

Meriton

2 Macpherson Street, Warriewood

24 Lot Community Title Subdivision

256447

Rev C | 14 July 2019

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 256447

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1 Introduction

Meriton commissioned Arup to undertake traffic engineering services for the proposed Development Application (DA) for 2 Macpherson Street, Warriewood. The subject site is in the Northern Beaches Council local government area and is proposed to be sub-divided into 22 low-density residential lots with a perimeter road.

The council have requested a review of the design in accordance with the requirements of “*Local Street*” (under the *Warriewood Valley Roads Masterplan*). Furthermore, the following controls from the *Pittwater 21 Development Control Plan (DCP 2014)* are addressed:

- Section B6, Access and Parking;
- Section C6, Design Criteria for Warriewood Valley Release Area; and
- Section D16, Warriewood Valley Locality.

A previous DA (N0398/17) for the civil works including cut and fill, private road, drainage works and environmental management works was lodged to Council on 1 September 2017. A revised road layout has been drawn by AT&L, which has been reviewed for its design and interface to the surrounding road network for this DA.

This application was approved by Land and Environmental Court on 31 May 2019.

The statement is structured as follows:

- Existing transport conditions
- Description of proposal
- Car parking provision and arrangement
- Generation of people and car trips and road network impacts
- Vehicle access arrangements and internal road design aspects

2 Existing transport conditions

The proposed development site is located at 2 Macpherson Street, Warriewood is shown in Figure 1.

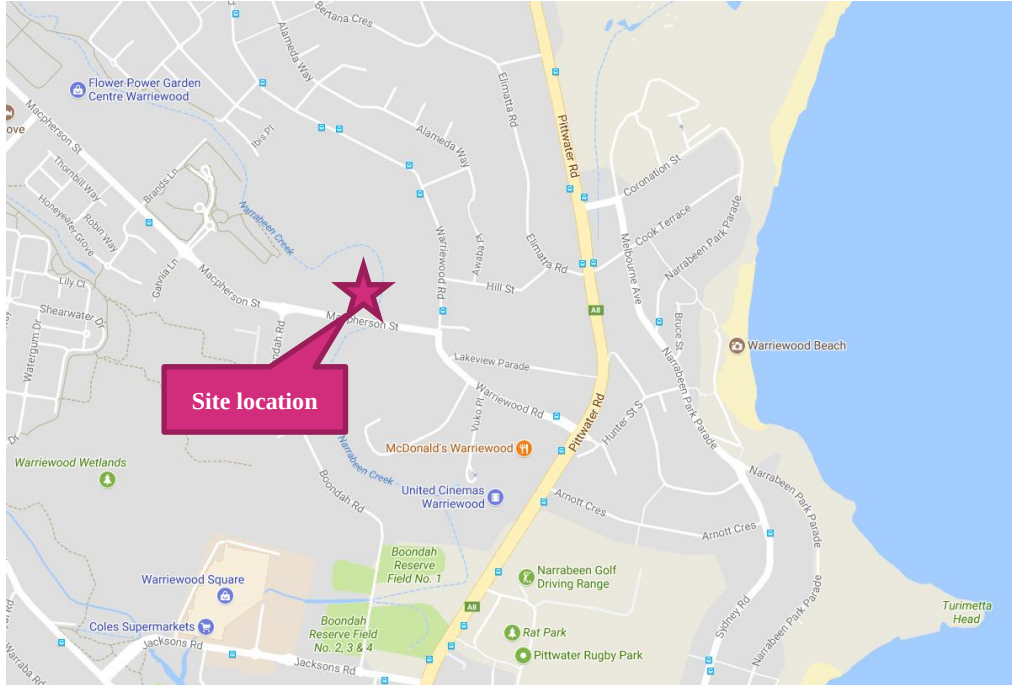


Figure 1: Site Location Plan

2.1 Road network

The site fronts Macpherson Street, which is a collector road connecting to Warriewood Road and subsequently Pittwater Road, which is the main arterial distributor in the area for all regional access. Macpherson Street also connects to Ponderosa Parade in the west, which subsequently connects to Mona Vale Road, the other main arterial distributor.

