DEVELOPMENT SIGNS

Notice of intention to commence public notification
Section 17.2 of the Development Assessment Rules

DA/17/2023
Sunshine State Developments Pty Ltd and Jamworth Pty Ltd
C/- Development Signs Australia Pty Ltd **admin@developmentsigns.com.au**
07 33 555 030
26 February 2025
Gladstone Regional Council
PO Box 29, Gladstone Qld 4680

RE: Development application for:

PRELIMINARY APPROVAL (VARIATION REQUEST) FOR MATERIAL CHANGE OF USE FOR DWELLING HOUSES, DUAL OCCUPANCY AND MATERIAL CHANGE OF USE UTILITY INSTALLATION AND RECONFIGURING A LOT (1 INTO 20 PLUS BALANCE PARCEL)

Where: CAPTAIN COOK DRIVE, AGNES WATER QLD 4667
On: Lot 2 SP117407

Dear Sir/Madam

In accordance with section 17.2 of the Development Assessment Rules, I intend to start the public notification required under section 17.1 on:

28 February 2025

DEVELOPMENT SIGNS

At this time, I can advise that I intend to:

☒ Publish a notice in:

Gladstone Today
on
27 February 2025

and

☒ Place notice on the premises in the way prescribed under the Development Assessment Rules

27 February 2025

and

☒ Notify the owners of all lots adjoining the premises the subject of the application

26 February 2025

If you wish to discuss this matter further, please contact me on the above telephone number.

Yours sincerely

Ben Dale

26 February 2025

Our Ref: Q21489.1
Your Ref: DA/17/2023
Nicholas Cooper

GOLD COAST | 07 5562 2303
GLADSTONE | 07 4972 3831

info@zoneplanning.com.au
zoneplanning.com.au
Zone Planning QLD Pty Ltd
ABN 13 660 561 704

20 February 2025

The Chief Executive Officer
Gladstone Regional Council
PO Box 29
GLADSTONE QLD 4680

via email: info@gladstone.qld.gov.au
ncooper@gladstone.qld.gov.au

Dear Nicholas,

RESPONSE TO ASSESSMENT MANAGER'S INFORMATION REQUEST
DEVELOPMENT ASSESSMENT RULES 2017 PART 3 S13
PRELIMINARY APPROVAL (VARIATION REQUEST)
COMBINED RECONFIGURING A LOT (1 INTO 20 LOTS PLUS BALANCE PARCEL)
& MATERIAL CHANGE OF USE FOR A RESIDENTIAL MASTER PLAN
CAPTAIN COOK DRIVE, AGNES WATER
(LOT 2 SP117407)

We act on behalf of our clients, Sunshine State Development Pty Ltd and Jamworth Pty Ltd**,** regarding the abovementioned Development Application.

On 10 September 2024 an Information Request was received from Gladstone Regional Council. Pursuant to Section 13.2 of the *Development Assessment Rules 2017*, we provide our response to this Information Request below.

The following information is attached in support of this response:

1. GRC Information Request (**Attachment 1**);
2. Water and Sewerage Technical Note by Covey (**Attachment 2**);
3. Traffic Impact Assessment by Rytenskild Traffic Engineering (**Attachment 3**);
4. Updated Discovery Drive Estate Development Code by Zone Planning QLD (**Attachment 4**);
5. Stormwater Technical Note by Covey (**Attachment 5**); and
6. Categories of Development and Assessment Comparisons (**Attachment 6**).

In accordance with Section 13.2 of the *Development Assessment Rules 2017* this letter and attachments constitute a response to all the information requested.

1. ***Sewerage***
   Provide a Sewer Master Plan (including modelling) for the entire development site to demonstrate that the proposed development will be serviced by appropriate sewerage infrastructure in accordance with Acceptable Outcome 2.1 of the Development Design Code. The assessment shall include:
   a. *A staging assessment to ensure that all infrastructure is appropriately sized and located for each staging horizon.*
   b. *The demand at each of the connection points to Council's existing network (i.e. western and eastern connections).*

RESPONSE

The subject application is for a Preliminary Approval (Variation Request) for a Material Change of Use – Dwelling Houses, Dual Occupancy and Utility Installation and Development Permit for Reconfiguring a Lot – 1 into 20 Lots plus Balance Parcel. Considering the entire master planned development is proposed at a Preliminary Approval level only, no defined lot layout or alignment has been confirmed for either the Low Density Residential or Character Residential Precincts, outside of the 20 lots applied for as part of the Development Permit.

On this basis, a full sewer master plan detailing staging, sizing and location for delivery of infrastructure will not be provided. Alternatively, the attached Water and Sewerage Technical Note completed by Covey (**Attachment 2**) provides an addendum to the previously provides Water Supply and Sewer Network Analysis Report, covering off the anticipated sewer demand for the entire Master Plan area. This operates on the basis of achieving a maximum yield of 325 lots across both the Low Density and Character Residential Zones, with only 255 of these lots connected to reticulated sewer.

The anticipated demand is calculated at a total EP of 791.

The sewer from the development is proposed to discharge 87 lots (3.5 L/s PWWF) to the existing gravity networks at Discovery Drive, Woodrow Drive and Cabbage Palm Drive which ultimately drains to PS01 (refer to the previous report and the study by MWH (2014)). The remaining 168 lots (6.8 L/s PWWF) is proposed to discharge to the proposed sewer pump station SPS_D. SPS_D will discharge to PS08 via a proposed rising main as documented by MWH (2014). The current planned capacity of SPS_D is 64 L/s. SPS_D is expected to have sufficient capacity to service the proposed development. The capacity of SPS_D will be verified with Council as part of a detailed Sewer Network Analysis provided with the first application that proposes to discharge to SPS_D.

TRANSPORTATION SERVICES

The Applicant has not provided a Traffic Impact Assessment for the development as applied for. Details of the new arterial road intersections have not been provided and the intersection of Captain Cook Drive and Discovery Drive has not been assessed for the increase in traffic from both current and the future stages of the development.

Furthermore, Council does not accept the applicant's response to the previous request for further information on the matter, and considers that any development that has the possibility of adding >5% of new trips to the network requires a Traffic Impact Assessment prepared generally in accordance with the Guide to Traffic Impact Assessments be provided to justify any impacts on the network.

2. *Council requests a Traffic Impact Assessment (TIA) for the entire development with specific consideration of treatments required for any staging including stage 1, and identifying any additional trips generated by the new proposed zoning changes.*

RESPONSE

Please see the completed Traffic Impact Assessment undertaken by Rytenskild Traffic Engineering in **Attachment 3**. The assessment outlines that the existing Discovery Drive intersection could accommodate approximately 325 additional lots, without relying on the secondary arterial road connection. Taking this into consideration, Discovery Drive currently has the capacity to accommodate a large portion of the proposed master plan; noting that it would reach full capacity towards the complete delivery of the entire master plan (ie. Low Density Residential Lots and Character Residential Lots). On this basis, the master plan development will not be reliant on the sub-arterial connection to filter traffic back through to the Agnes Water township. Please refer to the Traffic Impact Assessment for further detail.

3. ***Water***
Provide a Water Master Plan (including modelling) for the entire development site to demonstrate that the proposed development will be serviced by appropriate water infrastructure in accordance with Acceptable Outcome 1.1 of the Development Design Code, which will include but not be limited to:
   a. *Development demand loads (and diurnal patten) in EP in accordance with CMDG and Council's Local Government Infrastructure Plan (LGIP) demand generation assumptions*
   b. *The proposed water infrastructure to service the Development with a staging assessment to ensure all infrastructure is appropriately sized and located for each staging horizon.*

RESPONSE

The subject application is for a Preliminary Approval (Variation Request) for a Material Change of Use – Dwelling Houses, Dual Occupancy and Utility Installation and Development Permit for Reconfiguring a Lot – 1 into 20 Lots plus Balance Parcel. Considering the entire master planned development is proposed at a Preliminary Approval level only, no defined lot layout or alignment has been confirmed for either the Low Density Residential or Character Residential precincts, outside of the 20 lots applied for as part of the Development Permit.

On this basis, a full water master plan detailing staging, sizing and location for delivery of infrastructure will not be provided. Alternatively, the attached Water and Sewerage Technical Note completed by Covey (**Attachment 2**) provides an addendum to the previously provides Water Supply and Sewer Network Analysis Report, covering off the anticipated water demand for the entire master plan area. This operates on the basis of achieving a maximum yield of 325 lots across both the Low Density and Character Residential Zones.

Based on the boundary conditions provided by council, the current performance of the existing water network indicates that a proposed extension to the water network may provide adequate flow and pressure to the proposed development both during peak hour and under fire flow conditions. This will need to be reconfirmed with a detailed water supply analysis as part of each subsequent Development Permit for the subdivision.

FLOODING

In the proposed Discovery Estate Development Code, the Applicant is proposing in Table 2.69.1: Assessment Categories of Overlays that, for the Flood Hazard Overlay, all development within a mapped flood hazard investigation area is Accepted Development and is Not Applicable for Assessment Criteria.

4. *Provide a Flood Impact Assessment in accordance with Councils Planning Scheme Policy in order to quantify the actual level of hazard over the subject area.*

RESPONSE

The Applicant has sought to remove the Accepted Development Flood Hazard provisions from the Development Code and has amended the Development Code to reflect the level of assessment and assessment criteria currently found in the Gladstone Regional Council Planning Scheme to ensure any future development in the Flood Hazard Investigation Area completes the necessary flood assessment, if Council's updated flood modelling has not been completed. Please refer to **Attachment 4** for a copy of the updated Development Code.

Furthermore, the Development Permit: Subdivision component of the application is located outside of the Flood Hazard Investigation Area. Taking this into account, no Flood Impact Assessment is considered necessary at this point in time.

STORMWATER

Further information is required to clarify how the proposed stormwater management strategy complies with the relevant requirements.

5. *Based on LIDAR survey, it does not appear that the proposed development site drains to the dam, and rather bypasses to the east as overland flow towards the existing airstrip. Please justify the assumption that the site drains to the dam.*

RESPONSE

The existing catchment contributing flow to the dam was delineated based on the existing topography of the site and flow paths. In the developed scenario, it is proposed to provide a turfed swale to direct a larger catchment to the dam including the proposed Stage 1 development area. Given the design works associated with the construction of a turfed swale connection between the Stage 1 and the existing dam, it is anticipated that run off will travel along this alignment, subject to ongoing maintenance of this drain. No other changes are proposed to the land that would otherwise indicate a worsening of stormwater elsewhere on the premises. Please see the attached Stormwater Technical Note provided by Covey in **Attachment 5** for further detail.

It is further noted that future stormwater management considerations will be required as part of subsequent stages of the subdivision, subject to future Development Permits.

6. *Clarify the maintenance requirements of the proposed swale and pond in order to ensure ongoing water quality treatment capacity is maintained.*

RESPONSE

The proposed swale will need to be mown on a routine basis as part of a maintenance program of works. The proposed swale will be turfed and constructed with 1v:5h batters to facilitate such maintenance. Any scour or blockage within the swale will be identified and repaired as part of this routine maintenance. This will ensure a free-draining condition with appropriate water treatment capacity. In relation to the pond, sediment levels will be routinely monitored to ensure siltation is not occurring. Given the minor size of Stage 1 in relation to the pond catchment area, and the upstream swale, it is anticipated the sediment levels discharging to the pond will be minimal, however, will be assessed on an annual basis.

PLAN OF DEVELOPMENT

Section SC63.6 Varying categories of development and assessment has not been addressed.

7. *Provide an assessment and provide information in accordance with section SC6.3.6 of the Planning Scheme - Varying categories of development and assessment.*

RESPONSE

Please see **Attachment 6** for a breakdown of the comparisons between Council's current Planning Scheme provisions and the proposed Development Code.

8. ***MCU – Public Utility Sewerage Treatment Plant***
   Provide updated planning report and assessment against the relevant codes to include reference to this proposed use with the application.

RESPONSE

The Public Utility Installation component of the Development Application is for Preliminary Approval only. The original application material shows the indicative location of the plant on its trunk infrastructure alignment, adjoining the future sub-arterial, as reiterated below in **Figure 1**.

The Emerging Community Zone Code does not stipulate any assessment criteria for a utility installation to be assessed against. Furthermore, the Development Design Code only requires development to be serviced by appropriate sewerage disposal infrastructure. Given the Sewer Pump Station has been earmarked as essential trunk infrastructure in Council's LGIP, it is considered that the utility installation automatically complies with this element.

The detailed design of the utility installation will be subject to a future Operational Works application once it is required. As a result, no further detail or assessment is proposed for the utility installation at this time.

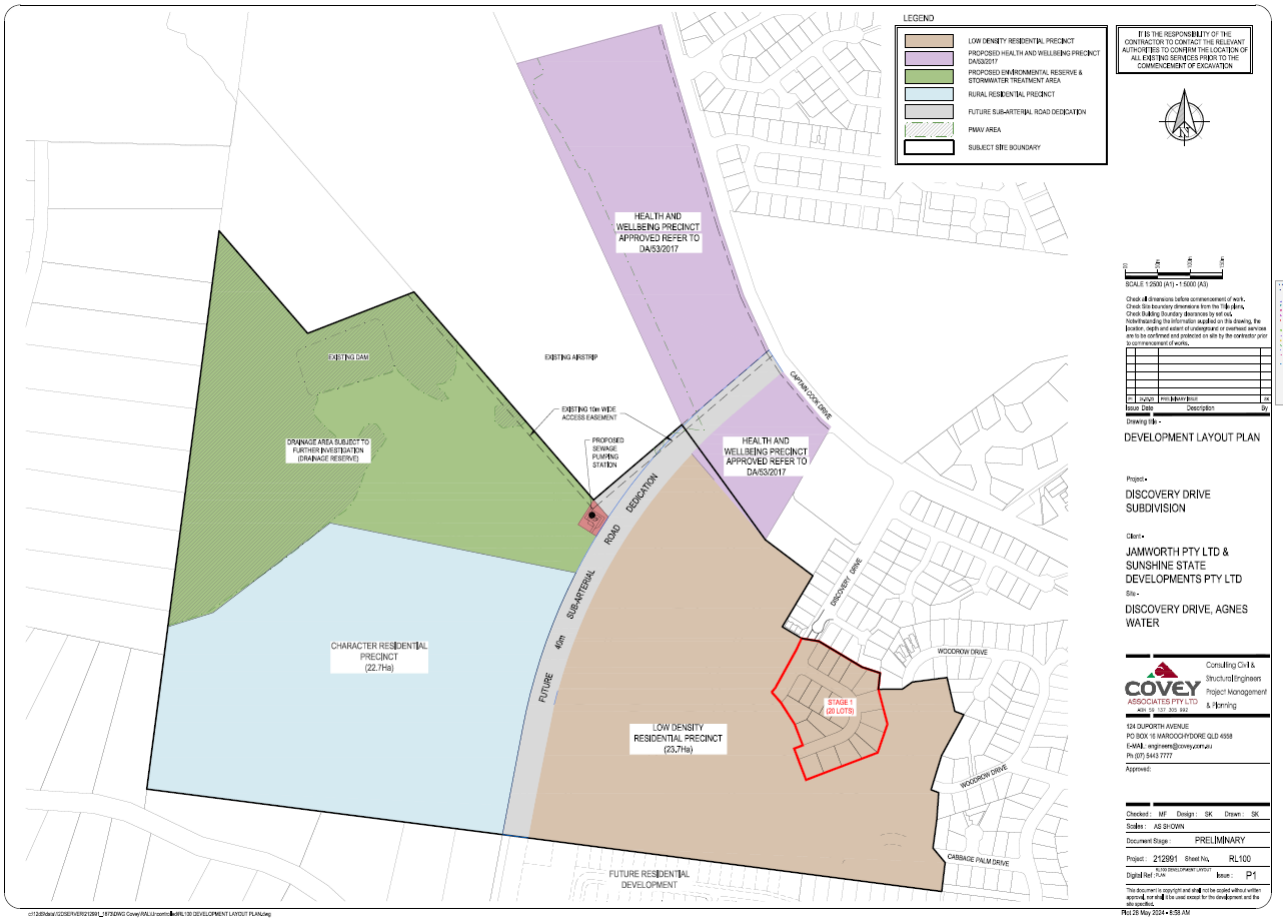


Figure 1: Location of Utility Installation

In accordance with Section 13.2 of the *Development Assessment Rules 2017* this letter constitutes a response to all of the information requested. Therefore, we ask that Council proceed with the assessment of this Development Application.

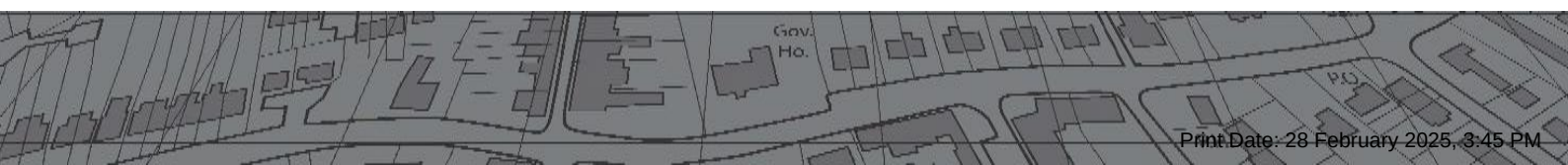
Should you require any further details or clarification, please do not hesitate to contact Sarah Hunt or the undersigned on 07 4972 3831.

Yours sincerely,

Stephen Enders | Director
ZONE PLANNING QLD

ATTACHMENT 1

Copy of Council's Information Request



GLADSTONE REGIONAL COUNCIL

Contact Officer: Nicholas Cooper
Our Ref: DA/17/2023

10 September 2024

Sunshine State Developments Pty Ltd and Jamworth Pty Ltd
C/- Zone Planning Group
PO Box 5332
GLADSTONE QLD 4680

Dear Sir/Madam

INFORMATION REQUEST
PLANNING ACT 2016 S68
DEVELOPMENT ASSESSMENT RULES 2017 PART 3

DA/17/2023 - RECONFIGURING A LOT - IMPACT PRELIMINARY APPROVAL (VARIATION REQUEST) FOR MATERIAL CHANGE OF USE DWELLING HOUSES, DUAL OCCUPANCY & UTILITY INSTALLATION AND RECONFIGURING A LOT 1 INTO 20 PLUS BALANCE PARCEL
LOT 2 SP 117407, CAPTAIN COOK DRIVE, AGNES WATER QLD 4677
LOT 2 SP 117407

Reference is made to the above Development Application and the reissue of the Confirmation Notice issued on 6/09/2024.

Council maintains its view, which has previously been communicated to you, that whilst Council is entitled to issue an information request for development applications, it is not the role of Council to via an information request steer and direct an applicant's application, and through that process, seek to correct any deficiencies in its content or form, or otherwise improve the robustness of an application so that it is better placed for assessment. Council will in this instance be issuing an Information Request to ascertain compliance with certain benchmarks. It is noted that some of the information requested formed part of the previous Information Request and Further Advice Notices.

The information requested is set out below:

<u>Sewerage</u>

1. Provide a Sewer Master Plan (including modelling) for the entire development site to demonstrate that the proposed development will be serviced by appropriate sewerage infrastructure in accordance with Acceptable Outcome 2.1 of the Development Design Code. The assessment shall include:

    a. A staging assessment to ensure that all infrastructure is appropriately sized and located for each staging horizon.
    b. The demand at each of the connection points to Council's existing network (i.e. western and eastern connections).

<u>Note:</u>

a) Council does not provide a copy of their sewerage model to external parties. However, Council will provide Boundary Conditions to enable the applicant to undertake the necessary internal modelling of the site. It is recommended that the Applicant begin discussion with Council as soon as possible to fully understand any additional network augmentations they may trigger.

b) It is noted that the material lodged for the Other Change application included sewerage planning; however, this planning only considered the Stage 1 lots not the entire development site.

c) It is noted that the proposed Character Residential Precinct is outside of the Defined Sewerage Service Area (DSSA). The response to this Information Request Item would need to demonstrate how this precinct would be appropriately serviced with sewerage infrastructure with consideration its location outside of the DSSA.

d) The Applicant's material proposes the construction of SPS E instead of SPS D to provide capacity for the proposed 20 lots in Stage 1. Due to the location of the development site in the SPS D catchment, it is noted that the timing of SPS D would need to be identified in the Sewer Master Plan. Council officers are assessing the impact of the construction of SPS E instead of SPS D as part of Stage 1 and will provide further advice in relation to this aspect.

<u>Transportation Services</u>
Issue:

The Applicant has not provided a Traffic Impact Assessment for the development as applied for. Details of the new arterial road intersections have not been provided and the intersection of Captain Cook Drive and Discovery Drive has not been assessed for the increase in traffic from both current and the future stages of the development.

Furthermore, Council does not accept the applicant's response to the previous request for further information on the matter, and considers that any development that has the possibility of adding >5% of new trips to the network requires a Traffic Impact Assessment prepared generally in accordance with the Guide to Traffic Impact Assessments be provided to justify any impacts on the network.

Requested information:

2. Council requests a Traffic Impact Assessment (TIA) for the entire development with specific consideration of treatments required for any staging including stage 1, and identifying any additional trips generated by the new proposed zoning changes.

<u>Water</u>

3. Provide a Water Master Plan (including modelling) for the entire development site to demonstrate that the proposed development will be serviced by appropriate water infrastructure in accordance with Acceptable Outcome 1.1 of the Development Design Code, which will include but not be limited to:

a. Development demand loads (and diurnal patten) in EP in accordance with CMDG and Council's Local Government Infrastructure Plan (LGIP) demand generation assumptions
b. The proposed water infrastructure to service the Development with a staging assessment to ensure all infrastructure is appropriately sized and located for each staging horizon.

Note:

a) Council does not provide a copy of their hydraulic model to external parties. However, Council will provide Boundary Conditions to enable the applicant to undertake the necessary internal modelling of the site. It is recommended that the Applicant begin discussion with Council as soon as possible to fully understand any additional network augmentations they may trigger.

b) It is noted that the material lodged for the Other Change application included water planning; however, this planning only considered the Stage 1 lots not the entire development site.

c) It is noted that the proposed Character Residential Precinct is outside of the Defined Water Service Area (DWSA). The response to this Information Request Item would need to demonstrate how this precinct would be appropriately serviced with water infrastructure with consideration its location outside of the DWSA.

d) The water master planning should consider trunk infrastructure that may be triggered as a result of the proposed development as defined in the Water Supply Strategic Infrastructure Plan – Agnes Water Supply Scheme.

Flooding
Issue:

In the proposed Discovery Estate Development Code, the Applicant is proposing in Table 2.69.1: Assessment Categories of Overlays that, for the Flood Hazard Overlay, all development within a mapped flood hazard investigation area is Accepted Development and is Not Applicable for Assessment Criteria.

Requested Information:

4. Provide a Flood Impact Assessment in accordance with Councils Planning Scheme Policy in order to quantify the actual level of hazard over the subject area.

Stormwater
Issue:

Further information is required to clarify how the proposed stormwater management strategy complies with the relevant requirements.

Requested information:

5. Based on LIDAR survey, it does not appear that the proposed development site drains to the dam, and rather bypasses to the east as overland flow towards the existing airstrip. Please justify the assumption that the site drains to the dam.
6. Clarify the maintenance requirements of the proposed swale and pond in order to ensure ongoing water quality treatment capacity is maintained.

Plan of Development
Issue:

Section SC63.6 Varying categories of development and assessment has not been addressed.

Requested Information:

7. Provide an assessment and provide information in accordance with section SC6.3.6 of the Planning Scheme - Varying categories of development and assessment.

MCU - Public Utility Sewerage Treatment Plant

Requested Information:

8. Provide updated planning report and assessment against the relevant codes to include reference to this proposed use with the application.

Please note that the next stage of the application process cannot commence until an information request response to this information request and any applicable referral agency's information request has been made by the applicant. A response to this information request may be provided in one of the following three ways:

1. providing all of the information requested together with a written notice asking the Assessment Manager and any applicable referral agency to proceed to the next stage of the application process; or
2. providing part of the information requested together with a written notice asking the Assessment Manager and any applicable referral agency to proceed to the next stage of the application process; or
3. a written notice:
   (i) stating that the applicant does not intend to supply any of the information requested; and
   (ii) asking the Assessment Manager and any applicable referral agency to proceed with the assessment of the application.

