



30 CHINBIBLE AVENUE,  
MULLUMBIMBY NSW 2482



17<sup>TH</sup> JUNE 2024

CIVIL ENGINEERING  
SERVICES REPORT



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## DOCUMENT CONTROL

Revision number	Description	Prepared	Reviewed	Issued	Issue date
A	Client comment	MK			6/3/24
B	Final draft	MK	JN	MK	31/5/24
C	Development Application	MK	JN	MK	17/6/24

**Document title:** Civil Engineering Services Report

**Document number:** J1201\_CESR

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## 1. INTRODUCTION

Ingen Consulting P/L has been engaged by Sked No.2 Pty Ltd to prepare a Civil Engineering Service Report to accompany a development application with Byron Shire Council for a multi dwelling housing and strata subdivision of proposed Lot 7 under DA10.2024.151.1 at 30 Chinbible Avenue, Mullumbimby NSW 2482.

### 1.1. Scope

The purpose of this report is to summarise the engineering aspects of the proposed development, particularly:

- Road network and site access
- Flooding
- Earthworks
- Stormwater management and drainage
- Water supply
- Sewer servicing

Each of the items above will be assessed per relevant Australian Standards and local government policies and guidelines.

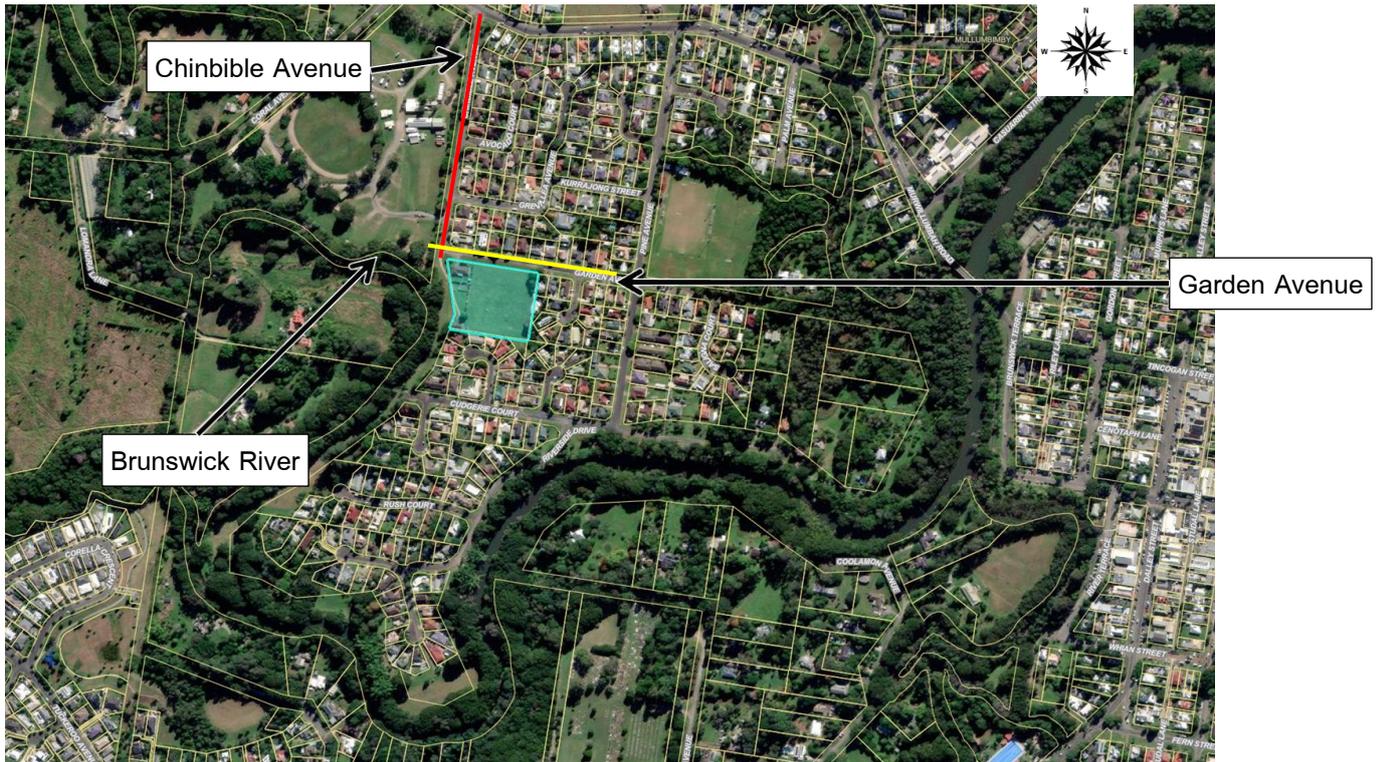
### 1.2. Site description

The subject site is situated in Mullumbimby. Its address is at 30 Chinbible Avenue, Mullumbimby NSW 2482, with Lot/Plan number registered as Lot 159 DP 755687, and the site has an area of 12,340 m<sup>2</sup> (measurement based on detail survey provided by Usher & Co) in total fronting Brunswick River, Chinbible Avenue and Garden Avenue, as shown in Figure 1. The development is limited to proposed Lot 7 under DA10.2024.151.1. Proposed Lot 7 provides an area of 8716.8m<sup>2</sup>. The 'subject site' in this report is limited to that area.

The site currently contains a residential dwelling, with some sheds, two driveways, horse stables and a paddock (Figure 2).

A separate Development Application has been submitted for the torrens title subdivision of the original lot to create 6 additional torrens title lots as shown in Figure 3.

Proposed lot 7 is the subject lot of this current Development Application for a strata title subdivision.



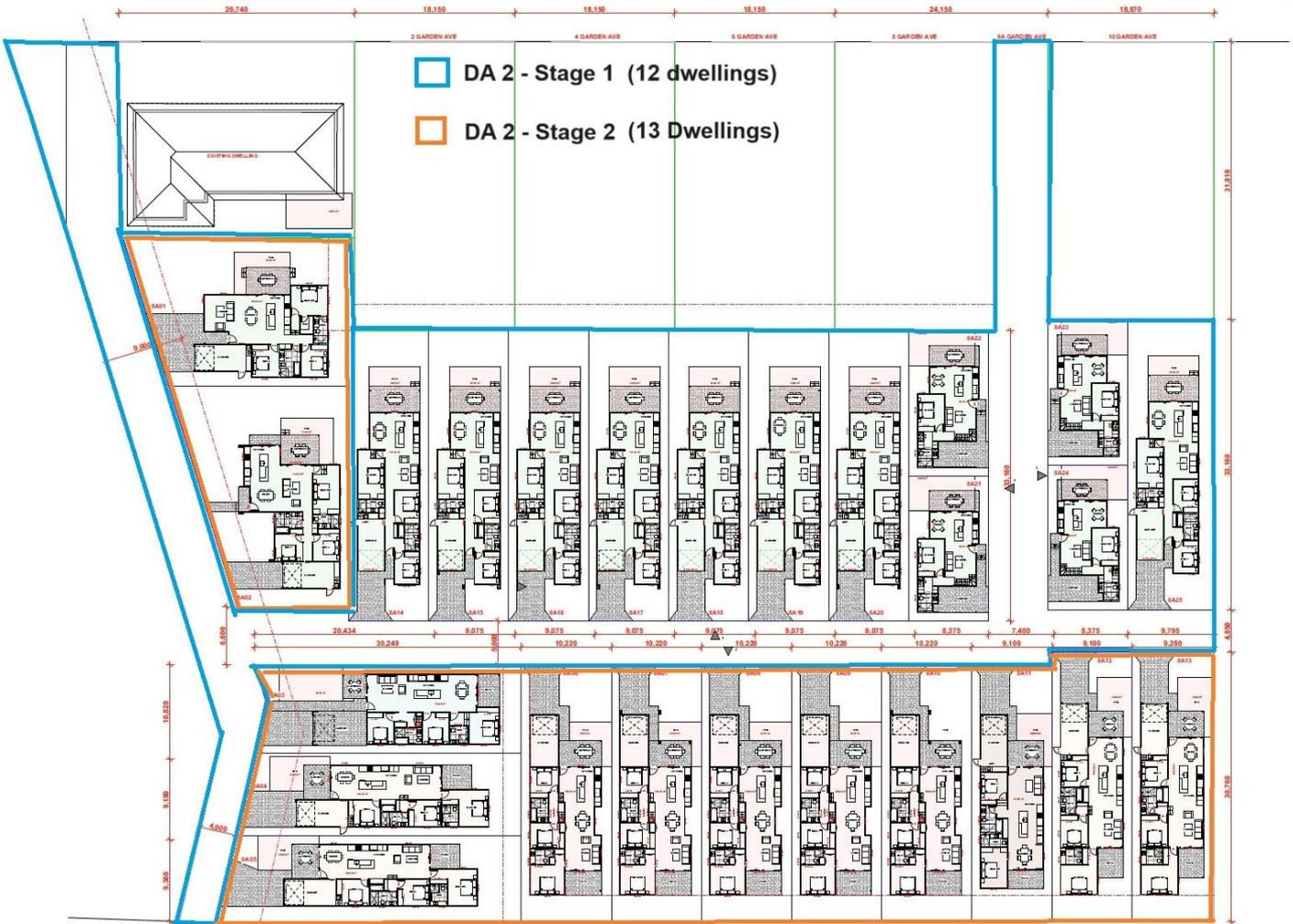
**Figure 1 | Site location, Source of the map: Byron Shire Council Online Map Tools**