Council recently completed upgrade works along Macpherson Street as part of the Section 94 Infrastructure Plan for the Warriewood Land Release development area by Council.

2.2 Public transport availability

Public transport near the site is serviced by bus services shown in Figure 2. Local bus stops are located along Macpherson Street and Warriewood Road (185 and E85). Express B-line bus services operate from Narrabeen Golf Driving Range stop approximately 1km south of the site. This service provides a high frequency and high-quality service for bus customers to the City.



Figure 2: Public Transport

2.3 Pedestrian and cycle linkages and access

The site may be accessed by pedestrians and cyclists from the south via Macpherson Street. Dedicated bicycle lanes are provided on Macpherson Street and Pittwater Road, while the paths provide access from the site through to Narrabeen to the south, there is no integrated cycle path network between the intersections of Macpherson Street / Boondah Road and Warriewood Road / Pittwater Road. Figure 3 shows the existing cycling infrastructure near the site.

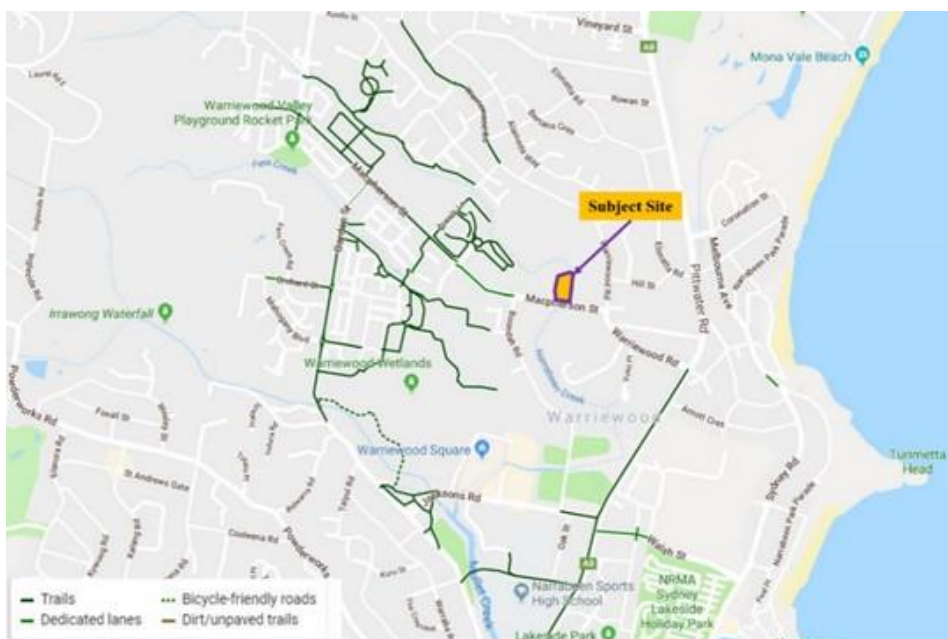


Figure 3: Cycle Infrastructure

3 Description of proposal

The proposed development site is made up of a site area of approximately 2.327 hectares, bound by Narrabeen Creek and Macpherson Street. Concessions have been made by the developer for the flooding and bushfire provisions.

The Development Application which seeks consent for the 24 Lot Community Title Subdivision to accommodate future residential development. The works proposed under this application include:

- Proposed Lot 1 – Private access loop road;
- Proposed Lots 2 – 23 – future residential lots under community title; and
- Proposed Lot 24 – Land to be dedicated to Council, being the 25-metre inner creek line corridor.

The perimeter loop road layout was approved under DA N0398/17 and is shown in Figure 4. This involves two connections to Macpherson Street approximately 100 m apart. The nearest existing intersection is Boondah Road roundabout, which is over 120m away.