Also, please note that if no response is received to this information request or any applicable referral agency's information request within 3 months of the date of this request/s, then the application will automatically transition to the Decision Stage. However, you may obtain from the requesting Authority (ie. Council or a referral agency) an extension of time to respond to the information request. The request for the extension must be in writing and must be received by the requesting Authority prior to the expiry of the three (3) month period. Please refer to Part 3 of the *Development Assessment Rules 2017* for further detail.

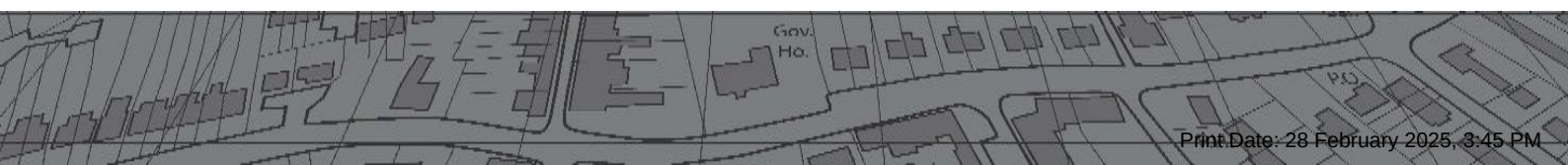
Should you have any queries in relation to this matter, please contact Council's Planning Officer Nicholas Cooper on (07) 4970 0700.

Yours faithfully

T R MCDONALD
PRINCIPAL PLANNING LEAD

ATTACHMENT 2

Water & Sewerage Technical Note



Technical Note – Water and Sewerage

To:	Nicholas Cooper | Gladstone Regional Council
Cc:	Andrew Hunter | ANH Developments
From:	Allister Gaffney | Covey Associates Pty Ltd
Date:	7 February 2025
Subject:	Lot 2 on SP117407 Captian Cook Drive, Anges Water QLD
Project No:	212991
Document No.:	M24-0586Tech
Your Reference:	DA/17/2023

Introduction

Covey Associates has been engaged by Mr Daniel Murphy to prepare a Technical Note for the proposed development at Lot 2 on SP117407 Captain Cook Drive, Anges Water QLD. The technical note is in response to the water and sewerage items in the Gladstone Regional Council information request dated 10 September 2024.

The proposed development is for a residential subdivision with 255 lots which is to be developed in stages. This technical note is an addendum to previously issued Water Supply and Sewer Network Analysis Report (M24-0254Rpt Issue A) which only considered Stage 1 of the development (20 lots). The following sections consider the entire master planned development. The proposed development sewer and water master plan layouts are provided in Attachment A.

Demand

For this assessment the equivalent persons (EP) was determined based on the Master Plan in Attachment A. The total EP for the entire development has been calculated as shown in Table 1. The total demand is **791 EP**. The assumptions used to calculation the total EP were as follows based on the Capricorn Municipal Development Guidelines (CMDG 2022):

- 3.1 EP per detached dwelling

Table 1 – EP Calculation

Development type	Lots	EP Rate	Units	EP Total
Residential Lots	255	3.1	EP per lot	791
			Total	**791**

Sewerage

The following values were adopted based on CMDG (2022) to calculate the sewer design loading:

- Existing sewer EP rate, 1 ET = 2.6 EP
- Developed sewer EP rate, 1 ET = 3.1 EP
- Average dry weather flow, ADWF = 225 L/EP/day
- Peak wet weather flow, PWWF= 5 x ADWF

Using the EP calculation above the sewer loading has been calculated as shown in **Table 2**.

Table 2 – Development Sewer Loading

	Sewer Loading	
Parameter	**L/EP/day**	**L/s**
ADWF	225	2.06
PWWF	1125	10.30

The sewer master plan proposes to discharge sewerage from all lots, excluding stage 1, to the proposed sewer pump station SPS_D. SPS_D will discharge to PS08 via a proposed rising main as documented by MWH (2014). The current planned capacity of SPS_D is 64 L/s. As this pump station has not been constructed to date, it is proposed to increase the design capacity to at least 74.3 L/s (64 + 10.3L/s) to be able to cater for the proposed development. The pump station would be required after the construction of Stage 1. The capacity of the sewer network will need to be confirmed with a detailed sewer network analysis. The location of pump station SPS_D is shown in Figure 1.

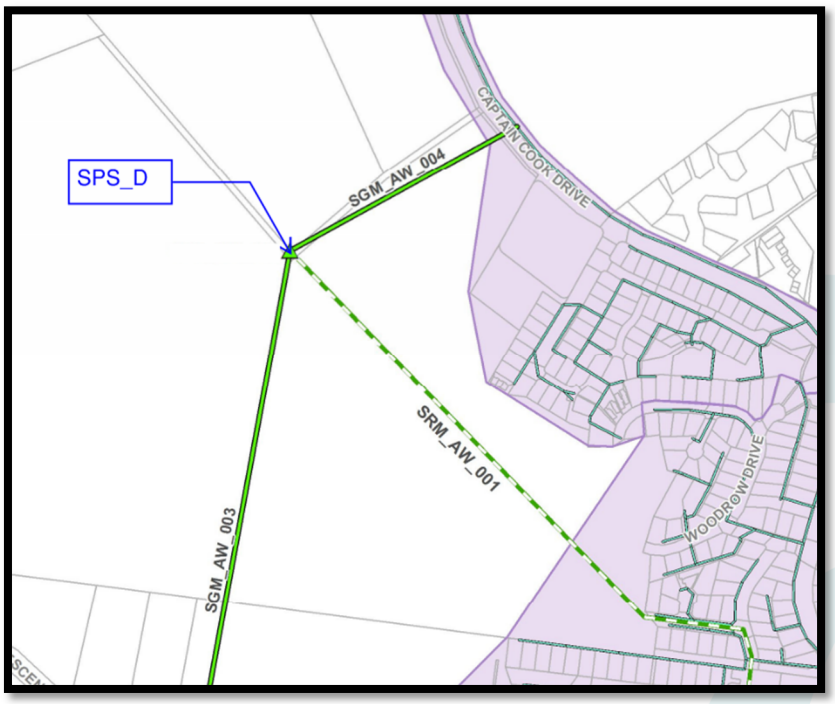


Figure 1 - Master Plan Sewer Pump Station

The previous report (M24-0254Rpt Issue A) has determined that Stage 1 inclusive of 20 lots can be adequately serviced by connecting to the existing DN150 Discover Drive sewer main and increasing the capacity of the proposed pump station SPS_E. This pump station would be required prior to the construction of Stage 1.

Water

The following values were adopted from the CMDG to calculate the water demand:

- Average day, AD = 312 L/EP/day
- Peak day (Max Day, MD), PD = 2.25 x AD
- Peak hour (Max Hour, MH), PH = 4.5 x AD

The water demand estimated for the proposed development was based on the estimated EP as shown in Table 3.

Table 3 – Development Water Demand

	Water Demand	
Design Parameter	**L/EP/day**	**L/s**
AD	312	2.86
PD	702	6.43
PH	1404	12.85

Council has provided boundary conditions for the proposed water master plan connection points as shown in Figure 2, Table 4 and Table 5.

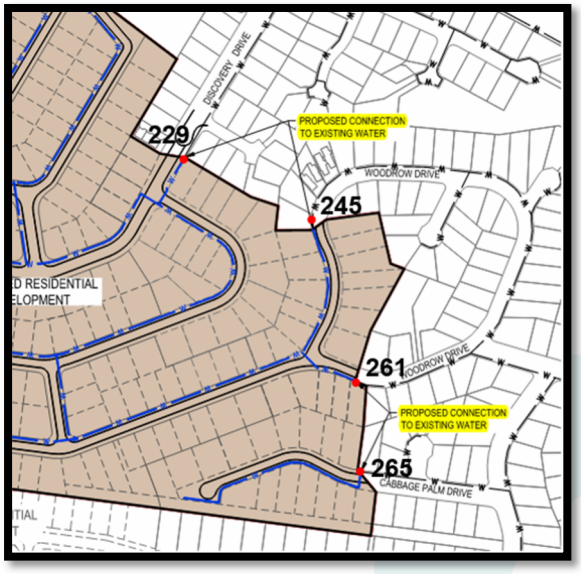


Figure 2 – Boundary Condition and Critical Nodes - South

Table 4 – Modelling Boundary Conditions – Peak Hour

Node	Elevation (m)	2026 Pressure (m)	2046 Pressure (m)
229	14.86	60.74	60.67
245	39.48	-	40.10
261	27.51	-	47.47
265	14.6	-	63.17

Table 5 – Modelling Boundary Conditions – Fire Flow

Node	Elevation (m)	2026 Pressure (m)	2046 Pressure (m)
229	14.86	58.14	32.50
245	39.48	-	21.93
261	27.51	-	31.39
265	14.6	-	39.09

As demonstrated by the boundary conditions, the peak hour pressure is well above the minimum 25m pressure required in all locations. For fire flow, the pressure at all boundary locations is greater than the 12m head required. These boundary conditions indicate that the residual pressure within the development is likely to be greater than the minimum required. This will need to be confirmed by a detailed water supply analysis.

Conclusion

This technical note has considered the demand from the entire proposed master plan development which includes up to 255 residential lots.

Upon review of the existing sewer infrastructure, it was determined that the network may be able to cater for the proposed development loading with the inclusion of the proposed sewer pump stations. The capacity of the existing and proposed network will need to be confirmed with a detailed sewer network analysis.

Based on the boundary conditions provided by council, the current performance of the existing water network indicates that a proposed extension to the water network may provide adequate flow and pressure to the proposed development both during peak hour and under fire flow conditions. This will need to be confirmed with a detailed water supply analysis.

If you require any further information or clarification on any of the items, please make contact at your earliest convenience.

Regards,

A Gaffney

Author:
Allister Gaffney
Senior Water Resource Engineer
BEng(Hons), MEng, RPEng, RPEQ-24345

References

Capricorn Municipal Development Guidelines (CMDG) 2022, Sewerage System – D12, website: www.cmdg.com.au

Capricorn Municipal Development Guidelines (CMDG) 2022, Water Supply Network – D11, website: www.cmdg.com.au

MWH, 2014, Sewer Strategic Infrastructure Plan – Agnes Water Sewer Scheme (2014), MWH.

Attachments

Attachment 1	Site Plans

LEGEND

- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED HEALTH AND WELLBEING PRECINCT
- PROPOSED ENVIRONMENTAL RESERVE & STORMWATER TREATMENT AREA
- FUTURE RURAL RESIDENTIAL DEVELOPMENT
- FUTURE SUB-ARTERIAL ROAD DEDICATION
- PMAV AREA
- SUBJECT SITE BOUNDARY

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

00 50m 100m 150m

SCALE 1:2500 (A1) - 1:5000 (A3)

Check all dimensions before commencement of work.
Check Site boundary dimensions from the Title plans.
Check Building Boundary clearances by set out.
Notwithstanding the information supplied on this drawing, the location, depth and extent of underground or overhead services are to be confirmed and protected on site by the contractor prior to commencement of works.

Issue	Date	Description	By
P1	24.03.23	PRELIMINARY ISSUE	SK

Drawing title -

DEVELOPMENT LAYOUT PLAN

Project -

DISCOVERY DRIVE SUBDIVISION

Client -

JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site -

DISCOVERY DRIVE, AGNES WATER

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

124 DUPORTH AVENUE
PO BOX 16 MAROOCHYDORE QLD 4558
E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777

Approved:

Checked : MF Design : SK Drawn : SK

Scales : AS SHOWN

Document Stage : PRELIMINARY

Project : 212991 Sheet No. RL100

Digital Ref : RL100 DEVELOPMENT LAYOUT PLAN Issue : P1

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Plot 7 May 2024 - 3:29 PM

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

LEGEND

- PROPOSED ROAD
- PROPOSED STAGE 1 ALLOTMENTS (20)
- FUTURE ALLOTMENTS
- PROPOSED EASEMENT BOUNDARY
- STAGE BOUNDARY
- 30 PRELIMINARY LOT DIMENSIONS

00 10m 20m 30m 40m 50m

SCALE 1:750 (A1) - 1:1500 (A3)

Check all dimensions before commencement of work.
Check Site boundary dimensions from the Title plans
Check Building Boundary clearances by set out.
Notwithstanding the information supplied on this drawing, the location, depth and extent of underground or overhead services are to be confirmed and protected on site by the contractor prior to commencement of works.

Checked - MF
Design - SK Drawn - SK
Scales - AS SHOWN
Document Stage - PRELIMINARY

Issue	Date	Description	By
P1	24.03.23	PRELIMINARY ISSUE	SK

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

Approved

124 DUPORTH AVENUE
PO BOX 16
MAROOCHYDORE QLD 4558
E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777
Fax (07) 5443 7577

Drawing title - STAGE 1 LAYOUT PLAN

Project - DISCOVERY DRIVE SUBDIVISION

Client - JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site - DISCOVERY DRIVE, AGNES WATER

Project No. 212991 Sheet No. RL101

Digital Ref : RL101 STAGE 1 LAYOUT PLAN Issue : P1

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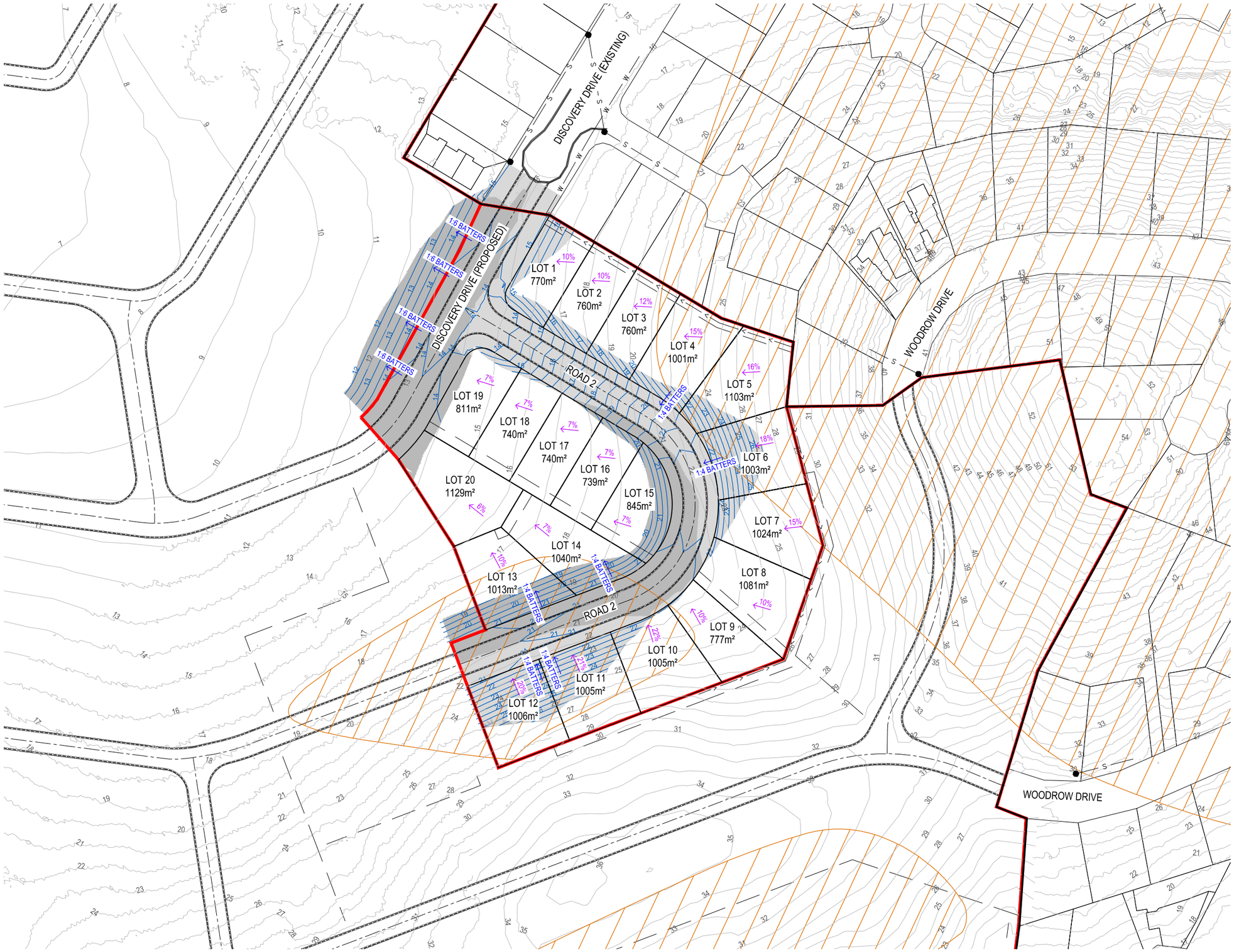
Plot 7 May 2024 - 3:29 PM



IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

LEGEND

- PRELIMINARY EARTHWORKS CUT EXTENT (3,480m³)
- PRELIMINARY EARTHWORKS FILL EXTENT (4,100m³)
- TYPICAL EXISTING SLOPE ACROSS LOT (APPROX.)
- MAPPED STEEP LAND
- PROPOSED EASEMENT BOUNDARY
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- STAGE BOUNDARY
- PRELIMINARY DESIGN CONTOURS @ 0.5m INTERVALS
- NATURAL CONTOURS @ 1m INTERVALS

00 10m 20m 30m 40m 50m

SCALE 1:750 (A1) - 1:1500 (A3)

Check all dimensions before commencement of work.
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Check Building Boundary clearances by set out.
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Checked - MF
Design - SK Drawn - SK
Scales - AS SHOWN
Document Stage - PRELIMINARY

Issue	Date	Description	By
P2	17.04.23	AMENDMENT	JA
P1	24.03.23	PRELIMINARY ISSUE	SK

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

Approved

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Ph (07) 5443 7777
Fax (07) 5443 7577

Drawing title - STAGE 1 EARTHWORKS PLAN

Project - DISCOVERY DRIVE SUBDIVISION

Client - JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site - DISCOVERY DRIVE, AGNES WATER

Project No. 212991 Sheet No. RL102

Digital Ref : RL102 STAGE 1 EARTHWORKS PLAN Issue : P2

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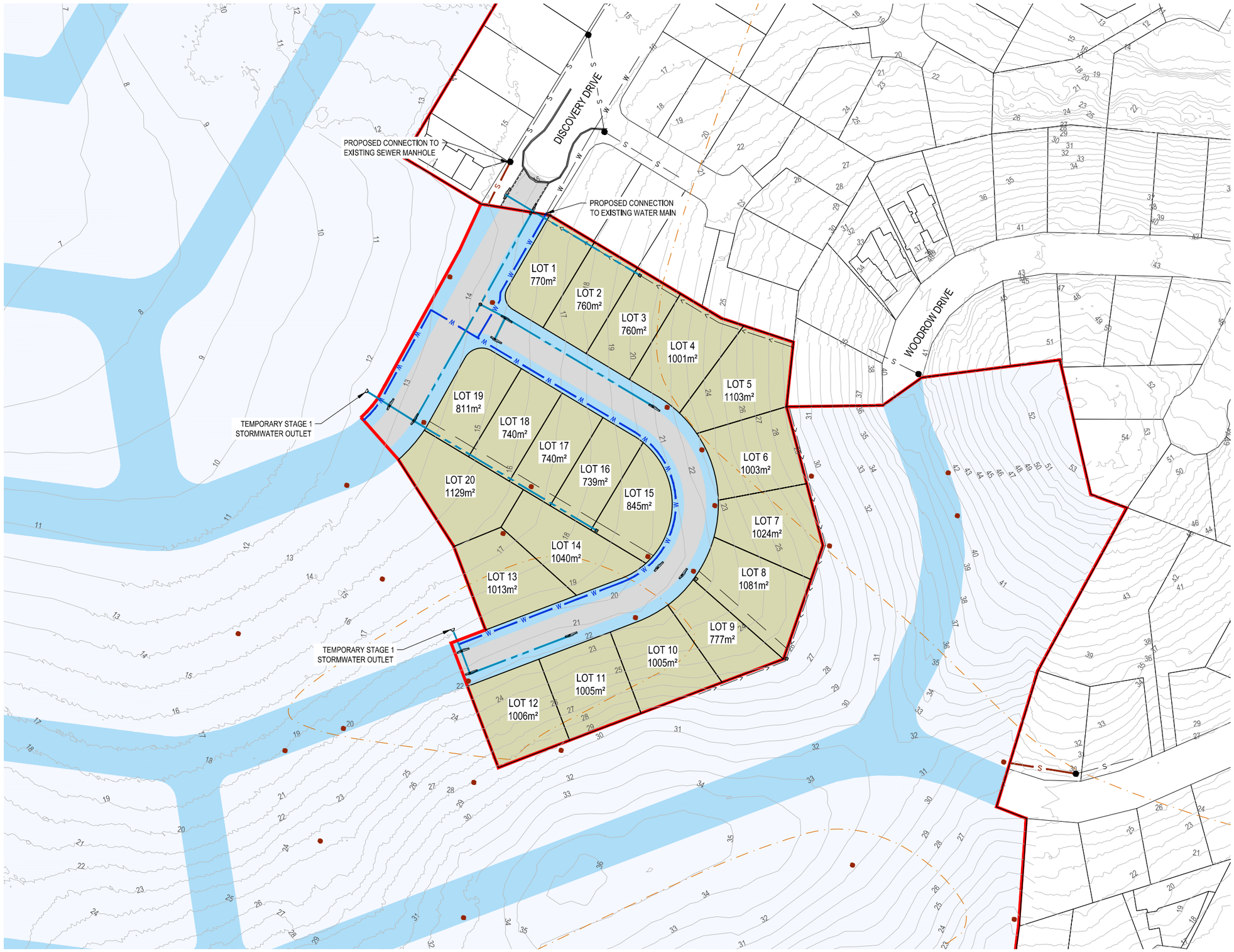
Plot 7 May 2024 - 3:29 PM



IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

LEGEND

- PROPOSED ROAD
- PROPOSED STAGE 1 ALLOTMENTS (20)
- FUTURE ALLOTMENTS
- PROPOSED EASEMENT BOUNDARY
- PROPOSED STORMWATER DRAINAGE
- PROPOSED SEWER MAIN (STAGE 1)
- PROPOSED WATER MAIN (STAGE 1)
- FUTURE GRAVITY SEWER MAIN
- MAPPED STEEP LAND
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- STAGE BOUNDARY
- NATURAL CONTOURS @ 1m INTERVALS

0 10m 20m 30m 40m 50m

SCALE 1:750 (A1) - 1:1500 (A3)

Check all dimensions before commencement of work.
Check Site boundary dimensions from the Title plans
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Checked - MF
Design - SK Drawn - SK
Scales - AS SHOWN
Document Stage - PRELIMINARY

Issue	Date	Description	By
P2	17.04.23	AMENDMENT	JA
P1	24.03.23	PRELIMINARY ISSUE	SK

COVEY ASSOCIATES PTY LTD
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Approved

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MAROOCHYDORE QLD 4558
E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777
Fax (07) 5443 7577

Drawing title - STAGE 1 ENGINEERING SERVICES PLAN

Project - DISCOVERY DRIVE SUBDIVISION

Client - JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site - DISCOVERY DRIVE, AGNES WATER

