Preliminary Servicing Strategy

“Golf Course Heights Estate”

For *Lot A D.P.961931 & Lot 11 D.P.546140, Euchareena Road, Molong*

Prepared for

Wakefield Ashurst Developments Pty Ltd

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Revision: B (June 2023)

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1. INTRODUCTION

1.1 Background

At the request of Wakefield Ashurst Developments Pty Ltd, Heath Consulting Engineers has prepared this Preliminary Servicing Strategy assessing the water, sewerage and stormwater servicing required for the future development. Additional servicing advice for electricity and telecommunications was obtained from the relevant authorities for Lot 11 DP546140.

Lot 11 DP546140 already has development approval for a 73 lot 1 acre development with Cabonne Council (DA 2006/251).

A conceptual subdivision pattern was prepared to support the planning proposal. The proposal is likely to generate approximately 632 lots with lot sizes ranging from 673m^2 to 9507m^2.

1.2 Objectives of Report

The objectives of this report are to provide a high-level assessment of the likely water, sewerage, stormwater, electrical and telecommunications servicing that will be required for the future development and whether the existing infrastructure has the capacity to service the future development.

Details presented in this report are subject to change as the development evolves and progresses through the various planning stages.

1.3 Subject Land

The subject land comprises Lot A DP961931, 92 Euchareena Road and Lot 11 DP546140, 168 Euchareena Road, Molong. The site is located approximately 1.0km east of the town centre of Molong and adjoins the eastern town boundary. The site has a total area of 118.79 hectares and is bounded by Euchareena Road to the north, the Molong Golf Course to the northeast, Back Saleyards Road to the east, Marsden Street to the south and Bertie Cole Street to the west.

The topography of the subject land is gently undulating to undulating. Slopes generally range from 3% to 6% with sections up to 10%. To the west the slopes reach 21%. Elevations on the site range from about RL 540 AHD to RL 580m AHD.

Topographic mapping shows that there is a prescribed stream in Lot 11 DP546140 commencing in the lot and traversing through the centre in a north to south direction. There are a series of small dams scattered over the site. This stream and dams are shown on **Figure 1.1**.

LEGEND

- SUBJECT LAND
- EXISTING WATERCOURSE
- NATURAL SURFACE CONTOURS (INTERVAL 0.25m AHD)

THIS PLAN IS PRELIMINARY ONLY. DIMENSIONS, AREAS, EASEMENTS AND FINISHED LEVELS ARE SUBJECT TO SURVEY.

N

EUCHAREENA RD

EUCHAREENA ROAD

MOLONG GOLF COURSE

EXISTING DWELLING

LOT 11 D.P.546140

LOT A D.P.961931

BACK SALEYARDS ROAD

BERTIE COLE ST

DEAN ST.

MARSDEN STREET

21%

14%

21%

9%

6%

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30 0 30 60 90 120 150m

SCALE 1:5000

FIGURE 1.1
SUBJECT LAND

2. WATER SERVICING

2.1 Objectives

The objectives for water supply servicing are to provide a potable water supply that complies with Cabonne Council's requirements and relevant Level of Service (LOS) targets.

2.2 Background Information

The subject land is currently not serviced by a reticulated potable water supply. A non-potable (raw water) supply was constructed to serve Lot 11 DP546140 in recent years. The construction certificate was issued by Cabonne Council for the construction of this supply to service the approved 1 acre development (DA No. 2006/251). This supply connects to the raw water main from the Molong Creek Dam at the intersection of Deight Street and the Mitchell Highway. The supply enters the site along the Saleyards Road boundary, see **Figure 2.1**. The non-potable water was intended for external domestic use only as part of the development with each dwelling requiring a 90,000 litre rainwater tank for domestic potable supply. The use of the non-potable water for irrigation was prohibited by the development consent.

A number of background studies have been completed for Cabonne Council over the last 15 years. The Cabonne Settlement Strategy (August 2012) referenced many of these studies, some of which are listed below.

- Hydroscience (Feb 2009) Joint Integrated Water Cycle Management (IWCM) – Evaluation Study (on behalf of Central Tablelands Water, Weddin/Blayney/Cabonne Shire Councils);
- Cabonne Council (2008) Draft – Strategic Business Plan – Water Supply Schemes ('Draft SBP');
- Cabonne Council (2008) Draft – Drought Management
- Cabonne Council (2008) Development Servicing Plan for Water Supply and Sewerage Schemes; (DSP, 2008)
- Cabonne Council (July 2007) Molong Water Supply – Potential Future Demand;
- Cabonne Council (July 2007) Molong Water Supply – 'Secure Yield' Study;
- Cabonne Council (March 2007) East Molong Rural Residential Zone – Water Supply and Sewerage Strategy Study – Preliminary Assessment and Concept Options ('East Molong 2007 Study');
- SMEC (October 2010) Review of Safe Yield for Molong Creek Dam and Borenore Creek Dam;
- Hydroscience (December 2010) Draft Technical Note – Options & Costing – Joint IWCM Strategy Study (on behalf of Central Tablelands Water, Weddin/Blayney/Cabonne Shire Councils);

- Hydroscience (June 2013) – Joint Integrated Water Cycle Management (IWCM) Detailed Strategy Study (on behalf of Central Tablelands Water, Weddin/Blayney/Cabonne Shire Councils) ('IWCM 2013);

