

Source: Transport for NSW Centre for Road Safety – Modified by GHD

3. Traffic impact assessment

3.1 Project traffic generation

Estimates of traffic generation can be determined from documentation literature review, including *Roads and Maritime Guidelines to Traffic Generating Developments, 2002 (The Guide).*

The proposed development consists of a new club facility with function areas, bar and associated café/restaurant and supporting office administration facilities.

The forecast traffic generation associated with the proposed development has been estimated based on *The Guide* (refer to Table 10) with the distribution of proposed Gross Floor Area (GFA) for office facility and Licenced Floor Area (LFA) for the club facilities outlined in Table 11.

Table 10 Guide to traffic genrating development: trip genration rates

Facility Type	Trip Generation Rate (per 100 m^2 GFA / LFA)
	Peak Hour Vehicle Trips
Clubs/Function Rooms/Restaurant Cafe	10*
Office/Commercial	2

Notes:
(*) Based on RMS Guide to Traffic Generating Developments for club facilities

In application of the proposed distribution of the GFA, Table 11 outlines the potential traffic generation based on the guide. The traffic generation has been applied for both the weekday evening and Saturday peak periods for a robust assessment.

Table 11 With development trip generation

Trips	Facility type	GFA / LFA (m^2)	Trip Generation Rate (per 100 m^2 GFA)	Trip Generation (veh / hour)
Peak Hour Trips	Clubs/ Function Rooms/ Restaurant/ Cafe	1,636	10	164
	Office/ Commercial	57	2	1
	Non Licenced areas	324	-	-
	Total	***2,023***		***165***

3.1 Traffic Distribution

The forecast traffic associated with the proposal has been distributed based on 50 percent arrivals and 50 percent departures during the peak hour to account for a regular turnover of patrons of the facility.

The existing site access traffic and the additional trip generation has been applied to the new access proposed on Copland Street, with the existing turning traffic ratio interpreted by the on-site traffic intersection counts conducted in 2017.

The intersection survey undertaken at the existing site access indicated approximately 10% of vehicles arrived/depart from the south and 90% arrived/departed from the north (towards Wagga Wagga township). For the analysis of the new intersection at Copland Street, this ratio was transcribed with 10% arrive/depart from the east and 90% arrive/depart for the west (towards Wagga Wagga township).

Figure 15 and Figure 16 show the forecast traffic distribution with the proposed development. The Tasman Road access will be utilise as a secondary access egress and therefore the level of service at this location will improve from its current level of service with vehicles now using the new access of Copeland Street.

For analysis of the new intersection at Copeland Street, the potential traffic generation based on the Roads and Maritime Traffic Generating Developments guideline was applied to the peak hour survey periods for a robust assessment, with the inclusion of the existing peak hour vehicles surveyed from the existing site access transferred to the Copeland Street access.

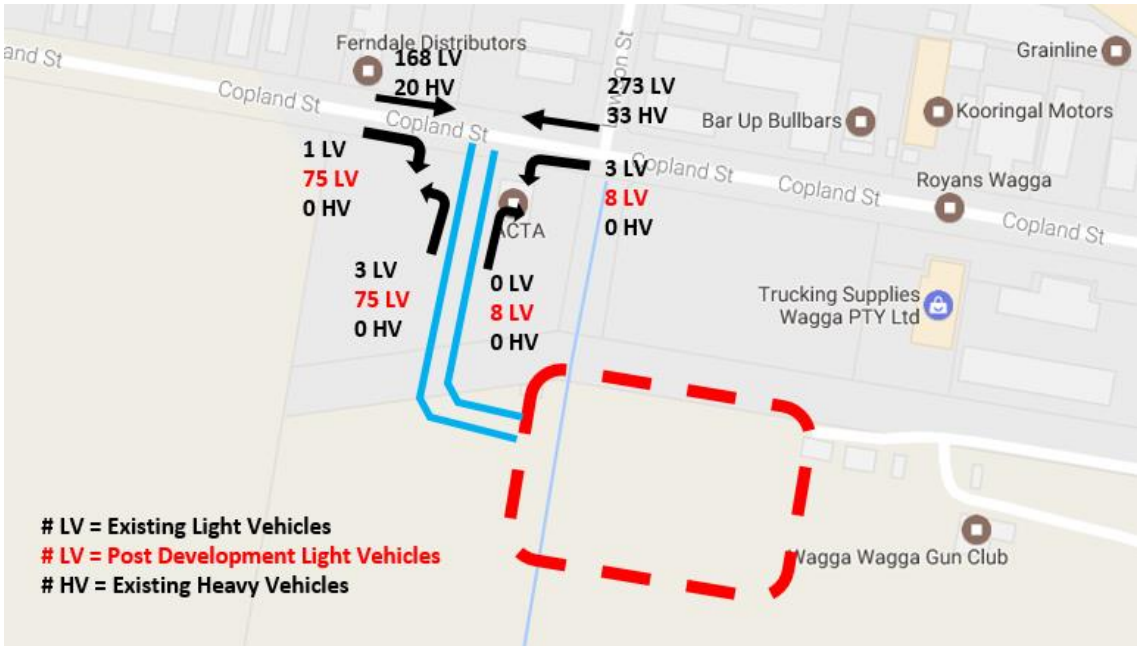


Figure 15 Post development weekday peak hour traffic flows

Source: Google maps – Modified by GHD

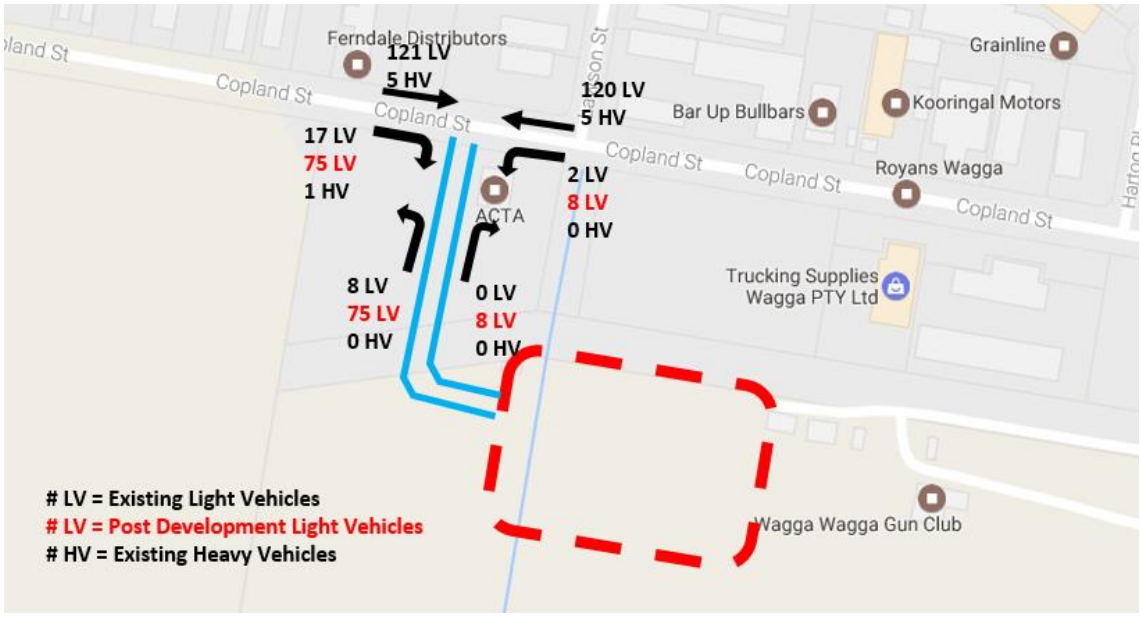


Figure 16 Post development saturday peak hour traffic flows

Source: Google maps – Modified by GHD

3.2 Intersection performance

The post development traffic flows at the proposed intersection at Copland Street site access include a standard single lane priory control giveaway “T-intersection”. The intersection was analysed using SIDRA 7 to obtain the proposed operational performance with the summary of results outlined in Table 12 and detailed in Appendix A.