Project No. 212991 Sheet No. RL103

Digital Ref : RL103 STAGE 1 ENGINEERING SERVICES PLAN Issue : P2

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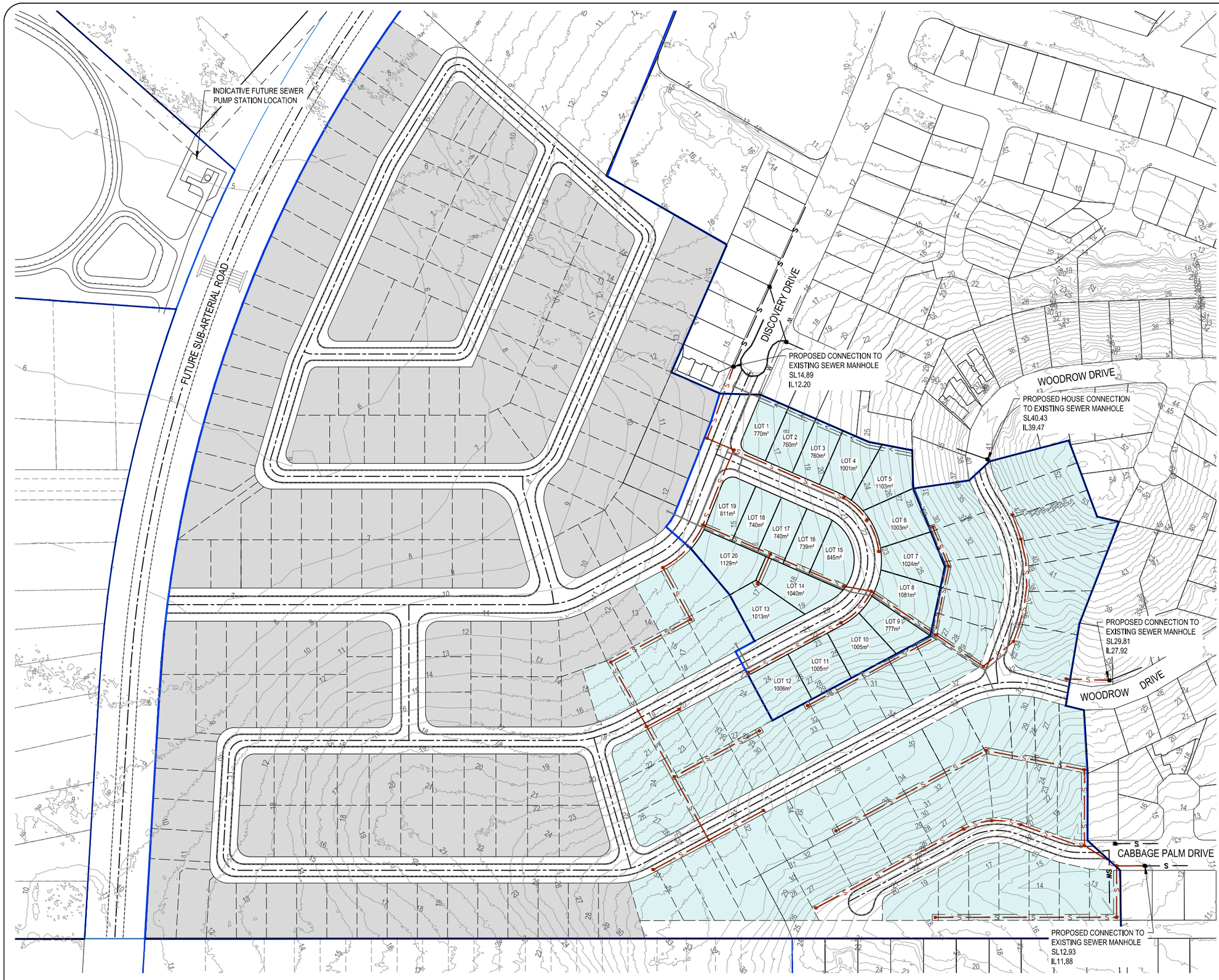
Plot 7 May 2024 - 3:29 PM

Print Date: 28 February 2025, 3:45 PM



IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

LEGEND

- PROPOSED ALLOTMENTS SERVICEABLE VIA EXISTING SEWER GRAVITY NETWORK (Approx. 87 lots)
- PROPOSED ALLOTMENTS TO FUTURE SEWER PUMP STATION
- PROPOSED EASEMENT BOUNDARY
- PROPOSED SEWER MAIN
- EXISTING SEWER MAIN
- STAGE BOUNDARY
- NATURAL CONTOURS @ 1m INTERVALS

0 25m 50m 75m

SCALE 1:1250 (A1) - 1:2500 (A3)

Check all dimensions before commencement of work.
Check Site boundary dimensions from the Title plans
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Issue	Date	Description	By
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E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777
Fax (07) 5443 7577

Drawing title - SEWERAGE CATCHMENT PLAN

Project - DISCOVERY DRIVE SUBDIVISION

Client - JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site - DISCOVERY DRIVE, AGNES WATER

Project No. 212991 Sheet No. RL400

Digital Ref : RL400 SEWERAGE CATCHMENT PLAN Issue : P2

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Plot 7 May 2024 - 3:30 PM

Revised

3/05/2024 2:34:53 PM

MAP IDENTIFIER

A1

A2

A8

SPS_D
Proposed Duty: 64 L/s @ 35m

PS02
Existing Duty: 46.4 L/s

PS01
Existing Duty: 34.2 L/s

SPS_E
Proposed Duty: 61 L/s @ 39m

Covey Associates Pty Ltd
Mark up of plan
3 May 2024

CREEK

CORAL SEA

SGM_AW_002

PS04

PS09

CAPTAIN COOK DRIVE

SGM_AW_004

SPS_AW_004

SRM_AW_001

SGM_AW_003

WOODROW DRIVE

PS02

PS05

PS07

JEFFERY COURT

PS03

PS01

SGM_AW_005

SPS_AW_005

BPS01 - BOOSTER PUMP STATION

SPRINGS ROAD

FITZROY CRESCENT

THE CRESCENT

PS06

SGM_AW_001

ROUND HILL ROAD

SGM_AW_006

387000 388000 389000 390000

7323000 7322000

3 x 2 km Map Grid
Cadastral Boundaries
Water Ways
Existing Sewer Catchment Areas
PS
EXISTING INFRASTRUCTURE
Existing Sewer Pump Stations
Existing Rising Mains
Existing Sewer Mains
Proposed Gravity Sewer Augmentations
2016
2031
Proposed Rising Mains
2016

MWH

GLADSTONE REGIONAL COUNCIL

SEWER INFRASTRUCTURE PLAN

MWH Global Pty Ltd can not be held responsible for any damages due to errors or omissions in this product.

Map Created: 19/08/2014 thatchc

Coordinate System: GDA 1994 MGA Zone 56

A4 Scale: 1:7,650

File Name: AGNW_AugmentationPlan_A1

GLADSTONE

0 250 500 m

Agnes Water - Gravity Sewer Scheme - Augmentation Plan

GLADSTONE REGIONAL COUNCIL

A1

Print Date: 28 February 2025, 3:45 PM

Technical Note – Water and Sewerage

To:	Nicholas Cooper | Gladstone Regional Council
Cc:	Andrew Hunter | ANH Developments
From:	Allister Gaffney | Covey Associates Pty Ltd
Date:	19 February 2025
Subject:	Lot 2 on SP117407 Captian Cook Drive, Anges Water QLD
Project No:	212991
Document No.:	M24-0586Tech
Your Reference:	DA/17/2023

Introduction

Covey Associates has been engaged by Jamworth Pty Ltd and Sunshine State Developments Pty Ltd to prepare a Technical Note for the proposed development at Lot 2 on SP117407 Captain Cook Drive, Anges Water QLD. The technical note is in response to the water and sewerage items in the Gladstone Regional Council information request dated 10 September 2024.

The proposed development is for a residential subdivision with 325 lots which is to be developed in stages. This technical note is an addendum to previously issued Water Supply and Sewer Network Analysis Report (M24-0254Rpt Issue A) which only considered Stage 1 of the development (20 lots). The following sections consider the entire master planned development. The proposed development sewer and water master plan layouts are provided in Attachment A.

Demand

For this assessment the equivalent persons (EP) was determined based on the Master Plan in Attachment A. The total EP for the entire development has been calculated as shown in Table 1. The total demand is **1008 EP** and **791 EP** for water and sewer, respectively. The calculation only considers the EP's connected to GRC's existing network. The character residential portion of the proposed development will have on-site treatment and disposal for sewer.

The assumptions used to calculation the total EP were as follows based on the Capricorn Municipal Development Guidelines (CMDG 2022):

- 3.1 EP per detached dwelling

Table 1 – EP Calculation

Development type	Lots	EP Rate	Units	EP Total
Water				
Residential Lots	325	3.1	EP per lot	1008
			Total	**1008**
Sewer				
Residential Lots	255*	3.1	EP per lot	791
			Total	**791**

*70 character residential lots will have on-site treatment and disposal for sewer

Sewerage

The following values were adopted based on CMDG (2022) to calculate the sewer design loading:

- Existing sewer EP rate, 1 ET = 2.6 EP
- Developed sewer EP rate, 1 ET = 3.1 EP
- Average dry weather flow, ADWF = 225 L/EP/day
- Peak wet weather flow, PWWF= 5 x ADWF

Using the EP calculation above the sewer loading has been calculated as shown in **Table 2**.

Table 2 – Overall Development Sewer Loading

	Sewer Loading	
Parameter	**L/EP/day**	**L/s**
ADWF	225	2.06
PWWF	1125	10.30

The sewer from the development is proposed to discharge 87 lots (3.5 L/s PWWF) to the existing gravity networks at Discovery Dr, Woodrow Dr and Cabbage Palm Dr which ultimately drains to PS01 (refer to the previous report and the study by MWH (2014)). The remaining 168 lots (6.8 L/s PWWF) is proposed to discharge to the proposed sewer pump station SPS_D. SPS_D will discharge to PS08 via a proposed rising main as documented by MWH (2014). The current planned capacity of SPS_D is 64 L/s. SPS_D is expected to have sufficient capacity to service the proposed development. The capacity of SPS_D will be verified with Council as part of a detailed Sewer Network Analysis provided with the first application that proposes to discharge to SPS_D. The location of pump station SPS_D is shown in Figure 1.

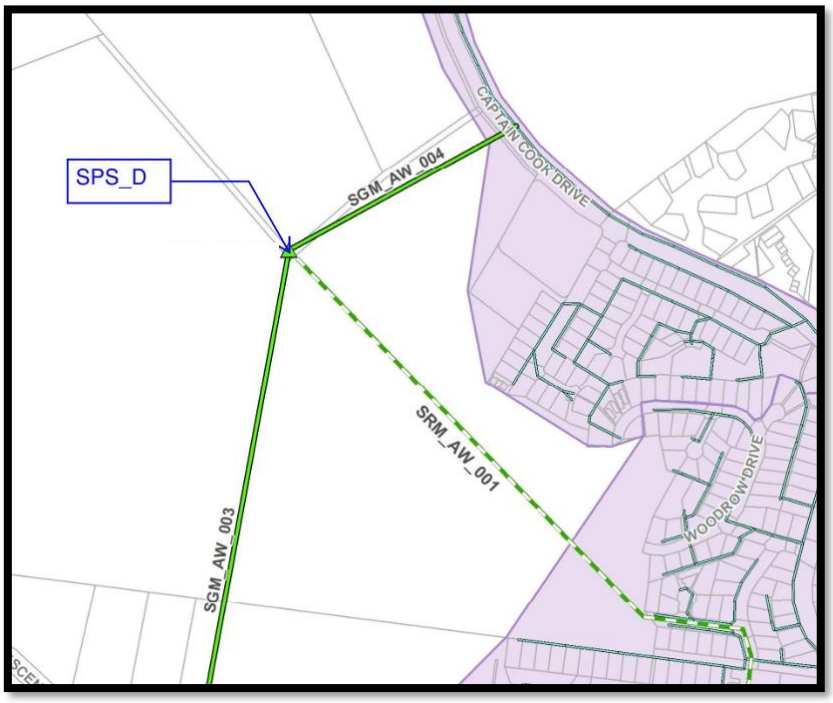

Figure 1 - Master Plan Sewer Pump Station

The previous report (M24-0254Rpt Issue A) has determined that Stage 1 inclusive of 20 lots can be adequately serviced by connecting to the existing DN150 Discover Drive sewer main and increasing the capacity of the proposed pump station SPS_E. This pump station augmentation would be required prior to the construction of Stage 1.

Water

The following values were adopted from the CMDG to calculate the water demand:

- Average day, AD = 312 L/EP/day
- Peak day (Max Day, MD), PD = 2.25 x AD
- Peak hour (Max Hour, MH), PH = 4.5 x AD

The water demand estimated for the proposed development was based on the estimated EP as shown in Table 3.

Table 3 – Development Water Demand

	Water Demand	
Design Parameter	**L/EP/day**	**L/s**
AD	312	3.60
PD	702	8.20
PH	1404	16.40

Council has provided boundary conditions for the proposed water master plan connection points as shown in Figure 2, Table 4 and Table 5.

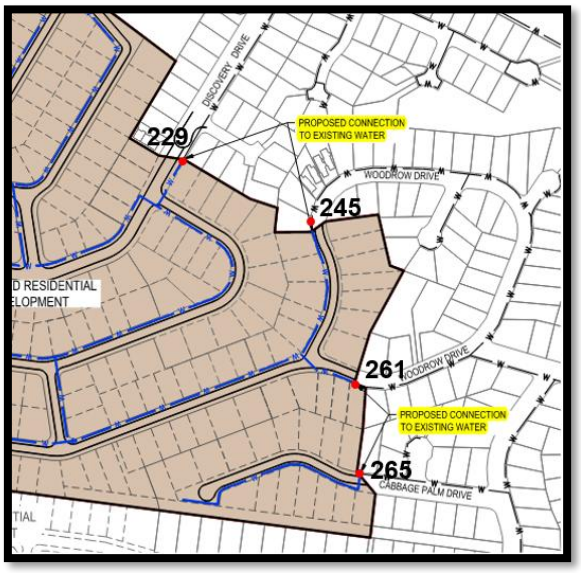

Figure 2 – Boundary Condition and Critical Nodes - South

Table 4 – Modelling Boundary Conditions – Peak Hour

Node	Elevation (m)	2026 Pressure (m)	2046 Pressure (m)
229	14.86	60.74	60.67
245	39.48	-	40.10
261	27.51	-	47.47
265	14.6	-	63.17

Table 5 – Modelling Boundary Conditions – Fire Flow

Node	Elevation (m)	2026 Pressure (m)	2046 Pressure (m)
229	14.86	58.14	32.50
245	39.48	-	21.93
261	27.51	-	31.39
265	14.6	-	39.09

As demonstrated by the boundary conditions, the peak hour pressure is well above the minimum 25m pressure required in all locations. For fire flow, the pressure at all boundary locations is greater than the 12m head required. These boundary conditions indicate that the residual pressure within the development is likely to be greater than the minimum required. This will need to be confirmed by a detailed water supply analysis.

Conclusion

This technical note as an addendum to the previously issued Water Supply and Sewer Network Analysis Report (M24-0254Rpt Issue A) has considered the demand for Stage 1 and the entire proposed master plan development which includes up to 325 residential lots.

Upon review of the existing sewer infrastructure, it was determined that the network may be able to cater for the proposed development loading with the inclusion of the proposed sewer pump stations. The capacity of the existing and proposed network will need to be confirmed with a detailed sewer network analysis.

Based on the boundary conditions provided by council, the current performance of the existing water network indicates that a proposed extension to the water network may provide adequate flow and pressure to the proposed development both during peak hour and under fire flow conditions. This will need to be confirmed with a detailed water supply analysis.

Future reconfiguration of a lot (ROL) application will be required to support the development of the balance of the site. As part of these applications, additional information will be provided on the proposed water and sewer servicing strategy.

If you require any further information or clarification on any of the items, please make contact at your earliest convenience.

Regards,

A Gaffney

Author:
Allister Gaffney
Senior Water Resource Engineer
BEng(Hons), MEng, RPEng, RPEQ-24345

References

Capricorn Municipal Development Guidelines (CMDG) 2022, Sewerage System – D12, website: www.cmdg.com.au

Capricorn Municipal Development Guidelines (CMDG) 2022, Water Supply Network – D11, website: www.cmdg.com.au

MWH, 2014, Sewer Strategic Infrastructure Plan – Agnes Water Sewer Scheme (2014), MWH.

Attachments

Attachment A	Site Plans

LEGEND

- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED HEALTH AND WELLBEING PRECINCT
- PROPOSED ENVIRONMENTAL RESERVE & STORMWATER TREATMENT AREA
- FUTURE RURAL RESIDENTIAL DEVELOPMENT
- FUTURE SUB-ARTERIAL ROAD DEDICATION
- PMAV AREA
- SUBJECT SITE BOUNDARY

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

00 50m 100m 150m

SCALE 1:2500 (A1) - 1:5000 (A3)

Check all dimensions before commencement of work.
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Issue	Date	Description	By
P3	19.02.25	UPDATED CHARACTER RES LABEL	AG
P2	17.04.23	AMENDMENT	JA
P1	24.03.23	PRELIMINARY ISSUE	SK

Drawing title -

DEVELOPMENT LAYOUT PLAN

Project -

DISCOVERY DRIVE SUBDIVISION

Client -

JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site -

DISCOVERY DRIVE, AGNES WATER

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

124 DUPORTH AVENUE
PO BOX 16 MAROOCHYDORE QLD 4558
E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777

Approved:

Checked :	MF	Design : SK	Drawn : SK
Scales :	AS SHOWN		
Document Stage :	PRELIMINARY		
Project :	212991	Sheet No.	MP100
Digital Ref :	MP100 DEVELOPMENT LAYOUT PLAN	Issue :	P3

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Plot 19 February 2025 - 12:03 PM

LEGEND

- CONCEPT GRAVITY SEWER TO EXISTING GRAVITY SEWER NETWORK
- CONCEPT GRAVITY SEWER TO FUTURE PUMP STATION
- CONCEPT SEWER RISING MAIN
- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED HEALTH AND WELLBEING PRECINCT
- PROPOSED ENVIRONMENTAL RESERVE & STORMWATER TREATMENT AREA
- FUTURE RURAL RESIDENTIAL DEVELOPMENT
- FUTURE SUB-ARTERIAL ROAD DEDICATION
- PMAV AREA
- SUBJECT SITE BOUNDARY

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

00 50m 100m 150m

SCALE 1:2500 (A1) - 1:5000 (A3)

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Issue	Date	Description	By
P2	19.02.25	UPDATED CHARACTER RES LABEL	AG
P1	24.03.23	PRELIMINARY ISSUE	SK

Drawing title -

SEWERAGE RETICULATION PLAN

Project -

DISCOVERY DRIVE SUBDIVISION

Client -

JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site -

DISCOVERY DRIVE, AGNES WATER

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

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E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777

Approved:

Checked : MF Design : SK Drawn : SK
Scales : AS SHOWN
Document Stage : PRELIMINARY
Project : 212991 Sheet No. MP400
Digital Ref : MP400 SEWERAGE RETICULATION PLAN Issue : P2

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Plot 19 February 2025 - 12:03 PM

LEGEND

- CONCEPT POTABLE WATER NETWORK
- EXISTING WATER MAIN
- PROPOSED RESIDENTIAL DEVELOPMENT
- PROPOSED HEALTH AND WELLBEING PRECINCT
- PROPOSED ENVIRONMENTAL RESERVE & STORMWATER TREATMENT AREA
- FUTURE RURAL RESIDENTIAL DEVELOPMENT
- FUTURE SUB-ARTERIAL ROAD DEDICATION
- PMAV AREA
- SUBJECT SITE BOUNDARY

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF EXCAVATION

00 50m 100m 150m

SCALE 1:2500 (A1) - 1:5000 (A3)

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Issue	Date	Description	By
P2	19.02.25	UPDATED CHARACTER RES LABEL	AG
P1	24.03.23	PRELIMINARY ISSUE	SK

Drawing title -

WATER RETICULATION PLAN

Project -

DISCOVERY DRIVE SUBDIVISION

Client -

JAMWORTH PTY LTD & SUNSHINE STATE DEVELOPMENTS PTY LTD

Site -

DISCOVERY DRIVE, AGNES WATER

COVEY ASSOCIATES PTY LTD
ABN 59 137 305 992
Consulting Civil & Structural Engineers Project Management & Planning

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PO BOX 16 MAROOCHYDORE QLD 4558
E-MAIL: engineers@covey.com.au
Ph (07) 5443 7777

Approved:

Checked : MF Design : SK Drawn : SK

Scales : AS SHOWN

Document Stage : PRELIMINARY

Project : 212991 Sheet No. MP500

Digital Ref : MP500 WATER RETICULATION PLAN Issue : P2

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Plot 19 February 2025 - 12:03 PM

Revised

3/05/2024 2:34:53 PM

MAP IDENTIFIER

A1

A2

A8

SPS_D
Proposed Duty: 64 L/s @ 35m

PS02
Existing Duty: 46.4 L/s

PS01
Existing Duty: 34.2 L/s

SPS_E
Proposed Duty: 61 L/s @ 39m

Covey Associates Pty Ltd
Mark up of plan
3 May 2024

CREEK

CORAL SEA

SGM_AW_002

PS04

PS09

CAPTAIN COOK DRIVE

SGM_AW_004

SPS_AW_004

SRM_AW_001

SGM_AW_003

WOODROW DRIVE

PS02

PS05

PS07

JEFFERY COURT

PS03

PS01

SGM_AW_005

SPS_AW_005

BPS01 - BOOSTER PUMP STATION

SPRINGS ROAD

FITZROY CRESCENT

THE CRESCENT

PS06

SGM_AW_001

ROUND HILL ROAD

SGM_AW_006

387000 388000 389000 390000

7323000 7322000

3 x 2 km Map Grid
Cadastral Boundaries
Water Ways
Existing Sewer Catchment Areas
PS
EXISTING INFRASTRUCTURE
Existing Sewer Pump Stations
Existing Rising Mains
Existing Sewer Mains
Proposed Gravity Sewer Augmentations
2016
2031
Proposed Rising Mains
2016

MWH

GLADSTONE REGIONAL COUNCIL

SEWER INFRASTRUCTURE PLAN

MWH Global Pty Ltd can not be held responsible for any damages due to errors or omissions in this product.

Map Created: 19/08/2014 thatchc

Coordinate System: GDA 1994 MGA Zone 56

A4 Scale: 1:7,650

File Name: AGNW_AugmentationPlan_A1

GLADSTONE

0 250 500 m

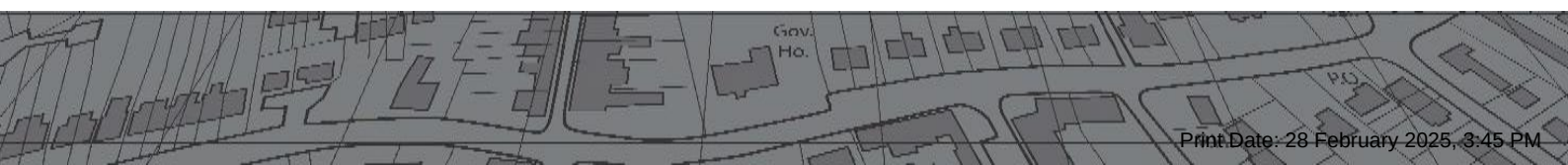
Agnes Water - Gravity Sewer Scheme - Augmentation Plan

GLADSTONE REGIONAL COUNCIL

A1

Print Date: 28 February 2025, 3:45 PM

ATTACHMENT 3
Traffic Impact Assessment



rytenskild
Traffic Engineering

TRAFFIC IMPACT ASSESSMENT

PROPOSED RESIDENTIAL SUBDIVISION (STAGE 1)

LOT 2 ON SP117407, DISCOVERY DRIVE, AGNES WATER

(Response to Council's Information Request, dated 10 September 2024)

Prepared for

SUNSHINE STATE DEVELOPMENTS PTY LTD AND JAMWORTH PTY LTD

3 FEBRUARY 2025

DOCUMENT REGISTER

RTE Reference 24085

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1.0 INTRODUCTION

1.1 Background

Rytenskild Traffic Engineering (RTE) has been engaged by Sunshine State Developments Pty Ltd and Jamworth Pty Ltd to prepare a Traffic Impact Assessment of its proposed residential estate at Agnes Water.

This report forms part of a Development Application to be lodged with the Gladstone Regional Council, and responds to Councils Information Request (DA/17/2023) dated 10 September 2024. The following information was requested.

Transportation Services

Issue:

The Applicant has not provided a Traffic Impact Assessment for the development as applied for. Details of the new arterial road intersections have not been provided and the intersection of Captain Cook Drive and Discovery Drive has not been assessed for the increase in traffic from both current and the future stages of the development.

Furthermore, Council does not accept the applicant's response to the previous request for further information on the matter, and considers that any development that has the possibility of adding >5% of new trips to the network requires a Traffic Impact Assessment prepared generally in accordance with the Guide to Traffic Impact Assessments be provided to justify any impacts on the network.

Requested information:

2. *Council requests a Traffic Impact Assessment (TIA) for the entire development with specific consideration of treatments required for any staging including stage 1, and identifying any additional trips generated by the new proposed zoning changes.*

1.2 Subject Site

The site is currently vacant and identified as Lot 2 on SP117407.

As shown in Figure 1.1, the subject site is located within 500 metres of the Agnes Water centre, and surrounded by existing residential uses.