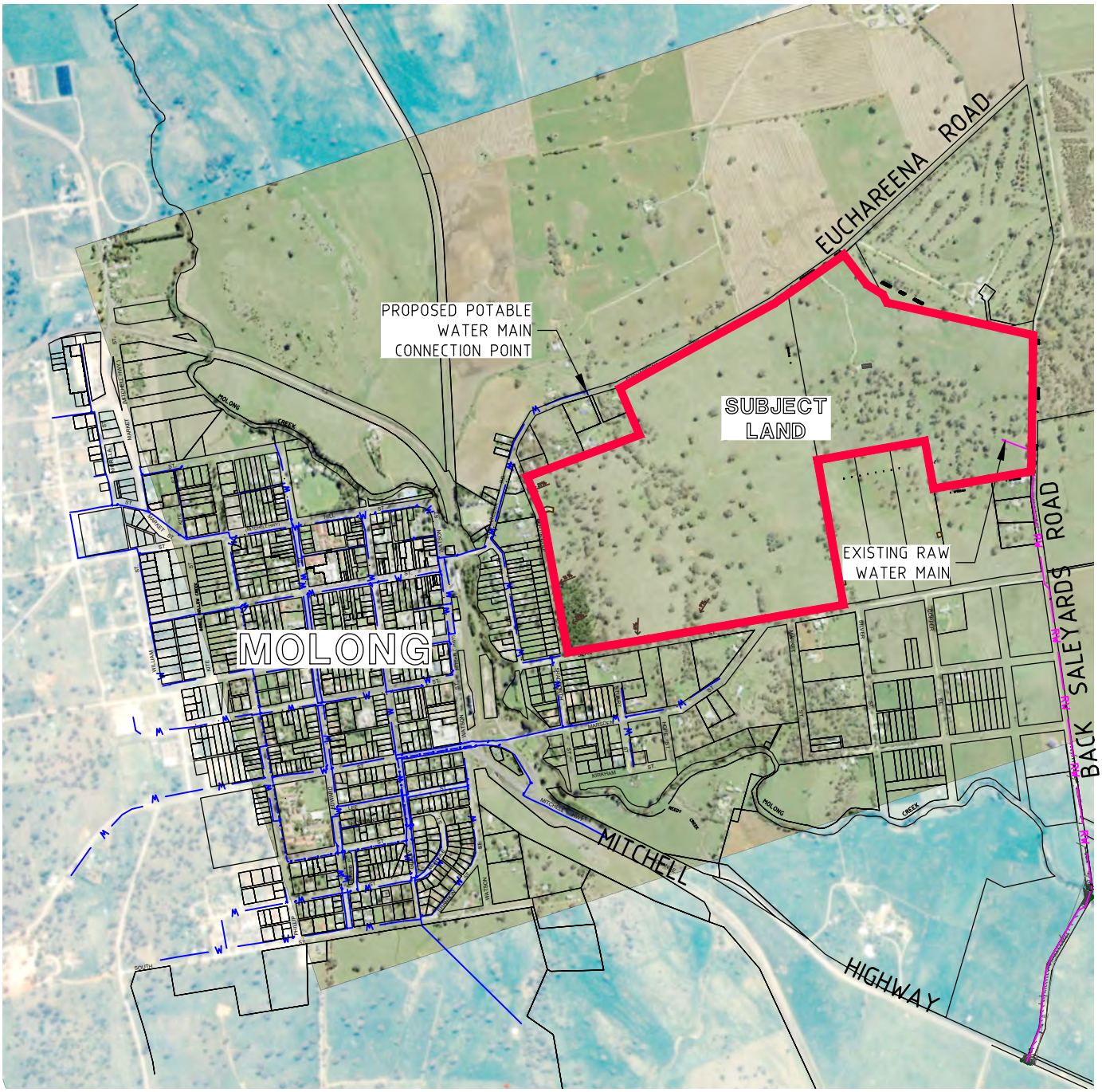
At the time of writing this report we have not been able to obtain copies of these studies.

The Settlement Options Paper – Cabonne Settlement Strategy 2021-2041 (May 2021) (CSS 2021) prepared by iPlan Projects for Cabonne Council provides some commentary on the water supply for the proposed growth areas.

> *"Molong has historically been supplied with water from Molong Dam (& previously Borenore Dam) (Council as the water authority) via the filtration plant in Molong. However, this is not a secure supply and has been a restriction to growth. Recently, a pipeline has been constructed from Orange to Molong to provide emergency water supply. This will reduce the risk of water supply failure but is not intended to support significant growth so additional supplies should be pursued. A new bore is being constructed with 50ML license. The Molong Water Filtration Plant (WFP) is nearing the end of its lifespan and will require significant upgrades in the near future. At this stage Council needs to determine the most cost-effective way to supply water to the town. There is no current additional capacity to extend potable water supply to LLR areas so they mostly rely on rainwater tanks unless otherwise agreed."*

It is understood that there have been many changes to the water supply for Molong and the surrounding Villages in recent years that have impacted on the Molong Water Supply spare capacity. Further, Council have engaged Premise to undertake a study to assist them with their planning of the Molong Water Supply to cater for the future demand. We understand that this study includes the servicing of the subject land.

As Council will be addressing the overall water supply for Molong, this report will only focus on the demand requirement for the subject land.



LEGEND

EXISTING WATER MAINS

RW EXISTING RAW WATER MAIN

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FIGURE 2.1
EXISTING WATER SUPPLY LAYOUT

2.3 Design Criteria

It is envisaged that the Cabonne Council (2008) Development Servicing Plan for Water Supply and Sewerage Schemes; (DSP, 2008), would contain information for the Molong Water Supply with regard to capacity, demand and level of service criteria. At the time of writing this report, this document has not been made available to us. Cabonne Council provided their Strategic Business Plan – Water Supply Schemes, Draft 2008 (SBP, 2008), which provides some information with regard to demand and level of service criteria.

The Wellington Blayney Cabonne Strategic Alliance has "Guidelines for Engineering Works". These guidelines do not provide information with regard to relevant design criteria. Where criteria is not available, suggested values consistent with surrounding water authorities and Water Services Association of Australia (WSAA) Water Supply Code were nominated.

