David Pavey Pty Ltd trading as

Pavey Consulting Services

Traffic Studies and Transportation Planning
Road Safety Reviews
Project Management and Contract Administration
Mediation and Government Relations
Water Management

Planning Proposal

259 Averys Lane Buchanan

Traffic Impact Assessment

30 August 2021

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Revision Register

Rev	Date	Author	Checked by	Approved By	Remarks
0	30 August 2021	David Pavey	Sharyn Pavey	David Pavey	Issued for client review
2	6 September 2021	David Pavey	Sharyn Pavey	David Pavey	Final for Submission

Table of Contents

Page

1. Introduction

Pavey Consulting Services has been commissioned to assess the proposed traffic arrangements associated the Planning Proposal for the Rezoning part of Lot 10 DP 1085485 (no 261 Averys Lane Buchanan and to provide an opinion on any effect the proposed development may have on the surrounding area.

This report includes an assessment of the physical layout of the site, including consideration of the following traffic elements:

- Traffic generation and effect (if any) on the adjacent road network, and
- Vehicular Access, and
- Alternate modes of transport.

The results of the above analyses are outlined in the following sections.

2. Limits if Report

This report takes into account the particular instructions and requirements of our client. Pavey Consulting has taken care in the preparation of this report, however it neither accepts liability nor responsibility whatsoever in respect of:

- Any use of this report by any third party,
- Any third party whose interests may be affected by any decision made regarding the contents of this report; and/or
- Any conclusion drawn resulting from omission or lack of full disclosure by the client, or the clients' consultants.

3. Site Location

This proposal is located 261 Averys Lane Buchanan.

4. Proposal

It is proposed to subdivide Lot 10 DP 1085485 into 2 lots to allow each of the two individual dwellings that already exist to be contained in their own individual lot.

Proposed Lot 10 A (1.11 ha) contains an existing dwelling and associated building and has access off the northern end of Averys Lane and proposed Lot 10B (22.82Ha) contains an existing dwelling and associated buildings and is accessed of that section of Averys Lane adjacent to the Hunter Expressway. The proposed development application drawings are included in **Appendix A**.

After consideration of this proposal Cessnock Council requested additional information to be provided to consider the potential development of lot 10A. A draft subdivision plan has been created to demonstrate the potential yield of the rezoned area. The proposed development application drawings are also included in **Appendix A**.

Cessnock City Council's minimum lot size for R2 Low Density Residential Zone is 405m^2. With a developable land area of 8,153m^2, 18 lots could be accommodated. However, given the environmental constraints such as bush fire and Council's DCP requirements the conclusions of the draft subdivision being a potential yield of 14 lots is considered to be more practical. Biodiversity considerations will further reduce the potential yield. The updated biodiversity assessment report details the current situation in relation to biodiversity land.

The proposed lot sizes will allow for a variety of housing stock, including single dwellings, secondary dwellings and dual occupancy developments.

5. Recent Development Approvals and Provision of Infrastructure

The draft subdivision plan for 261 Avery Lane utilises the upgrade and extension of Averys Lane and intersection improvements at John Renshaw Drive that are part of Development Consent or Section 94 contributions of the recently approved Buchanan Ridge Estate 175 lot residential development located immediately to the west of the subject site.

The Developer, Hunter Lands, of Buchanan Ridge has advised that they anticipate that Stage 1 of this development will be completed within the next 12 months and the following works will be competed as part of this stage of the approved development.

- Provision of CHR / AUL(s) intersection upgrading at the John Renshaw Drive / Avery's Lane intersection
- Reconstruction and widening of Avery's Lane from John Renshaw Drive to Buchanan Ridge Estate to a 11 m sealed rural road with appropriate shoulders and drainage.

It is noted that within the S94 Developer Contributions Plan for the Avery's Village Urban Release Area the following works are listed that are pertaining to the development of 359 Avery Lane

- Avery's Lane at south connection to subdivision – Construct a single lane roundabout (assumed for traffic calming purposes). In this regard advice from the developer of Buchanan Ridge is that the completion of these works are part of discussions with Council as a Works in Kind Agreement.