Table 12 SIDRA resutls - post development intersection operations (2017)

Intersection	Weekday Peak				Saturday Peak			
	Average Delay (s)	LoS	Control Type	Degree of Saturation	Average Delay (s)	LoS	Control Type	Degree of Saturation
New Site Access / Copland Street	7.8	A	Priority	0.174	5.9	A	Priority	0.126

Notes:
a) The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
b) The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
c) The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
d) Average delay is given in seconds per vehicle.

Table 12 indicates that the intersection on Copland Street analysed as a single lane each way priory control giveaway “T-intersection” is expected to operate at an acceptable Level of Service (i.e. better than Level of Service E) of service in both the weekday evening and Saturday peak hour periods with the additional traffic from the proposed development.

Additionally, the existing site access on Tasman Avenue is proposed to be a secondary access for the site. As such, traffic volumes are expected to reduced in this location with the proposal, which could improve the current operational performance.

3.3 Special events intersection performance review

The site is proposed to support various special events from conferences, weddings and sporting competitions. ACTA has provided information that the club facilitate such special events including:

- A sample event, Stone the Crows Festival, will be held on a yearly basis within the site. The event is expected to see 1,000 people and 500 Recreational Vehicles (RV) for the entire duration of the event. The event is carried out over the day with vehicles leaving over a 4 hour period.
- Conferences held at the proposed site will have a maximum of 1,200 people at a time and dinner functions are expected to see a maximum of 650 patrons.
- It is expected that the proposed site will see approximately 20 events at 500 people each and 10 events at 800-1,000 people over the first two years following construction of the proposal.

An additional traffic modelling assessment of the proposed new intersection at Copland Street was undertaken using SIDRA 7 for a typical special event. A typical special event has been assumed to be a dinner function within the conference area accommodating up to 650 patrons arriving on a Saturday evening. For this assessment, the following assumptions have been adopted:

- Analysis undertaken during the arrival period of the special event coinciding with existing volumes along Copeland Street for a Saturday evening between 5:00 pm – 6:00 pm Saturday evening (73 vehicles eastbound / 94 vehicles westbound);
- Taxi use will be utilised by 5 percent of patrons for arrival/departure:
  - 30 vehicle movements in/out (within the same hour)
- Remaining patrons (620 pax) utilise private car with occupancy of three patrons per vehicle:
  - 206 vehicle movement in/out
- Vehicles arrive or depart within the one hour period:
  - 236 inbound
  - 30 outbound
- Arrival/departure distribution as per the existing access ratio interpreted by the on-site traffic intersection counts from the existing (10% arrive/depart from the east and 90% arrive/depart for the west).
- Standard single lane priory control giveaway “T-intersection”.

It is noted that some such events may incorporate group transport options (e.g. mini bus), however for a robust assessment of the potential traffic generation for such event, this type of transport option has been excluded, as this would reduce the potential traffic generation.

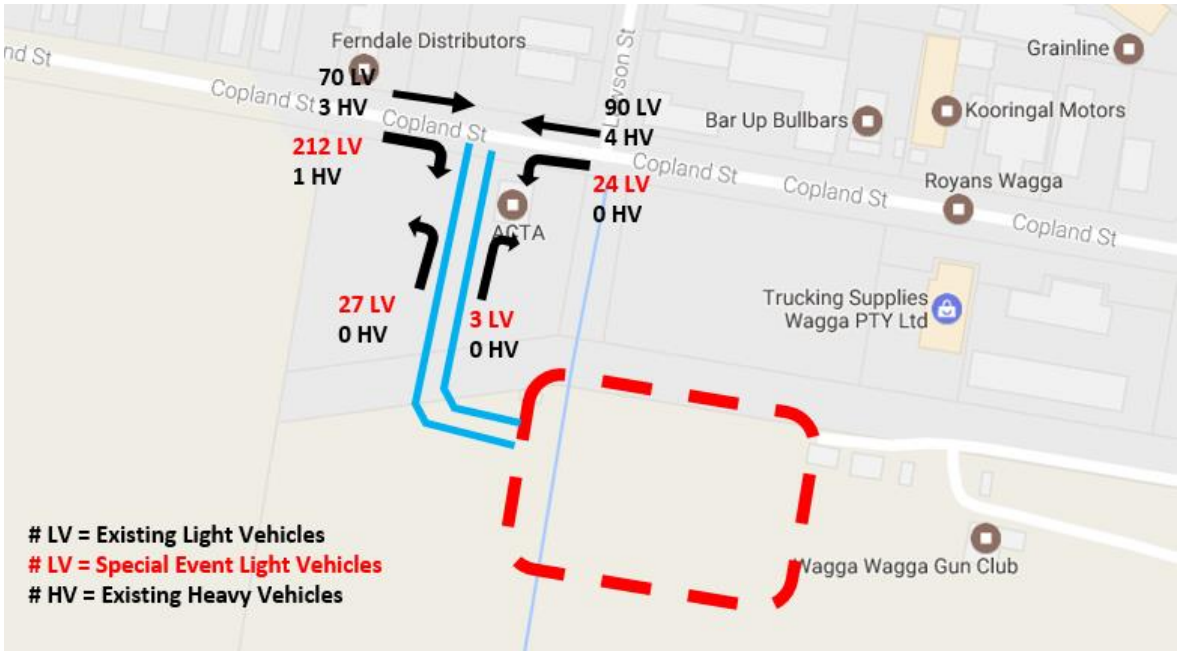


Figure 17 Forecast typical special event traffic - Saturday evening

Source: Google maps – Modified by GHD

The analysed site access include a standard single lane priory control giveaway “T-intersection”. The intersection was analysed using SIDRA 7 to obtain the proposed operational performance with the summary of results outlined in Table 13 and detailed in Appendix A.

Table 13 SIDRA results for typical special event scenario (2017) weekend evening peak

Intersection	Saturday Evening Peak			
	Average Delay (s)	LoS	Control Type	Degree of Saturation
New Site Access / Copland Street	5.9	A	Priority	0.171

Notes:
a) The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.
b) The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.
c) The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.
d) Average delay is given in seconds per vehicle.

The traffic modelling results shown in Table 13 indicate that the intersection on Copland Street (analysed as a single lane each way priory control giveaway “T-intersection”) would to operate at an acceptable Level of Service (i.e. better than Level of Service E) under the typical special event scenario.

It is anticipated that larger events will incorporate the implementation of special event traffic management to assist in traffic flow and parking arrangements.