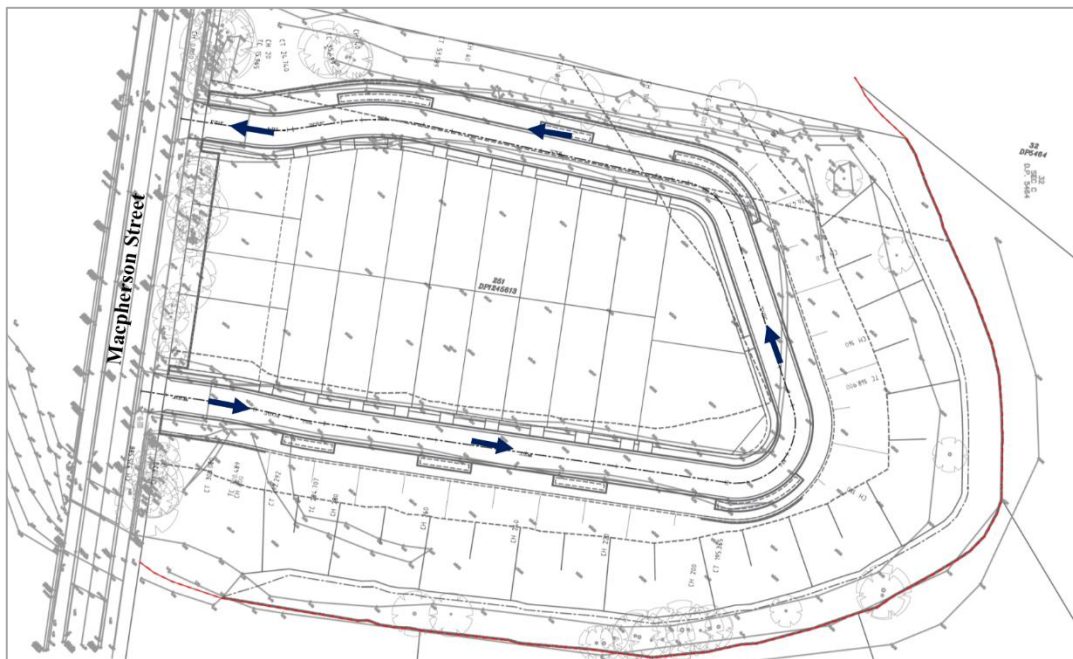


Figure 4: Proposed Road Layout

3.1 Proposed access arrangement

The main road access to the subdivision will be via a proposed one-way loop road from Macpherson Street. The internal road network is aligned to allow for future entry connection with Macpherson Street, approximately 150m west of the intersection of Macpherson Street/ Warriewood Road. The future exit connection with Macpherson Street is located approximately 120m east of the Macpherson Street / Boondah Road roundabout. Traffic will travel in a counterclockwise direction as shown in Figure 4.

3.2 Proposed integrated shared path

As shown in the sub-division DA drawings accompanying this letter, footpaths have been provided throughout the internal road network. They have been provided on one side of the road. The footpaths connect to Macpherson Street where pedestrians will be able to access the future proposed footpath on Macpherson Street.

According to the Warriewood Valley Roads Masterplan (2016), cycling infrastructure for Warriewood Valley is via shared paths on both sides of the carriageway within the road verge. In addition to the cycling network within road reserves, there is a network of shared paths along creek line corridors that provide alternate/additional cycle connections. This is shown in Figure 5.