Table 2.1 provides a comparison of the likely demands from both SBP, 2008 and the WSAA Water Supply Code.

Table 2.1: Water Supply Design Criteria

Criteria	Cabonne Council Strategic Business Plan	WSAA Water Supply Code
Peak Hour Demand (PHD)	10L/min = 0.16L/s/tenement = 576L	0.15L/s/tenement = 540L
Average Daily Demand (ADD)	847L/day/tenement Based on 799 connections in 2008. Current connections = 846	No value specified
Peak Daily Demand (PDD)	5000 L/day/tenement *	ADD x Peak Day Factor (2) = 847 x 2 = 1694L Adopt 2000L/day/tenement
Pressure (residual Head)	Minimum 22m Maximum 73m	Minimum 20m Maximum 60m
Temp	No value specified	No value specified but other Water Supply Authorities adopt 10L/s @ 12m residual head
* It is expected that this value does not take into account the BASIX requirements for rainwater use.		

2.4 Preliminary Water Servicing Strategy

The future development will ultimately create approximately 632 lots. For this report the demands on the water supply system were calculated using Equivalent Tenements (ETs). The number of ETs for the subject land was calculated based upon 1 ET per lot.

A total of 632 ETs were used in calculations for the proposal. This number was applied against the key design criteria to determine the following potable water demands:

- Peak Instantaneous Demand PID 94.8 L/s
- PDD 1264 kL
- Average Daily Supply 535 kL/day (195 ML/year)

These water demands do not make allowance for the use of rainwater tanks to satisfy BASIX and as such may be reduced by up to 40%, as the water saving target under BASIX.

The final connection point for the potable supply for the future development will be subject to reticulation modelling and more information being provided by Council once they have completed their additional studies. However, it is envisaged that an extension and augmentation of the water main in Euchareena Road will be required.

A conceptual water main layout is shown in **Figure 2.2** would consist of 100mm and 150mm diameter water mains. This reticulation would be subject to detailed design and modelling once details of Council's system are known.

At this stage no allowance to utilise a non-potable water supply has been allowed for even though the service currently exists. It is envisaged that the raw water may be required in order to provide the potable supply. Part of the existing non-potable reticulation main may be used to provide a secondary connection to the development via Dean Street.

LEGEND

- V — PROPOSED POTABLE WATER MAIN
- RW — EXISTING RAW WATER MAIN
- NATURAL SURFACE CONTOURS (INTERVAL 0.25m AHD)

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EUCHAREENA RD

EUCHAREENA ROAD

MOLONG GOLF COURSE

EXISTING DWELLING

LOT A
D.P.961931

LOT 11
D.P.546140

BERTIE COLE ST.

BACK SALEYARDS ROAD

DEAN ST.

MARSDEN STREET

ROAD 20m WIDE

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30 0 30 60 90 120 150m
SCALE 1:5000

FIGURE 2.2
CONCEPTUAL WATER RETICULATION LAYOUT

3. SEWERAGE SERVICING

3.1 Objectives

The objectives for sewerage servicing are to provide a service that complies with Cabonne Council's requirements and relevant Level of Service (LOS) targets.

3.2 Background Information

The subject land is currently not serviced by sewerage reticulation. The township of Molong is currently serviced by a sewerage system that delivers the sewage to a sewer treatment plant (STP) on the northern boundary of the Molong Township. It is understood that the STP has a capacity of approximately 2000 Equivalent Persons (EP). The nearest gravity mains are located 1.3km to the southwest of the site, see **Figure 3.1**. At the time of writing this report no information has been made available as to the existing capacity of the existing reticulation network or sewage pump stations.

CSS 2021 suggests that the existing *"STP can be progressively upgraded to accommodate growth"*.

3.3 Design Criteria

In the absence of modelling and sewer strategy of the Molong Town Sewerage System, the preliminary design criteria is based upon Water Services Association of Australia (WSAA) Sewage Code of Australia flow estimations. For this report the demands on the sewer reticulation system were calculated using Equivalent Tenements (ETs). The number of ETs for the subject land was calculated based upon 1 ET per lot.