4. Parking provision

4.1 Planning policy requirements

The parking requirements for the development have been reviewed against the requirements presented in Wagga Wagga City Council *Development Control Plan 2010 Section 2* (Controls that apply to all development) and the Australian Building Codes Board *National Construction Code 2016 Volume One (Class 2 to Class 9 Buildings)* which outline the required parking provision for an assembly building as:

- Restaurants, cafes, pubs, clubs and function rooms:
  - Outside the Wagga Wagga City Centre: 1 space per 10 m^2 GFA or 1 space per 3 seats
- Office Facilities:
  - Outside the Wagga Wagga City Centre: 1 space per 33 m^2 GFA or 1 space per 3 seats

In context of the existing site and proposed development, it is considered that the parking provision be reviewed in line with the DCP requirements for the site as a whole (at completion), as shown in Table 14 with application of the following conditions:

- The club facility does not provided a designated seating arrangement, as such the parking provision has been based on the GFA rates outlined in the DCP.
- Wagga Wagga LEP 2010 excludes storage facilities as part of the GFA.
- The existing building on the site will not be operational during peak times of the new club facility and therefore existing parking on site is proposed to be utilised for the club facility operation.
- From a parking management perspective, the following areas are proposed to be excluded as a parking generator, as it is considered that these areas would supplement the parking generating service areas within the club
  - Storage;
  - Wet areas (e.g. bathroom facilities); and
  - Hall of Fame.
  -

Table 14 Site car parking: DCP requirements

Location	GFA (m^2)	DCP Parking Rate	Minimum Parking Provision
Entry Foyer	62.5	*1 space per 10 m^2*	6.3
Circulation areas	160.1	*1 space per 10 m^2*	16.0
Storage	95.8	*Excluded*	-
Reception/office	57	*1 space per 33 m^2*	1.7
Wet areas	117	*Excluded*	-
Hall of Fame	40.7	*Excluded*	-
General seating	152	*1 space per 10 m^2*	15.2
Kitchen and Prep	228.1	*1 space per 10 m^2*	22.8
Conference	825.6	*1 space per 10 m^2*	82.6
Outdoor Viewing Area	275.3	*1 space per 10 m^2*	27.5
Total GFA	***2,014 m^2***		***172***
Minimum Parking Required			***173 spaces***

The proposed parking provision and arrangements is shown in Table 15 and Figure 18 respectively. The proposed parking areas utilises a combination of 112 formal parking spaces and a minimum of 140 space in an informal arrangement. This provides a total of a minimum of **282 spaces**.

The proposed on-site parking provision via the use of both formal and informal parking areas for the proposed development complies with the minimum requirement outlined in the DCP. The existing building within the site will not be operational when the proposed clubhouse is in operation. Therefore, the existing on-site hard stand parking area will supplement the proposed club house formalised parking requirements..

In addition, further informal overflow parking areas throughout various location within the site are available to accommodate additional parking within the site, if required, during special events.

Detail architectural site plan is included in Appendix C

Table 15 Proposed car parking provision

Location	Number of Spaces	Type	Comment
North of new building	62	Formalise parking on hardstand	New proposed formal parking
Northwest of new building	42	Informal parking	Informal parking area
Northeast of new building	38	Informal parking	Informal parking area
East of new building	50	Formalise parking on hardstand	Existing formal parking area (existing building will not be utilised during club facility events)
East of new building	60	Informal parking	Informal parking area
Total Formal Parking	***112***		
Total Informal Parking	***140***		
Total Parking	**282**		

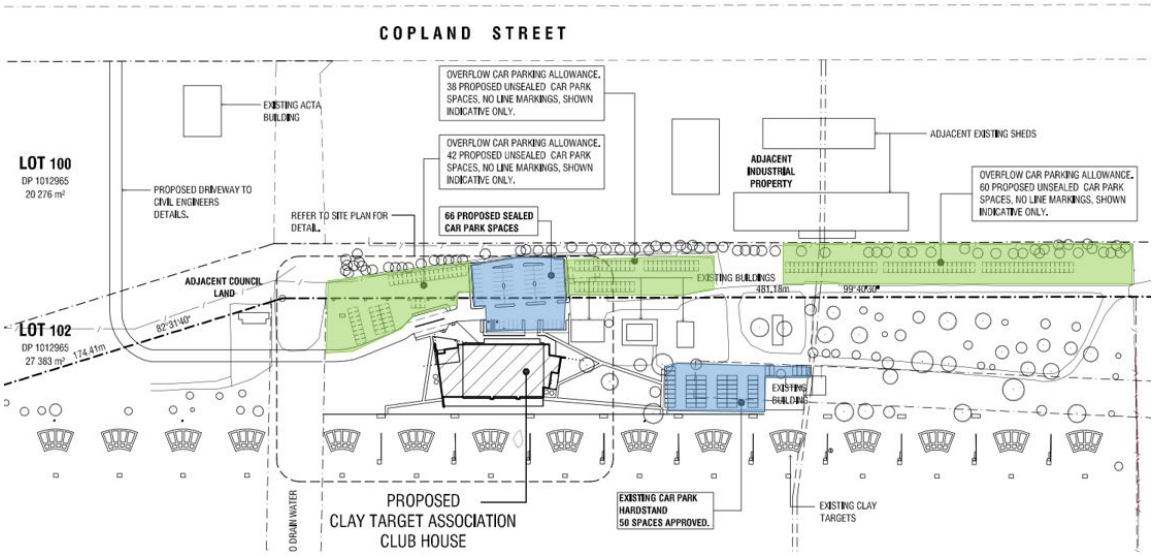


Figure 18 Proposed parking areas

Source: Icono Building Design Architects drawing

4.2 Accessible parking

The Wagga Wagga City Council *Development Control Plan 2010 Section 2* (Controls that apply to all development), has the following requirement for accessible parking:

- *Parking spaces are to be provided for disabled persons. Accessible parking spaces to comply with the relevant Australian Standard at the time of lodgement of application*

The accessible parking requirements for the development have been reviewed against the requirements presented in the Australian Building Codes Board *National Construction Code 2016 Volume One (Class 2 to Class 9 Buildings)* which outline the required accessible parking provision for a Class 9b assembly building as:

- Other assembly building:
  - Up to 1,000 car parking spaces: 1 space for every 50 car parking spaces or part thereof

The proposed car park includes **two accessible car spaces**. Based on the proposed 62 formal car spaces to be provided as part of the proposal, the proposed disabled parking meets the requirement for accessible parking within the new formal parking area.

4.3 Bicycle parking facilities

The Wagga Wagga City Council *Development Control Plan 2010 Section 2* (Controls that apply to all development) provides no specific requirement for bicycle parking provisions at facilities. Although there is no specific requirement of such facilities outlined in the DCP, the site facilities would be conclusive to consider the provision of bicycle parking to encourage alternative, sustainable transport options to staff and visitors.

As a guide, the Austroads 2017 *Guide to Traffic Management Part 11: Parking*, outlines guidelines for bicycle parking, including such areas as club facility (*Table 4.3 of Section 4.2.2)*:

- Club Facility:
  - Bicycle parking spaces: 1 space per 200 m^2 GFA

Table 16 Site bicycle parking recommendation (Austroads)

Location	GFA (m^2)
Proposed Development GFA	2,014 m^2
Total GFA	***2,014 m^2***
Recommended Parking Rate	*1 space per 200 m^2*
Recommended Parking Required	***10 spaces***

The Austroads guidelines outlines that that it could be considered appropriate to make available 50 percent of the recommended rate in the initial installation stage, with space available for additional parking in the event that demand of bicycle parking increases.

The proposal includes the provision of new bicycle parking facilities (racks) to accommodate **six bicycles**. This provision aligns with the based requirements of the guidelines (i.e. 50% provision). The use of the bicycle facilities should be monitored with further facilities provide, if the demand exceeds supply of the proposed facilities. Bicycle access to the site is provided by the off road bicycle route along Kooringal Road, Wagga Wagga, which is located to the west of the proposed club house.