**Figure 2 | Subject site aerial image, Source: Usher & Co**



The development will be staged with 12 strata lots and dwellings in Stage 1 and 13 lots and dwellings in Stage 2



**Figure 4 | Proposed development, Source: Story Design Collective**

## 2. TRAFFIC

Refer to the Traffic Impact Statement prepared by our office for more detail on this topic.

### 2.1. Site access and manoeuvring

The driveway cross overs and internal circulation roadway are designed to cater for a Medium Rigid Vehicle, as defined in AS 2480.2:2002. This vehicle is an conservative representation of both a typical waste collection vehicle and a fire fighting vehicle. The engineering drawings include a swept path analysis to demonstrate compliant maneuvering and clearances. Adequate sight lines to vehicles and pedestrians can be achieved.

### 2.2. Parking

A total of 7 visitor spaces is required to be provided on site. A total of 10 are shown on the DA drawings as a combination of parallel parking and angled parking spaces spread over the internal circulation driveway. Adequate offsets and widths are achieved for MRV's passing parked cars along the driveway.

### 2.3. Trip generation and traffic impact

The proposed development is estimated to generate 137.5 trips per day and 13.75 trips per hour during the peak hour. There is adequate spare capacity in the adjacent road network to cater for the additional traffic.

### 3. STORMWATER

#### 3.1. Water Sensitive Urban Design

Reference is made to the Stormwater Management Plan prepared for this proposal by our office.

The following lawful points of discharge are available:

- Stormwater pit in Chinbible Avenue, northwest of the site
- Stormwater pit adjacent Rosewood Court, 55m northeast of the site
- Stormwater pit in the public reserve, south of the site.
- The new mountable kerb proposed under a separate DA10.2024.151.1 for this site.
- The underground stormwater infrastructure proposed to be constructed under DA10.2024.151.1, that drains to the Garden Avenue stormwater network.

Connection to the stormwater pit south of the site would require an upgrade of the line to Nightcap Court, due to the fact this pit is very shallow (0.24m) and the outlet pipe is undersized for the development catchment. The northwestern pit is uphill from the site and therefore has limited suitability. The most suitable point of discharge is the stormwater infrastructure proposed under DA10.2024.151.1, that drains to the existing Garden Avenue stormwater network.