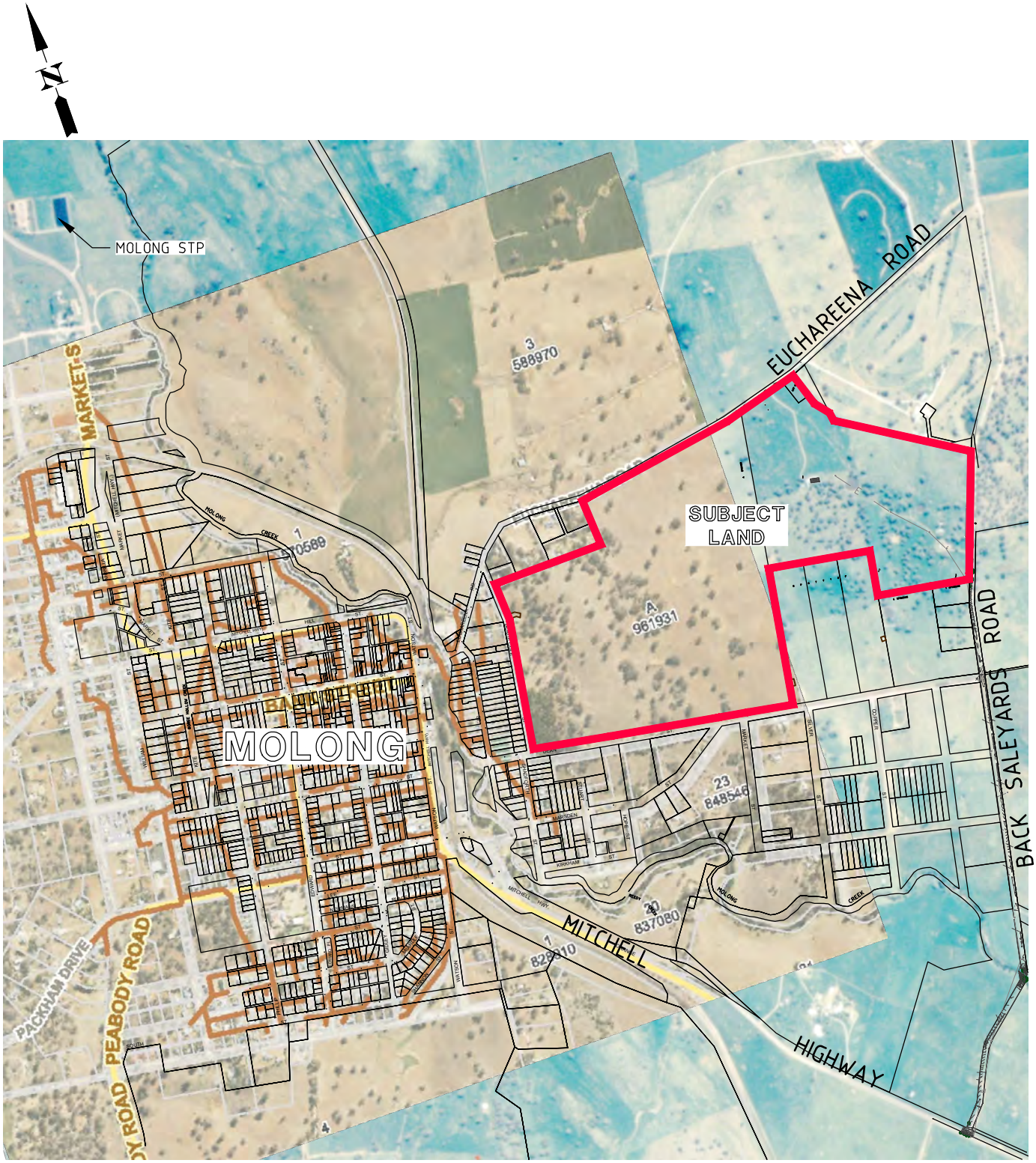
A total of 632 ETs were used in calculations for the future development.

3.4 Preliminary Sewerage Servicing Strategy

The proposal will create a total of 632 ET's. Based upon Water Services Association of Australia (WSAA) Sewage Code of Australia Calculations in **Table 3.1**, the calculated maximum design flow is **31L/s**.

The undulating topography of the site creates up to eight (8) likely catchments for sewerage servicing within the subject land. These catchments are shown in **Figure 3.2.** Subject to details being provided of Cabonne Council's existing reticulation network, it is envisaged that catchment S1 and S2 could be serviced by an extension of Council's gravity sewer network. Catchments S3 to S8 will either require individual sewage pump stations or require sewage pump stations to be provided further downstream where the site catchments combine. For example, a single sewage pump station could be constructed on Marsden Street that would service catchments S5, S6, S7 and S8 along with future development of the adjoining land.

It is understood that Premise have been engaged by Council to investigate the overall sewerage servicing for Molong and the subject land.



LEGEND

EXISTING SEWER MAINS

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FIGURE 3.1
EXISTING GRAVITY SEWER MAIN

LEGEND

(S1) PROPOSED SEWAGE CATCHMENT NUMBER

PROPOSED SEWER CATCHMENT BOUNDARY

NATURAL SURFACE CONTOURS (INTERVAL 0.25m AHD)

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EUCHAREENA ROAD

MOLONG GOLF COURSE

BERTIE COLE ST.

DEAN ST.

MARSDEN STREET

BACK SALEYARDS ROAD

S1 S2 S3 S4 S5 S6 S7 S8

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30 0 30 60 90 120 150m

SCALE 1:5000

FIGURE 3.2
SEWER CATCHMENTS

Table 3.1 – Sewer Calculations for Design Flow

Golf Course Heights Estate Sewer Calculations

	WSAA Code															
												WSAA Code				
Proposed ET's	**EP/ET=**	**EP**	**ADWF (L/s)**	**Area (ha)**	**d**	**PDWF (L/s)**	**POR Wet**	**GWI (L/s)**	**Aeff (ha)**	**F contain**	**Fsize**	**I1,2**	**I**	**C**	**IIF (L/s)**	**Design Flow (L/s)**
		ET x (EP/ET)	0.021xEP			PDWF = d x ADWF	% Sewer System Under GWL	0.025 x A x PORWet	Area x (Density/150)^0.5	Table B3	(40/A)^0.12	IFD Table	I 1,2 x Fsize x Fcontain	Table B1	0.028 x Aeff x C x I	Design Flow = PDWF + GWI + IIF
632	**3.00**	1896	3.98	**118.79**	2.42	9.62	**10%**	0.30	38.75	**1.50**	0.88	**24.60**	32.38	**0.60**	21.08	31.0

4. STORMWATER MANAGEMENT

4.1 Objectives

The objectives for Stormwater Management are to provide a stormwater management system that complies with Cabonne Council's requirements.

4.2 Background Information

The subject land is wholly contained within the Macquarie-Bogan River Catchment which drains to Molong Creek. There is a prescribed stream (Class 1) that runs centrally though Lot 11 DP546140 in a North to South direction along with a series of small dams scattered throughout the site.

4.3 Design Criteria

Stormwater runoff from the site would be managed on site to achieve the following objectives:

- Pit and pipe reticulation design to safely convey storm events up to and including the 10% Average Exceedance Probability event (AEP) with natural channels and roadways to convey the 1% AEP event;
- Zero increase in post-development peak flows over the existing case for storm events up to and including the 1% AEP event.