4.4 Motorcycle parking

The Wagga Wagga City Council *Development Control Plan 2010 Section 2* (Controls that apply to all development) provides no specific requirement of motorcycle parking provisions at facilities. Although there is no specific requirement of such facilities outlined in the DCP, the site facilities would be conclusive to consider the provision of motorcycle parking to encourage alternative transport options to staff and visitors. As a guide, the Austroads 2017 *Guide to Traffic Management Part 11: Parking, Section 4.2.2*, outlines the recommended motorcycle parking provisions for club premises as follows:

- *In addition to the car parking requirements, parking spaces for motorcycles will be required as calculated based on 2 percent of the total number of car parking spaces required.*

As noted above, the site is not located within the city centre area. In context of the existing site and proposed development, it is considered that the following parking provision be reviewed in line with the DCP and Austroads requirements for the site as a whole at completion as outlined in Table 17.

Table 17 Site motorcycle parking recommendation (Austroads)

Location	GFA (m^2)
Proposed car Parking	***140 spaces (formal)***
Recommended Motorcycle Parking Rate	*2% of minimum car parking required*
Recommended Motorcycle Parking Provision	***3 spaces***

The proposal provides **parking for three motorcycles** , which is in line with the parking requirements outlined in Austroads. Therefore, the motorcycle parking facilities outlined in the new development proposal of the Australian Clay Target Association Club house is deemed to be in compliance with minimum requirements.

5. Parking layout and access review

5.1 Car park arrangement

5.1.1 General Layout

An assessment of the car parking has been undertaken using *AS2890.1 – Off Street Car Parking.* Table 1.1 of AS2890.1 presents a number of car park classifications applicable to different land-uses. According to the Table, the car park will comprise a Class 2 facility, which is suitable for the use of generally medium term parking. The parking space dimensions and associated aisle widths for a Class 2 facility classification are presented in AS2890.1: Figure 2.2 include:

- Spaces: 2.5 m x 5.4 m; and
- Aisle Width: 5.8 m

A review of the parking layout has been completed within the new parking area under the proposed development of the Australian Clay Target Association Club house. It has been identified that the new parking area under the proposal provides parking spaces with dimensions of 2.5 m x 5.5 m and aisle widths of minimum 6.0 m to meet the requirements of AS2890.1.

5.1.2 Circulation

The proposed site includes a newly constructed access road from Copland Street to the car parking facility. The proposed roadway is typically 6.0 m wide along the straight sections of the road way and 6.4 m on the curve. This is in accordance with the minimum width required to allow two way flow outlined in AS 2890.1 for circulation roadways.

Two-way circulation is proposed typically within the car park aisles with a signal lane circulation roadway providing access to each parking aisle. The circulation roadway is 3.2 m wide to meets the minimum width required to allow one way flow outlined in AS 2890.1 for circulation roadways.

5.1.3 Accessible parking

Also within the layout, there is provision for 2 accessible car spaces. Section 2.2 of AS2890.6 requires parking space dimensions 2.4 m x 5.4 m with an access aisle width of 5.8 m and a shared area of 2.4 m x 5.4 m between spaces.

The proposed car park has been designed to provide compliant parking space widths of 2.4 m, an aisle width of 6.4 m and a shared space of 5.4 m by 2.4 m, which meets the minimum requirement.

5.1.4 Bicycle parking

The proposal include the provision of three bicycle rack to accommodate up to six bicycles, that could be utilised by staff or visitors to the club.

The bicycle racks are proposed to be located in front of the main building entrance. Patrons to the building will walk pass the bicycle facility increasing passive surveillance, providing an increase in security. Consideration should be given to erection of the CCTV cameras in the area to further increase the security and could be combined with security required to monitor the main entry and back of house facilities of the building.

5.2 Loading dock

The proposal includes the provision of a loading at the northern building line to providing servicing for delivers and waste collection for the facility. A swept turning path assessment has been undertaken for the architectural plan A01, to outline the turning path of a 12.5 m Heavy Rigid Vehicle (as defined in AS 2890.2). The tuning path indicates the sufficient area is available within the site to allow the design vehicle to enter and exit the site in a forward movement and manoeuvre within the site.

Currently service vehicle movements are low with waste collection occurring monthly. It is anticipated that the club facility's increase in service vehicle movement will remain a low occurrence and will be undertaken outside club facility peak operating times.

Deliveries and waste collection access will be controlled with removable bollards to prevent unauthorised vehicle access.

5.3 Drop off pick up parking

Separate drop-off and pick-up parking facilities have been provided in front of the main entry to the building. Each facility is designated to accommodate three cars in line with the parallel parking layout outlined in AS2890.1: Figure 2.5. The facility is to perform as a drop of and pick up facility only with no parking permitted in the laybys.

Access to the drop off will be via the proposed access road from Copland Street. Vehicles exit the drop off facility towards the car park to park the vehicle or recirculate back to the access road towards Copland Street.

The pickup facility will be accessed via the car park and exit via the access road to Copeland Street. A central median has been provide to discourage U-Turn manoeuvres in front of the main entry of the building.

5.4 Site access review

A new site access driveway is proposed, located off Copland Avenue, which would serve as the primary access to the site. A SIDRA analysis outlines that the intersection layout is to provide a minimum of a single lane each way "T-intersection" arrangement with priority given to the major road (Copland Street) to provide an acceptable level of service as outlined in Section 3.2 and Section 3.3.

The intersection is be designed to accommodate the potential maximum vehicles expected on site. This would include up to 12.5 m Heavy Rigid Vehicles for services vehicles and 14.5 m for coaches that may be used in special events.

The existing site access on Tasman Road is proposed to remain unchanged from its concurrent configuration and is to be utilised as a secondary access only. This access, if required, will be utilised for traffic management during special events.

6. Summary and conclusion

6.1 Proposed works

This Traffic and Parking Impact Assessment outlines the traffic, transport, parking and access impacts as a result of the proposed club facility at 72 Tasman Road, Wagga Wagga, which comprise of:

- Newly constructed club facility including bar, food, function room facilities and associated administration offices with 2014 m^2 GFA
- Car Parking provision of:
  - 62 new formalised hardstand car spaces (including 2 accessible spaces);
  - 50 existing hardstand car spaces;
  - 140 informal parking spaces; and
  - Additional overflow parking areas.
- Provision of three motorcycle parking spaces;
- Provision of six bicycle parking spaces;
- Drop-off and pick-up facility for up to six cars for the new club premises;
- One loading dock area is provided for loading, waste collection and other service vehicles along the northern edge of the building; and
- New site access driveway off Copland Street.

6.2 Traffic impact

The proposal includes the provision of a new primary access road of Copland Street, with the existing access on Tasman Road being utilised as a secondary access (if required e.g. special event traffic management).

The traffic generated by the proposed extension to the existing development is anticipated to generate an additional 165 vehicle movement during the peak hour periods based upon the Roads and Maritime *Guide to Traffic Generating Developments*. A traffic generation review was also undertaken, based on first principles, for an adopted typical special event activity (Saturday evening dinner accommodating up to 650 guests).

The assessment of the anticipated traffic generation and adopted special event has established that it can be accommodated within the existing road network. The operating performance of the proposed new intersection on Copland Street as a single lane each way priory control giveaway "T-intersection" would to operate at an acceptable Level of Service (i.e. better than Level of Service E) of service with the additional traffic post development.

For larger special events a site specific traffic management plan should be developed to assist in traffic flow and parking arrangements, utilising the overflow parking areas are secondary access off Tasman Road, if required.

6.3 Parking provision and layout

The proposed parking provision utilising both formal and informal parking arrangements meets the minimum requirements outlined in Wagga Wagga DCP and is anticipated to accommodate parking demands. Additional overflow parking areas are available within the site to provide additional parking, if required, during special events.

