



Altre Partners Pty Ltd

The Arbour - Stage 6 Traffic Study for Additional ILU's

April 2019

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1. Introduction

1.1 Background

Mbark is proposing to develop an extension to the existing The Arbour retirement village located to the southwest of the town centre of Berry, NSW. GHD has been requested to provide a Traffic Impact Statement (TIS) in support of the Development Application for the proposed development.

1.2 Scope

This study assesses the existing land use and development conditions, existing road network conditions including physical road network configuration & condition, traffic flows, pedestrian and cyclist infrastructure. The study also assesses the expected additional traffic generated by the development, the impacts that the additional traffic will have on the existing network and potential measures to mitigate the impacts (if required).

The study area is bounded by Queen Street to the North, Princes Highway to the West, and George Street to the East.

The Traffic Impact Statement (TIS) has been prepared in accordance with relevant sections of AUSTRROADS Guide to Traffic Management Part 12: Traffic Impacts of Developments.

1.3 Report Structure

The rest of the report is structured as follows:

- Section 2 – Existing Site Details
- Section 3 – Proposed Development
- Section 4 – Existing Traffic Conditions
- Section 5 – Projected Traffic Conditions
- Section 6 – Traffic Impact Assessment
- Section 7 – Conclusions and Recommendations

2. Existing Site Details

2.1 Site Description

The existing The Arbour retirement village is located at 10 Victoria Street, Berry, accessed via Pepper Farm Drive. The existing village has 113 detached independent living units and a communal facility, as well as internal roads, footpaths and landscape features.

Pepper Farm Drive also provides access to the Bupa Aged Care facility to the southwest of the site.

2.2 Surrounding Land Use

The site is bounded by the Princes Highway to the west, The Grange at Berry to the east and paddocks to the south. North of the site is residential housing lots and Mark Radium Park.

Figure 2-1 below shows the existing development.



Figure 2-1 Locality Map (Source: Google Maps)

3. Proposed Development

3.1 Built Form

The proposed expansion of The Arbour village will provide 11 new independent living units (ILU's) at the northeast corner of the site. To access these new ILU's, a new access road is to be built off Pepper Farm Drive on the eastern side. The location of the development parcel can be seen in Figure 3-1 below.



Figure 3-1 Development site

3.2 Vehicular Access and Circulation

Vehicular access to the village extension will be provided via a new internal access road off Pepper Farm Drive with individual driveways provided for each unit, as for the existing development.

3.3 Car Parking

The *Shoalhaven Development Control Plan (DCP) 2014 Chapter G21: Car Parking and Traffic* requires that car parking for seniors housing match the requirements of the *State Environmental Planning Policy (Housing for Seniors or People with a Disability)*. The State Environmental Planning Policy (SEPP) states that there shall be a minimum of 0.5 car spaces for each bedroom for a self-contained dwelling.

Applying the above rate of car parking, the proposed development is required to provide a minimum of 17 parking spaces, noting that each unit contains three bedrooms. A total of 22 parking spaces will be provided by the development based on two tandem parking spaces for each unit, which complies with the SEPP requirements. The proposed layout of the development is shown in Appendix B.

4. Existing Traffic Conditions

4.1 Existing Road Network Characteristics

The proposed extension to The Arbour retirement village is likely to generate additional traffic primarily along Pepper Farm Drive and Victoria Street, however the impacts will likely be minimal. This section will assess the existing condition of these roads.

4.1.1 Pepper Farm Drive

Pepper Farm Drive is a private, local road, providing access to the current living units as a part of The Arbour village, and to the Bupa Aged Care facility. It is a two-lane, two-way road approximately 6.0 m wide. The sign posted speed limit along Pepper Farm Drive is 20 km/hr.

Pepper Farm Drive is accessed from Victoria Street via a driveway crossing. There is a pedestrian footpath along the eastern side of the road, adjoining the footpath on Victoria Street. The footpath continues along Pepper Farm Drive south to the intersection at Bluestone Lane.

Pepper Farm Drive is a private road, and is predominantly used by residents, guests and visitors to the Bupa Aged Care facility and the existing The Arbour village.