Stormwater detention can be achieved by installing rainwater tanks with a 2kL detention volume on all dwellings in stage 1 and 2kL detention in rainwater tanks for all dwellings in stage 2, in addition to a 3kL reuse volume in all stages. All internal driveway pits need to be fitted with SPEL StormSacks or similar. Council's water quality targets are met by connecting all drainage infrastructure to an Atlan FlowFilter treatment device with 25 filter cartridges (14 in stage 1 and an additional 11 in stage 2). This treatment device will already be installed as part of a separate DA for the torrens subdivision, and the additional filters can be added as the subject DA progresses. Under DA10.2024.151.1, discharge from this device will be via a stormwater pipe towards the pit adjacent Rosewood Court. This stormwater pipe will be located behind the new kerb and will cross the existing sewer rising main, which may require localized lowering of the rising main to facilitate this.

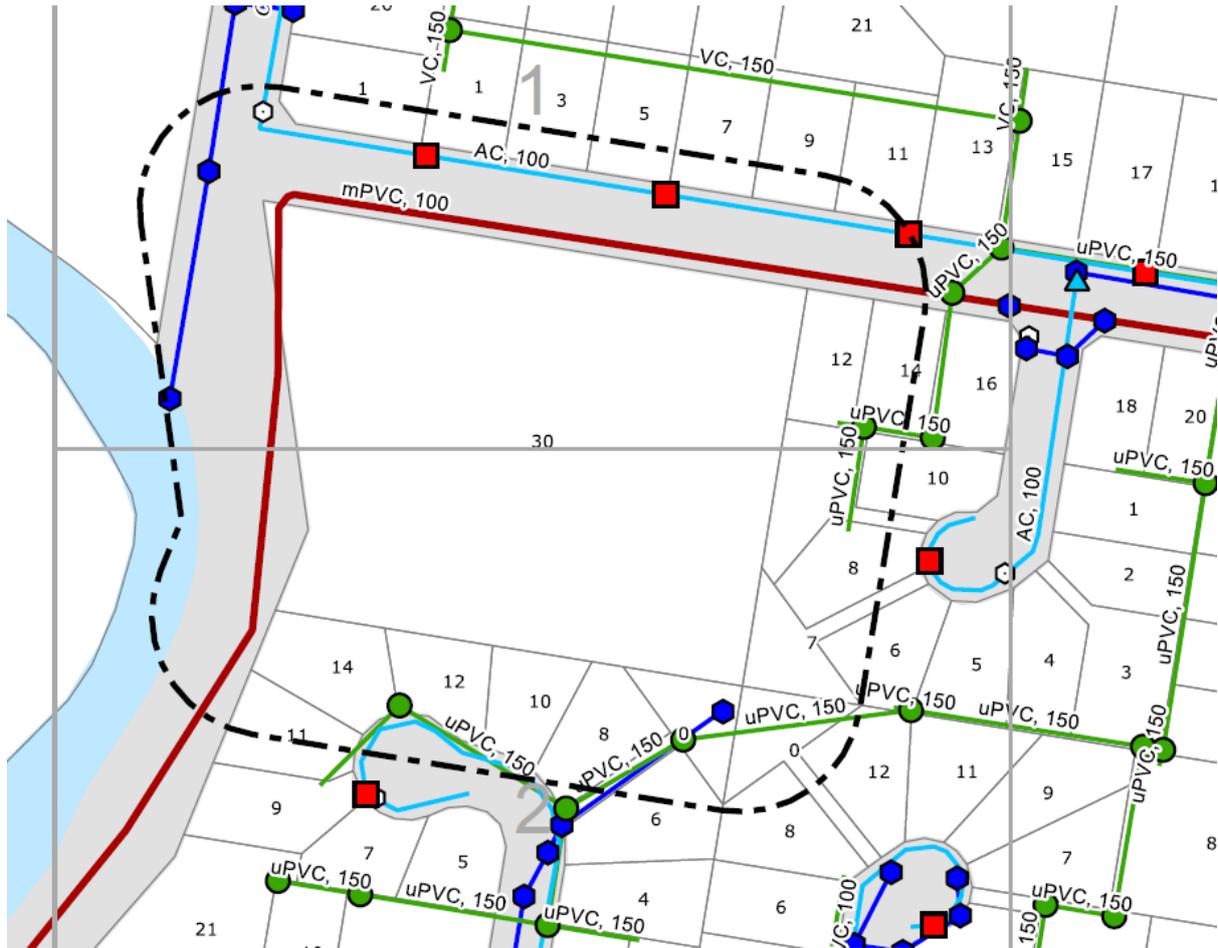


Figure 5 | Byron Shire Council DBYD plan, Source DBYD February 2024

### 3.2. Drainage

All roofwater will be collected in rainwater tanks and then discharged to stormwater pits in each strata lot. These will be surface inlet pits fitted with Stormsacks also picking up runoff from non-roofed areas. These are connected to the drainage system that collects all internal driveway runoff, and conveys this runoff to the in-ground treatment device in Lot 6 of DA10.2024.151.1.