The layout of the new formalised car parking area is in accordance with AS2890.1, AS2890.2 and AS2890.6. The car park provides a one-way circulation roadway to provide access to the individual parking aisles (typically two-way). Separate drop off and pick up facilities are provided in front of the building man entrance to accommodate up to six cars in total.

6.4 Conclusion

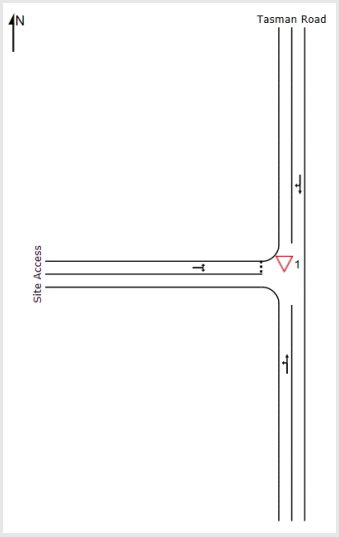
Based on the investigations undertaken by GHD, the proposed development is not expected to have an adverse impact on the surrounding road network

Appendices

Appendix A – SIDRA Analysis

Existing Club Access / Tasman Road (Weekday Peak: Existing)

Aerial Image



SIDRA Layout

MOVEMENT SUMMARY

Site: 1 [Tasman Road / Existing Site Access: Existing - Weekday PM Peak]

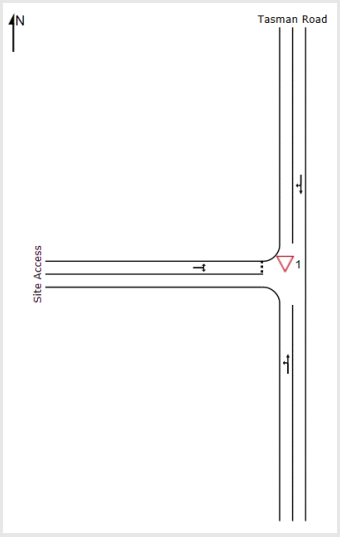
Tasman Road / Site Access: Existing - Weekday PM Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Tasman Road											
1	L2	3	0.0	0.021	7.9	LOS A	0.0	0.0	0.00	0.05	70.3
2	T1	36	8.3	0.021	0.0	LOS A	0.0	0.0	0.00	0.05	97.3
Approach		39	7.7	0.021	0.6	NA	0.0	0.0	0.00	0.05	94.0
North: Tasman Road											
8	T1	50	6.0	0.034	0.0	LOS A	0.1	0.5	0.05	0.12	95.3
9	R2	12	8.3	0.034	5.4	LOS A	0.1	0.5	0.05	0.12	28.1
Approach		62	6.5	0.034	1.1	NA	0.1	0.5	0.05	0.12	71.8
West: Site Access											
10	L2	3	0.0	0.002	0.1	LOS A	0.0	0.1	0.10	0.05	21.8
12	R2	1	0.0	0.002	0.7	LOS A	0.0	0.1	0.10	0.05	37.6
Approach		4	0.0	0.002	0.2	LOS A	0.0	0.1	0.10	0.05	25.9
All Vehicles		105	6.7	0.034	0.9	NA	0.1	0.5	0.03	0.09	74.5

Existing Club Access / Tasman Road (Saturday Peak: Existing)

Arial Image



SIDRA Layout

MOVEMENT SUMMARY

Site: 1 [Tasman Road / Existing Site Access: Existing - Weekend Peak]

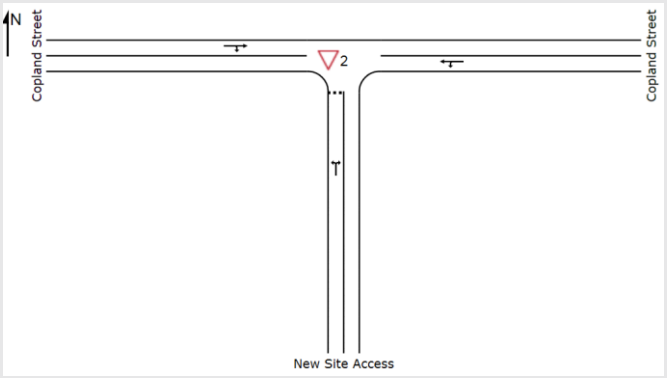
Tasman Road / Site Access: Existing - Weekend Peak
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Tasman Road											
1	L2	2	0.0	0.011	7.9	LOS A	0.0	0.0	0.00	0.07	69.9
2	T1	18	11.1	0.011	0.0	LOS A	0.0	0.0	0.00	0.07	96.4
Approach		20	10.0	0.011	0.8	NA	0.0	0.0	0.00	0.07	92.3
North: Tasman Road											
8	T1	29	17.2	0.027	0.0	LOS A	0.1	0.7	0.06	0.24	90.9
9	R2	18	5.6	0.027	5.3	LOS A	0.1	0.7	0.06	0.24	27.5
Approach		47	12.8	0.027	2.1	NA	0.1	0.7	0.06	0.24	54.4
West: Site Access											
10	L2	8	0.0	0.005	0.0	LOS A	0.0	0.1	0.06	0.03	21.9
12	R2	1	0.0	0.005	0.7	LOS A	0.0	0.1	0.06	0.03	37.7
Approach		9	0.0	0.005	0.1	LOS A	0.0	0.1	0.06	0.03	23.7
All Vehicles		76	10.5	0.027	1.5	NA	0.1	0.7	0.04	0.17	54.3

New Club Access / Copland Street (Weekday Peak: Post Development)

Arial Image



SIDRA Layout

MOVEMENT SUMMARY

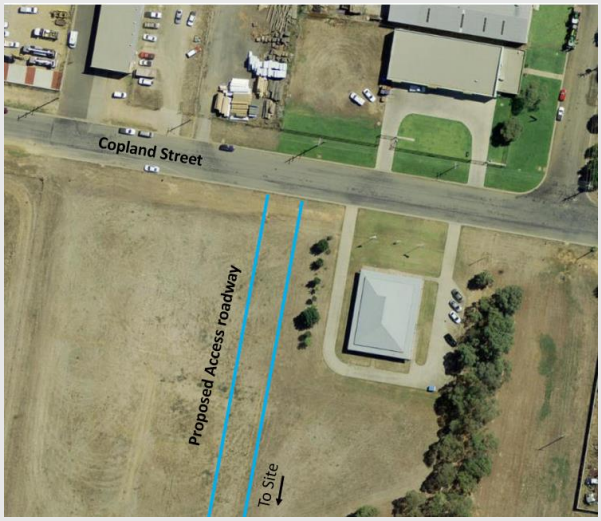
Site: 2 [Copland Street / New Site Access: Post Development - Weekday PM Peak]

Copland Street / New Site Access: Post Development - Weekday PM Peak
Giveway / Yield (Two-Way)