FIGURE 1.1 – LOCATION OF SUBJECT SITE

2.0 SURROUNDING ROAD NETWORK

2.1 Road Network

The surrounding road network comprises of the following key elements:

Captain Cook Drive - 3U - Urban 2 Lane Distributor
Discovery Drive - 4U - Urban Residential/Commercial Collector

The Captain Cook Drive / Discovery Drive intersection comprises of a type AUL(s) left turn treatment and a combined eastbound through / right turn lane.

An extract of the Gladstone Planned Road Network and Structure Plan is shown in Figures 2.1 and 2.2. Images of existing intersection conditions are shown in Figure 2.3.

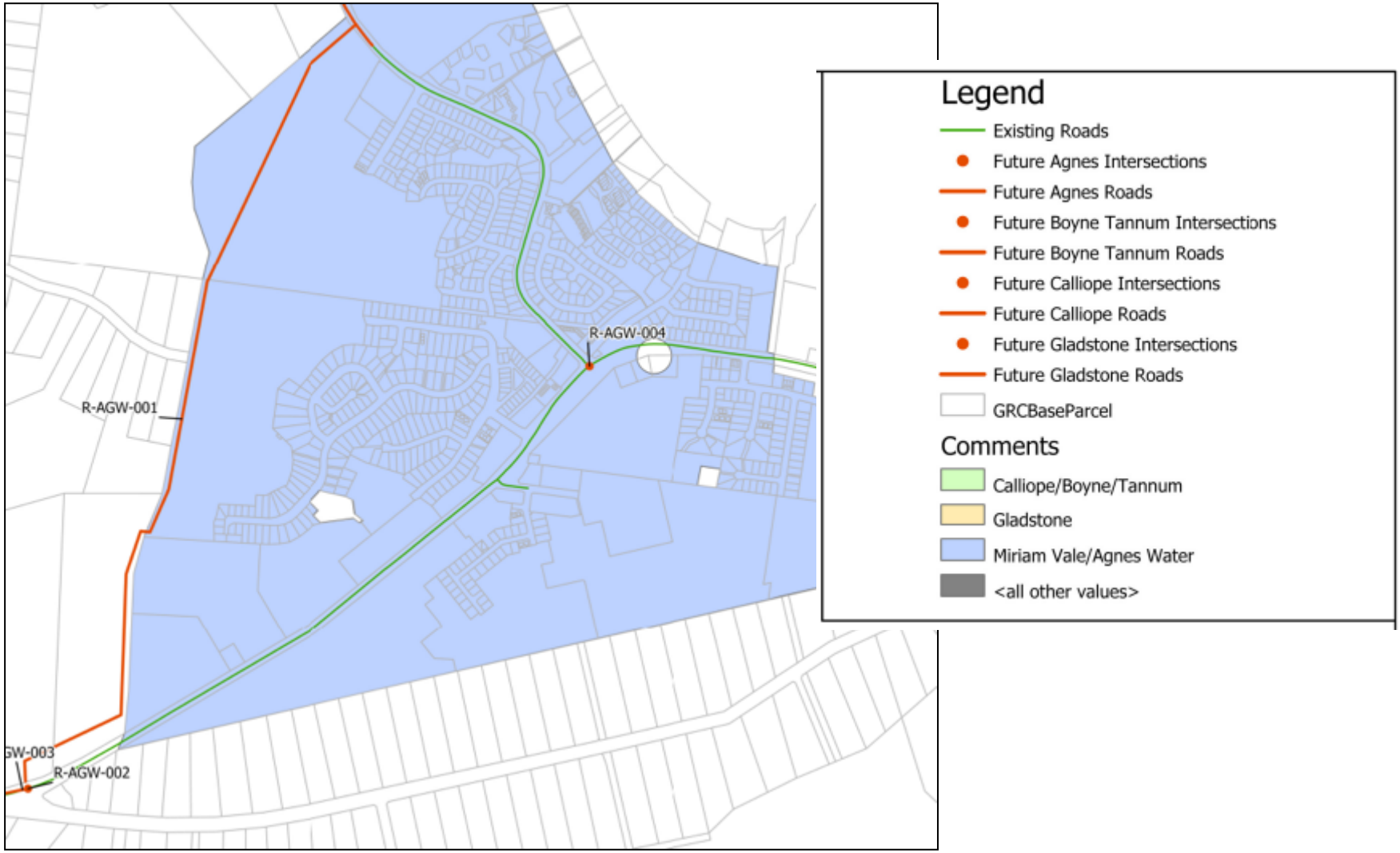


FIGURE 2.1 – PLANNED ROAD NETWORK (GLADSTONE PLANNING SCHEME)

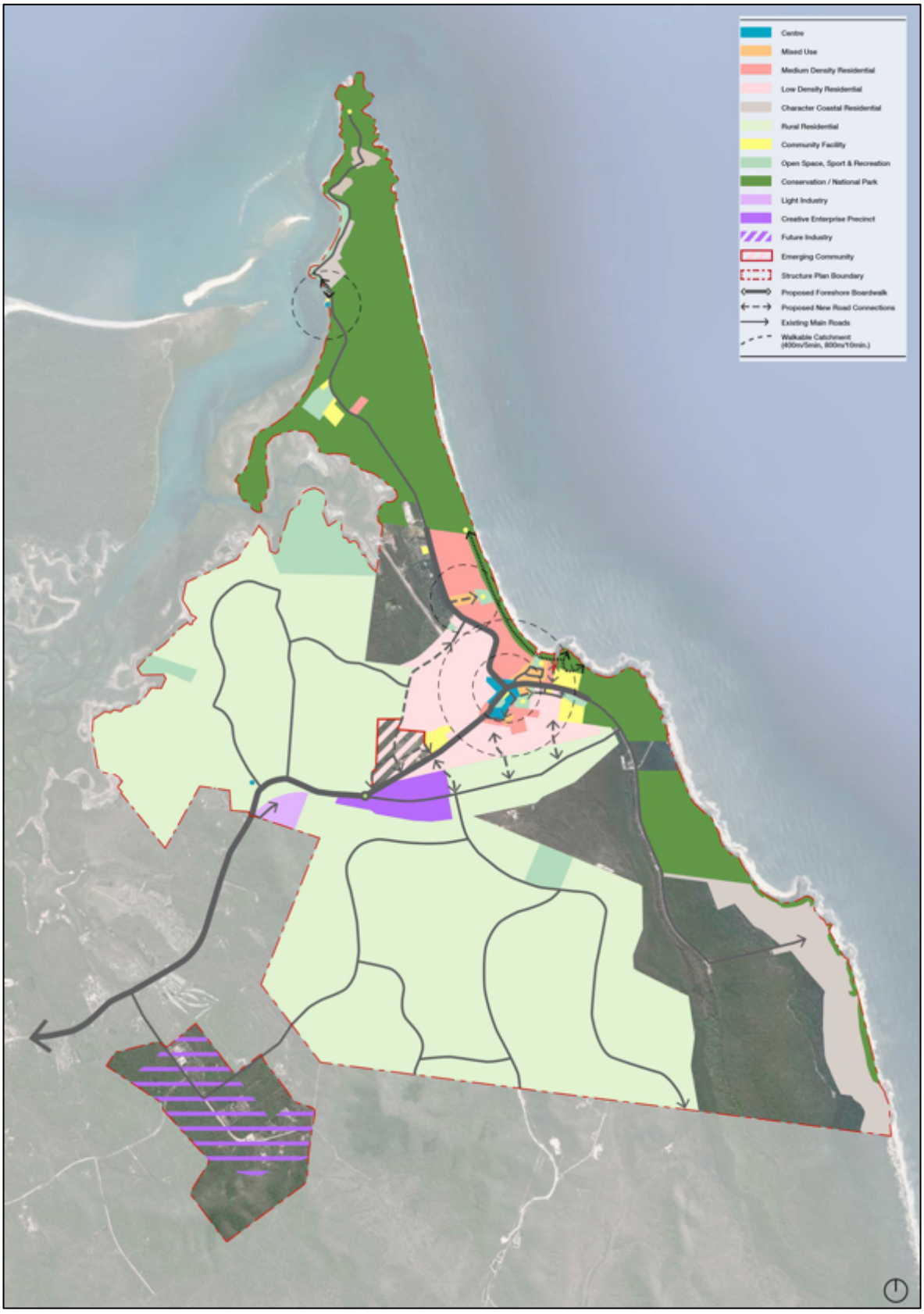


FIGURE 2.2 - AGNES WATER & SEVENTEEN SEVENTY STRUCTURE PLAN (GLADSTONE PLANNING SCHEME)

FIGURE 2.3 – EXISTING LAYOUT OF THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

2.2 Surveyed Traffic Volumes

RTE carried out traffic counts at the Captain Cook Drive / Discovery Drive intersection over two typical weekdays in December 2024 (Wednesday 4th December and Thursday 5th December 2024).

A summary of the surveyed peak hour for the intersection is shown in Figure 2.3, with the full survey data provided as Appendix A.

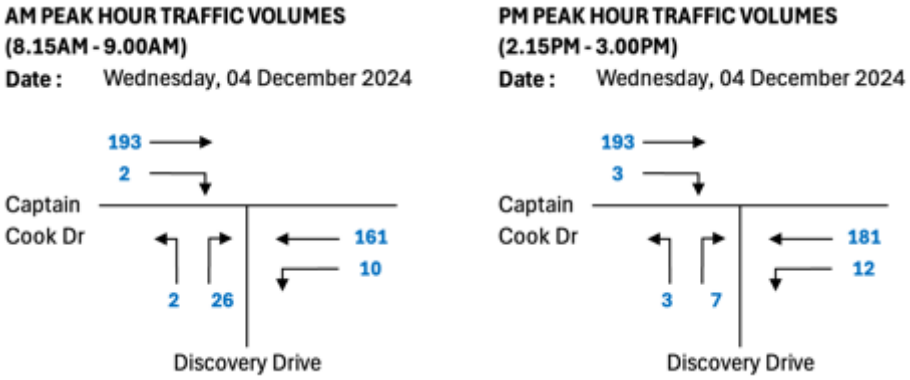


FIGURE 2.3 – SURVEYED PEAK HOUR TRAFFIC VOLUMES AT THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

2.3 Projected Background Traffic Volumes

Future background traffic volumes have been derived by applying an annual growth rate of 2.5% per annum to all movements. Resultant estimates for the years 2026 and 2036 are shown in Figure 2.4.

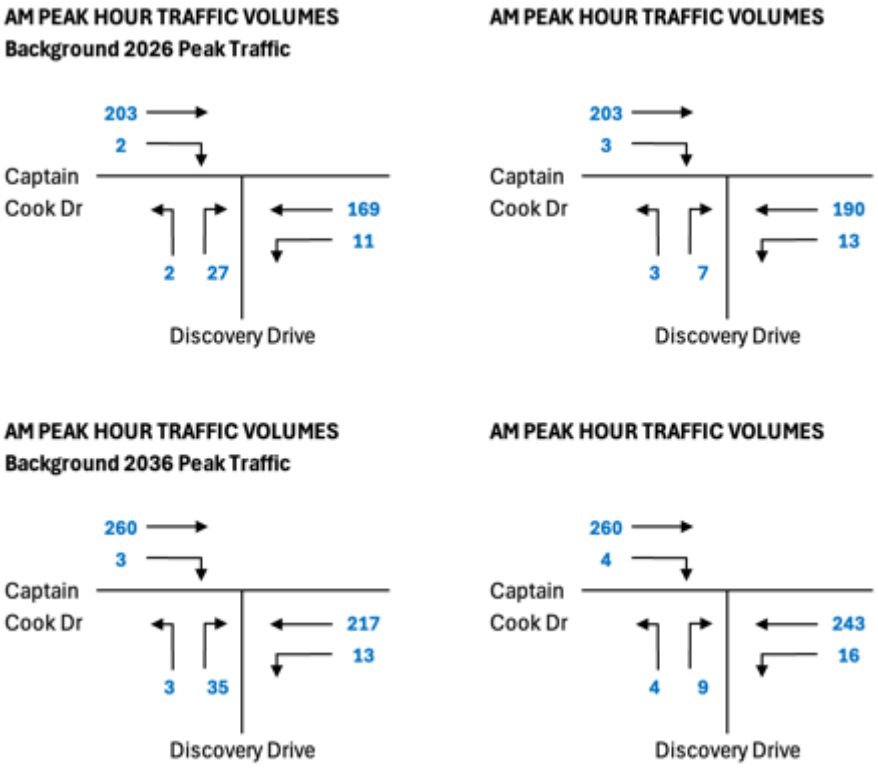


FIGURE 2.4 – PROJECTED BACKGROUND (YEARS 2026 AND 2036) PEAK HOUR TRAFFIC VOLUMES AT THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

3.0 DEVELOPMENT PROPOSAL

The proposed subdivision plan is for Stage 1 comprising of 20 lots, of an overall masterplan comprising of 325 lots. Access is proposed to be gained via an extension of Discovery Drive.

The proposed plan of reconfiguration for Stage 1 is shown in Figure 3.1, while the masterplan layout is detailed in Figure 3.2. The proposed road hierarchy, along with the associated typical cross sections, are shown in Figures 3.3 and 3.4.

FIGURE 3.1 – PROPOSED PLAN OF RECONFIGURATION

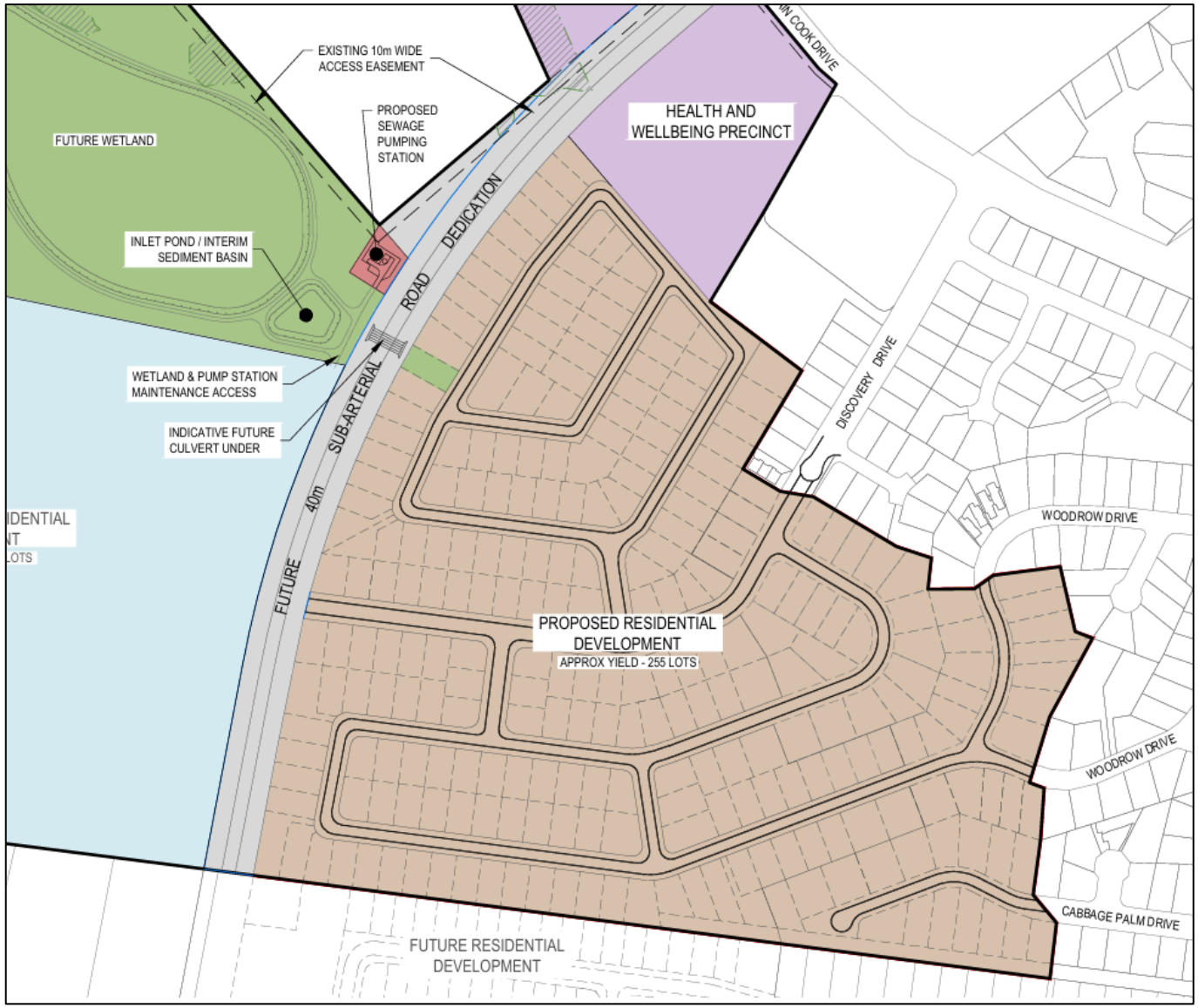


FIGURE 3.2 – PROPOSED MASTERPLAN

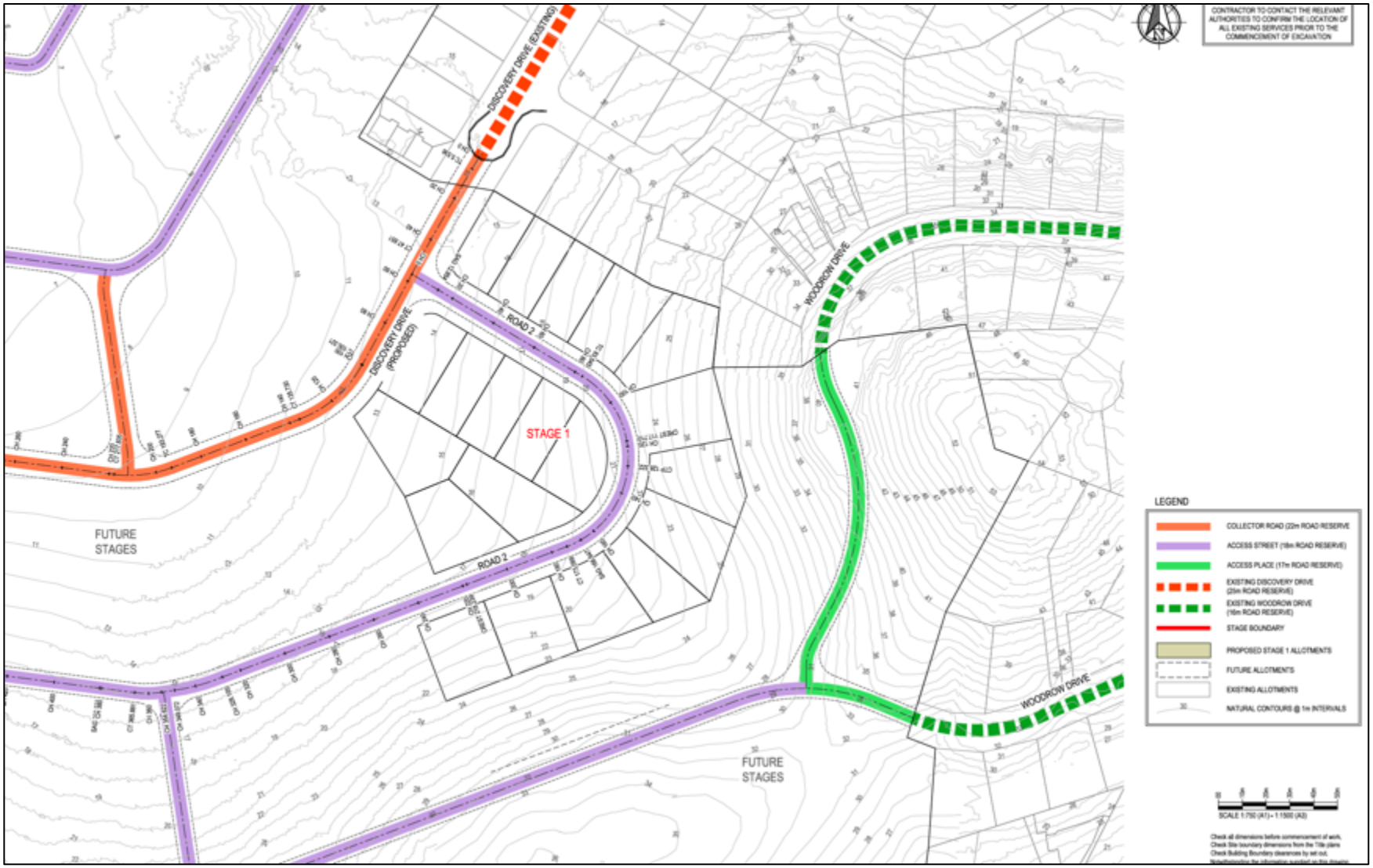


FIGURE 3.3 – PROPOSED ROAD HIERARCHY PLAN (STAGE 1)

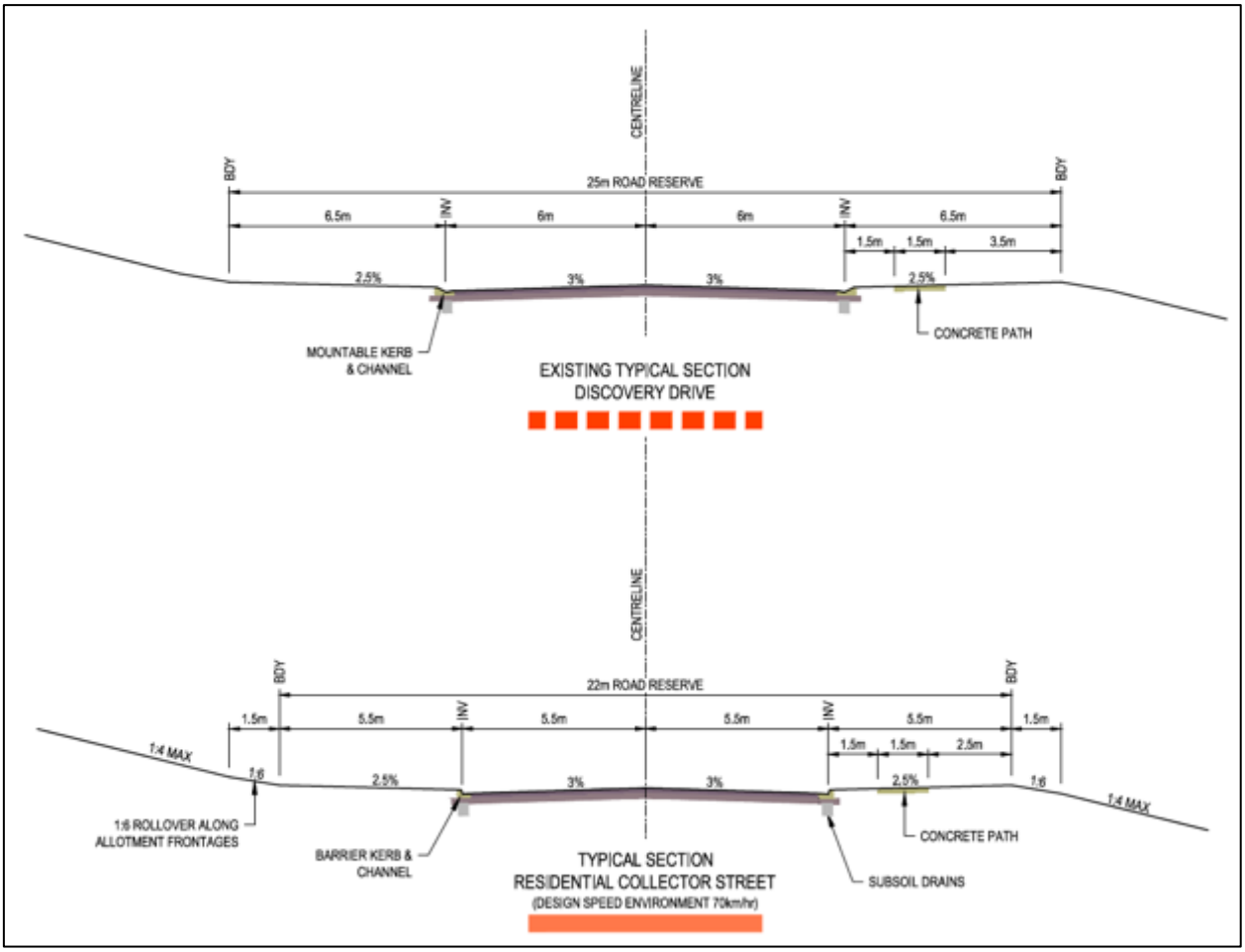


FIGURE 3.4 – EXISTING AND PROPOSED ROAD CROSS-SECTIONS

4.0 DEVELOPMENT TRAFFIC ESTIMATES

4.1 Development Traffic Generation

Development traffic generation rates have been sourced from the Department of Main Roads, *Road Planning and Design Manual (RPDM).* The following trip generation rate is considered to be appropriate for the proposed development:

0.8 peak hour trips per dwelling

Application of the above rate to the proposed development results in a traffic generation potential of 260 peak hour trips, as follows:

Table 4.1 - Estimated Development Traffic Generation

Component	Morning Peak Hour			Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
Stage 1 – 20 lots	3	13	**16**	12	4	**16**
Future Development – 305 lots	49	195	**244**	171	73	**244**
Total	**52**	**208**	**260**	**183**	**77**	**260**

Peak Hour Distribution: AM – 20 /80, PM – 70 / 30

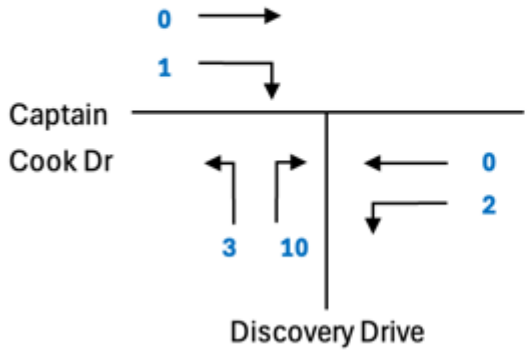
4.2 Development Traffic Volumes

Considering the surveyed volumes, it is estimated that traffic generated by the use will distribute 20/80 to the west and east, respectively.