The drainage system has been designed to carry the 20% AEP storm within the pipe network. This matches the design storm for roof gutters and downpipes. Larger storms will result in a portion of surface flow. All surface flows are assessed as 'safe' up to and including the 1% AEP storm event flow. The driveway is designed as a concrete V-shaped driveway to convey all overland flow towards the Garden Avenue kerb.

## 4. FLOODING AND EARTHWORKS

This chapter summarised the outcome of the Flood Assessment prepared by RMC Property Group Pty Ltd for this project.

### 4.1. Flood Planning Level

RMC have determined the flood planning levels for the site to vary between 7.542 and 8.196m AHD, as shown in Figure 6. The RMC report also states that the site is not affected by the 1% AEP flood hazards. The site also does not fall within the fill exclusion zone.

Table 1 Flood Planning Levels

Lot No.	Projected 2050 Flood Planning Level (m AHD)	Lot No.	Projected 2050 Flood Planning Level (m AHD)
1	8.132	6	7.542
2	7.875	7	N/A (Public reserve)
3	7.769	8	8.196 (Future strata subdivision of this lot shall have separate FPLs for each future strata lot)
4	7.647		
5	7.575		

Figure 6 | Flood Planning Levels, Source: RMC 2024

### 4.2. Development Control Plan

Based on the Byron Shire Development Control Plan C2, the RMC report draws the following conclusions:

- No minimum fill level required
- All habitable floor levels to be at or above the 2050 FPL
- All buildings to have a suitable 'shelter in place' above the PMF level
- All buildings to be constructed with flood compatible material up to the PMF level
- All buildings to be structurally sound for the force of floodwater, debris and buoyancy up to the PMF level
- The proposal has no flood effects up to and including the 1% AEP.
- Flood evacuation plan has been supplied.

