

Wyatt Road Kagaru

Movement Network Infrastructure Master Plan



Wel.Co

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Gold Coast

Suite 26, 58 Riverwalk Avenue
Robina QLD 4226
P: (07) 5562 5377

Brisbane

Level 2, 428 Upper Edward Street
Spring Hill QLD 4000
P: (07) 3831 4442

Sydney

Studio 203, 3 Gladstone Street
Newtown NSW 2042
P: (02) 9557 6202

W: www.bitziosconsulting.com.au

E: admin@bitziosconsulting.com.au

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		Reviewed:	A. Payne		
		Issued	A. Payne		

CONTENTS

Page

1. INTRODUCTION	1
1.1 Background	1
1.2 Approval History	1
1.3 Development Summary	2
1.4 Relevant Planning Documents	2
2. SITE LOCATION AND PLANNING CONTEXT	3
2.1 Site Location	3
2.2 Greater Flagstone Priority Development Area	4
2.2.1 Overview	4
2.2.2 Development Scheme	5
2.2.3 Connecting SEQ 2031 – An Integrated Regional Transport Plan for SEQ	6
2.2.4 SEQ Regional Transport Plan 2021	8
2.2.5 Development Charges and Offset Plan	9
2.3 Wyatt Road Context Area Plan	12
2.4 Wyatt Road Realignment	13
3. TRANSPORT NETWORK CONTEXT	15
3.1 Existing Transport Network	15
3.1.1 Road Network	15
3.1.2 Public Transport	16
3.1.3 Active Transport	16
3.2 Planned Transport Network	16
3.2.1 Road Network	16
3.2.2 Rail Transport	16
3.2.3 Active Transport	17
4. MOVEMENT NETWORK	19
4.1 Overarching Principles	19
4.2 Key Design Guidelines and Criteria	19
4.3 Road Network	20
4.3.1 Road Hierarchy	20
4.3.2 Typical Cross Sections	21
4.3.3 Rail Bridges	22
4.4 Junctions and Intersections	22
4.4.1 Intersection Control	22
4.4.2 Intersection Spacing	24
4.5 Public Transport	24
4.5.1 Bus Services and Infrastructure	24
4.5.2 Rail Infrastructure	26
4.6 Active Transport	26
4.6.1 Overview	26
4.6.2 Active Transport Strategy Development	26
4.6.3 Considerations Inside the Road Reserve	29
4.6.4 Considerations Outside the Road Reserve	30
4.6.5 Active Transport Network	30
4.7 Innovation & Flexibility	31

5. TRANSPORT MODELLING	32
5.1 Background	32
5.2 Wyatt Road Realignment Review	32
5.3 Intersection Modelling	35
5.3.1 Trunk Intersections	35
5.3.2 Key Intersections	38

Tables

Table 2.1: Transport and Network Infrastructure
Table 4.1: Key Road Design Criteria by Road Typology
Table 4.2: Environmental Capacity and Access Criteria by Road Typology
Table 4.3: DCOP Infrastructure and Indicative Timing
Table 4.4: Four-lane Cross-section Indicative Timing
Table 4.5: Typical Road Cross-sections by Road Hierarchy
Table 4.6: Rail Bridge Location and Details
Table 4.7: Typical Intersection Control Criteria
Table 4.8: Criteria to Determine Route Hierarchy
Table 4.9: Active Transport Infrastructure by Road Hierarchy

Figures

Figure 1.1: DEV2023/1431 Context Area Plan Proposed for Endorsement
Figure 2.1: Site Location and Surrounds
Figure 2.2: Greater Flagstone PDA
Figure 2.3: SEQ Principal Cycle Network Plan – Flagstone
Figure 2.4: Greater Flagstone DCOP - Transport (Roads) Trunk Infrastructure
Figure 2.5: Greater Flagstone DCOP – Transport (Intersections) Trunk Infrastructure
Figure 2.6: Greater Flagstone DCOP – Transport (Structures) Trunk Infrastructure
Figure 2.7: Surrounding Context Areas
Figure 2.8: Wyatt Road Realignment Preferred Option (Scenario 3)
Figure 3.1: Existing Road Network
Figure 3.2: Future Active Transport (Cycle) Network
Figure 4.1: Movement Network Road Hierarchy
Figure 4.2: Movement Network Key Intersections
Figure 4.3: Public Transport Stop Locations and Coverage
Figure 4.4: Active Transport Trip Attractors
Figure 4.5: Active Transport Desire Line Routes and Classification
Figure 4.6: Active Transport Network
Figure 5.1: Scenario 3 Revised Trunk Road Network
Figure 5.2: Scenario 3 Forecast Daily Traffic Volumes
Figure 5.3: Scenario 3 Maximum Peak Hour Volume and V/C Ratio
Figure 5.4: RI012 Scenario 3 Intersection Form
Figure 5.5: RI013 Scenario 3 Intersection Form
Figure 5.6: RI012 Ultimate (2066) Peak Turn Volumes
Figure 5.7: RI013 Ultimate (2066) Peak Turn Volumes

Appendices

Appendix A: Wyatt Road Context Area Plan
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1. INTRODUCTION

1.1 Background

This Movement Network Infrastructure Master Plan (IMP) has been prepared on behalf of Wel.Co Group PTY LTD (Wel.Co) for the land identified as 'Wyatt Road Context Plan Area' (subject site) within the Greater Flagstone Priority Development Area (PDA) for which Economic Development Queensland (EDQ) is the Assessment Manager.

The Movement IMP has been prepared to address the whole of site traffic and transport networks outlining a strategy for the development and management of transportation and connectivity within the region. This Movement IMP aims to address key infrastructure needs, enhancing mobility and promoting sustainable transport ultimately contributing to the region's economic prosperity and quality through the planning of future movement networks.

1.2 Approval History

The following recent approvals are relevant to the subject site:

- **DEV2023/1384:** ROL (1 into 2 management Lots) – May 2023
- **DEV2018/971:** ROL (1 into 2 Lots) – Nov 2018
- **DEV2014/585:** ROL (2 Lot Subdivision) – Aug 2014

An application for Reconfiguration of a Lot (Management Subdivision) and Context Plan for Endorsement is also current for the subject site (DEV2023/1431). The Context Area plan proposed for endorsement as a part of this application is shown in Figure 1.1.

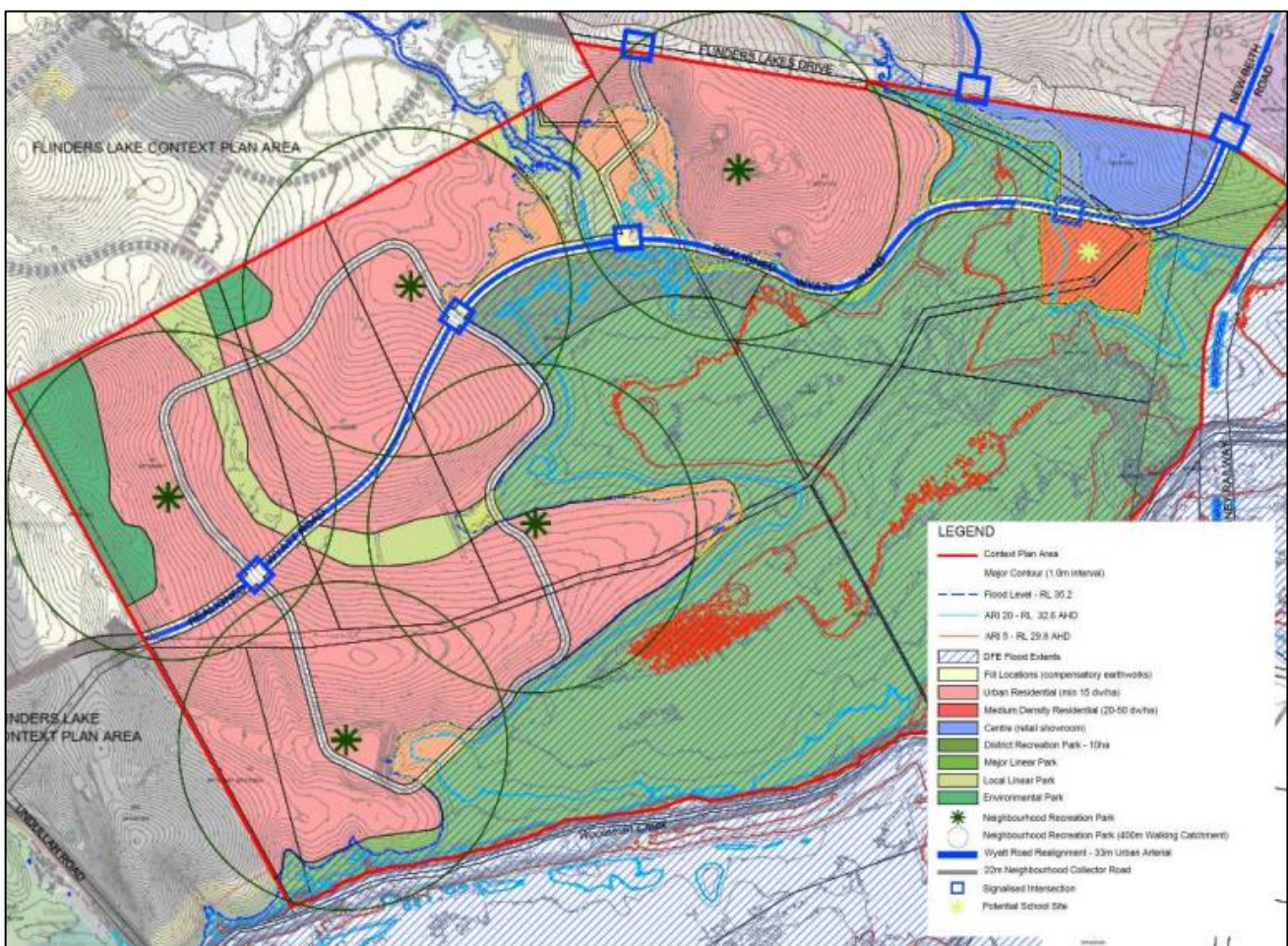


Figure 1.1: DEV2023/1431 Context Area Plan Proposed for Endorsement

1.3 Development Summary

While primarily comprising of residential dwellings, the subject site is expected to include a mix of land uses, including:

- Low-density residential
- Medium-density residential
- Potential neighbourhood centre
- Potential future school
- Various parklands and open space.

In accordance with the VLC South Logan Strategic Transport Model reporting, the Flagstone South region, incorporating the Wyatt Road Context Area, is forecast to ultimately home 7,264 residents. In accordance with the PDA Development Scheme, the minimum density for neighbourhoods is 15 dwellings per hectare. Forecast employment numbers in this region are minimal.