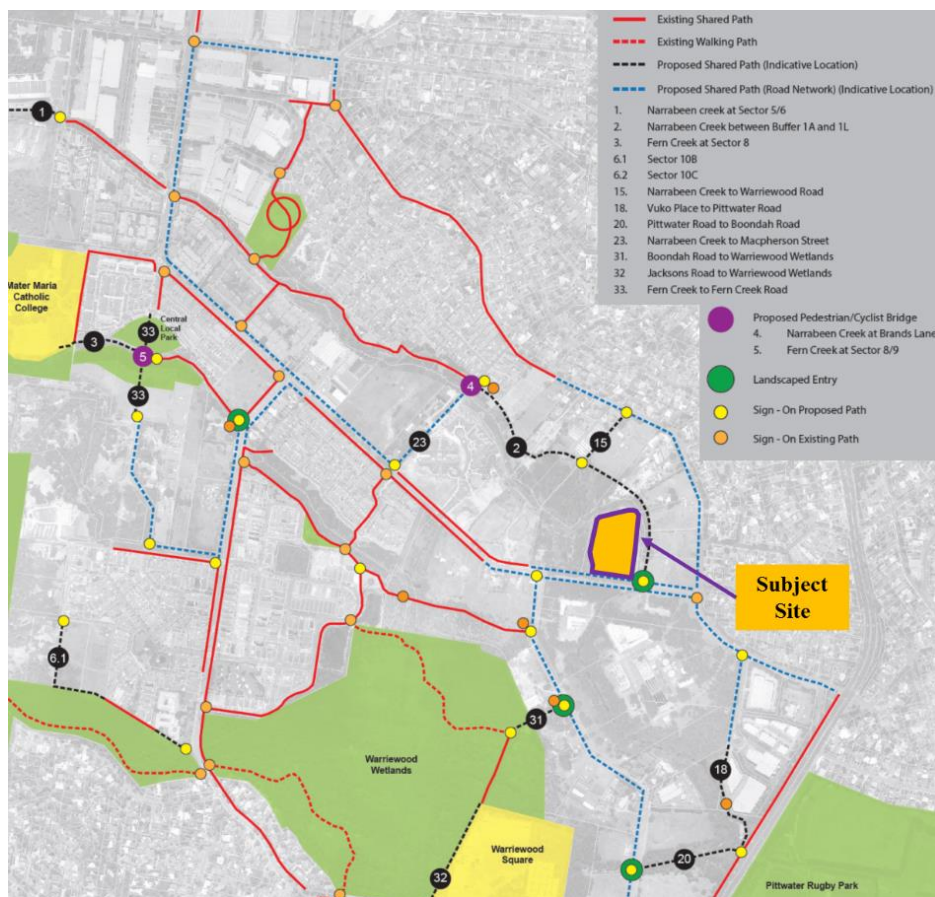


Figure 5: Proposed Shared Paths

Source - Warriewood Valley Landscape Masterplan and Design Guidelines (Public Domain), 2018

4 Parking requirements

4.1 Off-street car parking

Provision B6.3 from the Pittwater DCP requires on-site parking for the dwelling houses in the proposed subdivision to be provided as follows:

- *One bedroom per dwelling* *1 space*
- *Two (2) or more bedrooms per dwelling* *2 spaces*

The minimum dimensions of the internal spaces are to be provided as listed in Table 1.

Table 1: Dimensions of internal space for on-site parking

Type	Dimensions
Single car parking spaces on the hardstand and Single Carport	2.4-metre x 5.5 metres with a 0.3metre minimum clear space each side for access to doors
Enclosed garage (internal dimension)	3.0 metre x 6.0 metre, with 2.4 metre minimum width entry
Multiple sides by side carport and enclosed garage (internal dimension)	5.7-metre x 6.0 metre for 2 adjacent vehicles + 2.7-metre width for each additional vehicle with, 2.4-metre minimum width entry per vehicle space

4.2 On-street parking

A minimum of one on-street visitor parking space for every two dwellings is to be provided under Warriewood Valley Roads Masterplan (May 2016).

It is assumed that on-street car parking will be provided at all legally permitted kerbside areas. This will provide a few spaces for future users including visitors, likely to be unrestricted. Any changes because of access driveways within the proposed internal streets will likely still result in a net increase of the potential on-street parking spaces even with the removal of parallel parking on Macpherson Street to facilitate access.

An available perimeter of 333 m exists on the outside kerb. It could, therefore, be possible to park up to 55 cars on the outside alone, with approximately half that amount on the inside for residential access.