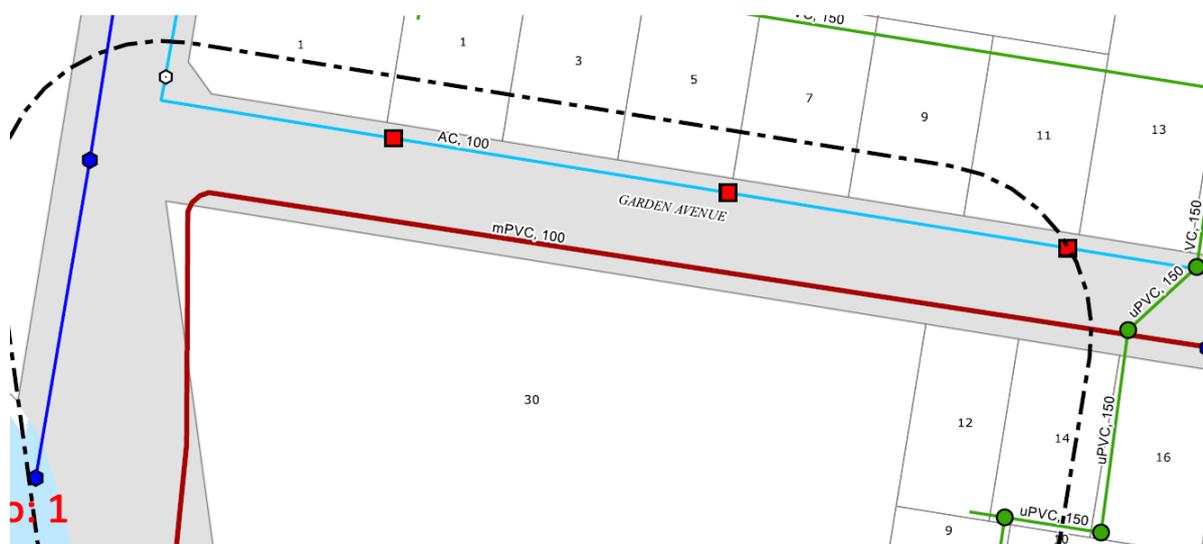
### 4.3. Earthworks

It is proposed to not import any fill. Any earthworks on site will be minimal and will be for site levelling and grading only, to ensure adequate drainage can be achieved.

## 5. UTILITIES

### 5.1. Potable water

There is an existing  $\varnothing 100\text{mm}$  water main in the northern verge of Garden Avenue, for the frontage of the site. It is proposed to tee off this main in two locations, both in front of the proposed new access driveways, to construct an on-site ring main to service the site. All future dwellings will have a metred property connection off this proposed ring main.



**Figure 7 | Services in Garden Avenue, Source: DBYD February 2024**

The Byron Shire Policy – Water and Sewer Equivalent Tenements 2018 prescribes the following water ET rates for multi-residential lots with a lot size less than  $450\text{m}^2$ :

- 1-bedroom unit: 0.40
- 2-bedroom unit: 0.60
- 3-bedroom unit: 0.80

**Table 1 | Water ET's per stage**

Item	Stage 1	Stage 2
1-bedroom unit @ 0.40ET	4 x 0.40 = 1.60 ET	0
2-bedroom unit @ 0.60ET	0	1 x 0.60 = 0.60 ET
3-bedroom unit @ 0.80ET	8 x 0.80 = 6.40 ET	12 x 0.80 = 9.60 ET
<b>Total ET</b>	<b>8.00 ET</b>	<b>10.20 ET</b>
Daily water use @ 630L/day/ET	5040 L/day	6426 L/day

Daily reuse volume (100L/day/dwelling)	1200 L/day	1300 L/day
<b>Net ET increase</b>	<b>3840 L/day</b>	<b>5126 L/day</b>

## 5.2. Fire fighting supply

The proposed on-site ring main will also be used for fire fighting supply. There are two existing fire hydrants in Garden Avenue along the frontage of the site, and another 3 fire hydrants are proposed to be constructed on site to service the development, as per advice by the fire safety consultant.