Since the lodgement of the context area application (DEV2023/1431), the context area plan has been revised with the latest Wyatt Road Context Area Plan provided at **Appendix A**.

1.4 Relevant Planning Documents

The following planning documents have been referenced / sourced throughout the preparation of this Movement Network IMP, including (but not limited to):

- Greater Flagstone PDA Development Scheme
- The Development Charges and Offset Plan (DCOP) and DCOP maps
- The Greater Flagstone PDA Infrastructure Plan Background Report (IPBR)
- South Logan Strategic Transport Model Update: Model Development and Network Apportionments (VLC, 18 June 2020)
- Greater Flagstone Priority Development Area – Bicycle Network Plan (VLC, June 2017)
- Wyatt Road Realignment Review (VLC, August 2023)
- Wyatt Road Kagaru Context Area Plan (current application pending review by EDQ (DEV2023/1431))
- Relevant Context Area Plans associated with the Flagstone PDA
- Relevant EDQ Guidelines and Practice Notes

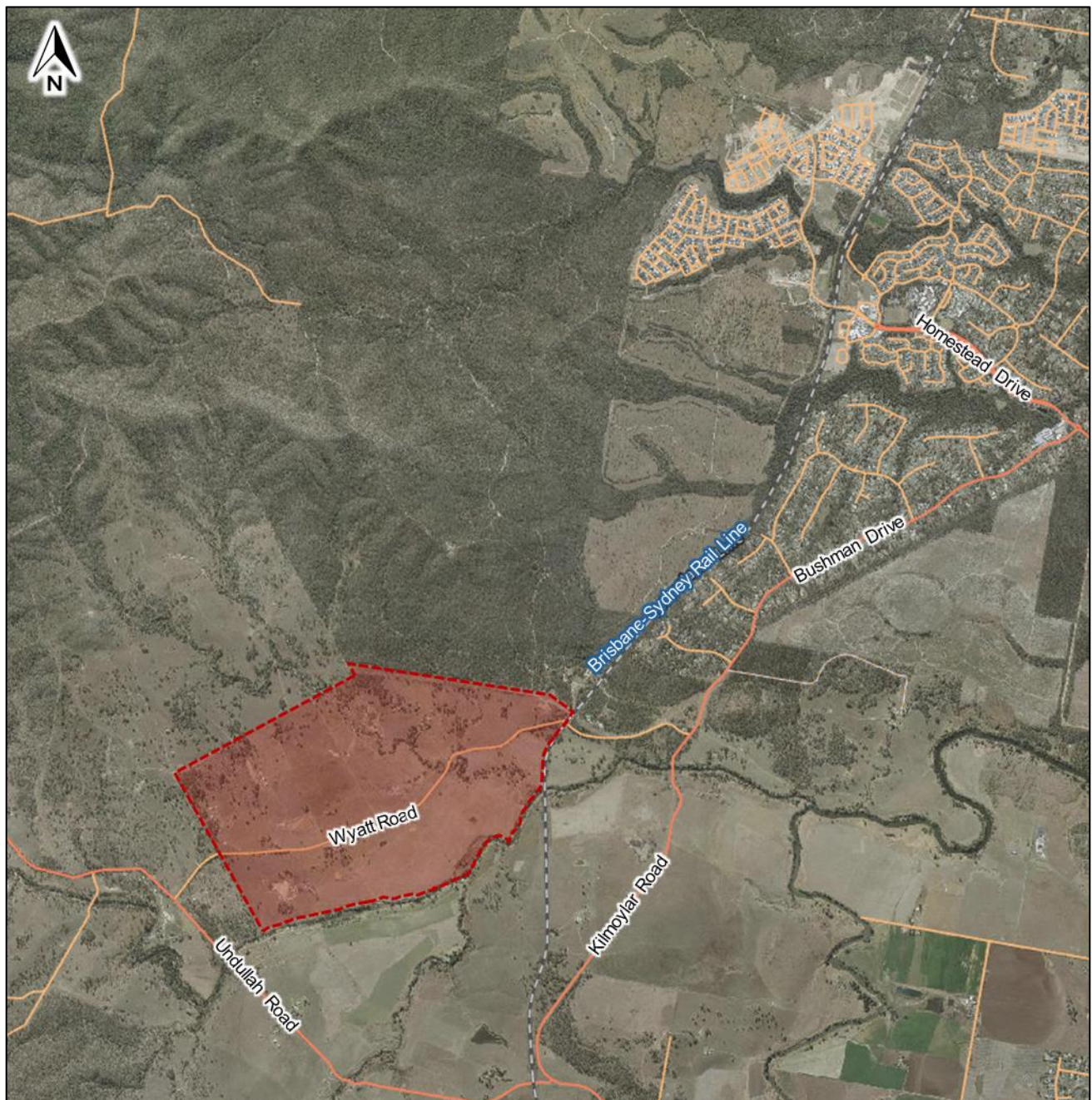
2. SITE LOCATION AND PLANNING CONTEXT

2.1 Site Location

The subject site exists within the south of the Greater Flagstone PDA residing within the Logan City Council LGA and consists of mostly rural land use. The subject site is located to the west of the Brisbane-Sydney rail line with its most of its south-west border aligning with Teviot Brook.

At present the only formed road connection into the development is via Wyatt Road.

Figure 2.1 shows the indicative subject site boundary and the surrounding key roads.



Source: Queensland Globe (adapted by Bitzios)

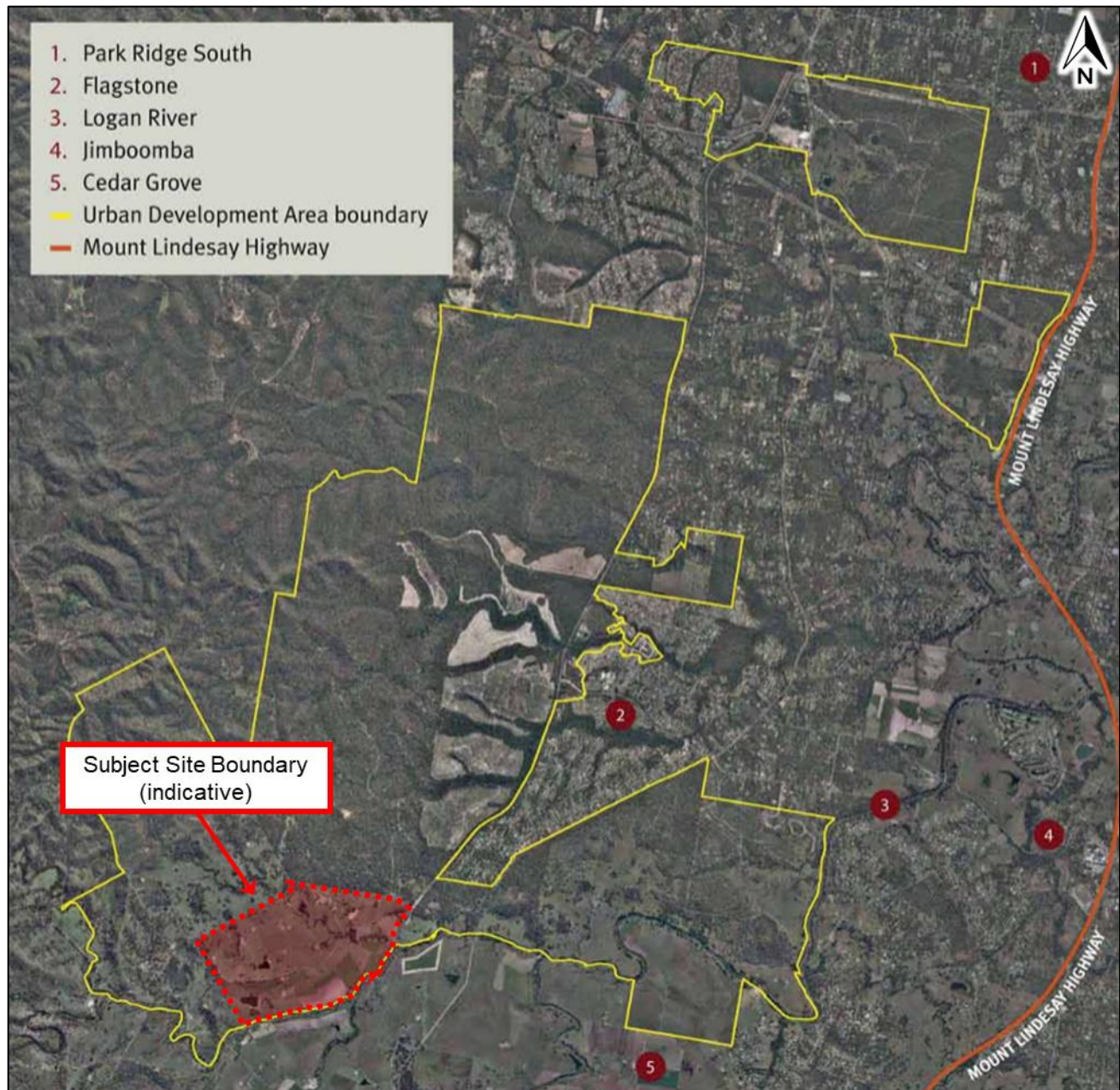
Figure 2.1: Site Location and Surrounds

2.2 Greater Flagstone Priority Development Area

2.2.1 Overview

The Greater Flagstone PDA was declared on 8 October 2010 and forms a 7,188-hectare area of development land located in South Logan, west of Jimboomba and the Mount Lindsay Highway. The PDA is forecast to provide approximately 51,500 dwellings housing approximately 138,000 people over a 30-40 year timeframe.

The subject site, with respect to the PDA area, is illustrated in Figure 2.2 for context.



Source: Greater Flagstone Urban Development Area: Development Scheme (adapted by Bitzios)

Figure 2.2: Greater Flagstone PDA

2.2.2 Development Scheme

Given that the subject site is within the Greater Flagstone PDA it falls under the “*Greater Flagstone Urban Development Area: Development Scheme*” (Development Scheme). This scheme is a key consideration for the development of this Movement IMP. The following sub-sections detail the key outcomes of the Development Scheme, and subsequent expected provisions and strategies.