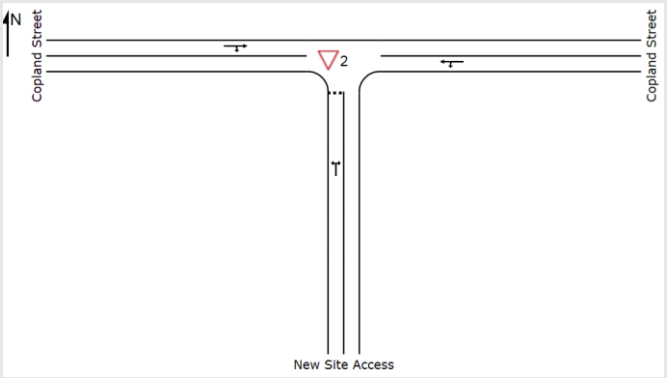
Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: New Site Access											
10	L2	78	0.0	0.069	1.1	LOS A	0.3	1.9	0.37	0.26	35.8
12	R2	8	0.0	0.069	1.3	LOS A	0.3	1.9	0.37	0.26	35.4
Approach		86	0.0	0.069	1.1	LOS A	0.3	1.9	0.37	0.26	35.7
East: Copland Street											
1	L2	11	0.0	0.174	7.8	LOS A	0.0	0.0	0.00	0.45	71.7
2	T1	306	10.8	0.174	3.8	LOS A	0.0	0.0	0.00	0.45	82.2
Approach		317	10.4	0.174	4.0	NA	0.0	0.0	0.00	0.45	81.9
West: Copland Street											
8	T1	188	10.6	0.160	0.6	LOS A	0.6	4.4	0.27	0.19	57.3
9	R2	76	0.0	0.160	6.8	LOS A	0.6	4.4	0.27	0.19	37.8
Approach		264	7.6	0.160	2.4	NA	0.6	4.4	0.27	0.19	51.4
All Vehicles		667	7.9	0.174	3.0	NA	0.6	4.4	0.16	0.32	60.2

New Club Access / Copland Street Road (Saturday Peak: Post Development)



Arial Image



SIDRA Layout

MOVEMENT SUMMARY

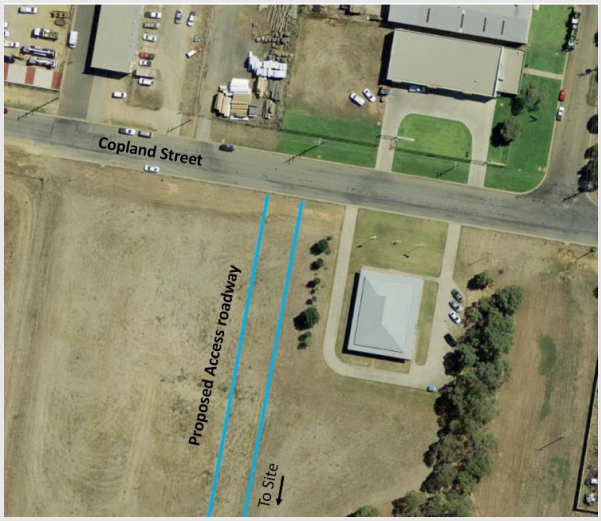
Site: 2 [Copland Street / New Site Access: Post Development - Weekend Peak]

Copland Street / New Site Access: Post Development - Weekend Peak
Giveway / Yield (Two-Way)

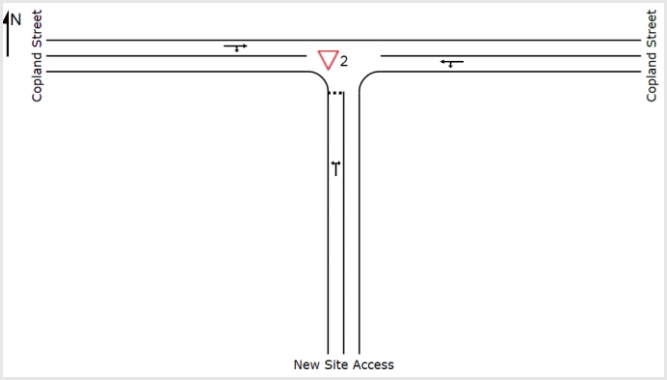
Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: New Site Access											
10	L2	83	0.0	0.061	0.4	LOS A	0.2	1.7	0.22	0.11	36.1
12	R2	8	0.0	0.061	1.0	LOS A	0.2	1.7	0.22	0.11	35.7
Approach		91	0.0	0.061	0.4	LOS A	0.2	1.7	0.22	0.11	36.0
East: Copland Street											
1	L2	10	0.0	0.071	5.6	LOS A	0.0	0.0	0.00	0.04	57.1
2	T1	125	4.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.04	59.6
Approach		135	3.7	0.071	0.4	NA	0.0	0.0	0.00	0.04	59.4
West: Copland Street											
8	T1	126	4.0	0.126	0.3	LOS A	0.5	3.8	0.21	0.25	57.0
9	R2	93	1.1	0.126	5.9	LOS A	0.5	3.8	0.21	0.25	37.6
Approach		219	2.7	0.126	2.7	NA	0.5	3.8	0.21	0.25	48.5
All Vehicles		445	2.5	0.126	1.5	NA	0.5	3.8	0.15	0.16	48.7

New Club Access / Copland Street Road (Saturday Evening: Special Event)



Arial Image



SIDRA Layout

MOVEMENT SUMMARY

Site: 2 [Copland Street / New Site Access: Post Development - Special Event (Saturday Evening)]

Copland Street / New Site Access: Post Development - Special Event (Saturday Evening)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: New Site Access											
10	L2	27	0.0	0.020	0.3	LOS A	0.1	0.5	0.17	0.08	36.2
12	R2	3	0.0	0.020	1.0	LOS A	0.1	0.5	0.17	0.08	35.8
Approach		30	0.0	0.020	0.3	LOS A	0.1	0.5	0.17	0.08	36.1
East: Copland Street											
1	L2	24	0.0	0.062	7.9	LOS A	0.0	0.0	0.00	0.14	76.6
2	T1	94	4.3	0.062	0.0	LOS A	0.0	0.0	0.00	0.14	95.6
Approach		118	3.4	0.062	1.6	NA	0.0	0.0	0.00	0.14	92.1
West: Copland Street											
8	T1	73	4.1	0.171	0.4	LOS A	0.9	6.3	0.25	0.43	55.4
9	R2	213	0.5	0.171	5.9	LOS A	0.9	6.3	0.25	0.43	36.6
Approach		286	1.4	0.171	4.5	NA	0.9	6.3	0.25	0.43	41.2
All Vehicles		434	1.8	0.171	3.4	NA	0.9	6.3	0.18	0.33	49.3

Appendix B – Traffic Survey Data

Copland Street Automatic Tube Count Survey

Job No	A59
Client	GHD
Site	Copeland St - west of Lawson St
Location	Wagga Wagga
Site No	1
Start Date	5-Apr-17
Description	Volume Summary
Direction	EB

Menu

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	10-Apr	11-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr		
AM Peak	0	0	290	319	287	126	0		
PM Peak	0	0	175	193	198	128	0	1456	1220
0:00	0	0	3	3	4	7	0	2	2
1:00	0	0	1	2	0	1	0	1	1
2:00	0	0	3	8	2	2	0	3	2
3:00	0	0	8	11	12	8	0	6	6
4:00	0	0	30	25	26	8	0	16	13
5:00	0	0	85	149	90	26	0	65	50
6:00	0	0	165	156	162	35	0	97	74
7:00	0	0	290	319	287	61	0	179	137
8:00	0	0	187	191	211	94	0	118	98
9:00	0	0	172	155	184	126	0	102	91
10:00	0	0	124	140	146	111	0	82	74
11:00	0	0	135	120	152	117	0	81	75
12:00	0	0	131	147	170	112	0	90	80
13:00	0	0	160	193	168	128	0	104	93
14:00	0	0	143	160	184	91	0	97	83
15:00	0	0	174	172	176	84	0	104	87
16:00	0	0	175	188	198	73	0	112	91
17:00	0	0	172	149	148	65	0	94	76
18:00	0	0	82	55	68	52	0	41	37
19:00	0	0	60	37	43	33	0	28	25
20:00	0	0	23	26	19	11	0	14	11
21:00	0	0	18	14	23	13	0	11	10
22:00	0	0	4	14	11	0	0	6	4
23:00	0	0	5	5	8	0	0	4	3
Total	0	0	2350	2439	2492	1258	0	1456	1220