4.4 Preliminary Stormwater Servicing Strategy

A pit and pipe stormwater reticulation system would be designed to safely convey the 10% AEP event. This is to limit the runoff into adjacent blocks in the development. Major overland flow paths are to be directed along roadways and drainage reserves (natural channels) and into stormwater detention basins.

The conceptual stormwater management plan includes a series of constructed stormwater detention basins to limit discharge and control runoff to pre-development flow rates.

4.5 Hydrology

A hydrological assessment was carried out using Intensity Frequency Duration and rainfall data in accordance with Australian Rainfall & Runoff 2019 (ARR2019) which was derived from the Australian Rainfall & Runoff Hub and from the Bureau of Meteorology respectively for Molong. The subject land was assessed under two scenarios:

- Existing pre-development scenario to determine the pre-development runoff from the site; and
- Post-development mitigated scenario - the proposed developed site including stormwater detention basins.

4.6 DRAINS Analysis

The DRAINS model is a rainfall/runoff storage network routing model used to model large urban or rural catchment areas and was adopted for this study. The model allows runoff parameters to be amended to simulate the impact of development (e.g. increase of impervious surfaces) and estimate the hydraulic performance of stormwater network elements such as pits and pipes and detention basins.

The Watershed Bounded Network Model (WBNM) hydrological method was adopted within DRAINS to model the large rural catchments to determine the pre-developed flow rates. This model allows rainfall losses to be reflective of the land use and soil type.

The ARR2019 Initial Loss-Continuing Loss (IL-CL) hydrological model was adopted for the future development site to assess stormwater detention requirements. This model was adopted as it is more suited to urban catchments.

A description of the models and results for each of the two scenarios is provided below.

4.6.1 Existing Pre-Development Scenario

The existing catchments for the subject land are shown in **Figure 4.1.**

A DRAINS model for the existing pre-development scenario representing these existing catchments is shown in **Figure 4.2**. The adopted catchment areas, percent impervious and catchment slopes are summarised in **Table 4.1**.

Table 4.1: Existing Catchment Characteristics used in Model

Catchment	Catchment Area (ha)	Percent Impervious (%)	Flow Path Length (m)	Flow Path Slope (%)	Retardance Coefficient (n)
C-1	17.1	0	380	12.5	0.15
C-2	16.36	0	485	4.0	0.15
C-3	3.15	0	180	6.5	0.15
C-4	10.49	0	350	6.0	0.15
C-5	24.5	0	430	4.5	0.15
C-6	18.57	0	430	4.5	0.15
C-7	14.55	0	370	2.5	0.15
C-8	4.625	0	170	4.5	0.15
C-9	24.07	0	1100	2.5	0.15

LEGEND

PROPOSED STORMWATER CATCHMENT

① PROPOSED CATCHMENT NUMBER

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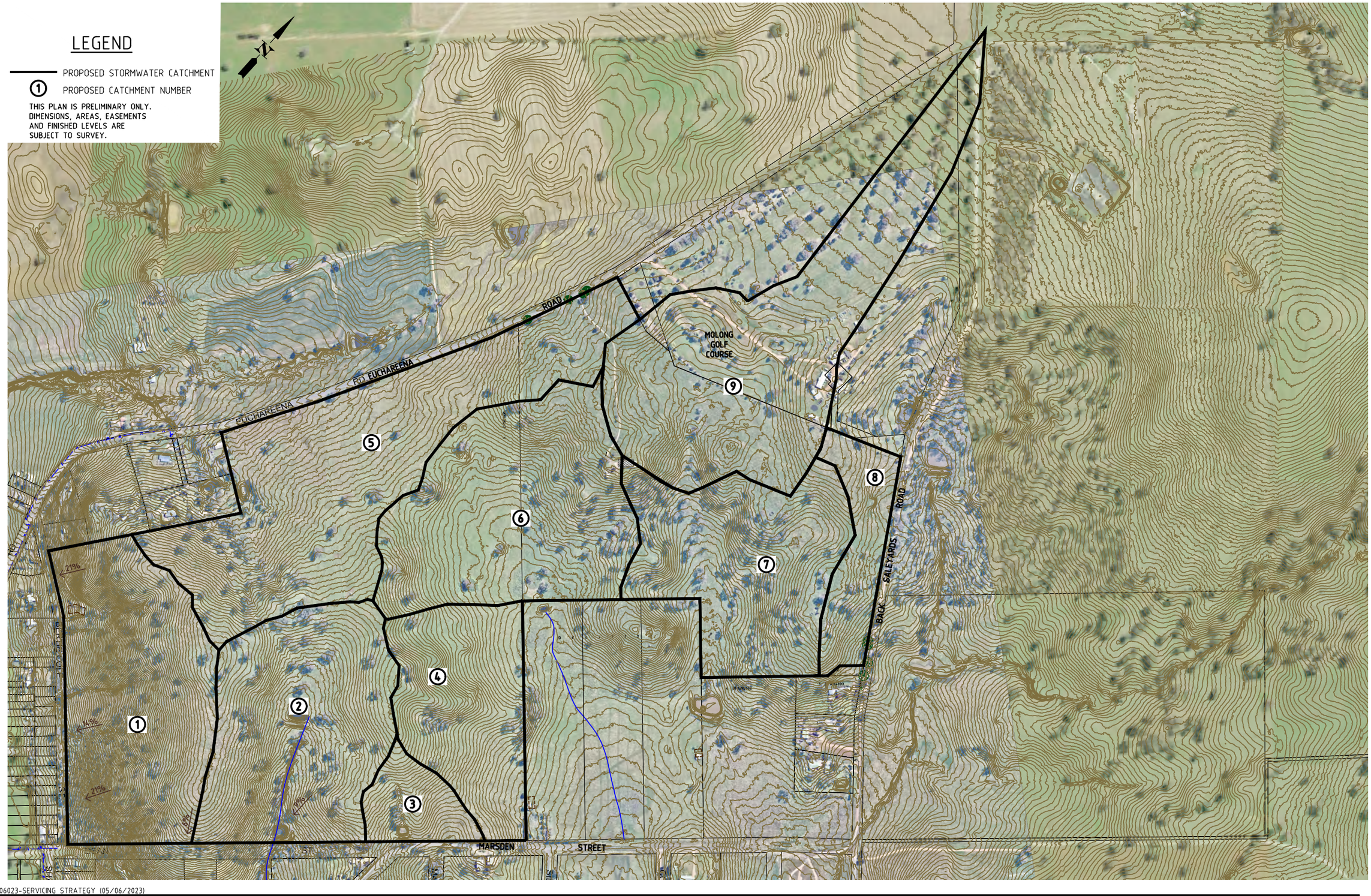