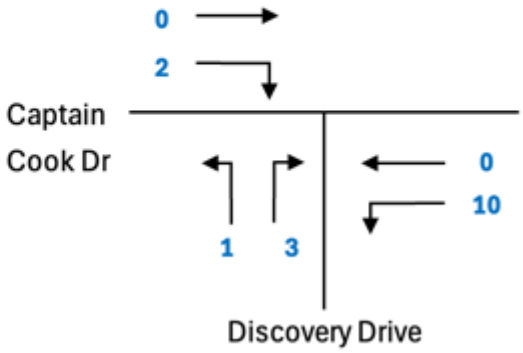
For the purpose of this assessment, it has been assumed that all future development as part of the master plan will distribute via the Captain Cook Drive intersection. This is conservative as the planned arterial road will facilitate travel to and from the west without having to use Captain Cook Drive.

Development traffic estimates for the surrounding intersections are shown in Figure 4.1.

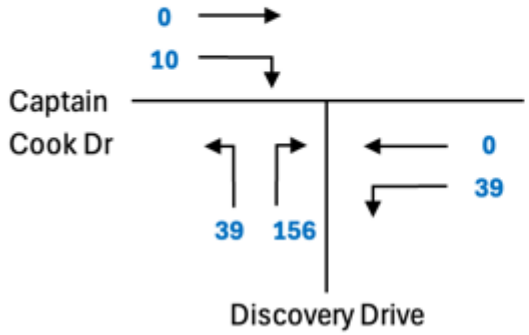
AM PEAK HOUR TRAFFIC VOLUMES
Development Traffic - Stage 1



AM PEAK HOUR TRAFFIC VOLUMES



AM PEAK HOUR TRAFFIC VOLUMES
Development Traffic - Future Development



AM PEAK HOUR TRAFFIC VOLUMES

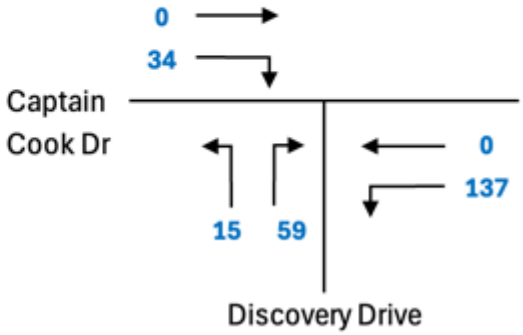


FIGURE 4.2 – DEVELOPMENT TRAFFIC ESTIMATES (PEAK HOUR) AT THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

5.0 ROAD NETWORK IMPACTS

5.1 Design Traffic Volumes

Design traffic volumes for the year 2036 have been derived by adding the projected background traffic and the proposed development traffic estimates. Design traffic volumes for Stage 1 and future development are shown in Figures 5.1 and 5.2.

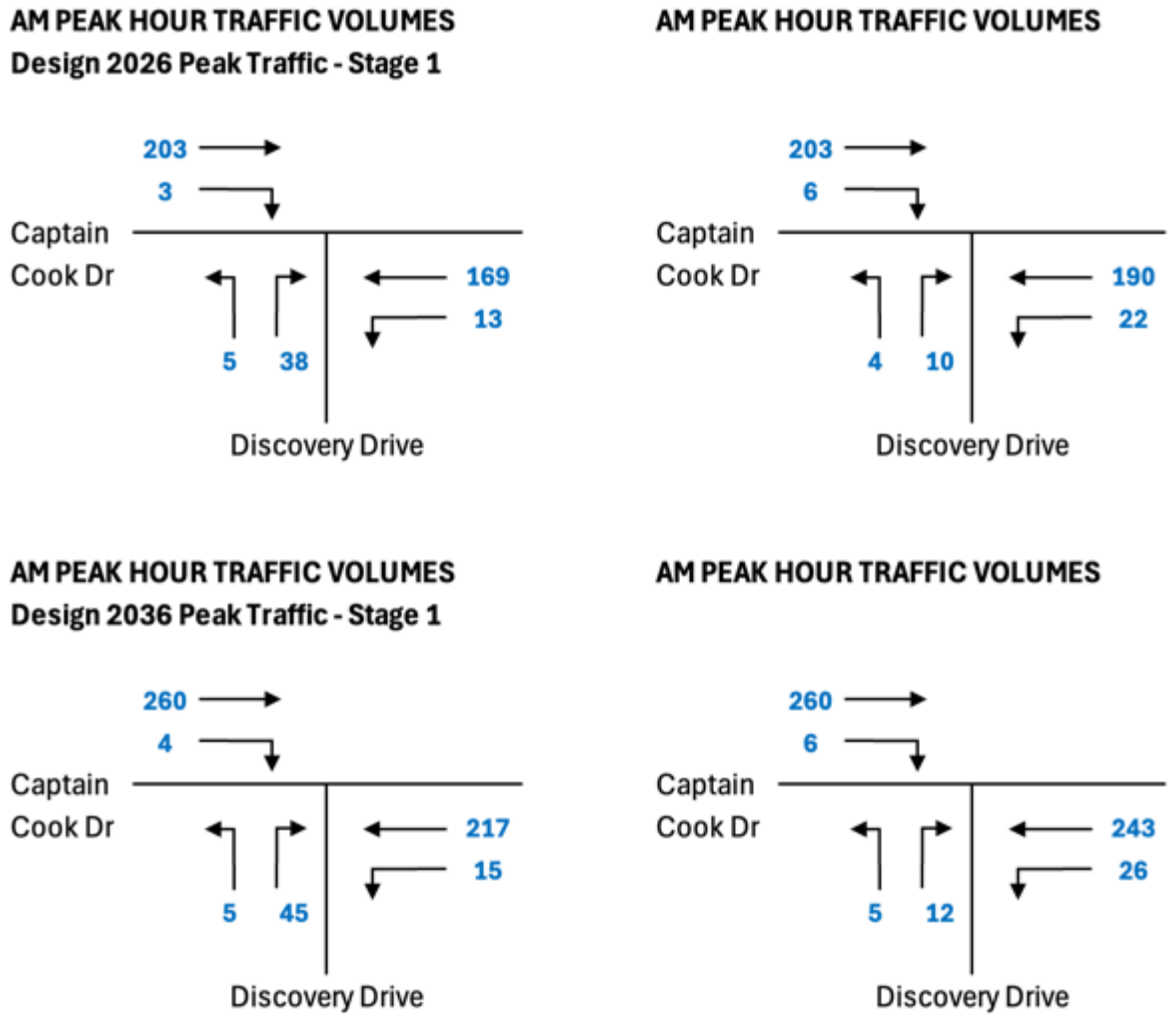


FIGURE 5.1 – DESIGN YEARS 2026 AND 2036 PEAK HOUR TRAFFIC ESTIMATES FOR STAGE 1 AT THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

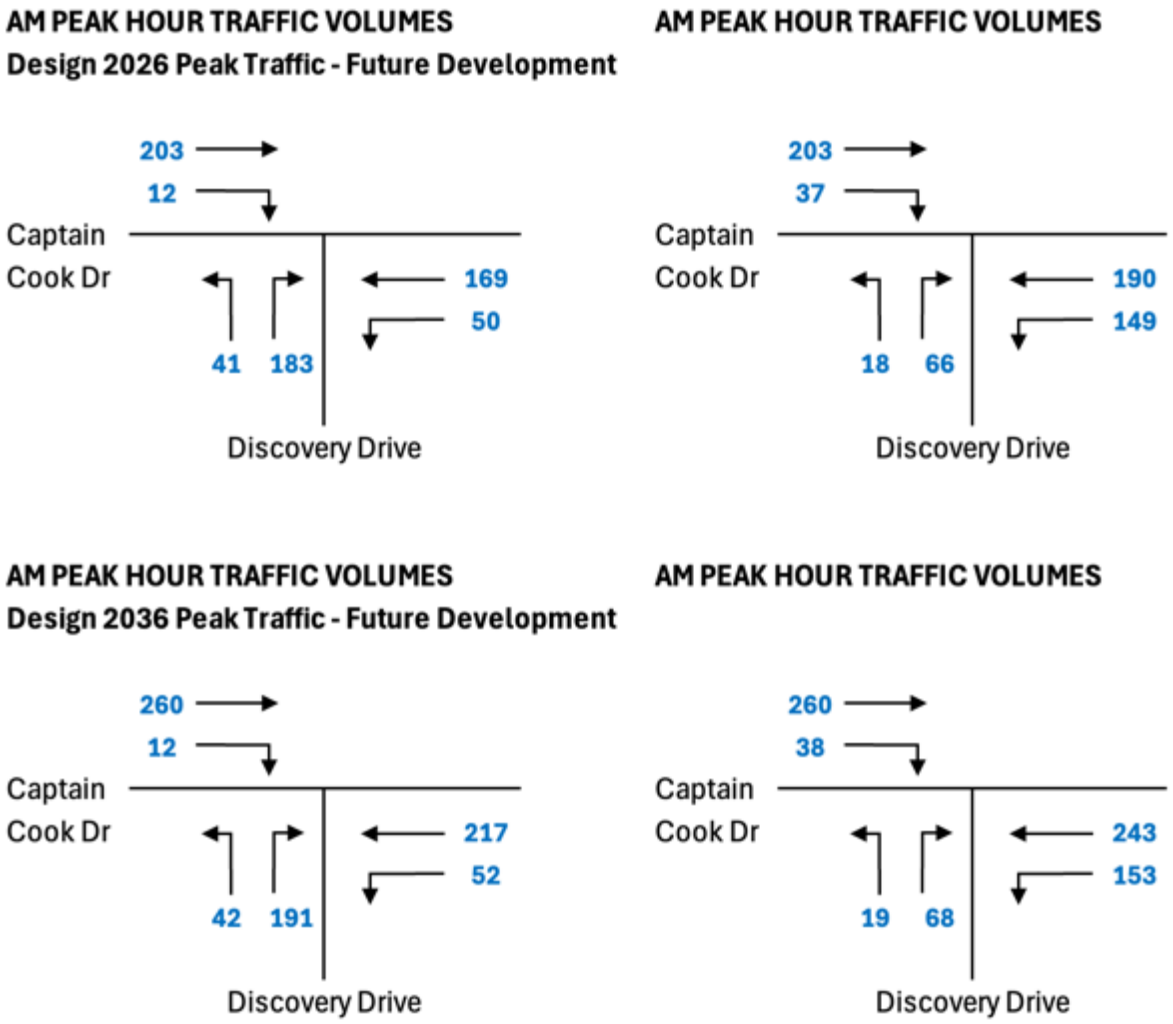


FIGURE 5.2 – DESIGN YEARS 2026 AND 2036 PEAK HOUR TRAFFIC ESTIMATES FOR FUTURE DEVELOPMENT AT THE CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

5.2 Intersection Performance

Modelling for the Captain Cook Drive / Discovery Drive intersection has been carried out using SIDRA software.

A summary of the results is provided in Table 5.1, with the SIDRA Movement Summary for each scenario provided as Appendix B.

Table 5.1: SIDRA Results (Captain Cook Drive / Discovery Drive)

Scenario	Degree of Saturation	Average Delay (second)	95% Back of Queue (metres)
2026 AM Peak hour BACKGROUND	0.119	0.8	1.1
2026 PM Peak hour BACKGROUND	0.120	0.4	0.4
2036 AM Peak hour BACKGROUND	0.151	0.7	1.4
2036 PM Peak hour BACKGROUND	0.153	0.4	0.5
STAGE 1			
2026 AM Peak hour DESIGN	0.119	1.0	1.7
2026 PM Peak hour DESIGN	0.122	0.7	0.5
2036 AM Peak hour DESIGN	0.152	0.9	2.0
2036 PM Peak hour DESIGN	0.156	0.6	0.6
FUTURE DEVELOPMENT – MASTERPLAN			
2026 AM Peak hour DESIGN	0.319	3.7	11.4
2026 PM Peak hour DESIGN	0.158	3.0	3.7
2036 AM Peak hour DESIGN	0.376	3.8	14.8
2036 PM Peak hour DESIGN	0.194	2.8	4.3

As shown in Table 5.1, the existing layout of the Captain Cook Drive / Discovery Drive intersection is expected to perform satisfactorily under projected future traffic conditions, for both the completion of Stage 1 and the balance of the masterplan for the proposed development.

5.3 Turn Warrants

In accordance with Austroads Part 6, the following turn treatments are warranted at the Captain Cook Drive / Discovery Drive intersection under the year 2036 background and design traffic conditions:

Background -
Left turn treatment - Type BAL
Right turn treatment - Type BAR

Design – Stage 1
Left turn treatment - Type BAL
Right turn treatment - Type BAR

Design – Future Development
Left turn treatment - Type AUL(s)
Right turn treatment - Type CHR(s)

As indicated above, basic left and right turn treatments are warranted at the intersection under the projected ten-year traffic conditions for Stage 1 of the development. Given the very low demand for traffic to turn right into Discovery Drive, the existing arrangements are considered satisfactory for Stage 1. However, as shown in Figure 5.3, further development of the site in accordance with the master plan will require an upgrade of the Captain Cook Drive / Discovery Drive intersection to include a Type CHR(s) right turn treatment and a Type AUL(s) left turn treatment.

A concept plan of the proposed layout for the Captain Cook Drive / Discovery Drive intersection is provided in Figure 5.4.

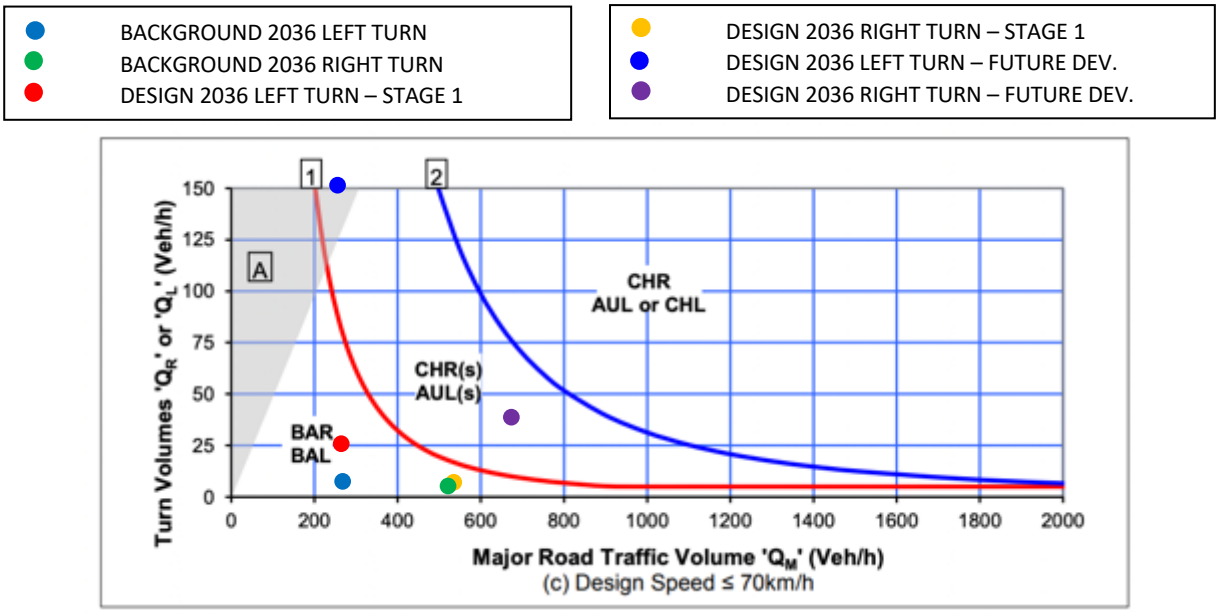


FIGURE 5.3 – TURN WARRANTS ASSESSMENT FOR CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

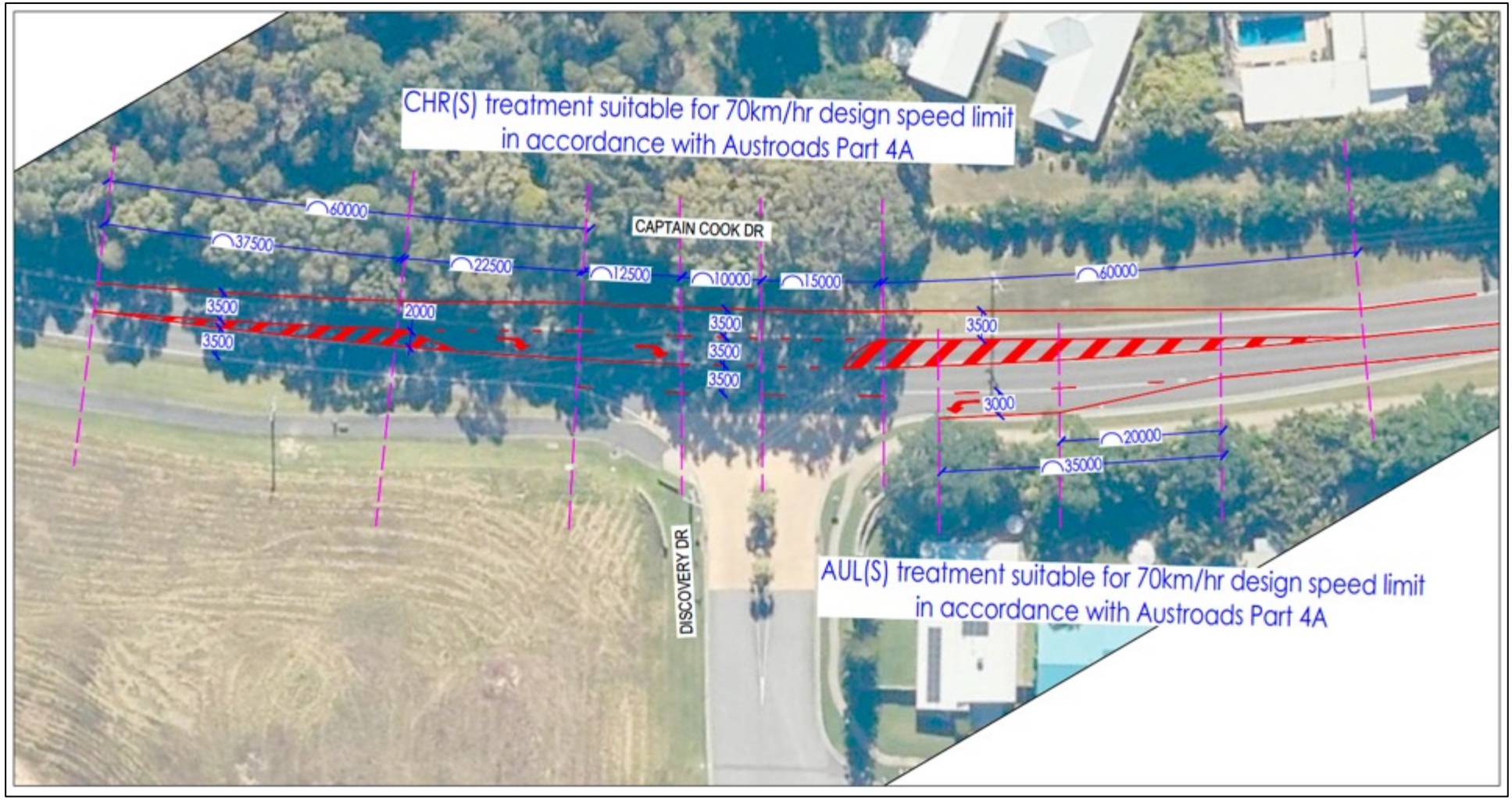


FIGURE 5.4 – CONCEPT LAYOUT OF REQUIRED UPGRADE TO CAPTAIN COOK DR / DISCOVERY DR INTERSECTION FOR FUTURE STAGES OF DEVELOPMENT

5.4 Discovery Drive

As shown in Figure 3.4, it is proposed that Discovery Drive be designed with a road reserve width of approximately 22 metres, which aligns with typical standards for a residential collector street designed for a 70 km/h environment. In accordance with the Gladstone Regional Council Road Hierarchy Policy – Table 2, a residential collector road of this design has capacity to carry in the order of 3,000 vehicles per day (vpd).

Traffic count data (refer to Figure 2.3) indicates that Discovery Drive currently carries approximately 40 vehicles during peak hour, equating to 400 vehicles per day. With a capacity of 3,000 vpd and a traffic generation rate of 8 trips per lot (daily), Discovery Drive could accommodate approximately 325 additional lots, without relying on the secondary arterial road connection.

Given the above, Discovery Drive currently has the capacity to accommodate a large portion of the proposed masterplan. However, it would reach full capacity towards its completion.

6.0 PLANNED 1770 ARTERIAL ROUTE

6.1 Background

A Secondary Arterial route is proposed for the Agnes Water and Town of 1770 region to reduce traffic volumes passing through the Agnes Water township. As shown in Figure 5.3, the proposed route is expected to provide a direct travel option for traffic to and from 1770, bypassing the Agnes Water commercial centre.