5 Generation of people and car trips and road network impacts

5.1 Traffic generation

The RMS Technical Direction (TDT 2013/04a), which supplements the Guide to Traffic Generating Developments, provides updated trip generation rates for low density residential dwellings based in Sydney. It recommends an average hourly trip rate of 0.99 vehicle trips per dwelling during the AM peak period and 0.95 vehicle trips per dwelling during the PM peak period. The proposed subdivision, with potential for 22 dwellings, with an 80/20 split, is therefore anticipated to generate the following traffic:

- 22 vehicle trips per hour during the AM peak period (5 trips in and 17 trips out), and
- 21 vehicle trips per hour during the PM peak period (17 trips in and 4 trips out).

5.2 Traffic impact

The proposed subdivision will result in an increase of up to 17 vehicle trips per hour. This volume equates to less than one vehicle trip per 4 minutes being generated on average during the PM peak period. This is minor in nature and will have a negligible impact on the operation of the intersections with Macpherson Street. The increase does not warrant intersection analysis nor would modelling software be sensitive to change for such a low traffic volume.

In summary, the proposed subdivision will not create any adverse traffic impacts to the external road network and is generally consistent with the traffic volumes that are generated by the existing site land uses.

5.3 Residential amenity

The potential impacts of the subdivision on the amenity of existing residents are assessed having regard to traffic volumes on affected road sections, based upon the concept of 'environmental capacity'. This measure is dependent on many factors, including the function (classification) of the road, historic traffic levels, traffic composition (notably the percentage of heavy vehicles), vehicle speeds, road widths, road gradients, road surface conditions, distances to building façades and type of building construction. In addition, individual people have different responses to the prevailing conditions so that circumstances that one person finds unacceptable may be acceptable to another. These variables are set out in Section 4.3 of the Roads and Maritime Services Guide to Traffic Generating Developments.

Nevertheless, Roads and Maritime Services has formulated design criteria for local and collector residential streets that take due account of amenity and safety

considerations. These specify a maximum goal for local and collector roads as follows:

- *Local Street* *300 veh/hr*
- *Collector Road* *500 veh/hr*

The increases associated with the proposed subdivision will result in traffic flows of 22 vehicles per hour during the PM peak. These volumes would thus be well below the Roads and Maritime Services maximum goal of 300 and 500 vehicles per hour on the local street. This is therefore considered acceptable.

6 Vehicle access arrangement and internal road design aspects

The proposed internal road design, access driveways, on-street parking and internal garages/car parking spaces are generally required to be designed by Austroads, Australian Standards – Parking Facilities and Warriewood Valley Roads Masterplan (May 2016) with the following characteristics considered noteworthy:

6.1 Road design

A one-way loop has been proposed for the internal road in the revised Civil DA plans. While one-way road systems may create a higher speed environment, the curves and on-street parking will limit this. A mandatory 10m No Stopping zone will need to be enforced to permit easier manoeuvring by the larger vehicles.

The largest expected vehicle to use the road layout is the standard Medium Rigid Vehicle (MRV) of 8.8m length. This vehicle represents a typical garbage vehicle and emergency vehicles such as fire trucks.

Austroads Guide to Road Design Part 4A notes that the centreline for approach roads should be designed as 90 degrees. This indicates that the current arrangement complies.

6.2 Typical plans and cross sections – Local Street

Under Warriewood Valley Roads Masterplan prepared by the former Pittwater Council, the roads within the subdivision are classified as Local Streets. A typical carriageway for access streets, as illustrated in Appendix A3 of the Masterplan, is shown in .