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40 0 40 80 120 160 200m
SCALE 1:7500

FIGURE 4.1
PRE-DEVELOPMENT STORMWATER CATCHMENTS

Figure 4.2 – DRAINS Model - Existing Pre-Development Scenario

The model includes the IL-CL hydrological method and adopted the following parameters:

- Impervious area Initial Loss = 1.0mm
- Impervious area Continuing Loss = 0mm
- Pervious area Initial Loss = 8.4mm
- Pervious area Continuing Loss = 1.52mm
- Australian Rainfall and Runoff 2019 rainfall depths and temporal patterns.

The ARR rainfall depths and temporal pattern ensembles were run for the 10% Annual Exceedance Probability (AEP) storms and the 1% AEP storms for durations from 5 minutes up to 72 hours. Peak flows were measured at the discharge location downstream of the catchments with the peak flows for the critical storms listed in **Table 4.2**.

Table 4.2: Existing Catchment Hydrology Results

Catchment	Existing Peak Flow (m^3/s)	
	10% AEP	1% AEP
C-1	1.835	3.734
C-2	1.158	2.307
C-3	0.402	0.833
C-4	0.953	1.931
C-5	1.869	3.846
C-6	1.417	2.915
C-7	1.049	2.096
C-8	0.547	1.161
C-9	0.921	1.846
Total	**10.151**	**20.669**

4.6.2 Post-Development Mitigated Scenario – Proposed Developed Site incorporating Stormwater Detention

The catchments for the development of the subject land are shown in **Figure 4.3.**

A DRAINS model representing the proposed developed catchments is shown in **Figure 4.4**. The model allowed for the changes in imperviousness for the proposed roads, dwellings, driveways and sheds. The adopted catchment areas, percent imperviousness and catchment slopes are summarised in **Table 4.3**.

Stormwater detention basins were provided in eight (8) locations to suit the site topography and stormwater outlet locations. The conceptual stormwater detention basins are shown in **Figure 4.5.**

Table 4.3: Post Developed Sub-Catchment Characteristics used in Model

Catchment	Catchment Area (ha)	Percent Impervious (%)	Flow Path Length (m)	Flow Path Slope (%)	Retardance Coefficient (n)
C-1	17.1	10	300 300	12.5 12.5	0.013 0.15
C-2	16.36	30	450 450	4.0 4.0	0.013 0.15
C-3	3.15	50	120 50	6.0 6.0	0.013 0.15
C-4	10.49	50	300 50	6.0 6.0	0.013 0.15
C-5	24.5	40	400 50	4.5 4.5	0.013 0.15
C-6	18.57	40	300 500	4.5 4.5	0.013 0.15
C-7A	8.255	30	200 150	4.0 4.0	0.013 0.15
C-7B	6.29	40	200 250	2.5 2.5	0.013 0.15
C-8A	2.71	50	120 50	6.0 6.0	0.013 0.15
C-8B	1.91	40	120 50	4.5 4.5	0.013 0.15
C-9A	15.03	0	880	2.5	0.15
C-9B	9.046	35	200 50	4.0 4.0	0.013 0.15

LEGEND

PROPOSED STORMWATER CATCHMENT

① PROPOSED CATCHMENT NUMBER

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N

MOLONG GOLF COURSE

ROAD

RD EUCHAREENA

EUCHAREENA

BACK

SALEYARDS

ROAD

MARSDEN STREET

1 2 3 4 5 6 7A 7B 8A 8B 9A 9B

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40 0 40 80 120 160 200m
SCALE 1:7500

FIGURE 4.3
POST-DEVELOPMENT STORMWATER CATCHMENTS

Figure 4.4 –DRAINS Model – Proposed Developed Site Incorporating Stormwater Detention

The ARR rainfall depths and temporal pattern ensembles were run for the 10% AEP storm and the 1% AEP storm for durations from 5 minutes up to 72 hours. Peak flows were measured at the discharge outlets for each stormwater detention basin with the peak flow from the site for the critical storms listed in **Table 4.4**.

Table 4.4: Post Developed Catchment Hydrology Results

Catchment	Post Developed Peak Flow (m^3/s)	
	10% AEP	1% AEP
C-1	1.98	4.07
C-2	0.969	1.751
C-3	0.302	0.424
C-4	2.00	3.87
C-5	1.62	3.65
C-6	0.633	1.268
C-7A + C-7B + C-9A + C-9B	1.928	3.26
C-8A	0.17	0.236
C-8B	0.34	0.651
Totals	**9.942**	**19.18**

The peak outflows from the site for the post-developed scenario were compared against the peak outflows for the pre-developed scenario. The results are shown in **Table 4.5** and indicate that the post-development flows are less than the pre-development flows for the Subject land. Some catchments C-1, C-4 and C-6 slightly exceed the predevelopment flows by less than 10%. This could be alleviated for Catchments C-4 and C-6 if one large basin was constructed further downstream on adjoining land as indicated in the overall concept plan.