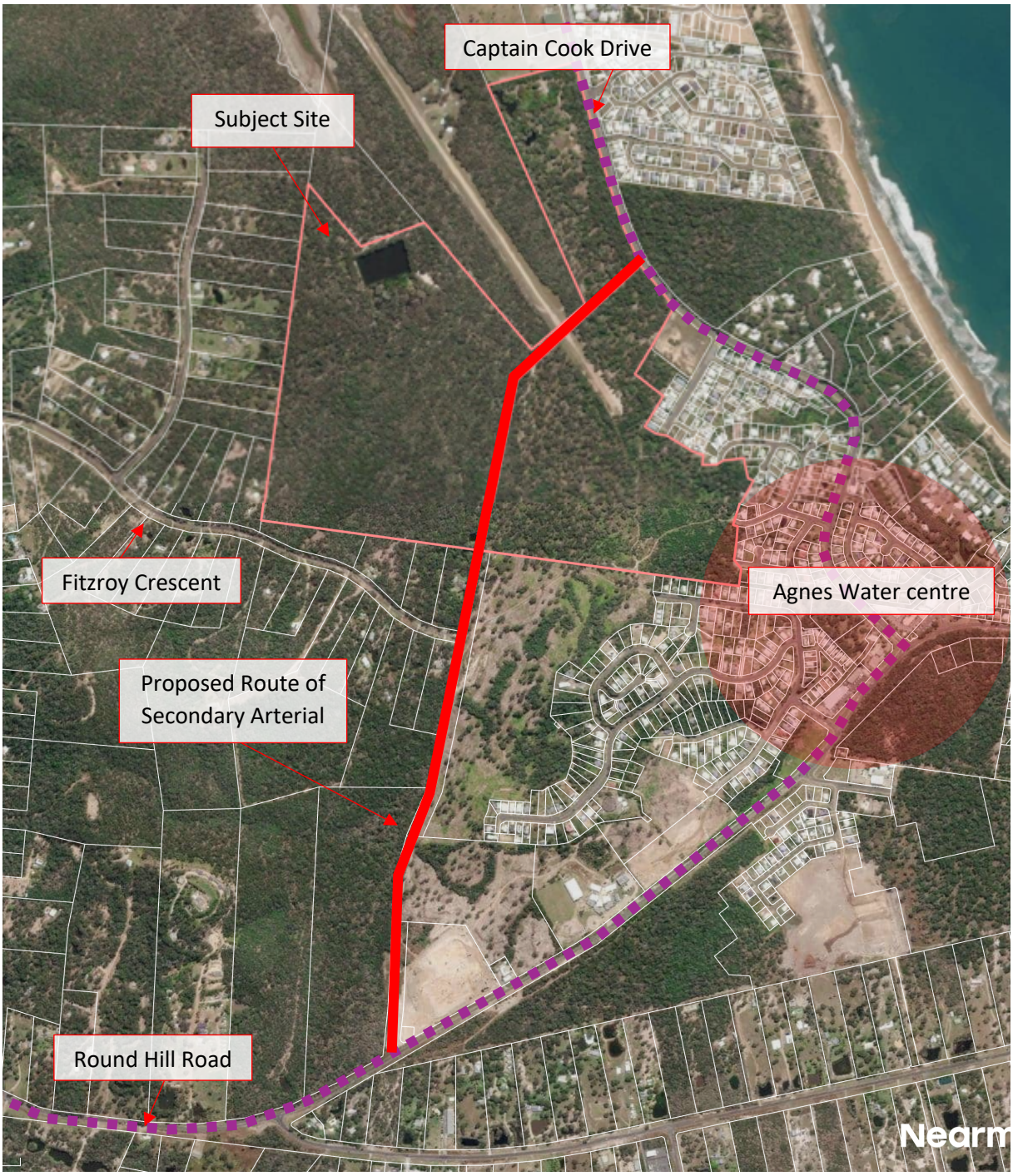


FIGURE 6.1 – PROPOSED ROUTE OF SECONDARY ARTERIAL ROAD

6.2 Estimated Traffic Volumes

The planned Secondary Arterial Route will be used for travel between 1770 / Agnes Water (north) and areas to the west of Agnes Water, and by planned residential development along the route. Table 6.1 provides a summary of the various sources of traffic generation that are likely to use the route.

Table 6.1 – Estimated Traffic Generation of Surrounding Developments

Proposal	Estimated Traffic Generation (2036)
Existing traffic on Captain Cook Drive	Approximately 50% of total surveyed volumes along Captain Cook Drive = 0.5 * 500 = **250** vehicles per peak hour *(source: Section 2.3 of this report)*
Approved health and wellbeing precinct (northern end of subject site)	Proposed internal road that gains access from Captain Cook Drive. Hence, less than **50** vehicles per peak hour. *(source: prelim approval DA/53/2017)*
Proposed masterplan – 325 lots	**260** vehicles per peak hour *(source: Section 4.1 of this report)*
Sunlover Residential Development – 154 lots	**124** vehicles per peak hour *(source: TIA prepared by Rytenskild Traffic)*
Fitzroy Crescent traffic	Approx. 50 rural residential lots = 0.78 * 50 = **39** vehicles per peak hour
Total	**723 vehicles per peak hour**

It is noted that there are two (2) unoccupied lots which will gain access via the Secondary Arterial road. As shown in Figure 2.2, these lots are situated within the Emerging Community zone.

Not all of the above traffic will utilise the route. For example, some traffic generated by the Stockwell project at Sunlover Avenue to access Agnes Water. Being conservative, it is estimated that the western section of the Arterial route will carry in the order of 600 vehicles per hour during peak periods, reducing to approximately 400 vehicles per peak hour at the northern end near Captain Cook Drive.

6.3 Road Design

The above traffic volumes are well within the capacity of a two lane road. The construction of the Secondary Arterial route shall be designed in accordance with the cross-section referenced in Figure 6.2.

As per Annexure D01C of the Gladstone Regional Council D1 Road Design Hierarchy Tables, a sub-arterial road carrying fewer than 20,000 vehicles per day must have a minimum reserve width of 40 metres (subject to its ultimate function). The road must also feature a nominal carriageway width of 11 metres per carriageway and a minimum shoulder width of 2 metres.

An extract from Annexure D01C of the Road Design Hierarchy Tables is provided in Figure 6.3.

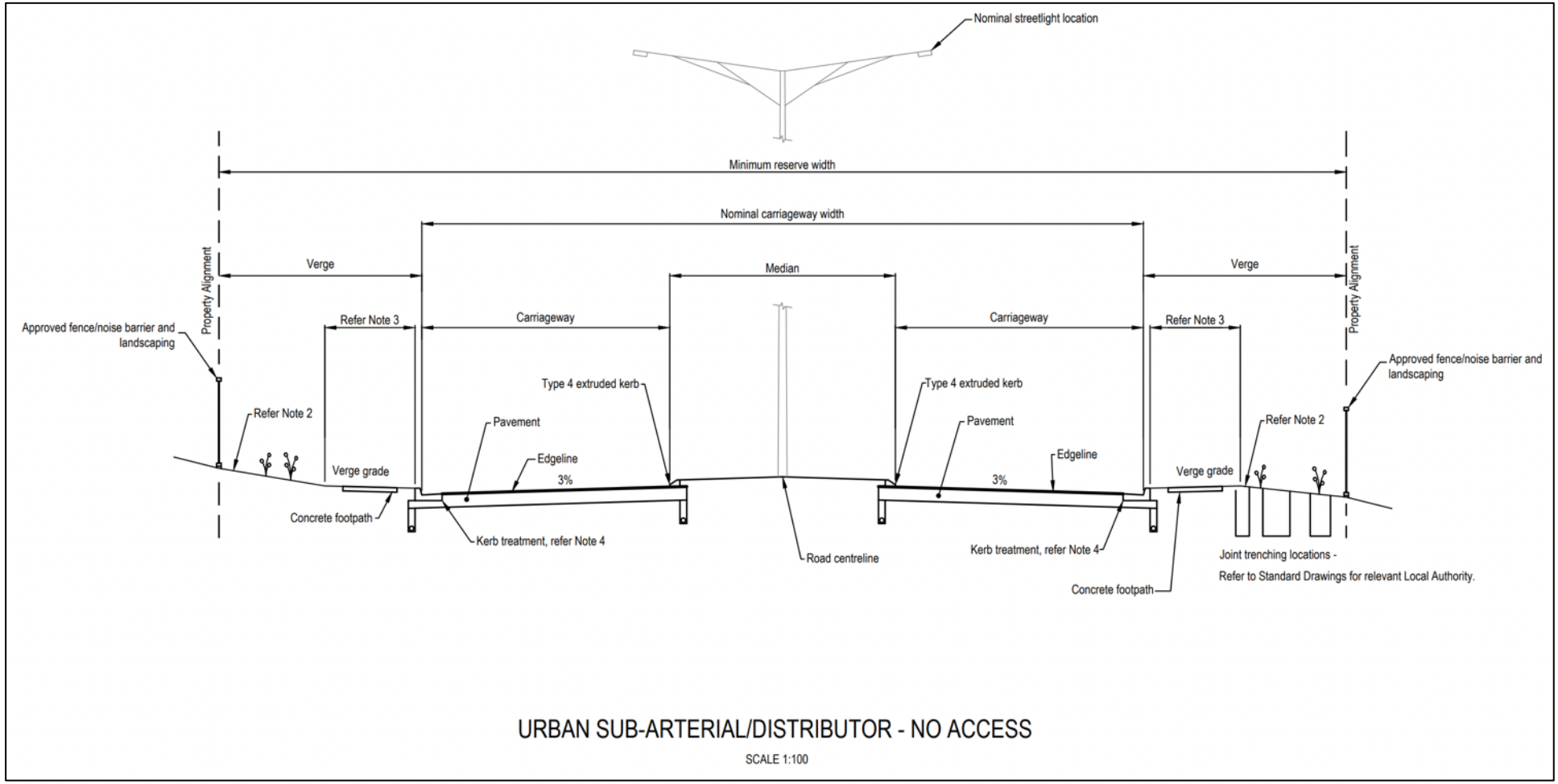


FIGURE 6.2 – TYPE CROSS SECTION URBAN SUB-ARTERIAL/DISTRIBUTOR (CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINES)

Annexure D01C

GLADSTONE REGIONAL COUNCIL D1 ROAD DESIGN HIERARCHY TABLES — REVISION 1 – Nov 2022

GRC – DESIGN CRITERIA – URBAN AREAS											
	Criterion	Road				Street					
		Arterial Roads		Distributor Road		Collector streets		Access Streets			
		Arterial	Sub-Arterial	4-Lane Distributor	2-Lane Distributor	Industrial	Residential / Commercial	Industrial Access Street	Residential Access Street	Residential Access Place	Residential Access Lane
	-										
Cross-Section Requirements											
23	Carriageway Form	As per DTMR Requirements	Site specific	Divided 2 x 2 lanes	2 marked lanes	2 marked lanes	2 marked lanes	Un-divided 2 lanes	Un-divided 2 lanes	Un-divided 2 lanes	
24	Minimum Reserve Width [7]		40m Depends on Ultimate Function	40m	25m Depends on Ultimate Function	25m	22m	25m	18m	17m	
25	Nominal Carriageway Width [8]		11m (No parking) per carriageway	2 x 11.5m	13m	13m	11m	13m	9m	8m	
26	Minimum Verge Width		7.5m	6m	6m	6m	5.5m	6m	4.5m	4.5m	
27	Minimum Through Lane Width		3.5m	3.5m	3.5m	3.5m	3.0m	3.5m	3.0m	3.0m	
28	Minimum Curve Radius [9]		As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	As per speed environment in accordance with relevant Austroads Guide	
29	Shoulder Width		2.0m (Min) Both sides each carriageway	3.0m (Min) Left side [10] 1.5m (Min) Right side [10] (Each Carriageway)	Site Specific	N/A	N/A	N/A	N/A	N/A	
30	Kerb and Channel Profile		Barrier Kerb	Barrier Kerb	Barrier Kerb	Barrier Kerb & Channel (150mm high)	Barrier Kerb & Channel (150mm high)	Barrier Kerb & Channel (150mm high)	Mountable Kerb & Channel (100mm high)	Mountable Kerb & Channel (100mm high)	
31	Median Width (Minimum)		5m	5m	Site Specific (2.0m where provided)	Site Specific (2.0m where provided)	Site Specific (2.0m where provided)	Site Specific (2.0m where provided)	No	No	

FIGURE 6.3 – ANNEXURE D01C FROM THE GLADSTONE REGIONAL COUNCIL D1 ROAD DESIGN HIERARCHY TABLES

6.4 Design of the Secondary Arterial Road / Captain Cook Drive Intersection

Given the higher-order function of the Secondary Arterial road and the traffic estimates discussed in section 6.2, it is envisaged that the Arterial Road / Captain Cook Drive intersection will need to be controlled by a channelised T junction with Type CHR(s) and Type BAL turn treatments. The projected traffic volumes are well within the capacity of such facilities. A more detailed assessment should be carried out during later stages of the subject development.

6.5 Design of the Secondary Arterial Road / Site Access Intersection

Given the future connection of the Secondary Arterial Road to the site, which would form a four-way intersection, it is considered that the intersection be controlled by a roundabout. This treatment would have the capacity to accommodate the estimated development traffic and projected through volumes along the Secondary Arterial Road. A more detailed assessment should be carried out during the later stages of the subject development.

7.0 SUMMARY OF CONCLUSIONS & RECOMMENDATIONS

- The subject site is located within walking distance of the Agnes Water village centre and various commercial and community uses.

- The proposed subdivision plan is for Stage 1 comprising of 20 lots, of an overall masterplan comprising of 325 lots. Access is proposed to be gained via an extension of Discovery Drive.

- SIDRA modelling based on recent traffic count data indicates that the existing layout of the Captain Cook Drive / Discovery Drive intersection will function satisfactorily under current network conditions and with the proposal and masterplan fully occupied.

- Basic left and right turn treatments are warranted at the intersection under Stage 1 traffic conditions. Given the very low demand for traffic to turn right into Discovery Drive, the existing arrangements are considered satisfactory for Stage 1. However, as shown in Figure 5.3, further development of the site in accordance with the master plan will require an upgrade of the Captain Cook Drive / Discovery Drive intersection to include a Type CHR(S) right turn treatment and a Type AUL(s) left turn treatment.

- Given the higher-order function of the Secondary Arterial road and the traffic estimates discussed in section 6.2, it is envisaged that the Arterial Road / Captain Cook Drive intersection will need to be controlled by a channelised T junction with Type CHR(s) and Type BAL turn treatments. The projected traffic volumes are well within the capacity of such facilities. A more detailed assessment should be carried out during later stages of the subject development.

- Given the future connection of the Secondary Arterial Road to the site, which would form a four-way intersection, it is considered that the intersection be controlled by a roundabout. This treatment would have the capacity to accommodate the estimated development traffic and projected through volumes along the Secondary Arterial Road. A more detailed assessment should be carried out during the later stages of the subject development.

APPENDICES

APPENDIX A – TRAFFIC COUNT DATA
APPENDIX B – SIDRA MODELLING RESULTS

APPENDIX A – TRAFFIC COUNT DATA (CAPTAIN COOK DR / DISCOVERY DR)

MANUAL TRAFFIC SURVEY RESULTS

Unit Type: Camera
RTE ID:
Location: 24085 Agnes water
Date: Wednesday, 04 December 2024
Comments: Fine weather

Class	Total

Time	N-Thru	N-Right	N-Left	S-Thru	S-Right	S-Left	E-Thru	E-Right	E-Left	W-Thru	W-Right	W-Left	Total	Cumul Tot
6:00	0	0	0	0	1	0	11	0	4	13	0	0	29	29
6:15	0	0	0	0	6	2	20	0	1	13	0	0	42	71
6:30	0	0	0	0	3	1	17	0	4	16	2	0	43	114
6:45	0	0	0	0	3	1	23	0	4	32	0	0	63	177
7:00	0	0	0	0	2	0	15	0	2	22	0	0	41	189
7:15	0	0	0	0	3	1	24	0	2	23	1	0	54	201
7:30	0	0	0	0	2	1	22	0	1	22	1	0	49	207
7:45	0	0	0	0	1	0	31	0	2	24	1	0	59	203
8:00	0	0	0	0	3	1	38	0	2	28	3	0	75	237
8:15	0	0	0	0	6	0	62	0	5	51	0	0	124	307
8:30	0	0	0	0	4	0	41	0	2	53	1	0	101	359
8:45	0	0	0	0	6	0	33	0	2	48	0	0	89	389
9:00	0	0	0	0	10	2	25	0	1	41	1	0	80	394
9:15	0	0	0	0	3	0	36	0	0	28	2	0	69	339
9:30	0	0	0	0	4	1	47	0	1	46	3	0	102	340
9:45	0	0	0	0	4	1	28	0	5	36	1	0	75	326
10:00	0	0	0	0	6	1	46	0	2	32	0	0	87	333
10:15	0	0	0	0	1	0	33	0	7	32	2	0	75	339
10:30	0	0	0	0	3	0	35	0	1	34	0	0	73	310
10:45	0	0	0	0	0	1	32	0	3	42	1	0	79	314
11:00	0	0	0	0	6	1	38	0	4	42	0	0	91	318
11:15	0	0	0	0	4	1	32	0	3	32	1	0	73	316
11:30	0	0	0	0	3	1	36	0	3	27	0	0	70	313
11:45	0	0	0	0	3	1	38	0	5	34	1	0	82	316
12:00	0	0	0	0	1	1	41	0	1	36	2	0	82	307
12:15	0	0	0	0	0	0	30	0	4	34	0	0	68	302
12:30	0	0	0	0	4	2	27	0	2	33	0	0	68	300
12:45	0	0	0	0	5	1	33	0	5	40	0	0	84	302
13:00	0	0	0	0	2	2	23	0	4	29	2	0	62	282
13:15	0	0	0	0	4	1	31	0	6	25	0	0	67	281
13:30	0	0	0	0	4	0	23	0	3	33	0	0	63	276
13:45	0	0	0	0	1	2	32	0	1	35	0	0	71	263
14:00	0	0	0	0	1	1	27	0	3	29	0	0	61	262
14:15	0	0	0	0	1	0	54	0	2	47	0	0	104	299
14:30	0	0	0	0	2	1	39	0	3	65	1	0	111	347
14:45	0	0	0	0	2	1	38	0	4	40	1	0	86	362
15:00	0	0	0	0	2	1	50	0	3	41	1	0	98	399
15:15	0	0	0	0	4	1	37	0	2	31	0	0	75	370
15:30	0	0	0	0	6	1	23	0	1	30	1	0	62	321
15:45	0	0	0	0	0	1	43	0	5	26	1	0	76	311
16:00	0	0	0	0	3	0	40	0	3	23	0	0	69	282
16:15	0	0	0	0	4	0	31	0	5	22	0	0	62	269
16:30	0	0	0	0	6	0	36	0	8	25	0	0	75	282
16:45	0	0	0	0	4	3	33	0	2	41	0	0	83	289
17:00	0	0	0	0	3	1	32	0	3	25	1	0	65	285
17:15	0	0	0	0	1	0	28	0	1	28	2	0	60	283
17:30	0	0	0	0	4	0	24	0	6	27	0	0	61	269
17:45	0	0	0	0	1	0	26	0	2	34	1	0	64	250
AM PEAK HR	**0**	**0**	**0**	**0**	**26**	**2**	**161**	**0**	**10**	**193**	**2**	**0**	394	579
PM PEAK HR	**0**	**0**	**0**	**0**	**7**	**3**	**181**	**0**	**12**	**193**	**3**	**0**	399	918

MANUAL TRAFFIC SURVEY RESULTS

Unit Type: Camera
RTE ID:
Location: 24085 Agnes water
Date: Thursday,5 December 2024
Comments: Fine weather
Class Total

Time	N-Thru	N-Right	N-Left	S-Thru	S-Right	S-Left	E-Thru	E-Right	E-Left	W-Thru	W-Right	W-Left	Total	Cumul Tot
6:00	0	0	0	0	1	0	10	0	0	7	1	0	19	19
6:15	0	0	0	0	6	0	21	0	0	11	0	0	38	57
6:30	0	0	0	0	1	1	15	0	1	19	1	0	38	95
6:45	0	0	0	0	2	0	14	0	5	24	0	0	45	140
7:00	0	0	0	0	1	1	18	0	2	25	1	0	48	169
7:15	0	0	0	0	2	1	31	0	2	16	0	0	52	183
7:30	0	0	0	0	1	0	19	0	3	23	0	0	46	191
7:45	0	0	0	0	7	1	22	0	2	20	0	0	52	198
8:00	0	0	0	0	6	1	39	0	4	34	1	0	85	235
8:15	0	0	0	0	5	3	48	0	3	51	1	0	111	294
8:30	0	0	0	0	1	0	43	0	2	52	0	0	98	346
8:45	0	0	0	0	2	1	39	0	5	46	4	0	97	391
9:00	0	0	0	0	2	1	34	0	6	31	0	0	74	380
9:15	0	0	0	0	3	4	46	0	2	27	1	0	83	352
9:30	0	0	0	0	3	0	34	0	1	38	1	0	77	331
9:45	0	0	0	0	1	1	33	0	6	41	0	0	82	316
10:00	0	0	0	0	4	2	46	0	2	37	1	0	92	334
10:15	0	0	0	0	2	1	32	0	2	37	0	0	74	325
10:30	0	0	0	0	6	1	27	0	7	38	2	0	81	329
10:45	0	0	0	0	4	0	37	0	8	56	1	0	106	353
11:00	0	0	0	0	3	1	36	0	5	47	0	0	92	353
11:15	0	0	0	0	6	1	47	0	2	33	0	0	89	368
11:30	0	0	0	0	3	4	32	0	3	39	1	0	82	369
11:45	0	0	0	0	2	3	32	0	5	39	0	0	81	344
12:00	0	0	0	0	3	2	41	0	4	32	1	0	83	335
12:15	0	0	0	0	3	2	33	0	4	30	1	0	73	319
12:30	0	0	0	0	2	1	30	0	2	37	0	0	72	309
12:45	0	0	0	0	5	0	33	0	6	34	0	0	78	306
13:00	0	0	0	0	4	1	28	0	5	39	0	0	77	300
13:15	0	0	0	0	3	1	33	0	6	40	1	0	84	311
13:30	0	0	0	0	4	0	30	0	4	28	4	0	70	309
13:45	0	0	0	0	3	0	36	0	3	22	0	0	64	295
14:00	0	0	0	0	5	0	33	0	2	26	1	0	67	285
14:15	0	0	0	0	2	0	50	0	1	25	0	0	78	279
14:30	0	0	0	0	6	1	44	0	2	61	0	0	114	323
14:45	0	0	0	0	7	1	34	0	7	48	1	0	98	357
15:00	0	0	0	0	4	0	20	0	9	35	0	0	68	358
15:15	0	0	0	0	2	2	28	0	5	17	0	0	54	334
15:30	0	0	0	0	0	2	21	0	2	35	1	0	61	281
15:45	0	0	0	0	10	1	29	0	5	30	0	0	75	258
16:00	0	0	0	0	2	1	32	0	6	24	0	0	65	255
16:15	0	0	0	0	3	1	35	0	1	23	0	0	63	264
16:30	0	0	0	0	8	0	35	0	4	29	0	0	76	279
16:45	0	0	0	0	1	0	26	0	4	31	0	0	62	266
17:00	0	0	0	0	2	0	31	0	5	23	2	0	63	264
17:15	0	0	0	0	3	2	37	0	5	24	0	0	71	272
17:30	0	0	0	0	5	0	23	0	2	20	2	0	52	248
17:45	0	0	0	0	3	0	39	0	1	10	0	0	53	239
AM PEAK HR	**0**	**0**	**0**	**0**	**10**	**5**	**164**	**0**	**16**	**180**	**5**	**0**	380	556
PM PEAK HR	**0**	**0**	**0**	**0**	**19**	**2**	**148**	**0**	**19**	**169**	**1**	**0**	358	843

APPENDIX B – SIDRA MODELLING (CAPTAIN COOK DRIVE / DISCOVERY DRIVE)

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'		Good operation.
'B'	Good operation. Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
'C'	Satisfactory.	Satisfactory but accident study required.
'D'	Operating near capacity.	Near capacity and accident study required.
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.
'F'	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode.

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	less than 14	Good operation.	Good operation.
B	15 to 28	Good with acceptable delays and spare capacity.	Acceptable delays and spare capacity.
C	29 to 42	Satisfactory.	Satisfactory but accident study required.
D	43 to 56	Operating near capacity.	Near capacity and accident study required.
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode.	At capacity and requires other control mode.