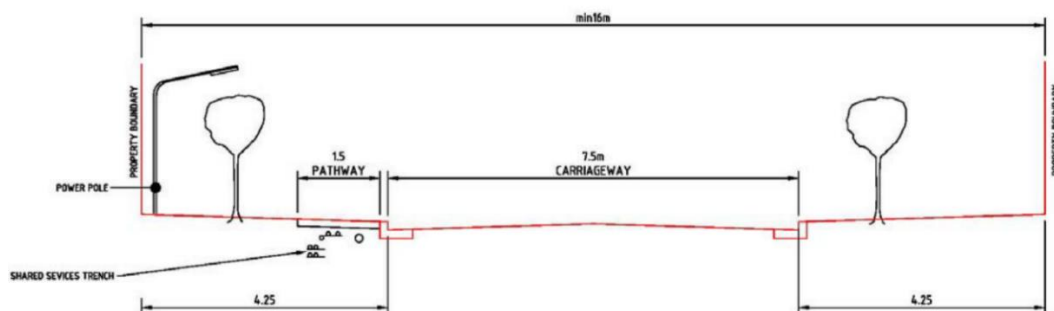


Figure 6: Typical Road Plans and Cross Sections - Local Streets

All the cross sections within the proposed subdivision will have carriageway of 7.5 metres to cater traffic, parking and cyclists with the road reserve width of 14.25 metres. The only section of the road that has the deficiency of 1.75m is the portion fronting MacPherson Road in section 1 which can't be accessed. Therefore, it is considered that the proposed carriageways comply with the requirements of a 'Local Street' as defined by the Master Plan and considered acceptable.

6.3 Sight lines

The proposed internal road provides 90-degree intersections with Macpherson Street and will have a compliant road width with Austroads. The road is expected to accommodate all design vehicles and allow for sufficient sight distances at key access points.

The intersections of the proposed roads with Macpherson Street have a 90 degrees angled alignment. Having regard for the splays on the corner of the intersections, they are considered to achieve the appropriate level of sight visibility.

6.4 Internal access arrangements

The design of the internal driveways is required to be in accordance with the *Australian Standard AS/NZS 2890.1-2004: Parking Facilities - Off-Street Car Parking*. The internal driveways must be contained within the driveway corridor. The minimum width of the driveway corridor for single dwellings is required to be 3 metres. This will be subject to a separate approval with each dwelling.

A swept path analysis was conducted to check compliance with the road design standards using approved software. Turning paths, using the various standard vehicles were tested on the road layout, including the entry and exits from the main street to the proposed road network. The turning paths show the design complies with standards and drawings are attached in Appendix A.