Land Use Plan – Movement Network

The Development Scheme specifies that the development contributes to:

- An effective, efficient and integrated movement network that provides a high level of safety and accessibility, maintains residential amenity and promotes the use of public and active transport, particularly for local trips
- A major road network that provides effective links between centres and the neighbourhoods they serve, and to the external road network, and accommodates a range of users including cars, service vehicles, pedestrians, cyclists and public transport
- A road network that has a functional hierarchy, facilitates longer travel movements, provides multiple access routes to and through neighbourhoods and minimises traffic impacts on residential areas
- The provision of a public transport network that is readily accessible to the community (90% of all dwellings should be within 400 metres of a potential public transport service), and provides effective links to centres, rail stations and external destinations
- A comprehensive active transport (walking and cycling) network based around major active transport spines, supplemented with local links and a safe and permeable street network within neighbourhoods. The active transport network provides safe and direct links to key destinations including centres, railway stations, parks and schools.

Infrastructure Plan – Transport and Network Infrastructure

Table 2.1 lists Transport and Network Infrastructure requirements as per the Development Scheme.

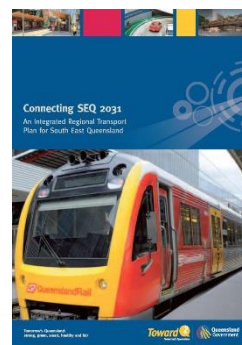
Table 2.1: Transport and Network Infrastructure

Infrastructure	Description of Works	When Required
Roads	Internal and trunk roads required to service the development as agreed with the relevant entity	To be constructed at the time the development is being undertaken and delivered before improvements are demanded by additional loading from developments within the development area
Public Transport ¹	<i>Development contribution to facilitate the early delivery of public transport services via Infrastructure Charges only for ~10 years (commenced in 2019)</i>	
Active Transport	Active transport infrastructure required to service the development	To be constructed at the time development is being undertaken
Other Networks	Network infrastructure improvements will be undertaken in conjunction with the relevant responsible authority	Delivered before improvements are demanded by additional loading from developments within the development area

¹Note that the public transport infrastructure requirements have changed and differ from what is documented in the Development Scheme generally as per the table above.

2.2.3 Connecting SEQ 2031 – An Integrated Regional Transport Plan for SEQ

Connecting SEQ 2031 establishes a long-term plan to develop a sustainable transport system in South-East Queensland. The plan adopts an integrated approach that considers land use planning and the various modes of transport. Connecting SEQ 2031 was developed as the guiding transport planning and policy document to support the desired regional outcomes of the SEQ Regional Plan 2009–2031. In accordance with Connecting SEQ, Greater Flagstone was planned to include *UrbanLink* services, *ExpressLink* services and improved active transport infrastructure.



UrbanLink Services

Flagstone is to include UrbanLink services providing connectivity between Yarrabilba (east) and Springfield (west). Connecting SEQ 2031 identified high frequency UrbanLink bus services on strategic corridors across the region as a key part of improving bus travel. The 'turn up and go' UrbanLink bus network was to provide:

- Service frequencies of 15 minutes or better off-peak, 10 minutes or better during the peak period
- High frequency, all day (6 am–9 pm), seven days per week
- Quality shelters and information
- Simplified high frequency network map with no need for a timetable
- A doubling of the proportion of residents in walking distance of 'turn up & go' services by 2031.

ExpressLink Services

ExpressLink services are to operate from Flagstone to Brisbane. The outer sections of the greater Brisbane metropolitan rail network will be operated as ExpressLink services. These services will use existing trains and will start at the end points of the greater Brisbane rail network, which, in 2031, are expected to include Flagstone (via Salisbury).

The ExpressLink network will operate much the same as express services operate today, running all stops to a change point (where UrbanLink services terminate), then stopping only at major transfer locations and activity centres. Passengers wanting to access other destinations will be able to transfer to an UrbanLink rail service or bus services or other ExpressLink stopping points.

The ExpressLink services will:

- Provide fast, express running services (competitive or faster than car) between outer suburbs and inner Brisbane
- Be easier for passengers to understand with the same stopping patterns on all services
- Allows for transfers at key stations to access multiple destinations
- Encourage people to travel off-peak.

Active and Sustainable Transport

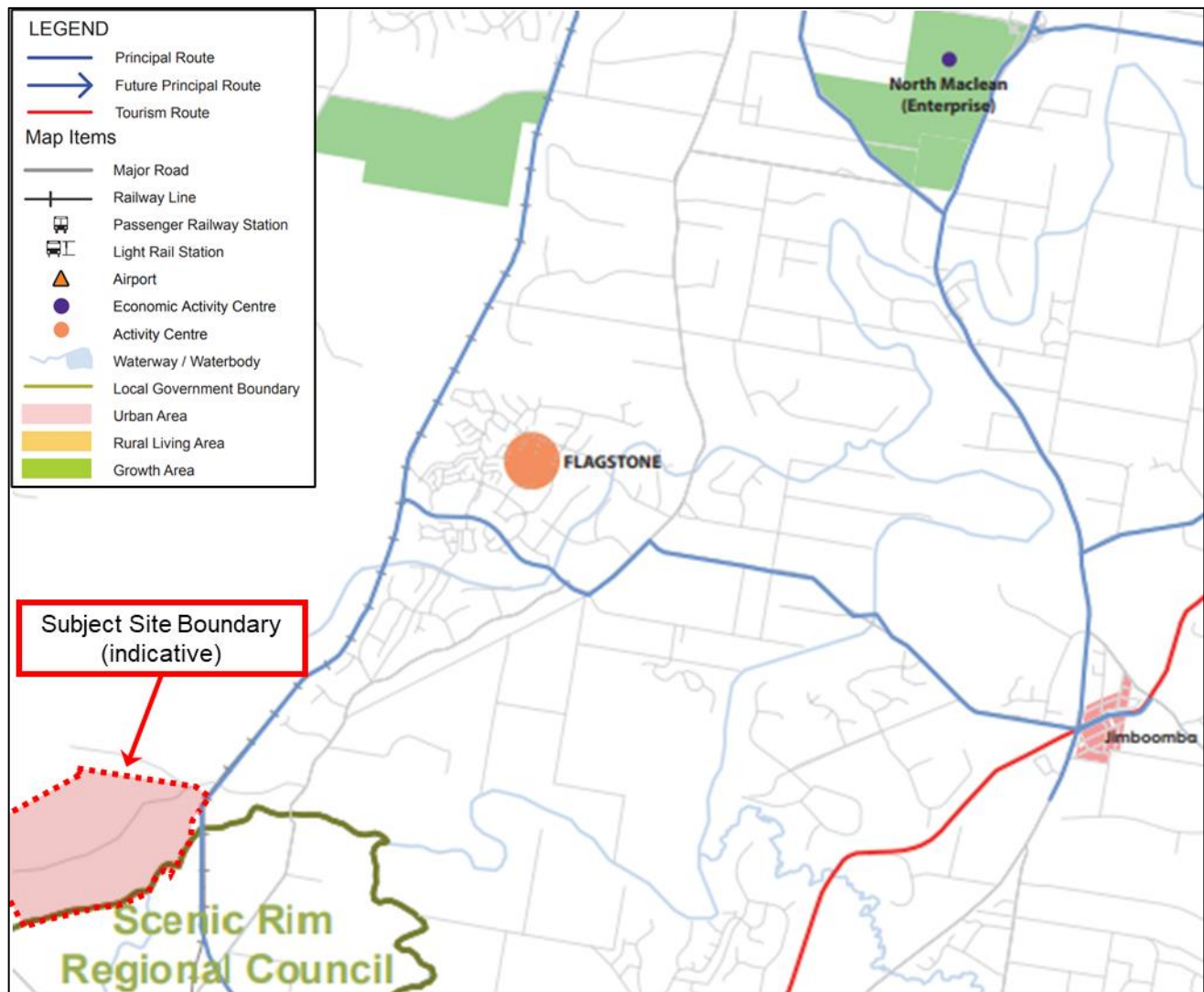
Specific active transport infrastructure improvements are not included in Connecting SEQ 2031, although infrastructure improvements are to be focused within new growth communities such as Flagstone. To be effective, active transport infrastructure investment must be:

- *Connected* – infrastructure investment in active transport needs to be targeted to fill the missing gaps in networks
- *Coordinated* – networks extend across local government boundaries and planning and delivery of networks needs to respond to this
- *'Fit for purpose'* – active transport infrastructure needs to be designed and delivered to meet the needs of most existing or potential users of the infrastructure.

Priority projects for completing a safe, direct and connected active transport network include:

- *Complete 5* – involves the planning, development and upgrade of networks within this 5km catchment, and any centre master planning exercise should take account of this catchment
- *Educated Ways* – which will focus on improvements to active transport networks around schools and universities
- *Connect To* – which plans to develop and upgrade walking and cycling routes that connect to major public transport stops and stations.

In addition to the above, the SEQ *Principal Cycle Network Plan* (SEQ PCNP) identifies a Future Principal Route through Flagstone, connecting to Jimboomba (east) and Greenbank (north). An extract from the SEQ PCNP is provided in Figure 2.3 which identifies the key principal cycle routes (and future cycle routes) in relation to the subject site are within the Brisbane-Sydney rail corridor.



Source: TMR, SEQ Principal Cycle Network Plan (adapted by Bitzios)

Figure 2.3: SEQ Principal Cycle Network Plan – Flagstone

It is noted that TMR are undertaking a rolling review and update of the Principal Cycle Network Plans and Priority Route Maps (developed in 2021) in close consultation with local governments across Queensland. Regardless, this future planning has been carried through the transport planning considerations of the Wyatt Road Context Plan Area.

Strategic Transport Goals

The following mode share targets were set within *Connecting SEQ 2031*:

- Reduce private vehicle mode share to 73%
- Increase public transport mode share to 10%

- Increase walking mode share to 10%
- Increase cycling mode share to 7%.

As previously defined, the Development Scheme includes a number of required criteria to contribute to achieving these strategic transport goals. Furthermore, the Development Scheme specifies a 'stretch target' to achieve a 20% share of all trips as active transport (walking and cycling) trips.

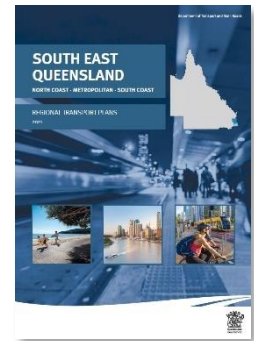
The above is also consistent with objectives / vision of Logan City Council's *Way2Go: Connecting Logan* of increasing active transport and public transport mode shares.