Figure 4-1 - Entrance of Pepper Farm Drive from Victoria Street

4.1.2 Victoria Street

Victoria Street is a two-lane, two-way collector road, approximately 9 m wide that extends from Queen Street/Princes Highway to Prince Alfred Street in Berry. The western end of Victoria Street has undergone recent construction to accommodate the Berry bypass, with a roundabout constructed to provide access to both Queen Street, and an on-ramp for the Princes Highway. Victoria Street has a 50 km/hr speed limit.

There is a pedestrian footpath along the southern verge of the street, which crosses at the median approximately 200 m east of the roundabout.

There are two bus stops located on Victoria Street in the vicinity of the proposed development, one on each side of the road approximately 150 m east of Pepper Farm Drive.

A school zone speed limit applies from approximately 115 m west of George Street to approximately 40 m to the west of Albany Street.



Figure 4-2 - Looking East along Victoria Street



Figure 4-3 - Looking West along Victoria Street from George Street

4.1.3 Windsor Drive

Windsor Drive is a local road that runs in a loop, with either end connecting on to Victoria Street. The western connection onto Victoria Street is opposite the location of the proposed The Arbour expansion. The eastern connection onto Victoria Street is affected by a school zone, however there is no sign posting on Windsor Drive to indicate this.



Figure 4-4 - Looking North along Windsor Drive

4.2 Existing Traffic Volumes

Matrix Traffic and Transport Data were engaged by GHD to undertake a traffic survey at the intersection of Pepper Farm Drive and Victoria Street in order to assess existing traffic volumes in the local road network. The traffic survey was undertaken on Tuesday 5 February 2019 between the hours of 07:30 to 09:30 and 16:30 to 18:30.

A summary of the observed peak hour flows is provided in Table 4-1 below and the full traffic survey data is provided in Appendix A.

Table 4-1 Traffic survey data

Location	AM Peak Average	PM Peak Average
Pepper Farm Drive - Northbound	37	18
Pepper Farm Drive - Southbound	21	19
Western Victoria Street - Eastbound	24	18
Western Victoria Street - Westbound	106	61
Eastern Victoria Street - Eastbound	17	11
Eastern Victoria Street - Westbound	83	55

4.3 Analysis of Existing Traffic Flows

Existing traffic data shows a high portion of traffic heading towards the Princes Highway, coming from both Pepper Farm Drive and from the east towards Berry Township.

During the AM peak hour times (8:30 am – 9:30 am), there is a total of 37 cars heading northbound along Pepper Farm Drive (leaving The Harbour/Aged Care Facility), while a total of 21 cars enter Pepper Farm Drive from Victoria Street.

These flows are significantly reduced during the PM peak hour (4:30 pm – 5:30 pm), with flows into Pepper Farm Drive from Victoria Street dropping to 19 vehicles, and flows out of Pepper Farm Drive dropping to 18.

The existing traffic flows on both Pepper Farm Drive and Victoria Street are well within the design capacity of those roads.

4.4 Public Transport

Shoalhaven Council provides a bus service that connects Nowra through to Gerringong on Route 705. This bus service passes through the town of Berry, along Victoria Street as shown in Figure 4-5. The bus services passes through 3 times per weekday in each direction, and twice in each direction on Saturdays. There are no services on Sundays or Public Holidays.



Figure 4-5 Berry Bus Route Map

4.5 Pedestrian and Cycle Network

The key pedestrian generators in the area are the bus stops on both sides of Victoria Street, and Berry Public School located on the corner of Victoria Street and Clarence Street.

A footpath is located along the eastern verge of Pepper Farm Drive, connecting to the footpath on Victoria Street. This footpath on Victoria Street provides pedestrian access to the bus stops on both the northern and southern verges.

The footpath on Victoria Street extends to the Berry Showground along the southern verge, and a footpath is also provided along Edward Street to provide pedestrian access to the town centre.

5. Projected Traffic Conditions

5.1 Traffic Generation

The proposed expansion of The Arbour retirement village has been identified for the addition of 11 residential independent living units. The peak traffic expected to be generated by the proposed development was estimated in accordance with *Austroads Guide to Traffic Management Part 12*.

Austroads provides a typical peak hour traffic generation rate for 'housing for seniors' of 0.4 trips per dwelling. Based on the proposed addition of 11 units, this results in an additional 5 peak hour trips. It is noted that the morning peak hour traffic volume that the development will generate may not coincide with the peak hour traffic of the surrounding transport network.