7 Summary and conclusions

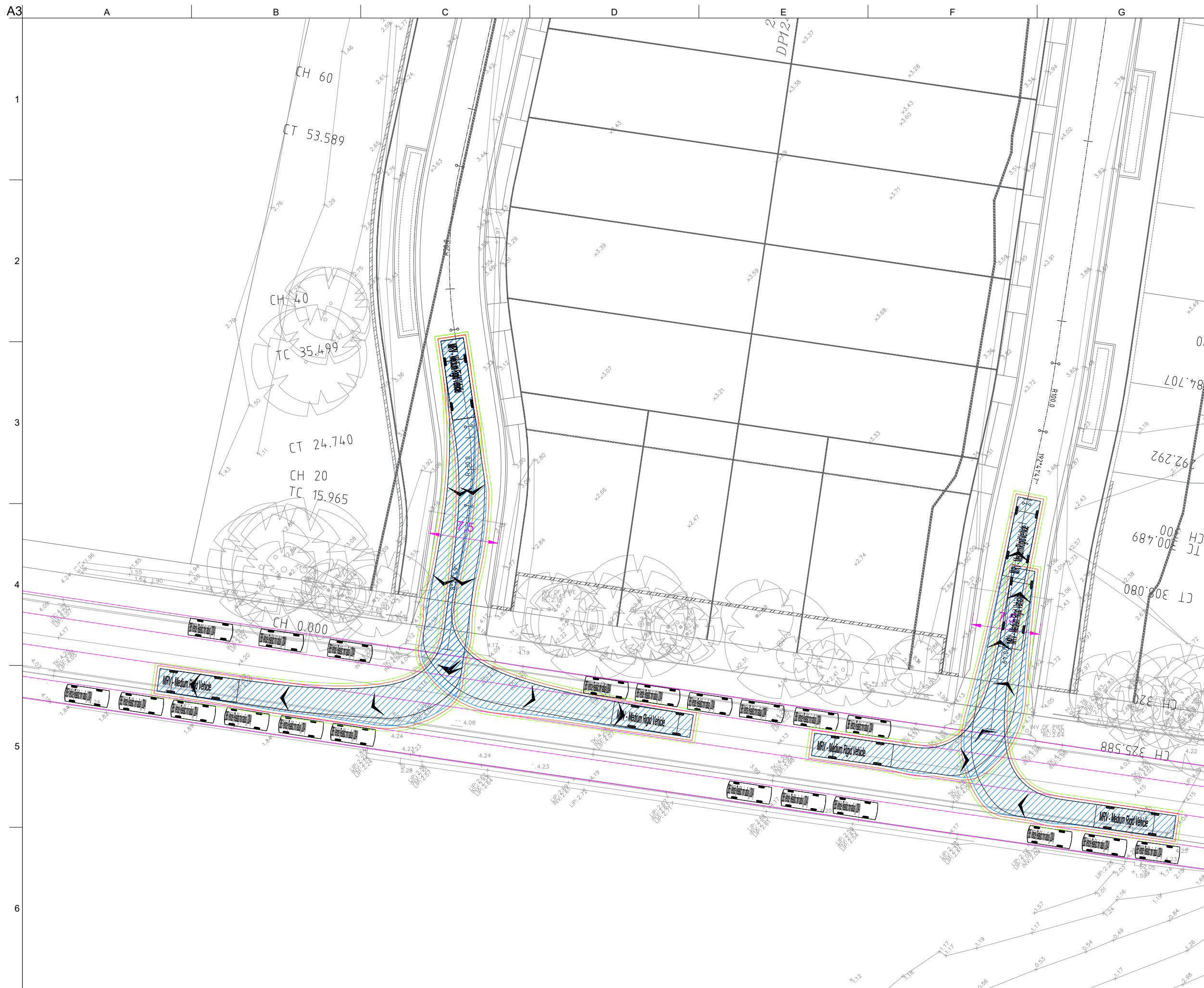
This letter has been prepared in support of the subdivision and civil works DA. The additional information on the internal roadways based on the *Warriewood Valley Roads Masterplan* requirement is provided. The controls from the Pittwater 21 *Development Control Plan (DCP 2014)* about access and parking; design criteria for Warriewood Valley Release Area and Warriewood Valley Locality are also addressed as part of this letter.

The main findings of the assessment are:

- The proposed development will sub-divide the existing lot into 22 residential lots and the associated internal road network.
- The vehicular trips to the site are proposed to be via two connections, an in and out access creating a one-way road loop on Macpherson Street.
- It is estimated the subdivision will generate up to 22 vehicle trips per hour during the PM peak hour (17 vehicle trips in and 5 vehicle trips out). This volume equates to less than one vehicle trip per 4 minutes being generated on average. This is minor in nature and will have a negligible impact on the operation of the intersections with Macpherson Street.
- The road has been designed for the largest practical vehicles intended to utilise the proposed road.
- The design of the internal road network complies with the requirement stipulated for Warriewood Valley Road Masterplan Design Guideline. The geometric design has been reviewed and can accommodate all intended design vehicles with no adverse sight distance.

Appendix A

Swept Path Analysis

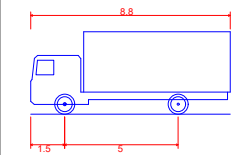


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Legend

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- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



MRV - Medium Rigid Vehicle	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m

B	27/11/18	LK	JRT	JRT
A	11/08/17	JRT	AMH	AMH
For Information				
Issue	Date	By	Chkd	Appd

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Client

Meriton

Job Title

2 Macpherson St, Warriewood

Drawing Title

Turning Paths
8.8m Medium Rigid Vehicle (MRV)

Scale at A3 1:400

Discipline	Transport
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Drawing Status	
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Issue
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