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**[1] both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

[1] *The values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs.*

CAPTAIN COOK DRIVE / DISCOVERY DRIVE INTERSECTION

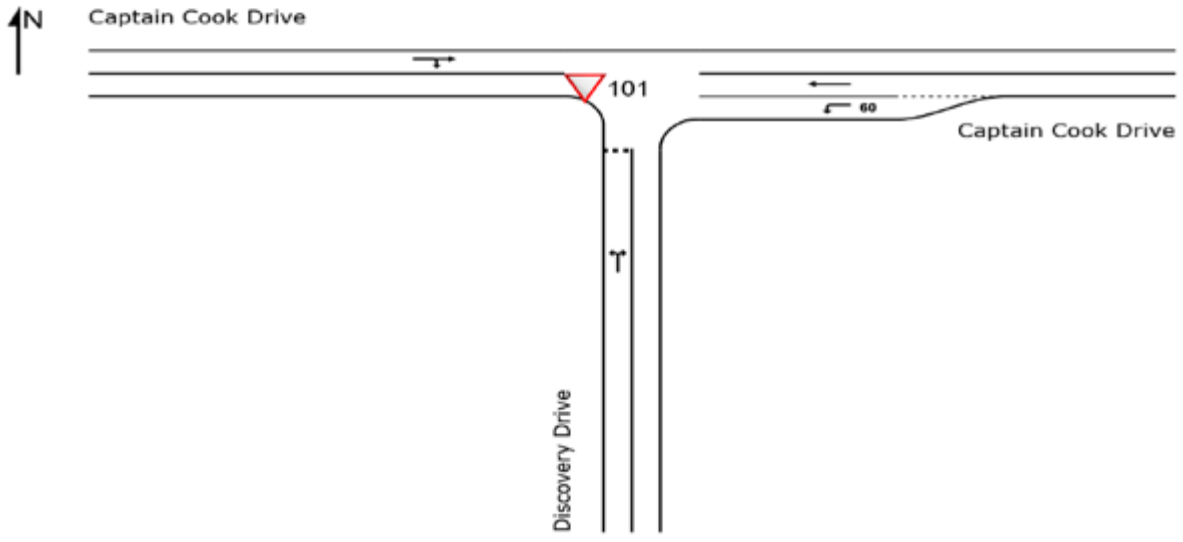
BACKGROUND 2026 PEAK TRAFFIC AM
BACKGROUND 2026 PEAK TRAFFIC PM
BACKGROUND 2036 PEAK TRAFFIC AM
BACKGROUND 2036 PEAK TRAFFIC PM
DESIGN 2026 PEAK TRAFFIC AM – STAGE 1
DESIGN 2026 PEAK TRAFFIC PM – STAGE 1
DESIGN 2036 PEAK TRAFFIC AM – STAGE 1
DESIGN 2036 PEAK TRAFFIC PM – STAGE 1
DESIGN 2026 PEAK TRAFFIC AM – MASTERPLAN BALANCE
DESIGN 2026 PEAK TRAFFIC PM – MASTERPLAN BALANCE
DESIGN 2036 PEAK TRAFFIC AM – MASTERPLAN BALANCE
DESIGN 2036 PEAK TRAFFIC PM – MASTERPLAN BALANCE

SITE LAYOUT

Site: 101 [Background 2026 Peak Traffic AM (Site Folder: General)]

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



BACKGROUND 2026 PEAK TRAFFIC AM

MOVEMENT SUMMARY

Site: 101 [Background 2026 Peak Traffic AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	2	5.0	2	5.0	0.042	6.2	LOS A	0.2	1.1	0.47	0.66	0.47	50.7
3	R2	All MCs	28	5.0	28	5.0	0.042	8.4	LOS A	0.2	1.1	0.47	0.66	0.47	50.6
Approach			31	5.0	31	5.0	0.042	8.2	LOS A	0.2	1.1	0.47	0.66	0.47	50.6
East: Captain Cook Drive															
4	L2	All MCs	12	5.0	12	5.0	0.006	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	178	10.0	178	10.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			189	9.7	189	9.7	0.097	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.119	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
12	R2	All MCs	2	5.0	2	5.0	0.119	5.7	LOS A	0.0	0.1	0.01	0.01	0.01	56.8
Approach			216	10.0	216	10.0	0.119	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.9
All Vehicles			436	9.5	436	9.5	0.119	0.8	NA	0.2	1.1	0.04	0.06	0.04	58.9

BACKGROUND 2026 PEAK TRAFFIC PM

MOVEMENT SUMMARY

Site: 101 [Background 2026 Peak Traffic PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	3	5.0	3	5.0	0.013	6.2	LOS A	0.0	0.4	0.43	0.60	0.43	51.1
3	R2	All MCs	7	5.0	7	5.0	0.013	8.5	LOS A	0.0	0.4	0.43	0.60	0.43	50.9
Approach			11	5.0	11	5.0	0.013	7.8	LOS A	0.0	0.4	0.43	0.60	0.43	51.0
East: Captain Cook Drive															
4	L2	All MCs	14	5.0	14	5.0	0.008	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	200	10.0	200	10.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			214	9.7	214	9.7	0.109	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.120	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.9
12	R2	All MCs	3	5.0	3	5.0	0.120	5.9	LOS A	0.0	0.2	0.01	0.01	0.01	56.8
Approach			217	9.9	217	9.9	0.120	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.8
All Vehicles			441	9.7	441	9.7	0.120	0.4	NA	0.0	0.4	0.02	0.04	0.02	59.4

BACKGROUND 2036 PEAK TRAFFIC AM

MOVEMENT SUMMARY

▽ Site: 101 [Background 2036 Peak Traffic AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	2	5.0	2	5.0	0.053	6.4	LOS A	0.2	1.4	0.53	0.71	0.53	50.0
3	R2	All MCs	31	5.0	31	5.0	0.053	9.6	LOS A	0.2	1.4	0.53	0.71	0.53	49.8
Approach			33	5.0	33	5.0	0.053	9.4	LOS A	0.2	1.4	0.53	0.71	0.53	49.9
East: Captain Cook Drive															
4	L2	All MCs	12	5.0	12	5.0	0.006	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	228	10.0	228	10.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			240	9.8	240	9.8	0.125	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.151	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.9
12	R2	All MCs	2	5.0	2	5.0	0.151	5.8	LOS A	0.0	0.2	0.01	0.01	0.01	56.8
Approach			276	10.0	276	10.0	0.151	0.0	NA	0.0	0.2	0.01	0.01	0.01	59.9
All Vehicles			548	9.6	548	9.6	0.151	0.7	NA	0.2	1.4	0.04	0.06	0.04	59.0

BACKGROUND 2036 PEAK TRAFFIC PM

MOVEMENT SUMMARY

▽ Site: 101 [Background 2036 Peak Traffic PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	3	5.0	3	5.0	0.017	6.5	LOS A	0.1	0.5	0.50	0.64	0.50	50.3
3	R2	All MCs	8	5.0	8	5.0	0.017	9.7	LOS A	0.1	0.5	0.50	0.64	0.50	50.2
Approach			12	5.0	12	5.0	0.017	8.8	LOS A	0.1	0.5	0.50	0.64	0.50	50.3
East: Captain Cook Drive															
4	L2	All MCs	14	5.0	14	5.0	0.008	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	256	10.0	256	10.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			269	9.7	269	9.7	0.140	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.153	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.9
12	R2	All MCs	3	5.0	3	5.0	0.153	6.0	LOS A	0.0	0.2	0.01	0.01	0.01	56.8
Approach			277	9.9	277	9.9	0.153	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.8
All Vehicles			558	9.7	558	9.7	0.153	0.4	NA	0.1	0.5	0.02	0.03	0.02	59.4

DESIGN 2026 PEAK TRAFFIC AM – STAGE 1

MOVEMENT SUMMARY

Site: 101 [Design 2026 Peak Traffic AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	5	5.0	5	5.0	0.061	6.2	LOS A	0.2	1.7	0.46	0.66	0.46	50.8
3	R2	All MCs	40	5.0	40	5.0	0.061	8.5	LOS A	0.2	1.7	0.46	0.66	0.46	50.7
Approach			45	5.0	45	5.0	0.061	8.2	LOS A	0.2	1.7	0.46	0.66	0.46	50.7
East: Captain Cook Drive															
4	L2	All MCs	14	5.0	14	5.0	0.008	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	178	10.0	178	10.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			192	9.6	192	9.6	0.097	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.4
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.119	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.9
12	R2	All MCs	3	5.0	3	5.0	0.119	5.8	LOS A	0.0	0.2	0.01	0.01	0.01	56.8
Approach			217	9.9	217	9.9	0.119	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.8
All Vehicles			454	9.3	454	9.3	0.119	1.0	NA	0.2	1.7	0.05	0.09	0.05	58.6

DESIGN 2026 PEAK TRAFFIC PM – STAGE 1

MOVEMENT SUMMARY

Site: 101 [Design 2026 Peak Traffic PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	4	5.0	4	5.0	0.019	6.3	LOS A	0.1	0.5	0.44	0.61	0.44	51.0
3	R2	All MCs	11	5.0	11	5.0	0.019	8.6	LOS A	0.1	0.5	0.44	0.61	0.44	50.9
Approach			15	5.0	15	5.0	0.019	7.9	LOS A	0.1	0.5	0.44	0.61	0.44	50.9
East: Captain Cook Drive															
4	L2	All MCs	23	5.0	23	5.0	0.013	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	200	10.0	200	10.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			223	9.5	223	9.5	0.109	0.6	NA	0.0	0.0	0.00	0.06	0.00	59.1
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.122	0.0	LOS A	0.1	0.4	0.03	0.03	0.03	59.7
12	R2	All MCs	6	5.0	6	5.0	0.122	6.3	LOS A	0.1	0.4	0.03	0.03	0.03	56.6
Approach			220	9.9	220	9.9	0.122	0.2	NA	0.1	0.4	0.03	0.03	0.03	59.6
All Vehicles			458	9.5	458	9.5	0.122	0.7	NA	0.1	0.5	0.03	0.06	0.03	59.0

DESIGN 2036 PEAK TRAFFIC AM – STAGE 1

MOVEMENT SUMMARY

Site: 101 [Design 2036 Peak Traffic AM - Stage 1 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	5	5.0	5	5.0	0.073	6.4	LOS A	0.3	2.0	0.53	0.72	0.53	50.0
3	R2	All MCs	41	5.0	41	5.0	0.073	9.7	LOS A	0.3	2.0	0.53	0.72	0.53	49.9
Approach			46	5.0	46	5.0	0.073	9.3	LOS A	0.3	2.0	0.53	0.72	0.53	49.9
East: Captain Cook Drive															
4	L2	All MCs	14	5.0	14	5.0	0.008	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	228	10.0	228	10.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			242	9.7	242	9.7	0.125	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.152	0.0	LOS A	0.0	0.2	0.01	0.01	0.01	59.9
12	R2	All MCs	3	5.0	3	5.0	0.152	5.9	LOS A	0.0	0.2	0.01	0.01	0.01	56.8
Approach			277	9.9	277	9.9	0.152	0.1	NA	0.0	0.2	0.01	0.01	0.01	59.8
All Vehicles			565	9.4	565	9.4	0.152	0.9	NA	0.3	2.0	0.05	0.08	0.05	58.7

DESIGN 2036 PEAK TRAFFIC PM – STAGE 1

MOVEMENT SUMMARY

Site: 101 [Design 2036 Peak Traffic PM - Stage 1 (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	4	5.0	4	5.0	0.024	6.5	LOS A	0.1	0.6	0.51	0.66	0.51	50.2
3	R2	All MCs	12	5.0	12	5.0	0.024	9.8	LOS A	0.1	0.6	0.51	0.66	0.51	50.1
Approach			16	5.0	16	5.0	0.024	8.9	LOS A	0.1	0.6	0.51	0.66	0.51	50.2
East: Captain Cook Drive															
4	L2	All MCs	24	5.0	24	5.0	0.014	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	256	10.0	256	10.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			280	9.6	280	9.6	0.140	0.5	NA	0.0	0.0	0.00	0.05	0.00	59.2
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.156	0.0	LOS A	0.1	0.5	0.03	0.03	0.03	59.8
12	R2	All MCs	6	5.0	6	5.0	0.156	6.6	LOS A	0.1	0.5	0.03	0.03	0.03	56.7
Approach			280	9.9	280	9.9	0.156	0.2	NA	0.1	0.5	0.03	0.03	0.03	59.7
All Vehicles			576	9.6	576	9.6	0.156	0.6	NA	0.1	0.6	0.03	0.06	0.03	59.2

DESIGN 2026 PEAK TRAFFIC AM – MASTERPLAN BALANCE [EXISTING LAYOUT]

MOVEMENT SUMMARY

Site: 101 [Design 2026 Peak Traffic AM - Masterplan balance [Existing Layout] (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	43	5.0	43	5.0	0.319	6.6	LOS A	1.6	11.4	0.55	0.73	0.60	50.0
3	R2	All MCs	193	5.0	193	5.0	0.319	9.9	LOS A	1.6	11.4	0.55	0.73	0.60	49.9
Approach			236	5.0	236	5.0	0.319	9.3	LOS A	1.6	11.4	0.55	0.73	0.60	49.9
East: Captain Cook Drive															
4	L2	All MCs	53	5.0	53	5.0	0.029	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	178	10.0	178	10.0	0.097	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach			231	8.9	231	8.9	0.097	1.3	NA	0.0	0.0	0.00	0.13	0.00	58.1
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.128	0.1	LOS A	0.1	0.9	0.05	0.06	0.05	59.4
12	R2	All MCs	13	5.0	13	5.0	0.128	6.6	LOS A	0.1	0.9	0.05	0.06	0.05	56.4
Approach			226	9.7	226	9.7	0.128	0.5	NA	0.1	0.9	0.05	0.06	0.05	59.3
All Vehicles			693	7.8	693	7.8	0.319	3.7	NA	1.6	11.4	0.20	0.31	0.22	55.4

DESIGN 2026 PEAK TRAFFIC PM – MASTERPLAN BALANCE [EXISTING LAYOUT]

MOVEMENT SUMMARY

Site: 101 [Design 2026 Peak Traffic PM - Masterplan balance [Existing Layout] (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	19	5.0	19	5.0	0.133	6.3	LOS A	0.5	3.7	0.53	0.72	0.53	50.0
3	R2	All MCs	69	5.0	69	5.0	0.133	10.1	LOS B	0.5	3.7	0.53	0.72	0.53	49.9
Approach			88	5.0	88	5.0	0.133	9.3	LOS A	0.5	3.7	0.53	0.72	0.53	49.9
East: Captain Cook Drive															
4	L2	All MCs	157	5.0	157	5.0	0.087	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	52.7
5	T1	All MCs	200	10.0	200	10.0	0.109	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			357	7.8	357	7.8	0.109	2.5	NA	0.0	0.0	0.00	0.25	0.00	56.5
West: Captain Cook Drive															
11	T1	All MCs	214	10.0	214	10.0	0.158	0.5	LOS A	0.4	3.1	0.19	0.21	0.19	58.4
12	R2	All MCs	39	5.0	39	5.0	0.158	7.4	LOS A	0.4	3.1	0.19	0.21	0.19	55.4
Approach			253	9.2	253	9.2	0.158	1.6	NA	0.4	3.1	0.19	0.21	0.19	57.9
All Vehicles			698	8.0	698	8.0	0.158	3.0	NA	0.5	3.7	0.13	0.30	0.13	56.1

DESIGN 2036 PEAK TRAFFIC AM – MASTERPLAN BALANCE [EXISTING LAYOUT]

MOVEMENT SUMMARY

Site: 101 [Design 2036 Peak Traffic AM - Masterplan balance [Existing Layout] (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	43	5.0	43	5.0	0.376	7.5	LOS A	2.0	14.8	0.63	0.83	0.80	48.7
3	R2	All MCs	195	5.0	195	5.0	0.376	12.1	LOS B	2.0	14.8	0.63	0.83	0.80	48.6
Approach			238	5.0	238	5.0	0.376	11.2	LOS B	2.0	14.8	0.63	0.83	0.80	48.6
East: Captain Cook Drive															
4	L2	All MCs	53	5.0	53	5.0	0.029	5.6	LOS A	0.0	0.0	0.00	0.58	0.00	52.7
5	T1	All MCs	228	10.0	228	10.0	0.125	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			281	9.1	281	9.1	0.125	1.1	NA	0.0	0.0	0.00	0.11	0.00	58.4
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.162	0.1	LOS A	0.1	1.0	0.05	0.06	0.05	59.5
12	R2	All MCs	13	5.0	13	5.0	0.162	7.0	LOS A	0.1	1.0	0.05	0.06	0.05	56.5
Approach			286	9.8	286	9.8	0.162	0.4	NA	0.1	1.0	0.05	0.06	0.05	59.4
All Vehicles			805	8.1	805	8.1	0.376	3.8	NA	2.0	14.8	0.20	0.30	0.25	55.4

DESIGN 2036 PEAK TRAFFIC PM – MASTERPLAN BALANCE [EXISTING LAYOUT]

MOVEMENT SUMMARY

Site: 101 [Design 2036 Peak Traffic PM - Masterplan balance [Existing Layout] (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

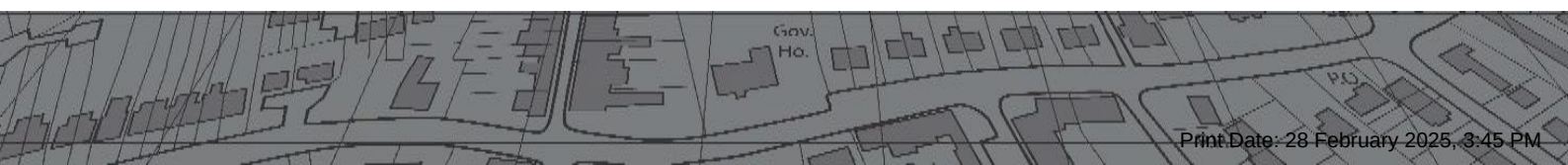
Captain Cook Drive / Discovery Drive
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Discovery Drive															
1	L2	All MCs	19	5.0	19	5.0	0.158	6.6	LOS A	0.6	4.3	0.59	0.78	0.59	49.1
3	R2	All MCs	69	5.0	69	5.0	0.158	11.7	LOS B	0.6	4.3	0.59	0.78	0.59	49.0
Approach			88	5.0	88	5.0	0.158	10.6	LOS B	0.6	4.3	0.59	0.78	0.59	49.0
East: Captain Cook Drive															
4	L2	All MCs	158	5.0	158	5.0	0.088	5.6	LOS A	0.0	0.0	0.00	0.57	0.00	52.7
5	T1	All MCs	256	10.0	256	10.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			414	8.1	414	8.1	0.140	2.2	NA	0.0	0.0	0.00	0.22	0.00	56.9
West: Captain Cook Drive															
11	T1	All MCs	274	10.0	274	10.0	0.194	0.5	LOS A	0.5	3.5	0.17	0.20	0.17	58.6
12	R2	All MCs	39	5.0	39	5.0	0.194	7.9	LOS A	0.5	3.5	0.17	0.20	0.17	55.6
Approach			313	9.4	313	9.4	0.194	1.5	NA	0.5	3.5	0.17	0.20	0.17	58.2
All Vehicles			815	8.2	815	8.2	0.194	2.8	NA	0.6	4.3	0.13	0.27	0.13	56.4

ATTACHMENT 4

Updated Discovery Drive Estate Development Code



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Zone Ref	Issue	Date	Prepared by	Checked by
Z21489.1	Draft	30/05/2024	SH	EM
	Revision 1	20/02/2025	SH	EM

Contents

1.0 Introduction

The Discovery Estate Development Code has been prepared in support of a Development Application for a Variation Request involving a Development Application for a Preliminary Approval (s50 of the *Planning Act 2016*) involving a Material Change of Use (Dwelling House and Dual Occupancy) to establish a Low Density Residential Precinct and Character Residential Precinct over land at Lot 2 Captain Cook Drive, Agnes Water, more accurately described as Lot 2 SP117407.

The Plan of Development illustrating the relevant Precincts is contained in **Appendix A**.

This Development Code implements a new local categorising instrument over Emerging Community zoned land, identifying the preferred planning outcomes for development in the area. The land use and administrative definitions applicable under this Code are reflective of those in the *Gladstone Regional Council Planning Scheme*; however, the corresponding level of assessment is varied in some circumstances essentially to reflect the Low Density Residential Zone and Character Residential Zone. Subsequent applications for a Material Change of Use (MCU) and Reconfiguring a Lot (ROL) will need to be lodged for the premises consistent with the level of assessment set out in the Assessment Tables contained herein.

New assessable development within the Discovery Estate will be assessed against the relevant *Gladstone Regional Council Planning Scheme* provisions at the time of lodgement of a Development Application, except where varied by the subject Preliminary Approval, including the outcomes identified in the Discovery Estate Development Code and conditions of approval.

2.0 Assessment Tables for the Discovery Estate Planning Code

2.1 Interpretation

1. The assessment categories are identified for development in each Precinct in the Tables as follows:

   a) Table 2.3.1 – Making a Material Change of Use – Low Density Residential Precinct;
   b) Table 2.3.2 – Making a Material Change of Use – Character Residential Precinct;
   c) Table 2.3.4 – Reconfiguration of Lot;
   d) Table 2.3.4 – Building Work; and
   e) Table 2.3.5 - Overlays.

2.2 Process for Determining Level of Assessment & Assessment Criteria

1. Development Applications within the Discovery Estate are to be assessed against the assessment criteria specified in the Gladstone Regional Council Planning Scheme in effect at the time of lodgement of the application and this Planning Code. The Discovery Estate Planning Code shall only prevail over Part 6 Zones of the Gladstone Regional Council Planning Scheme 2015 to the extent of any inconsistency.
2. For Accepted Development Subject to Requirements and development requiring Code Assessment, the relevant assessment criteria are contained in the applicable Codes.
3. If the land use is listed in the Table of Assessment – Material Change of Use or Table of Assessment – Reconfiguration of Lot and Other Development, the level of assessment is that prescribed by the applicable Table of Assessment in this Development Code subject to compliance with the assessment criteria specified. No other provisions of the Local Government Planning Scheme are applicable for the purpose of determining level of assessment unless specified in the Table of Assessment and assessment criteria of this Code.
4. If the land use is not listed in the Table of Assessment – Material Change of Use or Table of Assessment – Reconfiguration of Lot and Other Development of this Code, the level of assessment is that prescribed by the applicable Table of Assessment in the Planning Scheme for the Low Density Residential Zone or Character Residential Zone under the Gladstone Regional Council Planning Scheme, relative to the comparative Precinct designation.
5. Accepted Development that does not comply with one or more of the nominated Acceptable Outcomes in the relevant parts of the applicable Code/s becomes Code Assessable under the Discovery Estate Development Code unless otherwise specified.

2.3 Categories of Development & Assessment – Material Change of Use

The following tables identify the categories of development and the categories of assessment for making a Material Change of use in a Precinct.

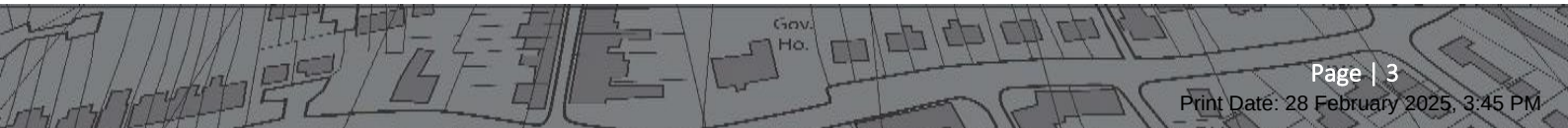


Table 2.3.1: Low Density Residential Precinct

Low Density Residential Precinct		
USE	**LEVEL OF ASSESSMENT**	**ASSESSMENT CRITERIA**
Dual Occupancy Dwelling House	**Accepted Development subject to requirements**	
	If complying with the relevant accepted development acceptable outcomes.	Discovery Estate Planning Code
	Code Assessment	
	In all other circumstances	Discovery Estate Planning Code Other Development Codes: Development Design Code
Any other use not listed in this table. **Any use listed in the table and not complying with the criteria in the level of assessment column.** **Any other undefined use.**	**Impact Assessment**	
	As specified by the Planning Scheme	Discovery Estate Planning Code The Planning Scheme and codes called up by Planning Scheme including the Strategic Framework

Table 2.3.2: Character Residential Precinct

Character Residential Precinct		
USE	**LEVEL OF ASSESSMENT**	**ASSESSMENT CRITERIA**
Dual Occupancy Dwelling House	**Accepted Development subject to requirements**	
	If complying with the relevant accepted development acceptable outcomes.	Discovery Estate Planning Code
	Code Assessment	
	In all other circumstances	Discovery Estate Planning Code Other Development Codes: Development Design Code
Any other use not listed in this table. **Any use listed in the table and not complying with the criteria in the level of assessment column.** **Any other undefined use.**	**Impact Assessment**	
	As specified by the Planning Scheme	Discovery Estate Planning Code The Planning Scheme and Codes called up by Planning Scheme including the Strategic Framework

2.4 Categories of Development & Assessment – Reconfiguring a Lot

The following table identifies the categories of development and the categories of assessment for Reconfiguring a Lot.

Table 2.4.1: Reconfiguring a Lot

Reconfiguring a Lot		
USE	**LEVEL OF ASSESSMENT**	**ASSESSMENT CRITERIA**
All Precincts	**Code Assessable**	
	Where the reconfiguration is for: a. a subdivision or boundary realignment, and all the new lots comply with the minimum lot size in Table 4.3.5-1.1 – Minimum Lot Sizes and Dimensions of Discovery Estate Development Code; or b. Dividing land by way of a lease for a term, including renewal options, exceeding 10 years; or c. Creating an easement giving access to a lot from a constructed road; or d. A Community Title Subdivision (Standard Format Plans and/or Volumetric Lots) of an existing or approved development; or e. Subdivision for Volumetric Lot/s established above or below ground level and/or using the structural elements of a building of an existing or approved.	Discovery Estate Development Code The following Codes within the Gladstone Regional Council Planning Scheme: 〉 Reconfiguring a Lot Code 〉 Development Design Code 〉 Landscaping Code
	Impact Assessable	
	In all other circumstances	Discovery Estate Development Code and The Planning Scheme and Codes identified by relevant Tables of Assessment within the Planning Scheme for the comparative zoning (ie. Low Density Residential Zone or Character Residential Zone).