5.2 Distribution of Traffic

The traffic data received from Matrix identifies the existing distribution of traffic to and from Pepper Farm Drive, and it is assumed that the additional traffic generated by the proposed development will follow the same pattern.

Therefore, the distribution of the additionally generated traffic is anticipated to be:

- 72% travelling to/from the Princes Highway.
- 28% to/from Queen Street, along Victoria Street in the eastern direction.

6. Traffic Impact Assessment

6.1 Access and Circulation

As there will be a new access road to access the proposed units, a new intersection will be required on Pepper Farm Drive. This new intersection has the potential to impact existing traffic flows on the road, with an expected increase in flows of almost 10%. However, due to the low volume of traffic, and the satisfactory sight distance, the existing circulation on Pepper Farm Drive will not be significantly impacted.

Additionally, the intersection between Victoria Street and Pepper Farm Drive will also not be significantly impacted by the additional traffic volume, due to the small number of additional vehicles.

6.2 Public Transport

The proposed development is not anticipated to generate any significant increase in public transport demand, given the small number of new residents to the town.

The additional traffic generated by the development is also not anticipated to interfere with public transport routes or times due to the low traffic volumes and low frequency of bus services.

6.3 Pedestrians and Cyclists

As the footpath on Victoria Street crosses the intersection to Pepper Farm Drive there is a potential impact of pedestrians interacting with the traffic to and from the new ILU's. However, due to the low anticipated traffic volumes, interaction between pedestrians and the additional traffic will be infrequent.

Additional pedestrian movement around the development is to be expected, however due to the low population increase, the usage increase will be minimal.

7. Conclusions and Recommendations

The proposed development of an additional 11 independent living units at The Arbour retirement village is not anticipated to impact the existing transport network. Based on the scale and nature of the proposed development, additional traffic generation will be minor which, combined with the existing low traffic volumes on Pepper Farm Drive and Victoria Street, will not have a significant impact on local traffic flows. Therefore, no mitigation measures are required.

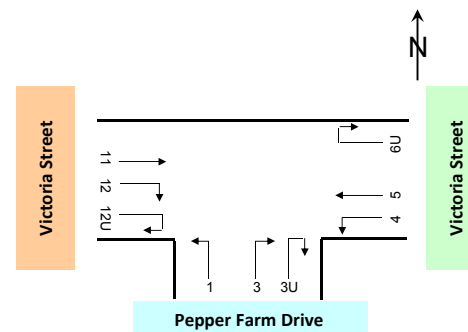
Appendices

Appendix A – Traffic Survey Data

Job No. : N4755
 Client : GHD
 Suburb : The Arbour
 Location : 1. Victoria St / Pepper Farm Dr

Day/Date : Tue, 5th Feb 2019
 Weather : Fine
 Description : Classified Intersection Count
 : 15 mins Data