2.2.4 SEQ Regional Transport Plan 2021

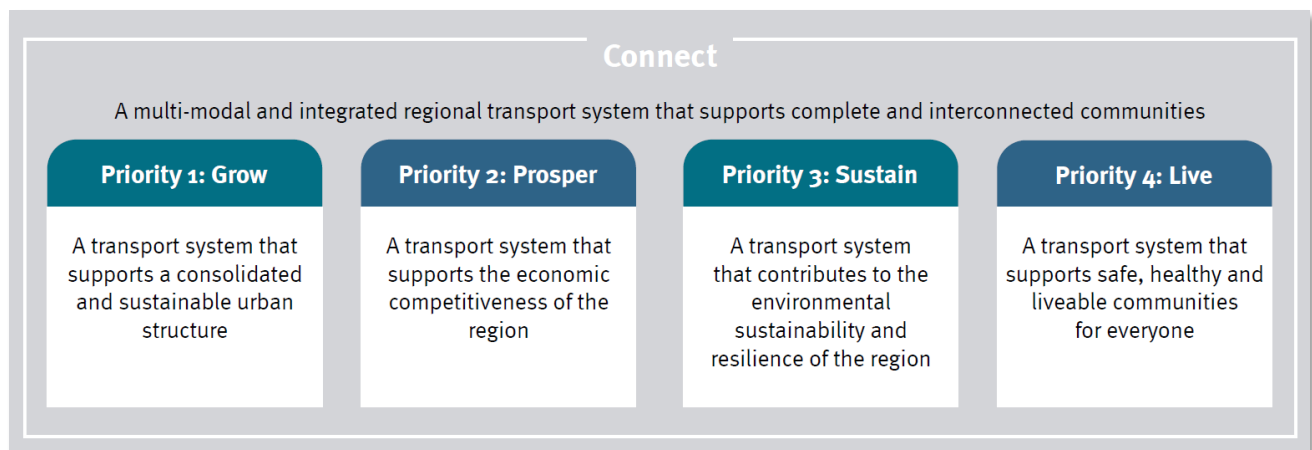
The South East Queensland Regional Transport Plan 2021 outlines strategic initiatives to enhance transportation infrastructure and connectivity across the region. Key growth areas including Greater Flagstone receive particular attention due to their growth and development prospects.

The Plan outlines key goals, priorities, objectives and actions to address the challenges and opportunities across SEQ including:

- *Priority 1: Grow*
- *Priority 2: Prosper*
- *Priority 3: Sustain*
- *Priority 4: Live.*



The SEQ Regional Transport Plans' priorities are demonstrated in the Figure Below.



Source: SEQ Regional Transport Plan 2021, Figure 10

The Plan outlines the following key principles relative to Greater Flagstone:

Population Growth Management: The plan addresses the anticipated population growth in Greater Flagstone and proposes transportation solutions to accommodate this expansion sustainably.

Transport Infrastructure Development: It highlights proposed infrastructure projects such as road upgrades, public transport expansion, and active transport networks to improve accessibility within and around Greater Flagstone.

Public Transport Enhancements: Strategies for improving public transport services including bus routes, frequency, and connectivity to key hubs within Greater Flagstone and to surrounding areas are outlined to encourage the use of sustainable transportation options.

Active Transport Networks: Emphasis is placed on developing pedestrian and cycling networks to promote active lifestyles and provide alternative transportation options within Greater Flagstone.

Integrated Land Use and Transport Planning: The plan integrates land use and transport planning to ensure that transportation infrastructure aligns with the development of residential, commercial, and recreational areas in Greater Flagstone.

Community Engagement and Stakeholder Involvement: *It emphasizes the importance of community engagement and stakeholder involvement in the planning and implementation processes to ensure that transportation solutions meet the needs and preferences of residents and businesses in Greater Flagstone.*

Overall, the South East Queensland Regional Transport Plan 2021 aims to support the sustainable growth and development of Greater Flagstone by improving transportation infrastructure, enhancing connectivity, and promoting alternative modes.

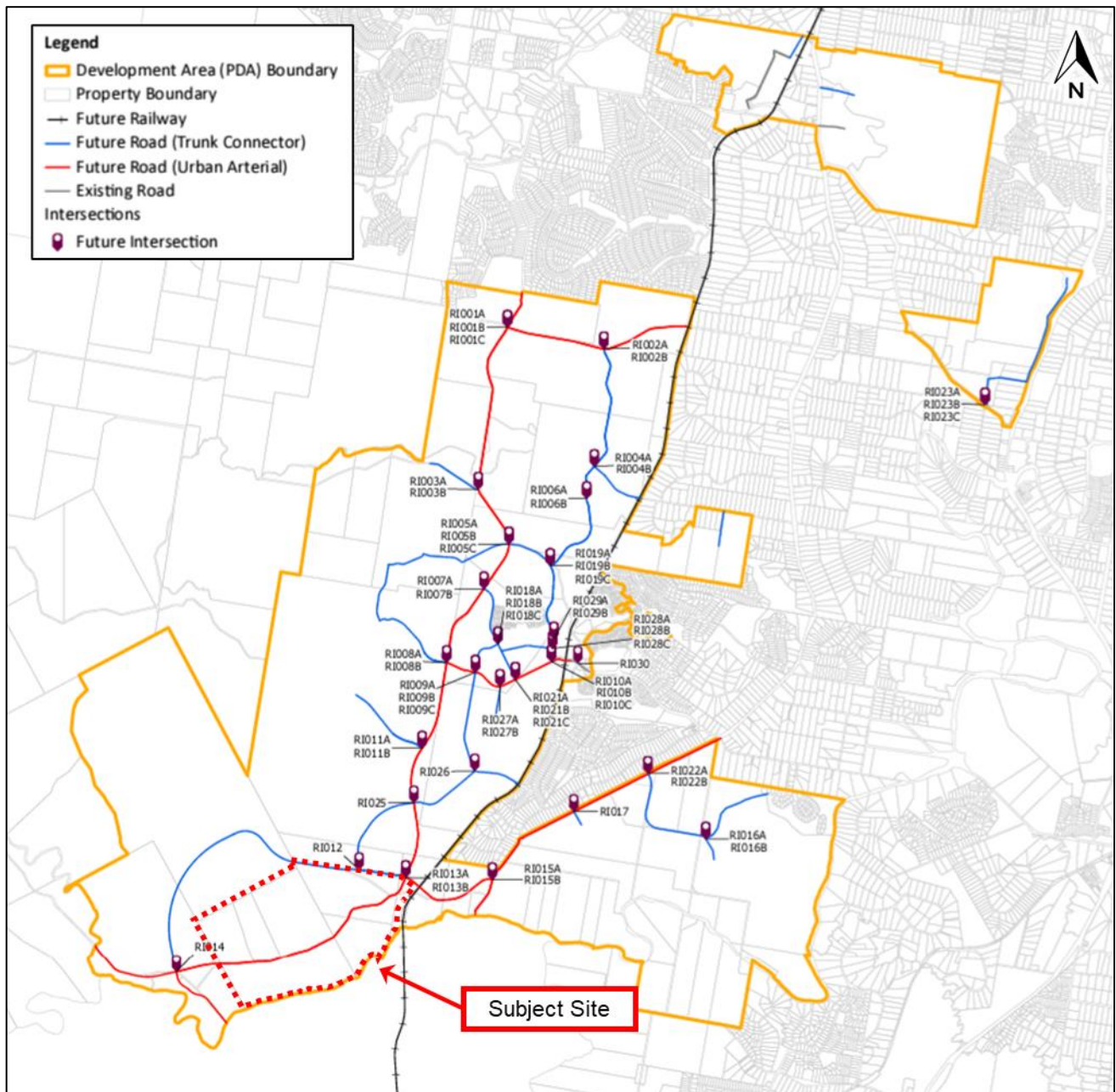
2.2.5 Development Charges and Offset Plan

The *Development Charges and Offset Plan* (DCOP) was adopted in July 2023 and supplements the Development Scheme identifying relevant development charges and the trunk infrastructure required to service the PDA, and how developers can claim an offset for the delivery of said infrastructure.

The DCOP is supported by a range of maps which show the relevant infrastructure graphically. The infrastructure outlined in these documents was largely informed by the updated modelling for the region using the South Logan Strategic Transport Model (SLSTM), relevant developer inputs from endorsed IMP's, recent development submissions, and ongoing liaison between land owners and EDQ.

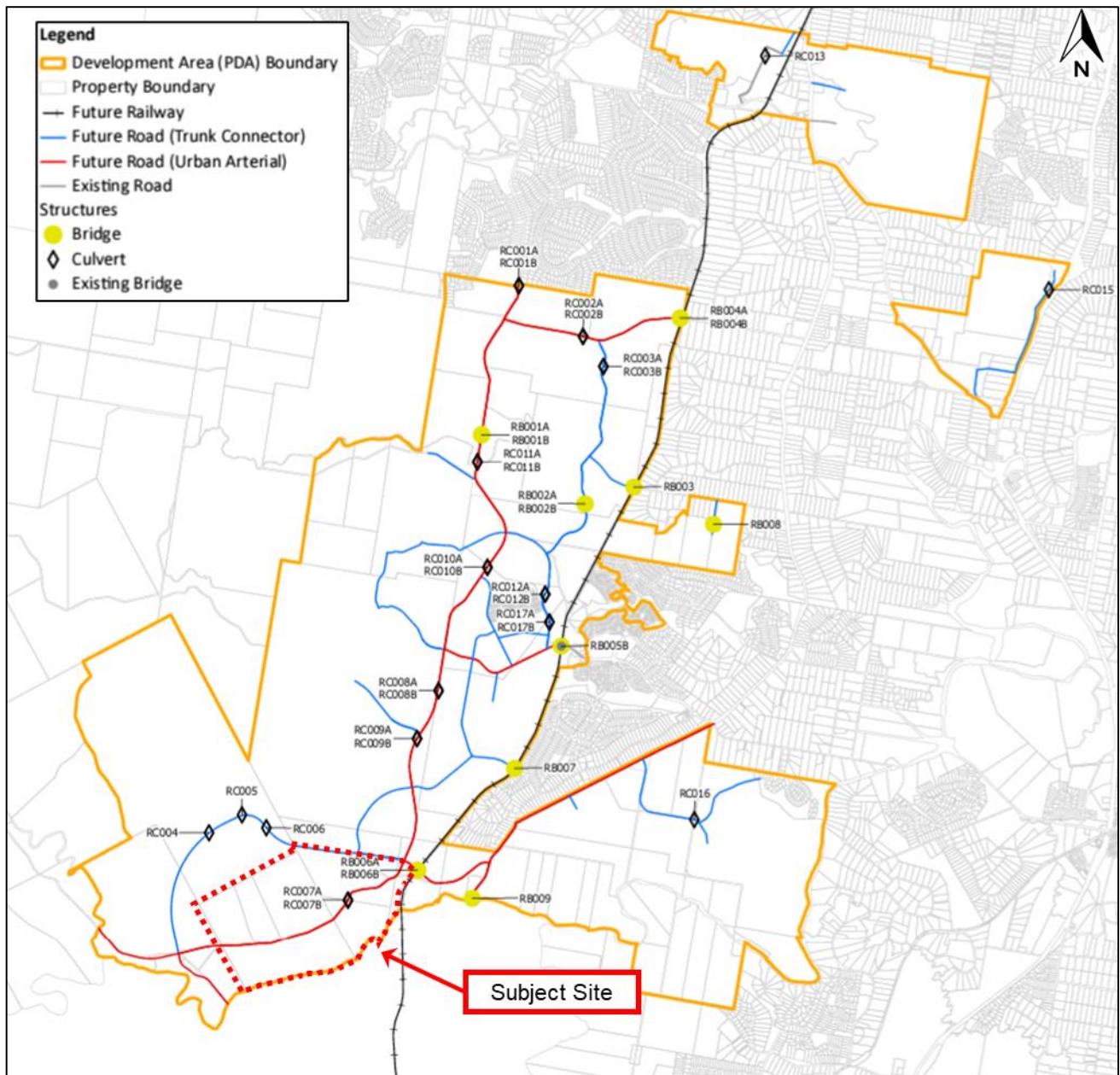
The Wyatt Road Kagaru Context Plan (refer Section 2.3) was a key document in representing the proposed planning within Wyatt Road Context Plan Area.