6. Traffic Generation and effect on adjacent Roadway

This Traffic Impact Assessment has utilised peak hour and daily traffic generation rates from – RMS Guide to Traffic Generating Developments 2002 and its 2013 Supplement.

The existing Lot 10 currently contains two separate residential building as and associated facilities such as garages, barns and storage sheds.

The propose two lot subdivision doesn't provide any additional dwellings to be constructed at this time, but as mentioned above although there is potential that Lot 10B could be the subject of a further subdivision and could accommodate up to an additional 14 lots.

With regards to proposed Lot 10 A, no changes are proposed to be made due to its current zoning and as such It is therefore considered that as no additional dwellings are proposed that there will be no additional vehicles generated by this development and as such will not affect the operation of the adjacent local road (Averys Lane) or its intersection with John Renshaw Drive.

With respect to the potential of 14 lots on proposed Lot 10B, we provide the following advice:

The RMS' *Guide to Traffic Generating Development's* provides specific advice on the traffic generation potential of various land uses. However, the RMS has released a Technical Direction (TDT 2013/4) releasing the results of updated traffic surveys and as a result amended land use traffic generation rates.

In regard to low density residential dwellings the following amended advice is provided within the Technical Direction.

Rates.

Daily vehicle trips = 7.4 per dwelling in regional areas

Weekday average evening peak hour vehicle trips = 0.78 per dwelling in regional areas (maximum 0.90).

Weekday average morning peak hour vehicle trips = 0.71 per dwelling in regional areas (maximum 0.85).

Therefore, the additional traffic generated by the potential 14 lot residential subdivision during the weekday peakperiod can be calculated as follows:

Daily vehicle trips = 14 dwellings x 7.4 trips per dwelling = 103 vtpd.

Weekday AM peak hour = 14 dwellings x 0.71 trips per dwelling = 9 vtph.

Weekday PM peak hour = 14 dwellings x 0.78 trips per dwelling = 10 vtph.

The capacity of a rural road is generally determined by the capacity of its intersections. However, Table 4.5 of RMS's *Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for rural roads and likely levels of service. This table is reproduced below

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

The data for Table 4.5 assumes the following criteria:

- *terrain level* with 20% no overtaking.
- *rolling* with 40% no overtaking.
- *mountainous* with 60% no overtaking.
- 3.7 m traffic lane width with side clearances of at least 2m.
- 60/40 directional split of traffic.

Assuming that the desirable worst level of service (LoS) on John Renshaw Drive is LoS C and that John Renshaw Drive represents level terrain with approximately 5% heavy vehicles then the two-way mid-block capacity of John Renshaw Drive would be in the order of 1,500 vph.

The Traffic Impact Assessment accompanying the Buchanan Ridge Estate Development identified that the predicted peak hour in 2024 volumes of 950 vph together with the peak hourly flows from Buchanan Ride brings the total predicted flow along John Renshaw Drive to 1075 which is well within its technical mid-block capacity in 2024.

Therefore, the additional 10 peak hour trips from this potential 14 lot subdivision will have an insignificant effect on the overall operation of John Renshaw Drive.

As Avery's Lane will in future contain residential dwellings the environmental road capacity thresholds provided within Table 4.6 of the RMS' *Guide to Traffic Generating Developments* (reproduced below) are of more relevance when considering the local road network's capacity to cater for additional traffic.

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

As Avery's Lane would become a major collector road for the Avery's Rise Residential Estate its environmental capacity is considered to be 500 veh/hr maximum.

The Traffic Impact Assessment for Buchanan Ridge indicates that with the additional traffic from the approved development together with the existing traffic on Averys Lane would be approx. 155 veh/hr in the peak time and as such the minor increase in traffic from potential 14-lot development (10 veh/hr) will ensure that traffic volumes on Avery's Lane will remain below the environmental or maximum capacity.