	Class 1	Class 2
Classifications	Lights	Heavies

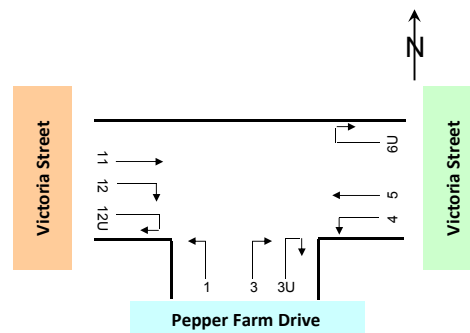


Approach	Pepper Farm Drive									Victoria Street								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 7:45	1	0	1	0	0	0	0	0	0	0	0	0	20	0	20	0	0	0
7:45 to 8:00	2	0	2	2	0	2	0	0	0	0	0	0	18	0	18	0	0	0
8:00 to 8:15	3	0	3	4	0	4	0	0	0	0	0	0	11	1	12	0	0	0
8:15 to 8:30	3	0	3	2	0	2	0	0	0	3	0	3	15	2	17	0	0	0
8:30 to 8:45	9	0	9	1	0	1	0	0	0	0	0	0	11	3	14	0	0	0
8:45 to 9:00	8	0	8	1	0	1	0	0	0	3	0	3	17	2	19	0	0	0
9:00 to 9:15	6	0	6	1	0	1	0	0	0	3	0	3	21	1	22	0	0	0
9:15 to 9:30	7	0	7	4	0	4	0	0	0	1	0	1	19	2	21	0	0	0
AM Totals	39	0	39	15	0	15	0	0	0	10	0	10	132	11	143	0	0	0
16:30 to 16:45	4	0	4	0	0	0	0	0	0	5	0	5	13	1	14	1	0	1
16:45 to 17:00	3	0	3	3	0	3	0	0	0	0	0	0	12	1	13	0	0	0
17:00 to 17:15	4	0	4	1	0	1	0	0	0	1	0	1	9	0	9	0	0	0
17:15 to 17:30	3	0	3	0	0	0	0	0	0	1	0	1	11	0	11	0	0	0
17:30 to 17:45	0	0	0	0	0	0	0	0	0	1	0	1	6	0	6	0	0	0
17:45 to 18:00	3	0	3	2	0	2	0	0	0	1	0	1	11	0	11	0	0	0
18:00 to 18:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0
18:15 to 18:30	3	0	3	2	0	2	0	0	0	0	0	0	4	0	4	0	0	0
PM Totals	20	0	20	8	0	8	0	0	0	9	0	9	71	2	73	1	0	1

Approach		Victoria Street								
Direction		Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 7:45		2	2	4	4	0	4	0	0	0
7:45 to 8:00		5	0	5	3	0	3	0	0	0
8:00 to 8:15		1	2	3	4	0	4	0	0	0
8:15 to 8:30		2	0	2	5	0	5	0	0	0
8:30 to 8:45		1	0	1	4	0	4	0	0	0
8:45 to 9:00		5	1	6	1	0	1	0	0	0
9:00 to 9:15		1	1	2	7	0	7	0	0	0
9:15 to 9:30		1	0	1	2	0	2	0	0	0
AM Totals		18	6	24	30	0	30	0	0	0
16:30 to 16:45		2	0	2	5	0	5	0	0	0
16:45 to 17:00		0	0	0	2	0	2	0	0	0
17:00 to 17:15		3	0	3	4	0	4	0	0	0
17:15 to 17:30		1	0	1	1	0	1	0	0	0
17:30 to 17:45		5	0	5	1	0	1	0	0	0
17:45 to 18:00		3	0	3	2	0	2	0	0	0
18:00 to 18:15		1	0	1	1	0	1	0	0	0
18:15 to 18:30		7	0	7	4	0	4	0	0	0
PM Totals		22	0	22	20	0	20	0	0	0

Job No. : N4755
 Client : GHD
 Suburb : The Arbour
 Location : 1. Victoria St / Pepper Farm Dr

Day/Date : Tue, 5th Feb 2019
 Weather : Fine
 Description : Classified Intersection Count
 : Hourly Summary

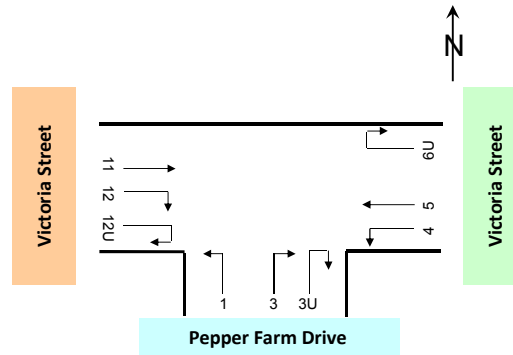


Approach	Pepper Farm Drive									Victoria Street								
Direction	Direction 1 (Left Turn)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 8:30	9	0	9	8	0	8	0	0	0	3	0	3	64	3	67	0	0	0
7:45 to 8:45	17	0	17	9	0	9	0	0	0	3	0	3	55	6	61	0	0	0
8:00 to 9:00	23	0	23	8	0	8	0	0	0	6	0	6	54	8	62	0	0	0
8:15 to 9:15	26	0	26	5	0	5	0	0	0	9	0	9	64	8	72	0	0	0
8:30 to 9:30	30	0	30	7	0	7	0	0	0	7	0	7	68	8	76	0	0	0
AM Totals	39	0	39	15	0	15	0	0	0	10	0	10	132	11	143	0	0	0
16:30 to 17:30	14	0	14	4	0	4	0	0	0	7	0	7	45	2	47	1	0	1
16:45 to 17:45	10	0	10	4	0	4	0	0	0	3	0	3	38	1	39	0	0	0
17:00 to 18:00	10	0	10	3	0	3	0	0	0	4	0	4	37	0	37	0	0	0
17:15 to 18:15	6	0	6	2	0	2	0	0	0	3	0	3	33	0	33	0	0	0
17:30 to 18:30	6	0	6	4	0	4	0	0	0	2	0	2	26	0	26	0	0	0
PM Totals	20	0	20	8	0	8	0	0	0	9	0	9	71	2	73	1	0	1