The DCOP maps relevant to transport for Wyatt Road Context Plan Area are provided in Figure 2.4 to Figure 2.6



Source: EDQ Greater Flagstone DCOP Maps (2022) (adapted by Bitzios)

Figure 2.5: Greater Flagstone DCOP – Transport (Intersections) Trunk Infrastructure



Source: EDQ Greater Flagstone DCOP Maps (2022) (adapted by Bitzios)

Figure 2.6: Greater Flagstone DCOP – Transport (Structures) Trunk Infrastructure

2.3 Wyatt Road Context Area Plan

In accordance with EDQ requirements, Context Area Plans are submitted as part of PDA applications to demonstrate the proposal will form part of a logical and integrated overall land use structure consistent with the vision, criteria and zone intents in the Development Scheme and relevant PDA guidelines.

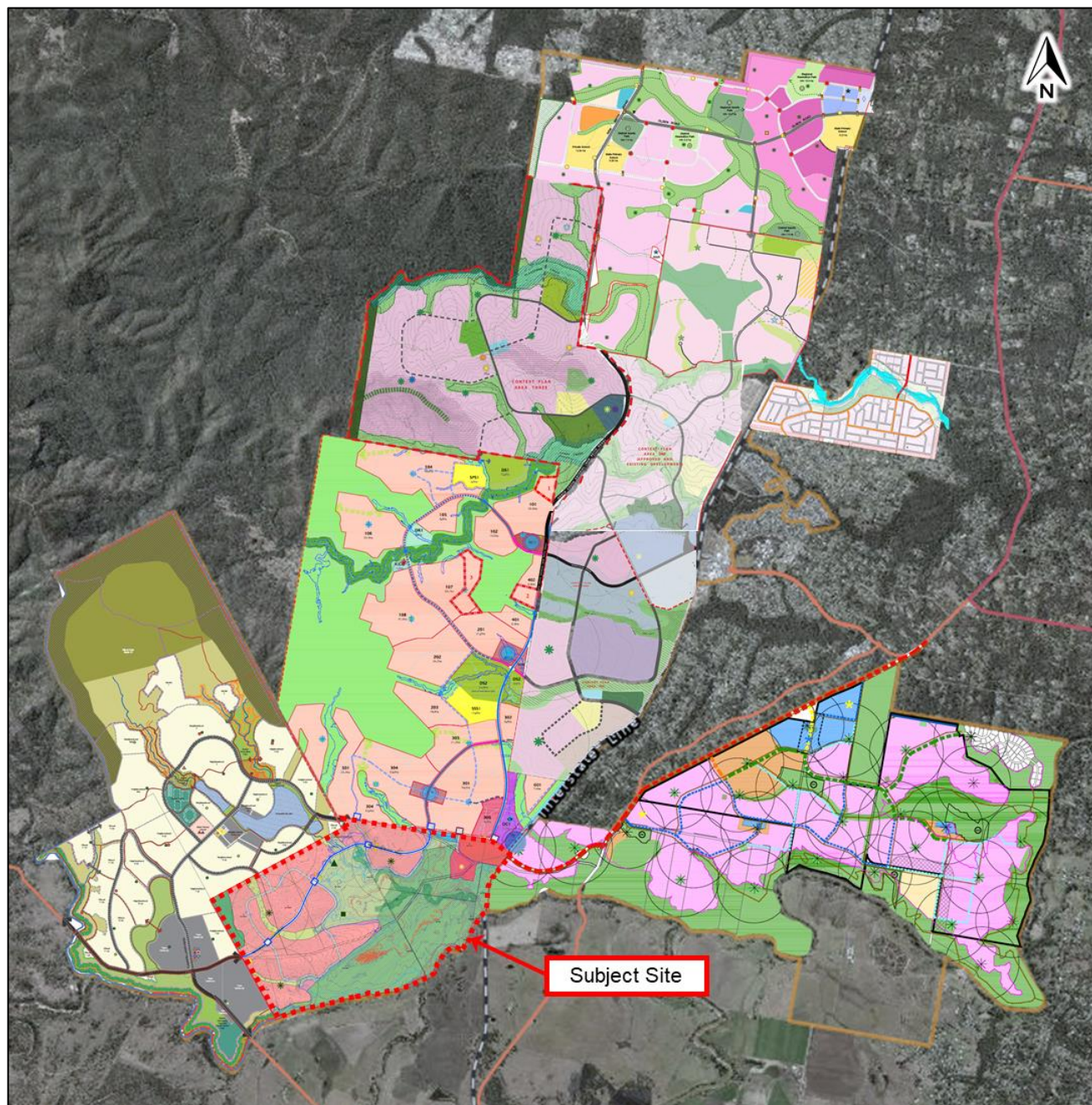
The intent of the context area plan is not to define the final composition of land uses and/or infrastructure, rather outlines the logical and likely locations of key components, including:

- Neighbourhoods: including major access points and indicative dwelling densities
- Principal land uses: including centres, schools, major parks and other community facilities
- Network infrastructure: including external connectivity
- Major road/rail corridors and connector street network: including potential public transport routes
- Trunk water and sewerage infrastructure

- Greenspace network, parks and environmental corridors
- Active transport spines.

The Wyatt Road Context Area Plans have been overlayed with other surrounding context area plans for land outside of Wyatt Road Context Plan Area, to demonstrate the external connectivity and their locations relative the site's surrounds.

Figure 2.7 shows the Wyatt Road Context Area plan relevant to the immediately surrounding context area plans (*Note, not all plans shown in the figure have been endorsed*).



Source: DILGP website, Greater Flagstone Priority Development Area (adapted by Bizios)

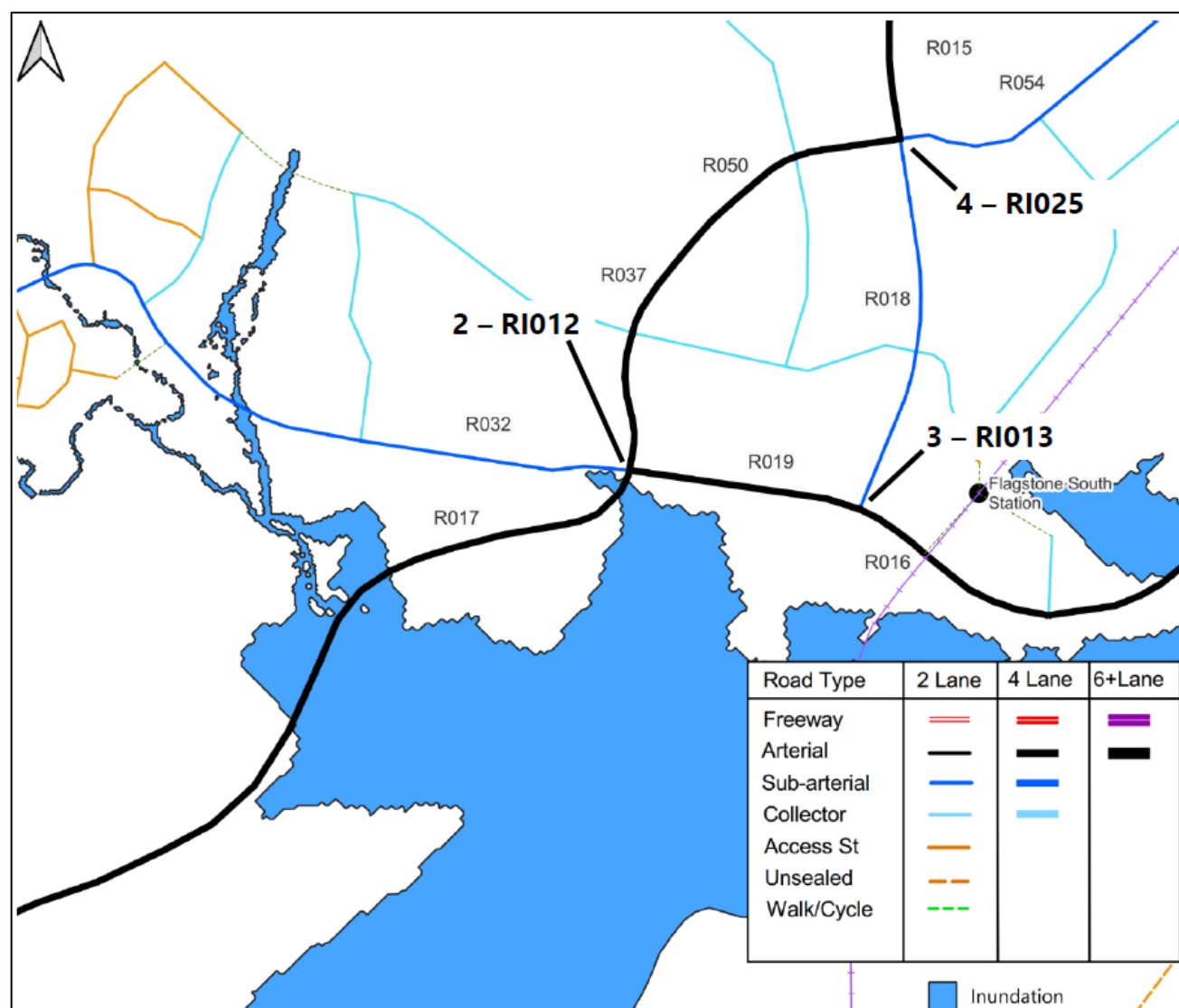
Figure 2.7: Surrounding Context Areas

2.4 Wyatt Road Realignment

Veitch Lister Consulting (VLC) was engaged by EDQ to investigate traffic scenarios exploring the potential realignment of Wyatt Road (RO17). The intent of this investigation was to identify new road alignment options avoiding impacts to the existing flood plain within the development's subject site.