Table 4.5: Comparison of Pre & Post Developed Flows for the Site

Catchment	Peak Flows (m^3/s)			
	10% AEP		1% AEP	
	Pre-Development	Post Development	Pre-Development	Post Development
C-1	1.835	1.98	3.734	4.07
C-2	1.158	0.969	2.307	1.751
C-3	0.402	0.302	0.833	0.424
C-4 + C-6	2.37	2.633	4.846	5.138
C-5	1.869	1.62	3.846	3.65
C-7A + C-7B + C-9A + C-9B	1.97	1.928	3.942	3.26
C-8A + C-8B	0.547	0.51	1.161	0.887
Totals	**10.151**	**9.942**	**20.669**	**19.18**

Details of the conceptual stormwater detention basins incorporated into the DRAINS model are summarised in **Table 4.6**.

Table 4.6: Stormwater Detention Basin Details

Stormwater Detention Basin Location	Storage Volume Required for 1% AEP
OSD 2	2280m^3
OSD 3	730m^3
OSD 5	5700m^3
OSD6	6560m^3
OSD 7A	2700m^3
OSD 7B	1900m^3
OSD 9B	2400m^3
OSD 8A	780m^3

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30 0 30 60 90 120 150m
SCALE 1:5000

FIGURE 4.5
CONCEPT STORMWATER BASINS

5. TELECOMMUNICATION SERVICING

5.1 Objectives

The objectives for telecommunication servicing are to provide a service that complies with Cabonne Council's and relevant statutory requirements.

5.2 Background Information

The subject land is currently serviced by fixed wireless via the National Broadband Network (NBN). The Molong township is serviced by the NBN with fibre to node.

5.3 Preliminary Servicing Advice

The NBN were contacted with regard to the provision of a telecommunications service for the development. They have advised that the future development could be serviced by a fibre connection. The extent of any backhaul requirements would not be determined until such time as the development progresses through the various planning stages.

The NBN advice is included in Appendix A.

6. ELECTRICAL SERVICING

6.1 Objectives

The objectives for electrical servicing are to provide a service that complies with Cabonne Council's requirements and relevant statutory requirements.

6.2 Background Information

The subject land is currently serviced by Essential Energy network with overhead powerlines traversing the eastern extremities of the subject land.

6.3 Preliminary Servicing Advice

Essential Energy were contacted with regard to the provision of an electrical service for the development. They have advised that the future development is located close to the Molong Zone Substation and "*The distribution network in the vicinity is quite strong and there are potential 11kV supply options from both Euchareena Road and Back Saleyards"*. As the development is likely to occur over many years they advise that the network capacity will likely change and would need to be reassessed as each stage is developed.

The advice from Essential Energy is included in Appendix B.

7. REFERENCES

The Cabonne Settlement Strategy (August 2012)

The Settlement Options Paper – Cabonne Settlement Strategy 2021-2041 (May 2021) (CSS 2021) prepared by iPlan Projects

Water Services Association of Australia (WSAA) Water Code of Australia

Water Services Association of Australia (WSAA) Sewage Code of Australia WSA 02-2002

8. GLOSSARY OF TERMS

AHD	Australian Height Datum.
ET	Equivalent Tenement – The basic unit of measure used to describe sewage flow from contributing sources as a ratio to that flow expected from a single average residential sewer.
kL	Kilolitre – unit of volume measurement.
kPa	Kilopascal – unit of pressure measurement.
ML	Megalitre – unit of volume measurement.
Non-Potable Water	Water not suitable for drinking purposes.
PDD	Peak Daily Demand – The maximum water supply demand on any one day (24 hour period) of the year.
STP	Sewage Treatment Plant.
WTP	Water Treatment Plant.

APPENDIX A

Advice from National Broadband Network

Roger Heath

From: Allison Rodgers
Sent: Thursday, 1 June 2023 10:19 AM
To: Roger Heath
Subject: Fwd: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]

Sent from my iPhone

Begin forwarded message:

> **From:** Greg Clifford <gregclifford@nbnco.com.au>
> **Date:** 1 June 2023 at 9:41:15 am AEST
> **To:** Allison Rodgers <allison@heathce.com>
> **Subject: RE: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]**
>
> Thanks Allison. **NBN** can certainly service this development. Let me know if there is anything else I can do. Thanks Greg

Greg Clifford
Senior Account Manager, New Developments

M +61 419 492 745 | **E** gregclifford@nbnco.com.au
100 Mount Street, North Sydney, NSW, 2060

nbn acknowledges and pays respects to the traditional custodians of all the lands upon which we work.

From: Allison Rodgers <allison@heathce.com>
Sent: Friday, May 26, 2023 3:02 PM
To: Greg Clifford <gregclifford@nbnco.com.au>

Subject: [External] RE: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]

EXTERNAL SENDER ??? Be cautious opening Links and Attachments
Hi Greg,

It's probably a bit early, we are only at the rezoning stage at the moment.

We were just chasing up whether it is doable for NBN or not for the site.

Thank you,

Allison Rodgers

Heath Consulting Engineers
351 Summer Street
PO Box 2501 ORANGE NSW 2800
Ph. 02 6360 0755

From: Greg Clifford <gregclifford@nbnco.com.au>
Sent: Friday, May 26, 2023 2:59 PM
To: Allison Rodgers <allison@heathce.com>
Subject: RE: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]

Thanks Alison. That site has grown. Did you want me to submit an application which our Planning team can assess the backhaul for the site or is it too early? Thanks Greg

Greg Clifford
Senior Account Manager, New Developments

M +61 419 492 745 | **E** gregclifford@nbnco.com.au
100 Mount Street, North Sydney, NSW, 2060

<image001.png>

From: Allison Rodgers <allison@heathce.com>
Sent: Thursday, 25 May 2023 3:00 PM
To: Greg Clifford <gregclifford@nbnco.com.au>
Subject: [External] RE: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]

EXTERNAL SENDER ??? Be cautious opening Links and Attachments
Hi Greg,

There are 685 Lots in total.