Approach		Victoria Street								
Direction		Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
7:30 to 8:30		10	4	14	16	0	16	0	0	0
7:45 to 8:45		9	2	11	16	0	16	0	0	0
8:00 to 9:00		9	3	12	14	0	14	0	0	0
8:15 to 9:15		9	2	11	17	0	17	0	0	0
8:30 to 9:30		8	2	10	14	0	14	0	0	0
AM Totals		18	6	24	30	0	30	0	0	0
16:30 to 17:30		6	0	6	12	0	12	0	0	0
16:45 to 17:45		9	0	9	8	0	8	0	0	0
17:00 to 18:00		12	0	12	8	0	8	0	0	0
17:15 to 18:15		10	0	10	5	0	5	0	0	0
17:30 to 18:30		16	0	16	8	0	8	0	0	0
PM Totals		22	0	22	20	0	20	0	0	0

Job No. : N4755
Client : GHD
Suburb : The Arbour
Location : 1. Victoria St / Pepper Farm Dr

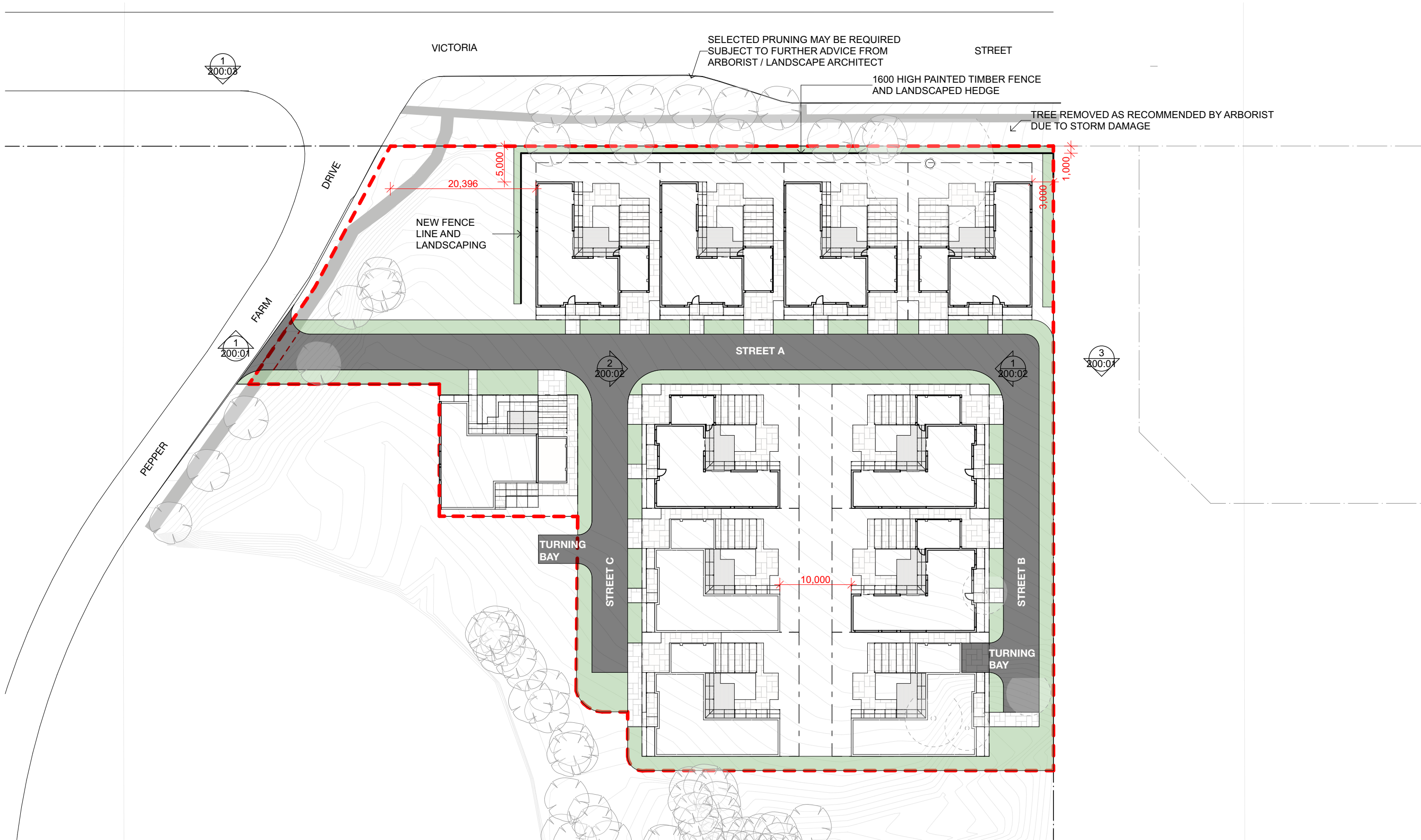
Day/Date : Tue, 5th Feb 2019
Weather : Fine
Description : Classified Intersection Count
 : Peak Hour Summary