New road alignment scenarios were developed from the 2066 South Logan Strategic Transport Model (SLSTM).

The findings of the review, as outlined in the Wyatt Road Realignment Review report, indicated Scenario 3 as the recommended road network option. The Scenario 3 road network recommended is illustrated in Figure 2.8.



Source: Wyatt Road Realignment Review (VLC, August 2023)

Figure 2.8: Wyatt Road Realignment Preferred Option (Scenario 3)

Since the completion of the study, EDQ has advised that the Scenario 3 alignment should be adopted for road network planning and transport assessment going forward. As such, plans for any proposed development within the Wyatt Road Context Plan area will adopt this revised alignment.

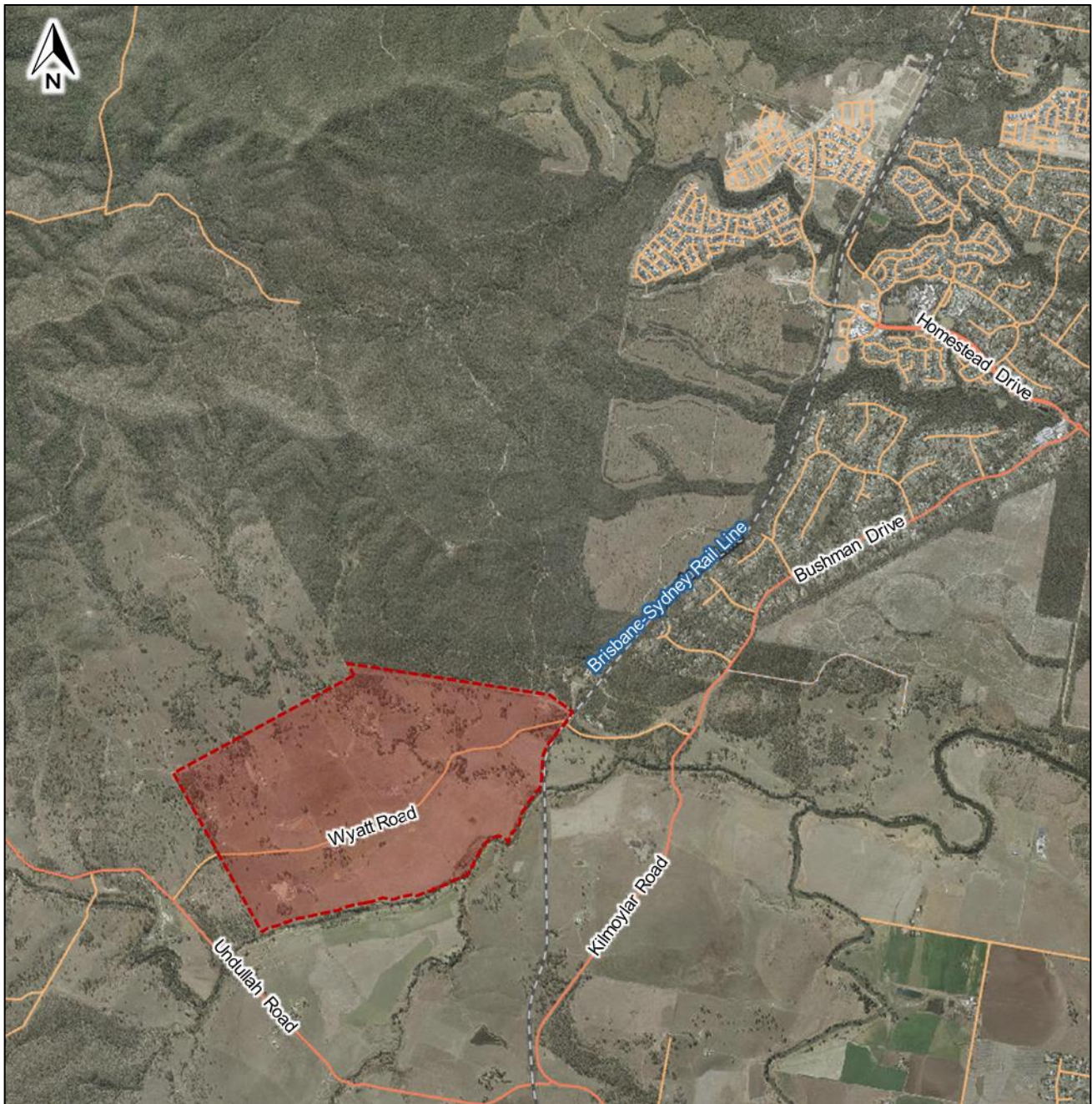
3. TRANSPORT NETWORK CONTEXT

3.1 Existing Transport Network

The surrounding existing transport network has been identified below to provide context around the progression of development and supporting infrastructure and how this Movement IMP allows for connection with the external network.

3.1.1 Road Network

The key existing external roads in the surrounding region include Bushman Drive, Homestead Drive, Kilmoylar Road and Teviot Road. The only existing road internal to Wyatt Road Context Plan Area is Wyatt Road and in its current form it is unsealed and serves several rural properties.



Source: Queensland Globe (adapted by Bizios)

Figure 3.1: Existing Road Network

At present, Wyatt Road provides the only access to the subject site via the west (onto Undullah Road) and east (onto Kilmoylar Road). Other key roads further afield from the subject site include Mount

Lindesay Highway (which is the key north-south arterial between Beaudesert and the Logan Motorway), Teviot Road and Cusack Lane (connecting east to Jimboomba).

3.1.2 Public Transport

Bus Services

As typical of a low-density rural land use there are no existing bus services provided within Wyatt Road Context Plan Area or surrounds.

Rail Services

The Brisbane-Sydney rail line borders the eastern extent of the subject site (see Figure 3.1) however does not currently provide passenger services and no rail stations currently exist in the vicinity of the subject site.

3.1.3 Active Transport

As typical of a low-density rural land use there is no existing active transport infrastructure within the Wyatt Road Context Plan Area.

3.2 Planned Transport Network

3.2.1 Road Network

Future road network projects in the region (outside of PDA land) are largely identified in Council's future road upgrade planning (LGIP), Way2Go strategy and Sub-regional Infrastructure Program (SRIP), and state government's (TMR) *Queensland Transport and Road Investment Program* (QTRIP). A number of these projects have also been included in forecast modelling completed by VLC within the SLSTM and are detailed in Section 5.

A summary of these future road network projects / upgrades is provided below:

- The Park Ridge Connector (PRC) between Logan Motorway and Granger Road
- The Southern Infrastructure Corridor (SIC) upgrade of Camp Cable Road
- Teviot Road upgrade to a four-lane, semi-arterial standard
- Mount Lindesay Highway four-lane expressway upgrade
- Future Greenbank interchange (Teviot Road, Middle Road, Stoney Camp Road)
- Four-lane upgrade of Springfield-Greenbank Road.

This Movement IMP considers these future projects in the forward planning, and hence is consistent with current road network planning.

3.2.2 Rail Transport

A number of rail transport / planning projects are underway in the region (and broader area) to improve public transport and freight services and connections given the growth in the region. The key projects are outlined in Council's Way2Go plan and are summarised below:

- **Salisbury to Beaudesert Rail line** will support increased take-up of planned expansion growth and provide the opportunity for passengers from growth areas including Greater Flagstone to access the Brisbane CBD (includes 11 new passenger stations, including Undullah).
- **Cross River Rail** includes a 10.2km rail line between Dutton Park and Bowen Hills which includes 5.9km of tunnel under the Brisbane River and CBD. It will unlock a bottleneck in the transport network allowing more trains to run more often; and increase capacity on the Brisbane rail network for increased services such as the Salisbury to Beaudesert rail line.
- **Inland Rail** provides a service offering of double-stacked trains from Beveridge in Victoria to Ebenezer in Queensland, with a further 40km single stacked connection through to Kagaru. While identified in Council's Way2Go (2018), Ebenezer was recently identified as the preferred end point for double-stacked operations, hence the Kagaru to Acacia Ridge and Bromelton section of Inland Rail was discontinued.



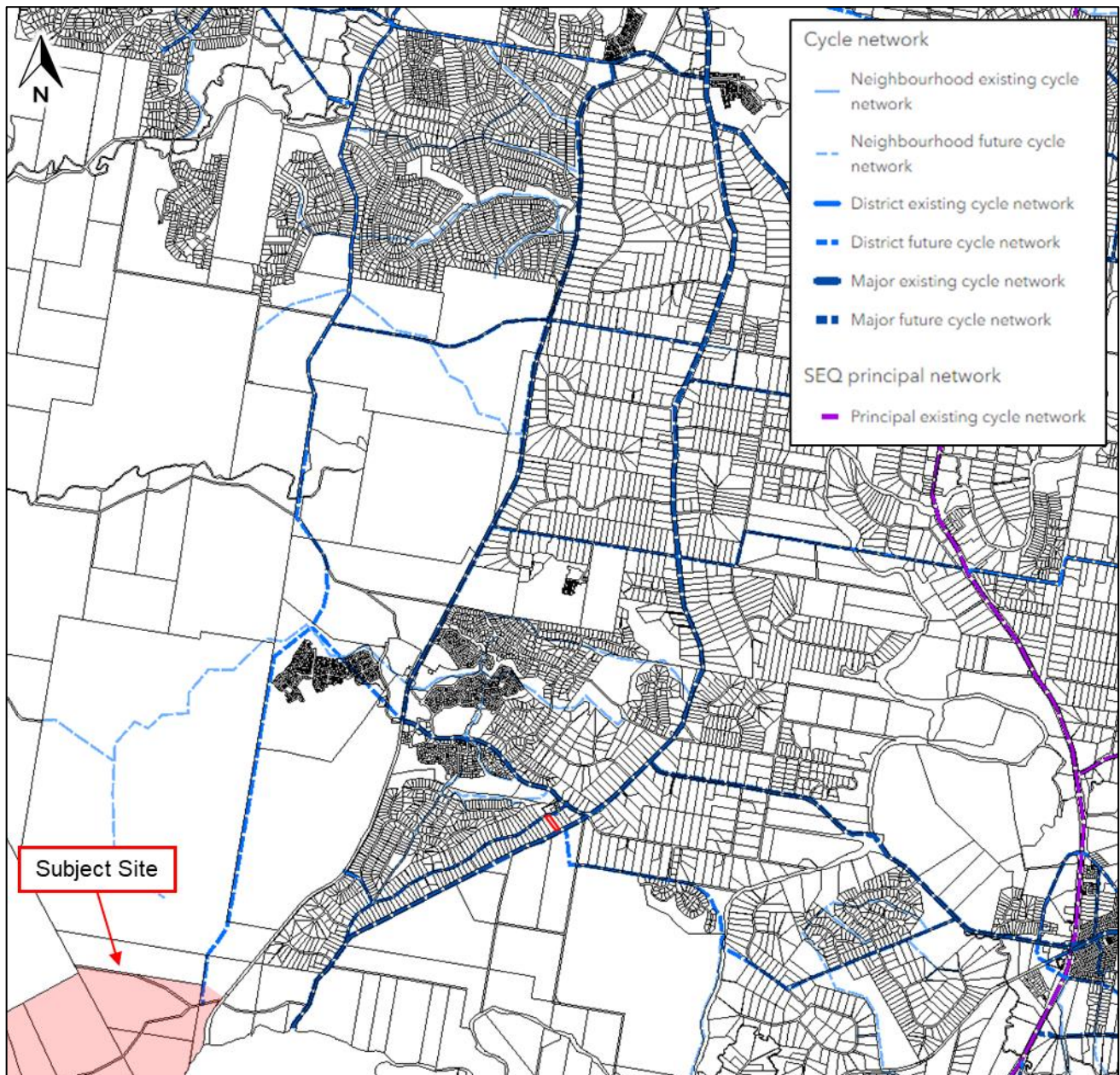
The most relevant of these projects to the Subject Site is the **Salisbury to Beaudesert passenger rail line**. This future public passenger transport project is accommodated in this Movement Network IMP with the planned delivery of Undullah interchange, located in close proximity to the north-east boundary of the subject site.