The Traffic Study submitted with the Buchannan Ridge Estate Application for the 175 residential lot subdivision found (in part) that the following the overall impact that that development on the surrounding road network:

- Existing traffic volumes on the local road network are within the technical and environmental capacity standards determined by Austroads and the Transport for NSW.
- The local road network is currently operating satisfactorily with good levels of service and little if any delay for motorists.
- The local road network has capacity to cater for additional traffic associated with new development in the area.
- The local road network currently has sufficient spare capacity to cater for the additional traffic generated by this development without adversely impacting on either current level of service experienced by motorists on the road or the residential amenity of existing residents.
- SIDRA modelling of the John Renshaw Drive / Avery's Lane intersection has shown the intersection currently operates satisfactorily during both the AM and PM peak periods and would continue to do so post development and with 10 years traffic growth to 2024. Average delays, LoS and 95 % back of queue lengths all remain at acceptable levels based on the RMS assessment criteria.

The above statements remain true when the additional minor traffic flows are added, from the potential 14 lot subdivision, onto the surrounding road network.

7. Vehicle Access for proposed Lot 10A and 10B

With respect to the proposed two lot subdivision as mentioned above each of the existing dwellings are serviced by separate access points. (see below) The proposed subdivision (2 lots) proposed to retain the existing driveway The location of these existing vehicle crossings has adequate sight distance.

Existing Access to Proposed Lot 10B

Existing Access to proposed Lot 10A

8. Vehicle Access for potential 14 lot subdivision of Proposed Lot 10B

As shown in Appendix A it is intended that a perimeter road would be established around the extremities of proposed Lot 10B. This proposed road will have the following features

- Wil serves as part of the bushfire protection,
- Will be connected in the south to the proposed roundabout detail above, and
- Be connected in the north to the proposed extension of Averys Lane provided in Stage 1 of the above-mentioned Buchanan Ridge Estate.

Base on the above information adequate vehicular access can be provide for the potential of an additional 14 lots on proposed Lot 10B.

9. Pedestrian and Cycle Facilities

The Cessnock City Council DCP for the Avery's Village Urban Release Area specifically states that the following infrastructure will be required due to the increased demand generated by residential development in this area.

- A shared pedestrian path / cycleway along the full length of the "urban" component of Avery's Lane and Heddon Street to Main Road; and
- An off-road shared pedestrian path / cycleway along Main Road, Heddon Greta from Heddon Street to Stanford Street.

Both pathways have been included within the S94 Plan for Avery's Village and thus would be subject to contribution from all development land within the urban release area.

The approved Buchanan Ridge Estate's Road design has included enough road reserve width in the Avery's Lane extension and in the internal road network to allow for the connection to the above facilities.

It is considered that the initial pedestrian and cycle demand from the subdivision may be for school children accessing public transport services at the John Renshaw Drive / Avery's Lane intersection. This demand would however be low, and the proposed 11-meter sealed width of Avery's Lane would provide suitable safe passage for this demand as is the case with most developed areas.

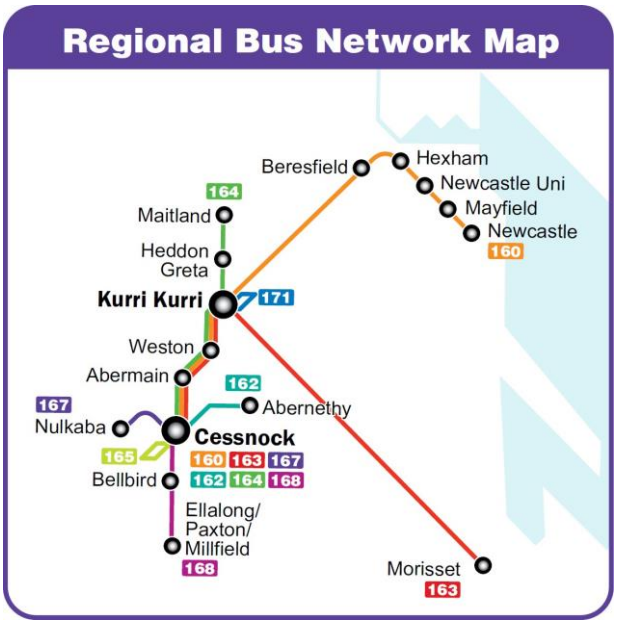
As the adjacent subdivision progresses and the infrastructure in the Section 94 Plans are developed additional facilities will become available to the occupants of the potential 14 Lot subdivision and consequently no additional infrastructure is warranted.