Approach		Pepper Farm Drive			Victoria Street			Victoria Street			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
AM	8:30 to 9:30	37	0	37	75	8	83	22	2	24	144
PM	16:30 to 17:30	18	0	18	53	2	55	18	0	18	91

Approach		Pepper Farm Drive			Victoria Street			Victoria Street			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
7:30 to 8:30		17	0	17	67	3	70	26	4	30	117
7:45 to 8:45		26	0	26	58	6	64	25	2	27	117
8:00 to 9:00		31	0	31	60	8	68	23	3	26	125
8:15 to 9:15		31	0	31	73	8	81	26	2	28	140
8:30 to 9:30		37	0	37	75	8	83	22	2	24	144
AM Totals		54	0	54	142	11	153	48	6	54	261
16:30 to 17:30		18	0	18	53	2	55	18	0	18	91
16:45 to 17:45		14	0	14	41	1	42	17	0	17	73
17:00 to 18:00		13	0	13	41	0	41	20	0	20	74
17:15 to 18:15		8	0	8	36	0	36	15	0	15	59
17:30 to 18:30		10	0	10	28	0	28	24	0	24	62
PM Totals		28	0	28	81	2	83	42	0	42	153

Appendix B – Proposed Development Layout



1 FLOOR PLAN
1:500
 AREA OF WORK

NOTE
The Builder shall check all dimensions and levels on site prior to construction. Notify any errors, discrepancies or omissions to the architect. Refer to written dimensions only. Do not scale drawings. Drawings shall not be used for construction purposes until issued for construction. This drawing reflects a design by SATURDAY STUDIO and is to be used only for work when authorised in writing by SATURDAY STUDIO.
All boundaries and contours are subject to survey drawing BY SURVEYOR. All levels to Australian Height Data. It is the contractors responsibility to confirm all measurements on site and locations of any services prior to work on site.
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**Saturday
Studio**



PROJECT NO.
18027
PRINT DATE: 3/4/19
PROJECT STATUS: SCC APPLICATION
CLIENT: MBARK PTY LTD
SITE: VICTORIA STREET, BERRY

DRAWING TITLE :
GA Plans
FLOOR PLAN
PROJECT NAME :
ARBOUR EXTENSION

ISSUE:
**SITE COMPATIBILITY
CERTIFICATE APPLICATION**
DRAWING NO.
110:01
REVISION NO.
C

GHD

Office 3, Kemp Building 176 Carp Street
Bega NSW 2550

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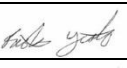
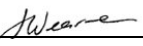
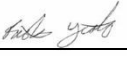
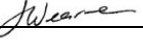
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23-SO1-213656155-

11/https://projects.ghd.com/oc/Canberra2/thearbourvillageberr/Delivery/Documents/2316581-REP-B_Traffic Study.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	Z.Crombie-Brown	T.Yeats		J.Wearne		14/2/19
1	Z.Crombie-Brown	T.Yeats		J.Wearne		05/04/19

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