3.2.3 Active Transport

Active transport infrastructure planning in the region is somewhat limited, with the majority of significant active transport infrastructure to be delivered with the emerging development fronts, and road network upgrades.

The SEQ *Principal Cycle Network Plan* (SEQ PCNP) identifies a Future Principal Route through Flagstone via the rail corridor and connecting to Jimboomba (east) and Greenbank (north) as shown in Figure 2.3.

Council's cycling infrastructure planning is outlined at a high-level in Figure 3.2, noting the future cycle network within the Flagstone PDA generally align with the DCOP planning.



Source: Logan City Council website: PDHub, Interactive Mapping (adapted by Bizios)

Figure 3.2: Future Active Transport (Cycle) Network

This Movement IMP caters for the future active transport network planning through delivery of active transport infrastructure inside the road reserve, and outside the road reserve.

4. MOVEMENT NETWORK

4.1 Overarching Principles

The Wyatt Road Context Plan Area movement network has been developed to address the key vision and objectives of the Development Scheme, the strategic targets of Connecting SEQ and Council's Way2Go strategy, and general alignment with the DCOP. The movement network therefore contributes to:

- *An effective, efficient, and integrated movement network with a functional road hierarchy...*
- *A major road network that provides effective links between centres, neighbourhoods, and the external network, accommodating all transport modes...*
- *A highly accessible public transport network reducing reliance on private vehicles with 90% of dwellings within 400m of public transport, aspiring to achieve strategic mode share targets...*
- *A comprehensive, connected, coordinated and fit-for-purpose active transport network based around major active transport spines to provide safe and direct links to key destinations...*

These key principles ensure the proposed movement network achieves a high quality, highly connected transport system attaining the vision and objectives for the region as outlined in key planning documents such as the Development Scheme.

4.2 Key Design Guidelines and Criteria

The key guidelines referenced throughout the planning and design of the road network included:

- Austroads Guide to Road Design (AGRD)
- The Greater Flagstone PDA IPBR
- EDQ's Guidelines No. 6 – Street and Movement Network (2019)
- City of Logan Planning Scheme
- IPWEAQ Street Design Manual (2020).

The key criteria utilised in the design of the primary internal road network and cross-sections is summarised in Table 4.1 and Table 4.2.

Table 4.1: Key Road Design Criteria by Road Typology

Road Hierarchy	Posted Speed	Design Speed	Kerb Type
Arterial / Sub-arterial	70km/h	80km/h	Upright / Barrier
Trunk Connector	60km/h	70km/h	Upright / Barrier
Neighbourhood Connector	≤50km/h	≤60km/h	Upright / Rollover
Neighbourhood Access	≤50km/h	≤60km/h	Rollover / Layback
Rear Lane	<50km/h	-	Flush

Note that street design will be implemented to control vehicle speeds, with lower speeds to be considered in lower order streets based on latest engineering practice.

Table 4.2: Environmental Capacity and Access Criteria by Road Typology

Road Hierarchy	Two-lane (veh/day)	Four-lane (veh/day)	Direct Lot Access
Arterial / Sub-arterial	10,000-20,000	>20,000	No
Trunk Connector	7,500-18,000	18,000-30,000	Yes, if <10,000 veh/day and posted speed ≤60km/h
Neighbourhood Connector	3,000-7,500	-	Yes
Neighbourhood Access	<3,000	-	Yes
Rear Lane	<500	-	Yes

4.3 Road Network

The overarching principle is that the movement network contributes to:

*An effective, efficient, and integrated movement network with a functional road hierarchy...
A major road network that provides effective links between centres, neighbourhoods, and the external network, accommodating all transport modes...*

4.3.1 Road Hierarchy

The road network has been proposed to align with the existing and future road network, regional infrastructure planning and the relative visions and objectives outlined in key planning documents. The proposed Wyatt Road Context Plan Area road hierarchy is shown in Figure 4.1 and **Appendix A**.

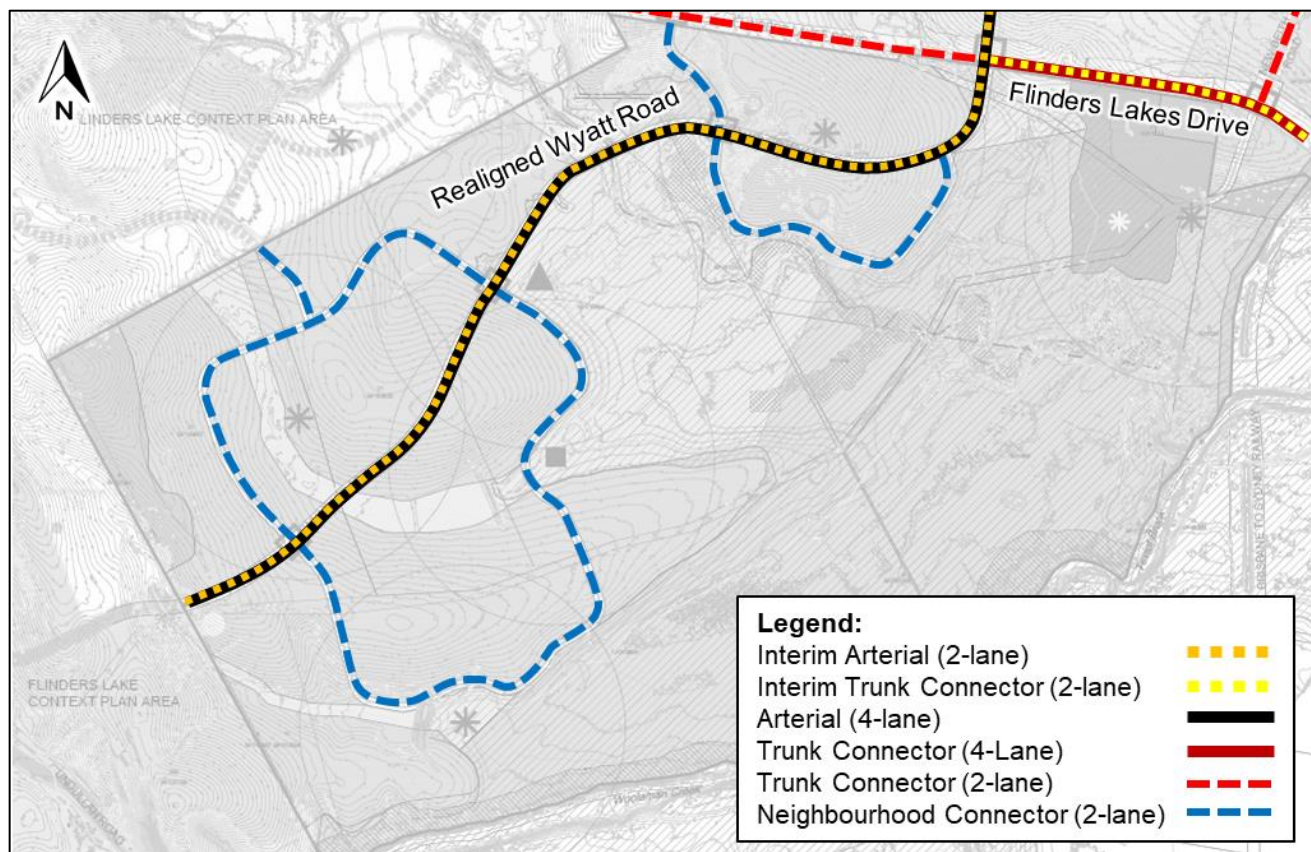


Figure 4.1: Movement Network Road Hierarchy

As shown, the road layout consists of the major (urban arterial) spine of Wyatt Road running through the subject site. In line with the EDQ Guidelines for the interaction between arterial roads and the PDA street network neighbourhood connector streets are proposed off Wyatt Road for access to surrounding residential precincts.

Indicative timing of arterial roads and trunk intersections in accordance with the DCOP is outlined in Table 4.3.

Table 4.3: DCOP Infrastructure and Indicative Timing

DCOP ID	Type	Sub-type	Road Name(s)	DCOP Timing
RI012	Intersection	Signalised	Flinders Lake Drive / Wyatt Road	2041-2066
RI013	Intersection	Signalised	New Beith Road / Flinders Lake Drive	2031-2066
R016A	Road	Trunk Connector (2-lane)	Flinders Lake Drive (interim)	2026-2031
R016B	Road	Trunk Connector (4-lane)	Flinders Lake Drive (ultimate)	2041-2066
R017A	Road	Urban Arterial (2-lane)	Wyatt Road (interim)	2026-2031
R017B	Road	Urban Arterial (4-lane)	Wyatt Road (ultimate)	2041-2066
R019A	Road	Trunk Connector (2-lane)	Flinders Lake Drive (interim)	2026-2031
R019B	Road	Trunk Connector (4-lane)	Flinders Lake Drive (ultimate)	2041-2066
R032	Road	Trunk Connector (2-lane)	Flinders Lake Drive	2026-2031

Interim (two-lane) and ultimate (four-lane) configurations are identified for Wyatt Road a Flinders Lake Drive. The timing / triggers for the upgrade from two-lanes to four-lanes is tied to progression of relevant development fronts and timing of lot delivery.