10.Public Transport Facilities

Currently Rover Coaches operates the public transport services (bus) in the Buchanan area. However, Buchanan only lies on the Cessnock to Newcastle Service (Route 160) with the service only picking up from bus stops along John Renshaw Drive.

The nearest bus stops to the proposed subdivision are located near the John Renshaw Drive/ Avery's Lane intersection (approximately 1 km from site).

This service would connect to Cessnock, Kurri Kurri, the University of Newcastle and the Newcastle CBD where connections to other Rover Coaches' bus routes, Newcastle train station and Newcastle Buses & Ferries routes would allow a regular public transport service to a number of shopping and commercial centers as well as other services in the Maitland and Newcastle areas.



Existing Bus Routes.

It is considered that the initial public transport demand from the potential 14- Lot subdivision may be for school children accessing public transport services at the John Renshaw Drive / Avery's Lane

intersection. This demand would however be low, and the proposed 11-meter sealed width of Avery's Lane would provide suitable safe passage for this demand as is the case with most rural areas.

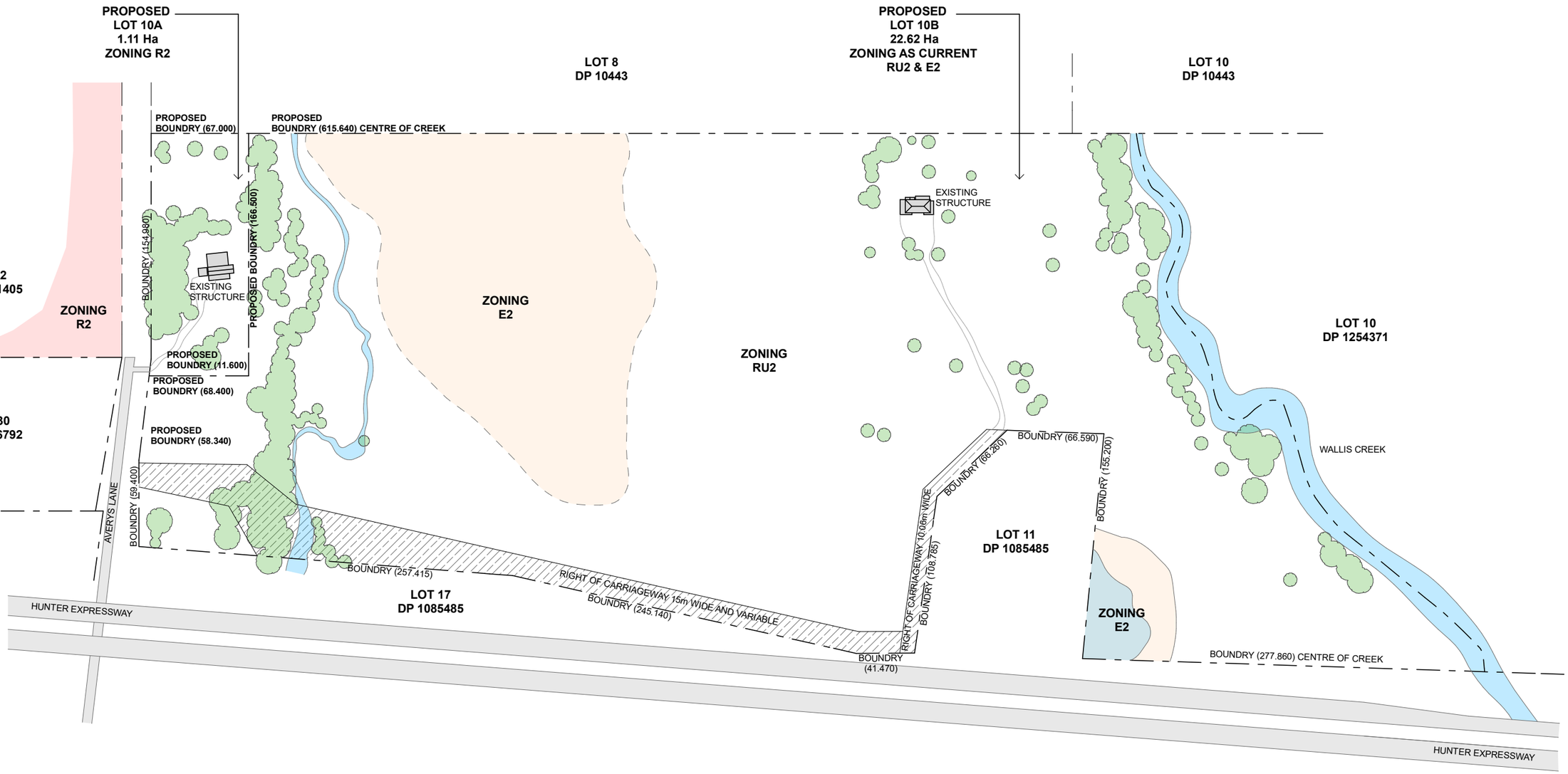
11.Conclusions

This traffic impact assessment for the 2-lot subdivision and the potential of an additional 14 Lot proposed Lot 10B has concluded.

- Existing traffic volumes on the local road network are within the technical and environmental capacity standards determined by Austroads and Transport for NSW.
- The local road network is currently operating satisfactorily with good levels of service and little if any delay for motorists.
- The local road network has capacity to cater for additional traffic associated with new development in the area.
- The potential 14 Lot subdivision upon completion is likely to generate an additional 9 vehicle trips per hour during the AM peak and 10 vehicle trips per hour during the PM peak traffic periods.
- The local road network (when incorporating already approved improvements that are likely to be finalised within the next 12 months) currently has sufficient spare capacity to cater for the additional traffic generated by this development without adversely impacting on either current levels ofservice experienced by motorists on the road or the residential amenity of existing residents.

Based on the findings of this report, Pavey Consulting Services is of the opinion there are no traffic engineering related matters that should preclude approval of this development and rezoning application.