Westbound Traffic Volumes

Job No	A59
Client	GHD
Site	Copeland St - west of Lawson St
Location	Wagga Wagga
Site No	1
Start Date	5-Apr-17
Description	Volume Summary
Direction	WB

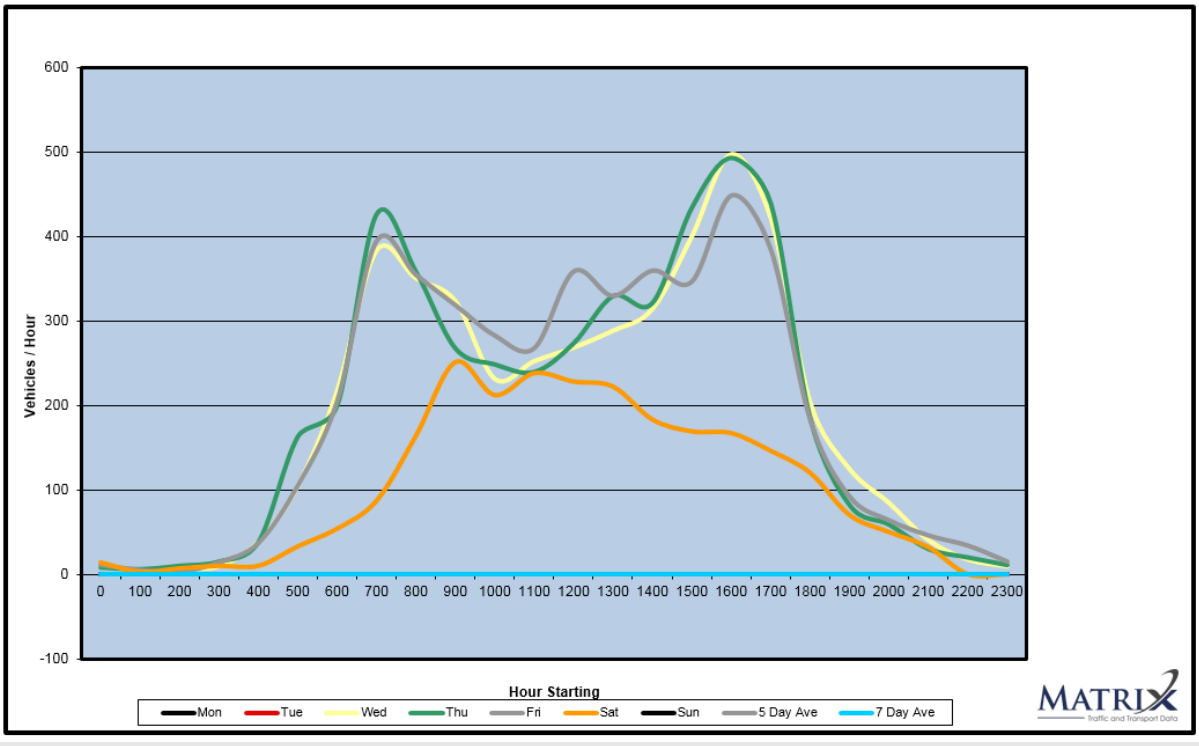
Menu

Hour Starting	Day of Week							W'Day Ave	7 Day Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	10-Apr	11-Apr	5-Apr	6-Apr	7-Apr	8-Apr	9-Apr		
AM Peak	0	0	164	168	144	125	0		
PM Peak	0	0	323	306	251	116	0	1333	1125
0:00	0	0	6	5	7	7	0	4	4
1:00	0	0	5	4	5	2	0	3	2
2:00	0	0	5	2	1	5	0	2	2
3:00	0	0	2	4	2	2	0	2	1
4:00	0	0	9	13	11	2	0	7	5
5:00	0	0	20	14	15	7	0	10	8
6:00	0	0	53	44	43	19	0	28	23
7:00	0	0	94	108	108	26	0	62	48
8:00	0	0	164	168	144	70	0	95	78
9:00	0	0	152	113	135	125	0	80	75
10:00	0	0	108	109	137	101	0	71	65
11:00	0	0	118	120	116	121	0	71	68
12:00	0	0	138	127	189	116	0	91	81
13:00	0	0	129	137	162	94	0	86	75
14:00	0	0	172	162	176	92	0	102	86
15:00	0	0	227	263	171	85	0	132	107
16:00	0	0	323	306	251	94	0	176	139
17:00	0	0	250	291	237	81	0	156	123
18:00	0	0	122	130	115	68	0	73	62
19:00	0	0	65	45	49	37	0	32	28
20:00	0	0	62	33	45	39	0	28	26
21:00	0	0	23	16	23	19	0	12	12
22:00	0	0	14	6	23	0	0	9	6
23:00	0	0	5	6	7	0	0	4	3
Total	0	0	2266	2226	2172	1212	0	1333	1125

Eastbound Traffic Volumes

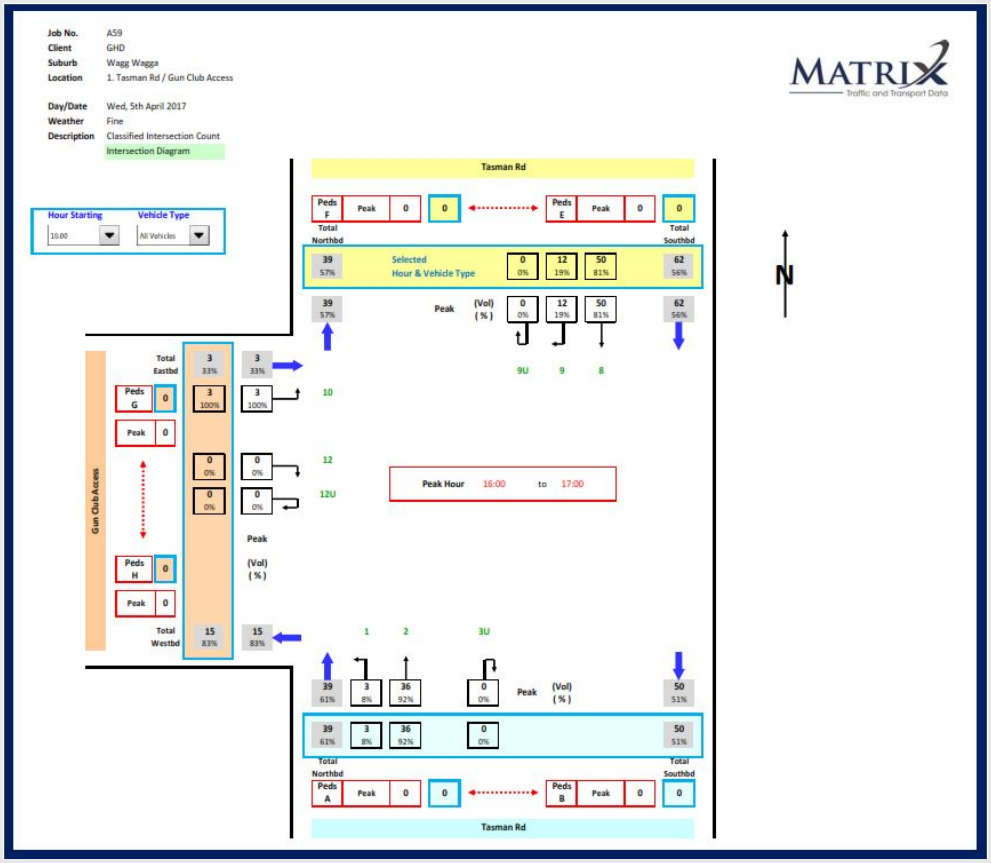
Select Site: 1 Copeland St - west of Lawson St