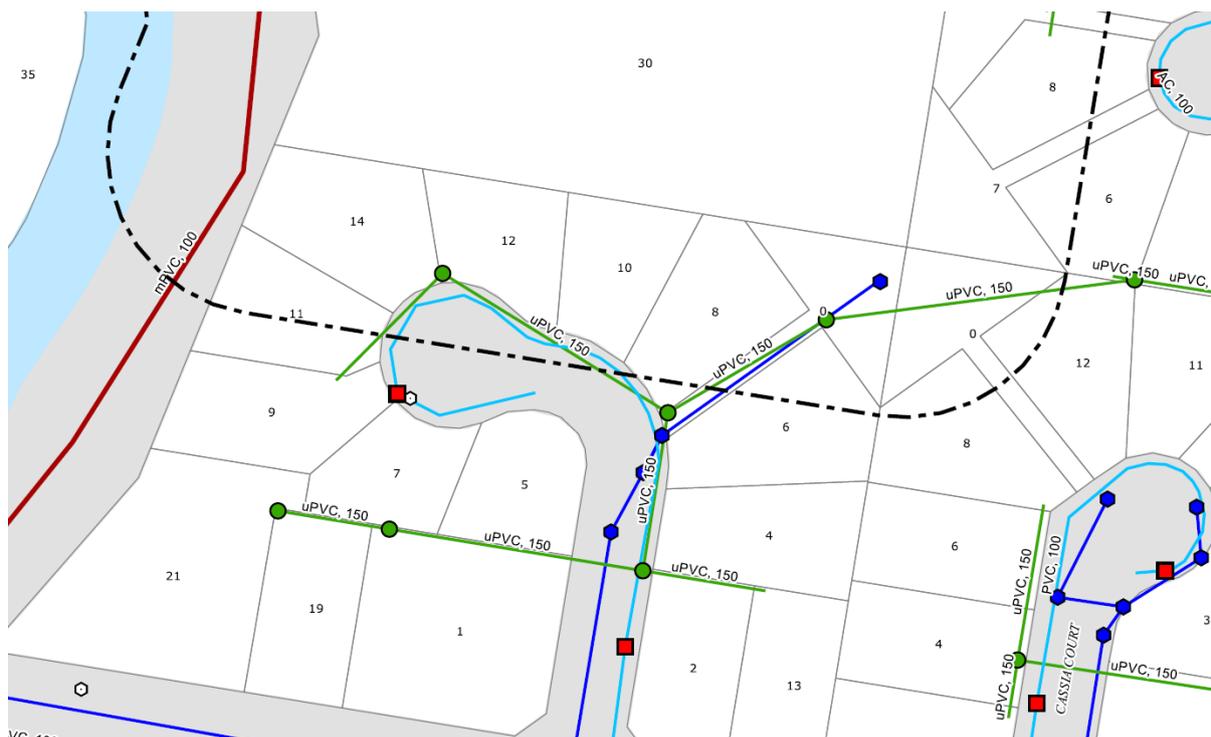
## 5.3. Waste water

Existing gravity sewer mains are available north and south of the site. In the north, there is a gravity sewer manhole in front of 14 and 16 Garden Avenue, to the east of the site. The lid level of this manhole is RL6.50m AHD, and the invert level of the outgoing pipe is RL3.09m AHD. Thus the manhole is 3.41m deep. DA10.2024.151.1 proposes connection to this manhole for the torrens title subdivision.

South of the site there is a sewer manhole located in the public reserve as shown in Figure 8. The lid level of this manhole is RL7.14m AHD and the invert level of the outgoing pipe is RL5.57m AHD. Thus this manhole is 1.57m deep. Both manholes could be used for the discharge of sewerage.

The preferred approach for this DA is to connect all waste water to the sewer proposed under DA10.2024.151.1.

Design of all sewer infrastructure within Lot 7 is required to meet AS 3500.2. It does not require to be constructed to a public sewer standard, however following the WSA Gravity Sewerage Code is recommended as it can be considered best-practice for the design of a gravity sewerage system for a multitude of dwellings. The sewer line within Lot 7 (where it does not catch sewage from other torrens lots) will be considered a private drainage line, and not a Council sewer. No easements are required for this section.



**Figure 8 | Services south of the site, Source: DBYD February 2024**

The Byron Shire Policy – Water and Sewer Equivalent Tenements 2018 prescribes the following sewer ET rates for multi-residential lots with a lot size less than 450m<sup>2</sup>:

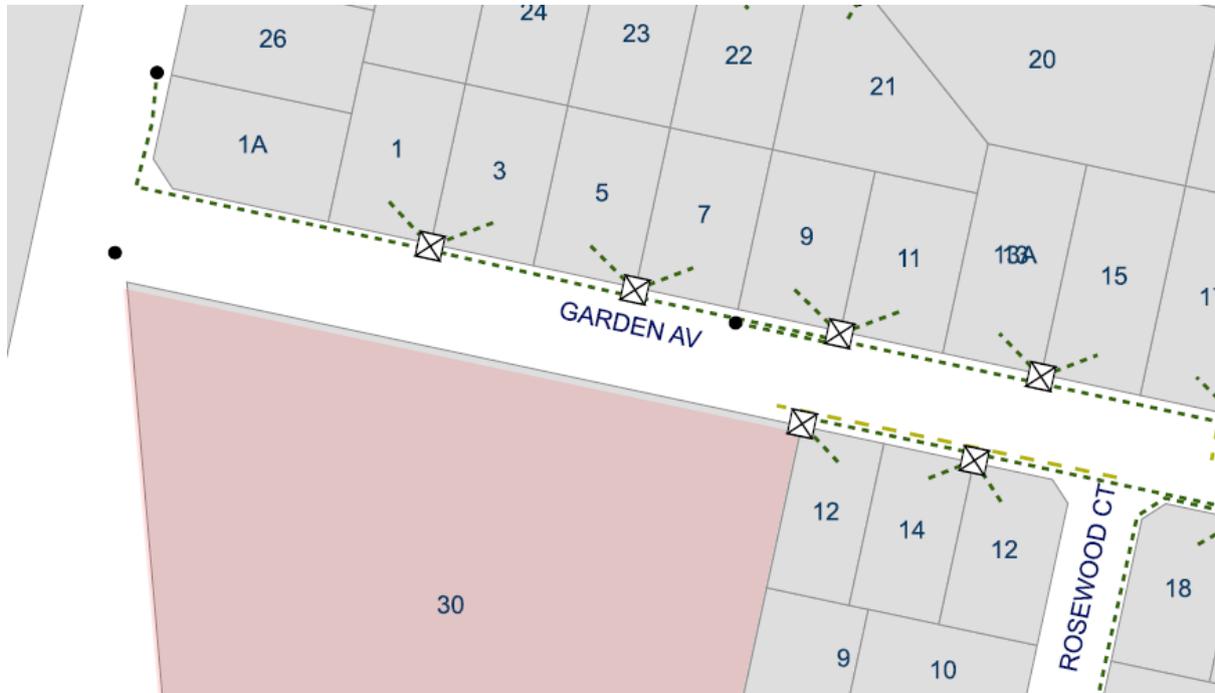
- 1-bedroom unit: 0.50
- 2-bedroom unit: 0.75
- 3-bedroom unit: 1.00

**Table 2 | Waste water ET's per stage**

Item	Stage 1	Stage 2
1-bedroom unit @ 0.50ET	4 x 0.50 = 2.00 ET	0
2-bedroom unit @ 0.75ET	0	1 x 0.75 = 0.75 ET
3-bedroom unit @ 1.00ET	8 x 1.00 = 8.00 ET	12 x 1.00 = 12.00 ET
<b>Total ET</b>	<b>10.00 ET</b>	<b>12.75 ET</b>
Daily waste water generation @ 590L/day/ET	5900 L/day	7522.5 L/day

#### 5.4. Power Connection

Overhead and underground electricity is available along Garden Avenue as shown in Figure 9. The nearest connection point to the site is located adjacent the northeastern corner of the site, on the boundary with 12 Garden Avenue. Any needs for upgrades would need to be determined by others.



**Figure 9 | Electrical services, Source: DBYD February 2024**

#### 5.5. Telecommunication

The Dial Before You Dig plot in Figure 10 shows existing Telstra infrastructure in Garden Avenue adjacent the subject site. There is an existing NBN cable connection within the site as shown in Figure 11. Therefore adequate communications connections are available.





## 6. CONCLUSIONS AND RECOMMENDATIONS

This report demonstrates that adequate engineering services can be supplied for the proposed development, and therefore we recommend that the development should be approved from an engineering perspective.

## REFERENCES

*Australian / New Zealand Standard 2890 series*

*Northern Rivers Local Government Development Design Manual*

*Policy: Water and Sewer Equivalent Tenements 2012, Byron Shire Council, Mullumbimby, 24 May 2007*

*Guide to Traffic Generating Developments, Roads and Traffic Authority, Version 2.2, October 2002*

*Planning for bush fire protection, NSW rural fire service, November 2019*

*30 Chinbible Avenue Mullumbimby Flood Assessment (Draft), RMC Property Group Pty Ltd, Erina NSW  
Rev A, 3 March 2024*