2.5 Categories of Development & Assessment – Building Work

The following table identifies the categories of development and the categories of assessment for Building Work.

Table 2.5.1: Building Work

Building Work		
LOW DENSITY RESIDENTIAL PRECINCTS		
Use	**Level of Assessment**	**Assessment Criteria**
Dwelling House Dual Occupancy	Accepted Development where involving minor building works	Not Applicable
	Otherwise, no change to assessment category	Discovery Estate Development Code
CHARACTER RESIDENTIAL PRECINCT		
Use	**Level of Assessment**	**Assessment Criteria**
Dwelling House Dual Occupancy	Accepted Development where involving minor building works	Not Applicable
	Otherwise, no change to assessment category	Discovery Estate Development Code

2.6 Categories of Development & Assessment – Overlays

The following table identifies the categories of development and the categories of assessment for Building Work, Material Change of Use and Reconfiguring a Lot.

Table 2.6.1: Assessment Categories for Overlays

Overlays		
	Level of Assessment	**Assessment Criteria**
Biodiversity Overlay		
Material Change of Use on a lot containing areas of mapped MSES.	Accepted Development	Not Applicable
Bushfire Hazard Overlay		
Material Change of Use involving works within the medium potential bushfire intensity area.	Accepted Development subject to requirements	Discovery Estate Development Code
Reconfiguring a Lot resulting in an increase in the overall number of lots.		

Flood Hazard Overlay		
Any Material Change of Use within a mapped flood hazard investigation area.	No change to assessment category if complying with all accepted development subject to requirements acceptable outcomes	Flood Hazard Overlay Code
Reconfiguring a Lot within a mapped flood hazard investigation area.	No change to assessment category	Flood Hazard Overlay Code
Steep Land Overlay		
All development within a mapped Steep Land area	Accepted Development subject to requirements	Discovery Estate Development Code
	Level of Assessment	
Any other use not listed in this table. **Any use listed in the table and not complying with the criteria in the level of assessment column.** **Any other undefined use.**	**As specified by the Planning Scheme**	Discovery Estate Development Code The Planning Scheme and Codes called up by the Planning Scheme

3.0 General Provisions of the Discovery Estate Planning Code

3.1 Discovery Estate Planning Code

The following assessment criteria comprise the Discovery Estate Planning Code:

1. Overall Outcomes for the Discovery Estate Planning Code; and
2. Performance Outcomes and Acceptable Outcomes for the Discovery Estate Planning Code.

3.2 Compliance with the Discovery Estate Planning Code

Compliance with the Discovery Estate Planning Code will be based on assessment against:

1. Accepted Development does not require a development approval and is not subject to assessment benchmarks. However, certain requirements may apply to some types of development for it to be Accepted Development. Where nominated in the Tables of Assessment, Accepted Development must comply with the requirements identified as Acceptable Outcomes in the relevant parts of the applicable Code(s) as identified in the relevant column.
2. Accepted Development that does not comply with one or more of the nominated Acceptable Outcomes in the relevant parts of the applicable Code(s) becomes Code Assessable development, unless otherwise specified.
3. The following rules apply in determining assessment benchmarks for each category of development and assessment.
4. Code Assessable development:
   a) is to be assessed against all the applicable Codes identified in the assessment criteria column;
   b) that complies with:
      i. the purpose and Overall Outcomes of the Code complies with the Code; and
      ii. the Performance or Acceptable Outcomes complies with the purpose and Overall Outcomes of the Code.
5. Impact Assessable development:
   a) is to be assessed against all identified Code(s) in the assessment criteria column (where relevant); and
   b) is to be assessed against the Gladstone Regional Council Planning Scheme, to the extent relevant.

4.0 Overall Outcomes for the Discovery Estate Planning Code

4.1 Application

This Code applies to development where the Code is identified as applicable in a Table of Assessment. When using this Code, reference should be made to Section 2.2 and where applicable, Tables 1 of Section 2.3.

4.2 Purpose

1. The purpose of the Discovery Estate Planning Code is to provide additional Low-density Residential and Character Residential Lots with predominantly detached Dwelling Houses or Dual Occupancy development to cater for housing need in the Agnes Water locality. Development is low rise, consistent with the low density character of the region's existing suburban areas.

2. The purpose of the Estate will be achieved through the following Overall Outcomes for the Low Density Residential Precinct:
   a. A range of housing, predominantly detached Dwelling Houses and some Dual Occupancy, on appropriate lot sizes.
   b. Buildings are of a scale, height and size that reflect a low density suburban character and create an attractive streetscape.
   c. Development maintains a high level of residential amenity having regard to traffic, noise, dust, odour, lighting and other locally specific impacts.
   d. Development is supported by transport infrastructure that is designed to provide and promote safe and efficient public transport use, walking and cycling.
   e. Development responds to land constraints, including but not limited to bushfire, flooding and minimising changes to natural topography.
   f. Development is supported by necessary community facilities, open space and recreational areas and appropriate infrastructure to support the needs of the local community.
   g. Residential development is protected from the impacts of any nearby industrial activities, transport corridors, infrastructure, installations and major facilities.

3. The purpose of the Estate will be achieved through the following overall outcomes for the Character Residential Precinct:
   a. Development supports a built form that exemplifies the existing natural landscape and is interspersed and sympathetically sited amongst the bushland elements of the site.
   b. Development of larger character residential lots is facilitated to provide a transition between the surrounding Low Density Residential and Rural Residential land and deliver variety in lot size across the Agnes Water locality. Despite their generous land size, character residential lot sizes are smaller than the traditional Agnes Water Rural Residential lot to avoid an increase in this housing style.
   c. Development provides a range of housing, predominantly detached Dwelling Houses and some Dual Occupancy where located on appropriate lot sizes.
   d. Buildings are of a scale, height and size that reflect a low density suburban character and create an attractive streetscape.

e. Development maintains a high level of residential amenity having regard to traffic, noise, dust, odour, lighting and other locally specific impacts.
f. Development maximises the retention of existing native vegetation in the Character Residential Precinct where possible and ensures residential activities maintain a maximum building envelope of 2,000m^2.
g. Development is designed to maximise energy efficiency and water conservation.
h. Lots are responsive to topography, scenic amenity, bushfire risk, flooding and the existing level of water infrastructure.
i. Development mitigates any adverse impacts on adjoining areas of environmental significance, including creeks, gullies, waterways, wetlands, coastal areas, habitats, vegetation and bushland through location, design, operation and management requirements.
j. Residential development and lots adjoining the northern environmental reserve retain a vegetated buffer along this shared boundary.

4.3 Assessment Benchmarks

Table 4.3.1: Low Density Residential Precinct - Accepted Development Subject to Requirements & Assessable Development

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
Built Form (if involving building work)	
PO1 Buildings: a. are low rise b. do not create unreasonable overshadowing on adjoining residential properties, and c. do not adversely impact on the low density residential character and amenity of the area. *Note—Setbacks for Dwelling House and Dual Occupancy in this zone are regulated in the Queensland Development Code.*	**AO1.1** Building height does not exceed 8.5m and 2 storeys above ground level. **AO1.2** Maximum site cover is 50%.
Residential Density	
PO2 Development reflects the low density character of the area.	**AO2.1** Residential density is a maximum of: a. one Dwelling House (including one Secondary Dwelling) per lot, or b. one dwelling per 400m^2 where a Dual Occupancy. **AO2.2** Where a Dwelling House, any Secondary Dwelling is: a. a maximum of 80m^2 GFA; b. located within 10m of the main building; and c. linked to the main building by a defined footpath in the most direct route possible.
Design & Streetscape	
PO3 Driveways must not visually dominate the street frontage.	**AO3** Vehicle access is provided through a: a. single driveway for a Dwelling House

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
	b. one paired driveway for Dual Occupancy (where not on a corner lot).
For all assessable development	
Design & Amenity	
PO4 Landscaping is provided to enhance the appearance of the development, screen unsightly components, create an attractive on–site environment and provide shading.	No acceptable outcome is nominated.
PO5 Development facilitates the security of people and property having regard to: a. opportunities for casual surveillance and sight lines; b. exterior building design that promotes safety; c. adequate lighting; d. appropriate signage and wayfinding; e. minimisation of entrapment locations; and f. building entrances, loading and storage areas that are well lit and lockable after hours.	No acceptable outcome is nominated.
PO6 Design elements contribute to an interesting and attractive streetscape and building through: a. the provision of projections and recesses in the façade which reflect changes in internal functions of buildings, including circulation b. variations in material and building form c. modulation in the façade, horizontally or vertically d. articulation of building entrances and openings e. corner treatments to address both street frontages f. elements which assist in wayfinding and legibility, and g. elements which relate to the context including surrounding buildings, parks, streets and open spaces.	No acceptable outcome is nominated.
PO7 Roof form assists in reducing the appearance of building bulk by: a. articulating individual dwellings; and b. incorporating variety in design through use of roof pitch, height, gables and skillions.	No acceptable outcome is nominated.
Effects of Development	
PO8 Development responds sensitively to on–site and surrounding topography, coastal foreshores, waterways, drainage patterns, utility services, access, vegetation and adjoining land use, such that: a. any hazards to people or property are avoided b. any earthworks are minimised c. the retention of natural drainage lines is maximised d. the retention of existing vegetation is maximised, and e. there is adequate buffering, screening or separation to adjoining development.	No acceptable outcome is nominated.
PO9 All uses are located, designed, orientated and constructed to: a. minimise noise, dust, odour or other nuisance from existing lawful uses; and b. minimise nuisance caused by noise, vibration and dust emissions generated by the state–controlled road and rail network in the vicinity of land in the low density residential zone.	No acceptable outcome is nominated.

Table 4.3.2: Character Residential Precinct - Accepted Development Subject to Requirements & Assessable Development

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
Built Form (if involving building work)	
PO1 Buildings: a. low rise; b. low density; c. of a size and scale that ensures the built form does not dominate natural landscape values; and d. designed and located so as not to adversely impact on the coastal and visual character of the area. *Note—Setbacks for Dwelling house and Dual occupancy in this zone are regulated in the Queensland Development Code.*	**AO1.1** Building height does not exceed 8.5m and 2 storeys above ground level.
	AO1.2 The maximum footprint for all buildings including any outbuildings, swimming pools or other structures is: a. 750m^2 on lot sizes 1,500m^2 – 2,499m^2; or b. 1,250m^2 on lots greater than 2,500m^2.
PO2 Buildings are located on the site to: a. to maximise the residential amenity of residents and neighbours b. maximise retention of native vegetation, and c. provide areas for landscaping to screen the building.	**AO2.1** Buildings are setback a minimum of 6m from the front and rear boundaries. *Note—A carport may be built in the 6m front setback where the maximum height is 3.5m.*
	AO2.2 Side boundary setbacks for any building or structure are a minimum of 4m. *Note—Side boundary setbacks are measured to the building wall.*
	AO2.3 Where Dual Occupancy and dwellings are separated by a minimum of 6m. *Note—Buildings can be linked by one unenclosed verandah or walkway*.
PO3 Residential activities preserve the environmental features of the lot in which they are situated.	**AO3.1** Residential activities are limited to a maximum cleared building envelope area equivalent to 50% of the site area or 2,000m^2, whichever is less.
Residential Density	
PO4 Development reflects the low density character of the area.	**AO4.1** Residential density is a maximum of: a. one Dwelling House (including one Secondary Dwelling) per lot; or b. one dwelling per 400m^2 where a Dual Occupancy.
	AO4.2 Where a Dwelling House, any Secondary Dwelling is: a. a maximum of 80m^2 GFA; b. located within 50m of the main building; and c. linked to the main building by a defined footpath in the most direct route possible.
Design & Streetscape	
PO5 Driveways must not visually dominate the street frontage.	**AO5** Vehicle access is provided through a: a. single driveway for a Dwelling House b. one paired driveway for Dual Occupancy (where not on a corner lot).

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
For all assessable development	
Land Use	
PO6 Development is of a small scale that does not compromise the low density and coastal village character of the locality.	No acceptable outcome is nominated.
Effects of Development	
PO7 Development responds sensitively to on–site and surrounding topography, drainage patterns, utility services, access, vegetation and adjoining land use, such that: a. any hazards to people or property are avoided b. native plants are retained within the lot or premises and adjoining road reserve c. any earthworks are minimised d. the retention of natural drainage systems is maximised e. the retention of existing vegetation is maximised f. damage or disruption to sewerage, stormwater and water infrastructure is avoided, and g. there is adequate buffering, screening or separation to adjoining development.	No acceptable outcomes are nominated.
PO8 Development maintains a high level of amenity within the site and minimises impacts on surrounding areas, having regard to: a. noise b. hours of operation including temporary uses c. traffic and parking d. visual impact e. signage f. odour and emissions g. lighting h. access to sunlight i. privacy *Note—Applicants may be required to engage specialists to provide detailed investigations into the above matters in order to demonstrate compliance with this performance criterion.*	No acceptable outcome is nominated.
Design and Amenity	
PO9 Landscaping for the development seeks to retain as much of the natural vegetation on site as possible, without resulting in undue hazard impacts.	No acceptable outcome is nominated.

Table 4.3.3: Reconfiguring a Lot - Accepted Development Subject to Requirements & Assessable Development

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
Lot Size & Dimensions	
PO1 The size and dimensions of created lots are suitable for their intended use that has regard to: a. the need to accommodate buildings, structures, vehicle access, parking and manoeuvring areas, open space, landscaping and the area required for on-site wastewater treatment system where the lot is not connected to reticulated sewer; and b. the physical characteristics of the site including where affected by an overlay.	**AO1.1** The size and dimensions of lots created by subdivision are to be undertaken in compliance with Table 4.3.5-1.1 – Minimum Lot Sizes and Dimensions.
Infrastructure & Services	
PO2 Each reconfigured lot is provided with infrastructure and services appropriate to its intended use and location in a manner that: a. is efficient; b. is adaptable to allow for future infrastructure upgrades; c. minimises risk of adverse environmental or amenity–related impacts; d. promotes the efficient use of water resources; and e. minimises whole of life cycle costs for that infrastructure.	**AO2.1** Lots ranging in size between 1,500m^2 to 3,999m^2 are to be provided with reticulated water and sewer infrastructure.
	AO2.2 Lots greater in size than 4,000m^2 are to be provided with reticulated water and may utilise on-site effluent treatment, where undertaken in accordance with Council's Engineering Design Planning Scheme Policy.
	AO2.3 Lots are connected to electricity and telecommunications infrastructure in accordance with the standards of the relevant regulatory authority prior to the commencement of any use of the site.
	AO2.4 Lots are provided with stormwater infrastructure that supports water sensitive urban design principles.

Table 4.3.5-1.1 – Minimum Lot Sizes & Dimensions

Precinct	Minimum Lot Size	Minimum Frontage	Minimum Building Envelope	Maximum Building Envelope
Low Density Residential Precinct	600m^2	17m	10m x 15m	N/A
Character Residential Precinct	1,500m^2 (where lots are provided with reticulated water and sewer)	30m	N/A	50% of site area, or 2,000m^2, whichever is lesser.
	4,000m^2 (in all other circumstances)			

Table 4.3.4: Overlays – Accepted Development Subject to Requirements & Assessable Development

PERFORMANCE OUTCOMES	ACCEPTABLE OUTCOMES
Development within Bushfire Hazard Overlay	
PO1 Development maintains the safety of people and property by not exposing them to an unacceptable risk from bushfire.	**AO1.1** Development is undertaken in accordance with the recommendations set out in any Bushfire Management Plan administered for the site.
Development within Flood Hazard Overlay	
PO2 Development: a. does not provide unacceptable risks to people, property or the environment from flood hazard impacts or, the risks are mitigated to an acceptable or tolerable level, or b. does not intensify an existing use in flood hazard area in order to avoid risks to people, property or the environment or the risks are mitigated to an acceptable or tolerable level.	**AO2.1** If the premises is located in a Flood Hazard Investigation Area in the Flood Hazard overlay mapping, a written notice issued by Council at its sole discretion, for the purposes of this acceptable outcome, confirms that it is satisfied that the performance outcome PO1 would be achieved without the need for a site specific flood hazard assessment and/or a Registered Professional Engineer of Queensland certifying the actual level of flood risk for the site and measures required to ensure the risk associated with the development can be mitigated to an acceptable or tolerable level.
Development within Steep Land Overlay	
PO3 Development avoids increasing the number of people at risk to a landslide or an intolerable risk through a geotechnical risk assessment including: a. on-site; and b. off-site where people may be affected on downward and upward slopes.	**AO3.1** Development is undertaken in accordance with the recommendations set out in a Geotechnical Risk Assessment.

5.0 Definitions

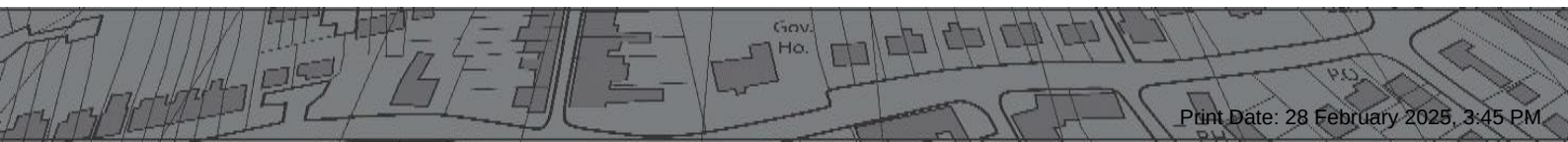
5.1 Land Use Definitions

Land Use definitions are as adopted by the Gladstone Regional Council Planning Scheme as in effect at time of any application.

5.2 Administrative Definitions

Administrative Definitions for the purpose of this Development Code are those referenced in the Gladstone Regional Council Planning Scheme as in effect at time of any application.

APPENDIX A
Plan of Development



ATTACHMENT 6

Categories of Development & Assessment Comparisons

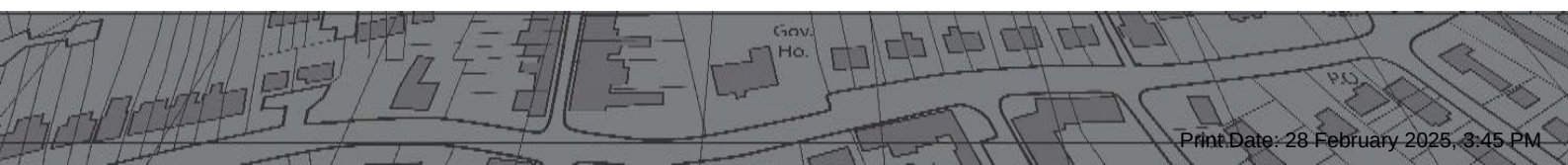


Table 1: Categories of Development and Assessment Comparisons in Accordance with SC63.6 of Gladstone Regional Council Planning Scheme

Planning Scheme Category of Development & Assessment	Proposed Category of Development & Assessment	Proposed Changes
Emerging Community Zone – Dwelling House: Accepted Development Subject to Requirements	Low Density Residential Precinct – Dwelling House: Accepted Development Subject to Requirements Character Residential Precinct – Dwelling House: Accepted Development Subject to Requirements	The Development Code seeks to support the change from the Emerging Community Zone to the Low Density Residential and Character Residential Precinct. The associated level of assessment remains unchanged, but the assessment benchmarks have been altered to reflect those currently found in the Low-Density Residential Zone Code and the Character Residential Zone Code and applicable to Dwelling Houses and Dual Occupancy development.
Emerging Community Zone – Dual Occupancy: Impact Assessable	Low Density Residential Precinct – Dual Occupancy: Accepted Development Subject to Requirements Character Residential Precinct – Dual Occupancy: Accepted Development Subject to Requirements	The Development Code seeks to support the change from the Emerging Community Zone to the Low Density Residential and Character Residential Precinct. The associated level of assessment remains unchanged, but the assessment benchmarks have been altered to reflect those currently found in the Low-Density Residential Zone Code and the Character Residential Zone Code and applicable to Dwelling Houses and Dual Occupancy development.
Emerging Community Zone – Reconfiguring a Lot (<50Ha): Impact Assessable	All Precincts – Reconfiguring a Lot for: a. a subdivision or boundary realignment, and all the new lots comply with the minimum lot size in Table 4.3.5-1.1 – Minimum Lot Sizes and Dimensions of Discovery Estate Development Code; or b. Dividing land by way of a lease for a term, including renewal options, exceeding 10 years; or c. Creating an easement giving access to a lot from a constructed road; or	The Development Code seeks to support further subdivision of land for the creation of residential and character residential lots, ranging in size from 600m^2 through to a maximum of 4,000m^2, depending on the availability of servicing, by shifting from Impact Assessable criteria under the Emerging Community Zone to Code Assessable criteria under the Development Code. The Code also seeks to clearly stipulate which types of Reconfiguring a Lot are supported in the Code, which is not expressly defined by the Emerging Community Zone Code TOA.

Planning Scheme Category of Development & Assessment	Proposed Category of Development & Assessment	Proposed Changes
	d. a Community Title Subdivision (Standard Format Plans and/or Volumetric Lots) of an existing or approved development; or e. Subdivision for Volumetric Lot/s established above or below ground level and/or using the structural elements of a building of an existing or approved. Code Assessable	
Building Work – Dwelling House: No change to level of assessment	Building Work – Dwelling House: Accepted Development where involving minor building works, otherwise, no change to level of assessment	The Development Code seeks to introduce Accepted Development where involving minor building works provisions and also seeks to including Dual Occupancy in this TOA as well.
	Building Work – Dual Occupancy: Accepted Development where involving minor building works, otherwise, no change to level of assessment	
Biodiversity Overlay – MCU: Code Assessable if provisionally made Accepted Development or Accepted Development Subject to Requirements by another Table of Assessment where located on land within: a. wetland/wetland protection area b. protected area c. wildlife habitat area d. turtle nesting sites, or e. high ecological value waterway. Otherwise no change to assessment category.	Biodiversity Overlay – MCU on a lot containing areas of mapped MSES: Accepted Development	The Development Code seeks to move away from triggering exempt clearing works from assessment under the Planning Scheme. This is an attempt to rectify an oversight in the current planning provisions and allow for the delivery of residential development on residential lots.

Planning Scheme Category of Development & Assessment	Proposed Category of Development & Assessment	Proposed Changes
Bushfire Hazard Overlay (Medium Bushfire Hazard Area) - Material Change of Use: No change to assessment category	Bushfire Hazard Overlay - Material Change of Use involving works within the medium potential bushfire intensity area: Accepted Development Subject to Requirements	No change to assessment level or the assessment benchmarks are proposed.
Bushfire Hazard Overlay - Reconfiguring a Lot: No change to assessment category	Bushfire Hazard Overlay - Reconfiguring a Lot resulting in an increase in the overall number of lots: Accepted Development Subject to Requirements	No change to assessment level or assessment benchmarks are proposed.
Flood Hazard Overlay - Any Material Change of Use where the development is Accepted Development Subject to Requirements under the Table of Assessment for the relevant zone and within the Flood Hazard Investigation Area for any of the following: a. Dual Occupancy b. Dwelling House No change to assessment category if complying with all Accepted Development Subject to Requirements Acceptable Outcomes.	Flood Hazard Overlay – Any Material Change of Use within a mapped Flood Hazard Investigation area: No change to assessment category if complying with all Accepted Development Subject to Requirements Acceptable Outcomes	No change to assessment level or assessment benchmarks are proposed.
Flood Hazard Overlay – Reconfiguring a Lot: No change to assessment category	Flood Hazard Overlay – Reconfiguring a Lot within a mapped Flood Hazard Investigation area: No change to assessment category	No change to assessment level or assessment benchmarks.
Steep Land Overlay - Any Material Change of Use where the development is Accepted Development Subject to Requirements under the Table of Assessment for the relevant zone for any of the following: a. Dual Occupancy b. Dwelling House No change to assessment category if complying with all Accepted Development Subject to Requirements Acceptable Outcomes.	Steep Land Overlay - All development within a mapped Steep Land area: Accepted Development Subject to Requirements	No change to assessment level or assessment benchmarks.
Steep Land Overlay - Reconfiguring a Lot: No change to assessment category		