Select direction: Combined

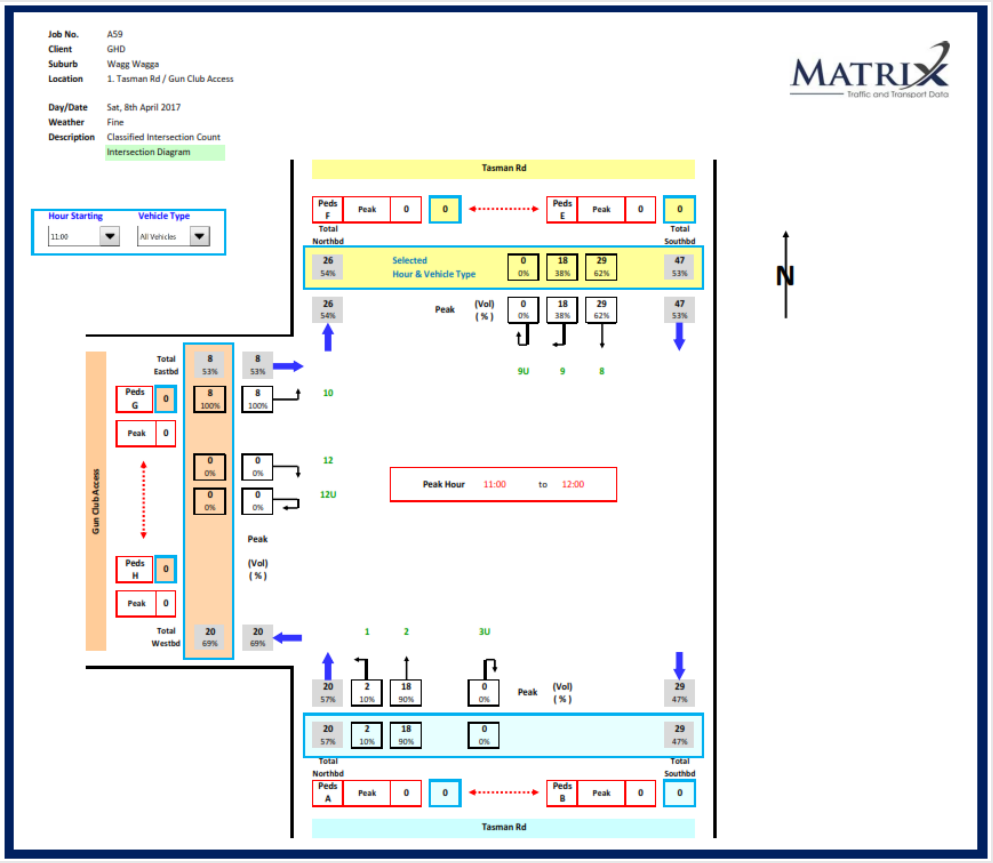


Combined Traffic Volumes

Existing Club Access / Tasman Road Intersection Survey



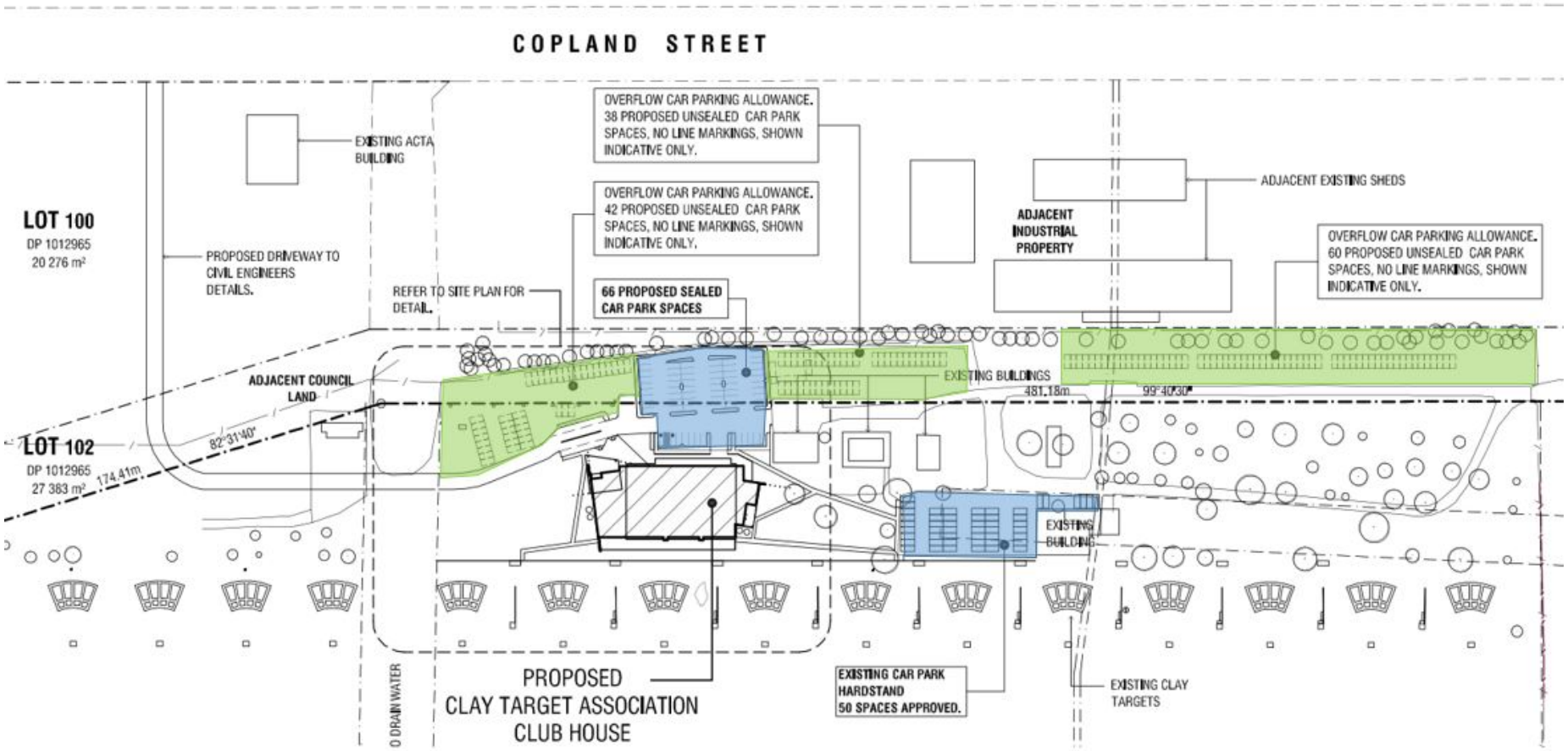
Weekday Peak Hour



Saturday Peak Hour

Appendix C – Architectural Site Plan – Parking Areas

Source: Icono Building Design Architects drawing



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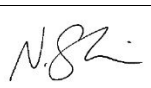
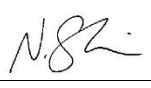
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 0	S. Clarke	O. Peel	On file	N. Szymanski		19/4/17
Rev 1	S. Clarke	O. Peel	On file	N. Szymanski		27/4/17

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