Appendix 1



01 PLAN - Site
NEW WORKS

NOT FOR CONSTRUCTION

REVISION LOG

REV.	CHK	EVENT	DATE
A	BML	CLIENT INFORMATION	26/06/20

Complete Planning Solutions
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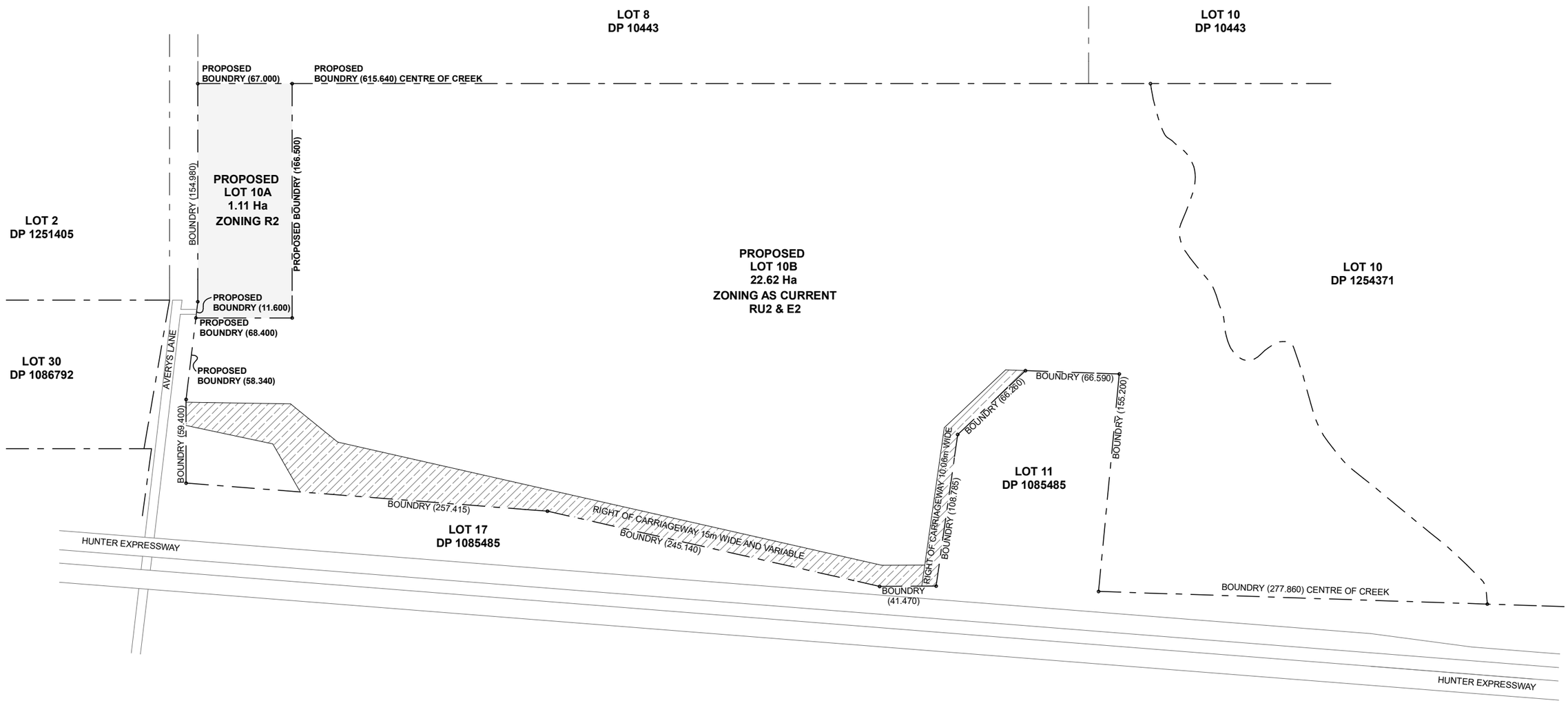
CLIENT Mrs A Shearman
PROJECT 1 into 2 Subdivision
LOT 10 SEC -- DP 1085485
LOCATION 259 Averys Lane, Buchanan, NSW, 2323
DRAWING TITLE PLAN - SITE
SCALE 1:3000 @A3
PRINT DATE 26/06/2020