Thank you,

Allison Rodgers

Heath Consulting Engineers
351 Summer Street
PO Box 2501 ORANGE NSW 2800
Ph. 02 6360 0755

From: Greg Clifford <gregclifford@nbnco.com.au>
Sent: Thursday, May 25, 2023 2:59 PM
To: Allison Rodgers <allison@heathce.com>
Subject: RE: 168 Euchareena Road, Molong (Commercial In Confidence) [Commercial - Anyone]

Hi Allison,

Yes I'm still the Account Manager for all new developments for this area. Can you confirm the size of the development (lots to be service) as we have flexibility with pricing now based on the size of the development. I can submit an application which our Planning team can review and advise if there is any backhaul charge however given Molong is already live via our FTTN technology, I wouldn't think it would incur a backhaul charge. Happy to help either way. Thanks Greg

Greg Clifford
Senior Account Manager, New Developments

M +61 419 492 745 | **E** gregclifford@nbnco.com.au
100 Mount Street, North Sydney, NSW, 2060

<image001.png>

From: Allison Rodgers <allison@heathce.com>
Sent: Wednesday, 24 May 2023 1:45 PM
To: Greg Clifford <gregclifford@nbnco.com.au>
Subject: [External] RE: 168 Euchareena Road, Molong (Commercial In Confidence)

EXTERNAL SENDER – Be cautious opening Links and Attachments
Good afternoon Greg,

I am not sure if your still involved in this area still, but further on from our email in August 2021, I have attached the latest layout for this proposal.

The site area has grown quite a bit, we are only at planning proposal stage at the moment.

I am just wondering if you previous advice is still Vaid.

Thank you,

Allison Rodgers

Heath Consulting Engineers
351 Summer Street
PO Box 2501 ORANGE NSW 2800
Ph. 02 6360 0755

From: Greg Clifford <gregclifford@nbnco.com.au>
Sent: Wednesday, August 18, 2021 11:06 AM
To: Allison Rodgers <allison@heathce.com>
Subject: RE: 168 Euchareena Road, Molong (Commercial In Confidence)

Hi Alison,

Thanks for sending this through. Yes **NBN** would service this development given the lot size (295). **NBN** would service this site with fibre however I don't know if any backhaul chargers would be applicable taking into account if there is no existing infrastructure in-place. I can request our Planning team review the area prior to an application being submitted or an application can be made and our Planning team will assess the site. I can organise for one of our Sales Team to call to discuss if that works. Thanks Greg

Kind regards,

Greg Clifford
Relationship Manager
New Developments | Enterprise | Customer Engagement | Operations
M +61 419 492 745 | **E** gregclifford@nbnco.com.au

Level 6, 100 Mount Street, North Sydney NSW 2060

APPENDIX B

Advice from Essential Energy

Roger Heath

Subject: FW: Subdivision enquiry

From: Andrew McIntyre <andrew.mcintyre@essentialenergy.com.au>
Sent: Wednesday, June 7, 2023 5:55 PM
To: Roger Heath <roger@heathce.com>
Cc: Colum Hopkins <colum.hopkins@essentialenergy.com.au>
Subject: RE: Subdivision enquiry

Roger

Sorry for the delay on this one but it is a bit more complicated.

To get a definitive response you should submit a connection enquiry via our Portal because I may not be aware of all connection applications which may impact this part of the network and this information provided can change with changes to the network.

However, as a general comment on the proposal I can provide the following:-

As discussed, it is expected that this number of lots would be a significant increase in load on the Molong network and would occur over a significant time period (possible 20+years). As a result of this, the available network capacity will likely change over the timeframe of the development and hence the capacity available would need to be reassessed as each stage is developed.

The distribution network in the vicinity is quite strong and there are potential 11kV supply options from both Euchareena Road and Back Saleyards Road. At this stage, it is likely there will be capacity available in these existing lines for the development, but the full load of development will need to be spread across both feeders and hence a connection between feeders through the development will be required to facilitate this. This will also allow for potential changes to the load distribution on the network over the timeframe of the development. It is likely that other load growth on the Molong network, along with the load increases from this development, may require upgrades to the capacity of the Molong network over the timeframe of the development, and whilst there are potential options to increase the capacity of the network in the vicinity, the funding requirements for this increase would need to be determined at the time.

Regards,
Andrew McIntyre
Manager Planning – Sth
Strengthen & Electrify
CAAM
Certified Associate in Asset Management
☎ 02 6391 5377 | 0429 924 518 | Ext: 55377
andrew.mcintyre@essentialenergy.com.au
PO Box 5730 | Port Macquarie | NSW 2444 | essentialenergy.com.au
General enquiries: 13 23 91 | Supply interruptions (24hr): 13 20 80
essential energy

From: Roger Heath
Sent: Wednesday, May 24, 2023 10:10 AM

To: Andrew McIntyre <andrew.mcintyre@essentialenergy.com.au>
Cc: Stephen Davies <stephen.davies@essentialenergy.com.au>
Subject: RE: Subdivision enquiry

Hi Andrew,

I hope you are well. It has been a while.

The below planning proposal has not been lodged yet and is now being extended to include Lot A DP961931, 92 Euchareena Road. This now takes the total number of lots proposed to approx. **635**.

It would be appreciated if you could advise what affect would this have on the below advice?

Regards
Roger Heath

Heath Consulting Engineers
351 Summer Street
PO Box 2501
ORANGE NSW 2800

Ph. 02 6360 0755