REVISION. A

DRAWING DA-01
SHEET 2 OF 3

PROJECT 200113



01 PLAN - CONCEPT SUBDIVISION
NEW WORKS

NOT FOR CONSTRUCTION

REVISION LOG

REV.	CHK	EVENT	DATE
A	BML	CLIENT INFORMATION	26/06/20

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CLIENT
Mrs A Shearman

PROJECT
1 into 2 Subdivision

LOT 10 SEC -- DP 1085485

DRAWING TITLE
SUBDIVISION

SCALE
1:3000 @A3

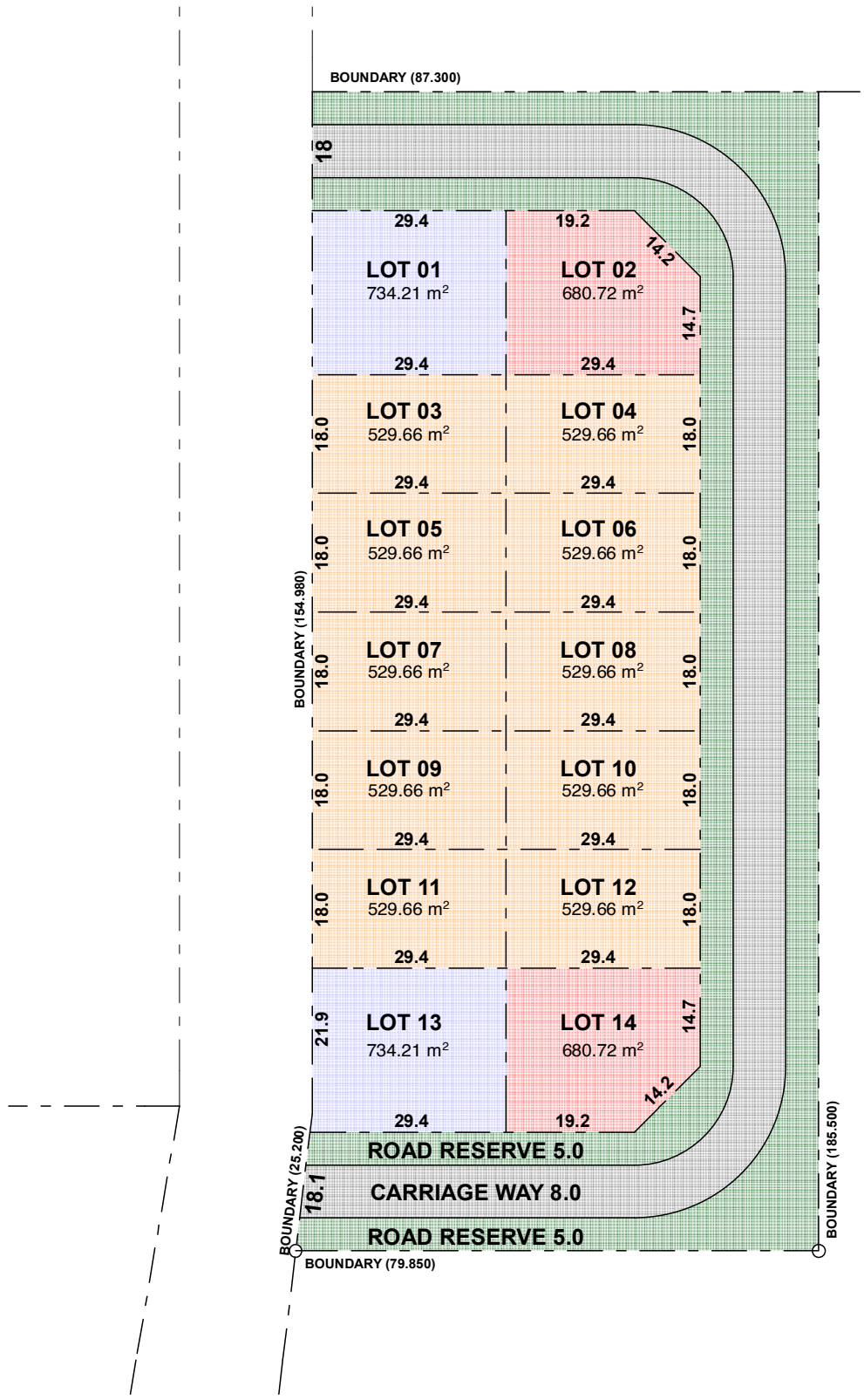
PRINT DATE
26/06/2020

LOCATION
259 Averys Lane, Buchanan, NSW, 2323

REVISION.
A

DRAWING
DA-02
SHEET 3 OF 3

PROJECT
200113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