This is considered in the SLSTM modelling based on information from developers and road authorities at the time, noting that this is subject to change over time. Regardless, indicative timing for these key roads to require a four-lane cross-section, based on the SLSTM modelling, is outlined in Table 4.4.

Table 4.4: Four-lane Cross-section Indicative Timing

Road	2031		2041		2066	
	AAWDT*	4-Lanes	AAWDT*	4-Lanes	AAWDT*	4-Lanes
R017 – Wyatt Road	321	-	24,984	✓	39,527	✓
R019 – Flinders Lake Drive	5,333	-	20,554	✓	30,611	✓

*AAWDT = Annual Average Daily Weekday Traffic in vehicles per day (veh/day)

Note, the threshold for warranting a four-lane cross-section is typically where roads are forecast to carry >18,000 veh/day.

4.3.2 Typical Cross Sections

Road cross sections are proposed generally in accordance the Flagstone PDA IPBR for trunk roads identified in the DCOP. Local roads shall also be delivered generally in accordance with the EDQ Guideline No. 6: Street and Movement Network.

Typical cross-sections proposed are detailed in Table 4.5.

Table 4.5: Typical Road Cross-sections by Road Hierarchy

Hierarchy	Road Reserve	Seal Width ¹	Lanes	Median	Parking	Bus	Footpath	Cycling
Interim Cross-sections								
Arterial (2-lane) - interim	20m	10m	2	No	No	Yes	1.5m (one sides)	3m two-way (same side)
Trunk Connector (2-lane) - interim	20m	7m	2	No	No	Yes	1.5m (one sides)	3m two-way (same side)
Ultimate Cross-sections								
Arterial (4-lane)	33m	14m	4	Yes (5m)	No	Yes	1.5m (both sides)	3m two-way (both sides)
Trunk Connector (4-lane)	32m	14m	4	Yes (5m)	No	Yes	1.5m (both sides)	3m one-way (one-side) + 2m one-way (other side)
Trunk Connector (2-lane) - with parking	24m	11.8m	2	No	Yes	Yes	1.5m (both sides)	2m one-way (both sides)
Neighbourhood Connector	22m	11.2m	2	No	Yes	Yes	1.5m (one side)	3m shared path (one side)
Neighbourhood Access	16m	7.5m	2	No	Yes	No	1.5m (one side)	On-road
Neighbourhood Lane	6.5m	5.5m	2	No	No	No	No	No

¹Seal width includes parking lane / indented parking widths

The cross-sections contained within this Movement IMP are “typical” cross-sections and therefore may be modified / widened where appropriate to cater for location-specific considerations such as medians, wider pathways, etc. Any alternate cross-sections shall be documented in subsequent applications. Key considerations include (but are not limited to):

- Where a cross-section includes on-street parking, it may be provided as indented parking
- When fronting parkland / open space, road reserves may be reduced where required active transport provisions can still be provided within the verge and adjacent open space.

4.3.3 Rail Bridges

As a part of development of the Flagstone PDA, a new rail bridge will be constructed for the Flinders Lake Drive trunk road (R019). While not within the subject site, this rail bridge is located in close proximity to the context area. This bridge is identified in the DCOP as shown in Figure 2.6, with details outlined in Table 4.6.

Table 4.6: Rail Bridge Location and Details

DCOP ID	Location	Existing?	Number of Lanes		Estimated DCOP Construction Timing
			Interim	Ultimate	
RB006A	Flinders Lakes Drive	No	2-lanes	-	2021 - 2026
RB006B		No	-	4-lanes	2041 - 2066

4.4 Junctions and Intersections

4.4.1 Intersection Control

Table 4.7 identifies the intersection control type which may typically be adopted based on the hierarchy of intersecting roads.

Table 4.7: Typical Intersection Control Criteria

Intersecting Road Types		Typical Control Type	
Arterial	Trunk Connector	Signalised	Priority (if left-in / left-out)
Trunk Connector	Neighbourhood Connector	Signalised	Priority (if T-intersection)
	Centre Access		
	Industrial Access		
Connector	Connector	Priority Control	
Connector	Access	Priority Control	
Access	Access	Priority Control	

The above are typical control types which are subject to change based on:

- Location-specific needs and/or constraints
- Safety considerations for all modes of traffic including vulnerable road users
- Consideration of the latest DCOP planning
- Operational performance identified by SIDRA Intersection modelling

In addition, the following principles shall be considered when determining intersection control types:

- Modified T-intersection arrangements shall be avoided where possible to minimise confusion
- Use of roundabouts on high-speed, high-volume, multi-lane roads shall be carefully considered and safety risks to active transport users are appropriately mitigated e.g., crossing treatments
- Left-right staggered / offset intersections are avoided wherever possible unless appropriate spacing / separation can be achieved.

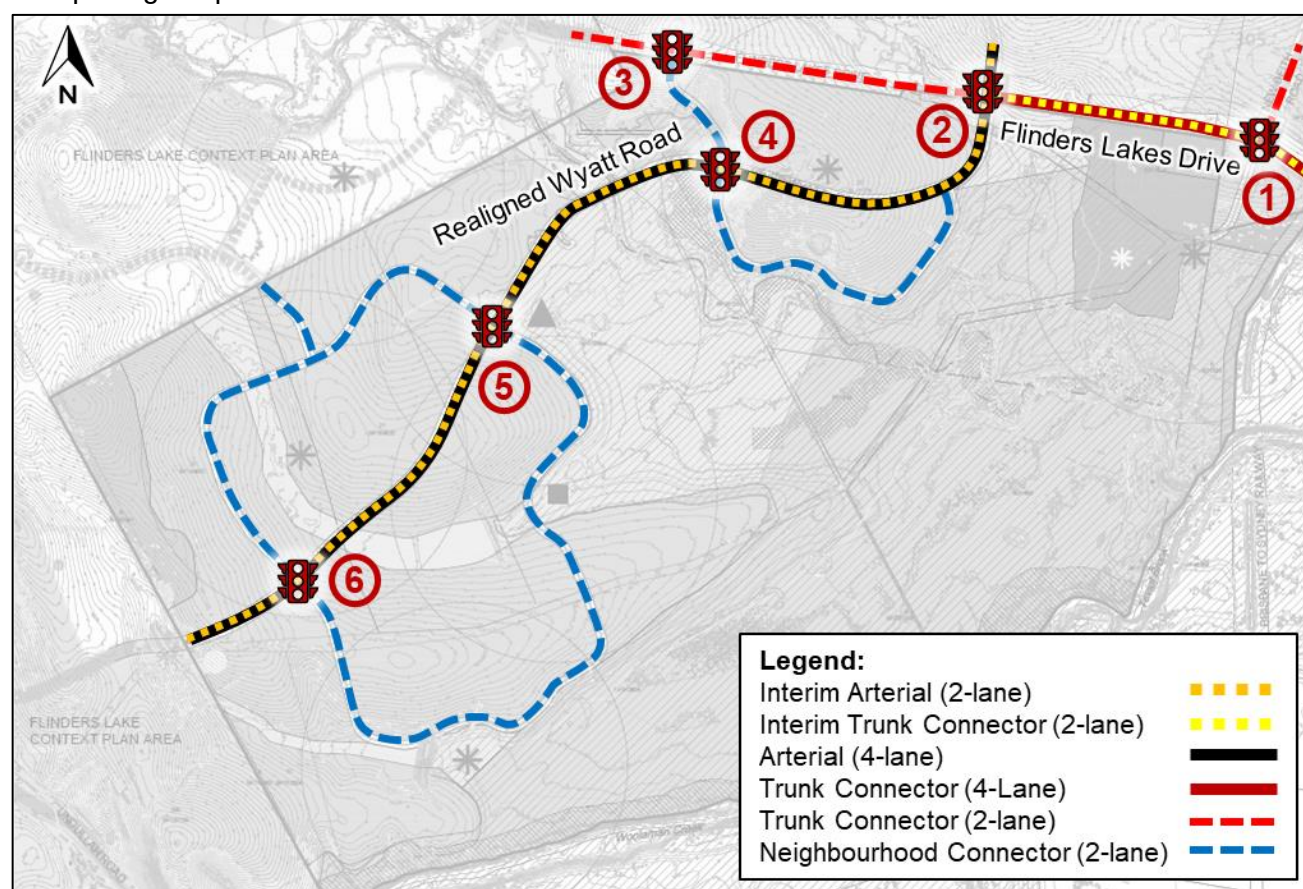


Figure 4.2: Movement Network Key Intersections

Ultimately, key intersections shown in Figure 4.2 above will require signalisation, however these intersections may be provided in an interim priority-controlled format. The timing / triggers for intersection signalisation is tied to progression of development both within Kagaru and surrounding development areas. Typical trigger points for signalisation of key intersections are as follows:

- Upgrade of relevant arterial / trunk roads to their ultimate 4-lane cross-sections
- Once all approaches to a 4-way arterial / trunk road are open to public traffic.

4.4.2 Intersection Spacing

Key guidelines considered in relation to intersection spacing include:

- EDQ's Guidelines No. 6 – Street and Movement Network (2019)
- Relevant Austroads Guides
- IPWEAQ Street Design Manual (2020).

Key principles adopted when planning intersection location and spacing include:

- Intersection spacing along major traffic routes will consider EDQ Guideline No. 6, including:
 - Trunk / Arterial Roads: 300m minimum spacing
 - Neighbourhood Connector: 120m minimum spacing
- Where appropriate intersection spacing cannot be achieved based on Structure Plan layout and site constraints, left-in / left-out arrangements may be considered.

Spacing of key intersections shown in Figure 4.2 comply with the above requirements.

All other intersections are expected to achieve appropriate spacing supported through separate development applications and intersection modelling.

4.5 Public Transport

The overarching principle related to public transport adopted for Wyatt Road Context Plan Area is that the movement network contributes to:

A highly accessible public transport network reducing reliance on private vehicles with 90% of dwellings within 400m of public transport, aspiring to achieve strategic mode share targets...

The subject site benefits from a comprehensive and connected road network allowing a high-level of bus network coverage and the future passenger rail line which will be integrated with the overall movement network including rail-bus transit interchange located with the future Undullah transit interchange.

4.5.1 Bus Services and Infrastructure

Indicative locations of bus stop pairs are identified within the subject site road network as demonstrated in Figure 4.3, including the 400m radius catchment area of these bus stops.

The proposed bus stop locations and bus routes which can be achieved are shown provide a highly accessible public transport network towards reducing reliance on the private vehicle and supporting achievement of mode share targets outlined in Section 2.2.3.

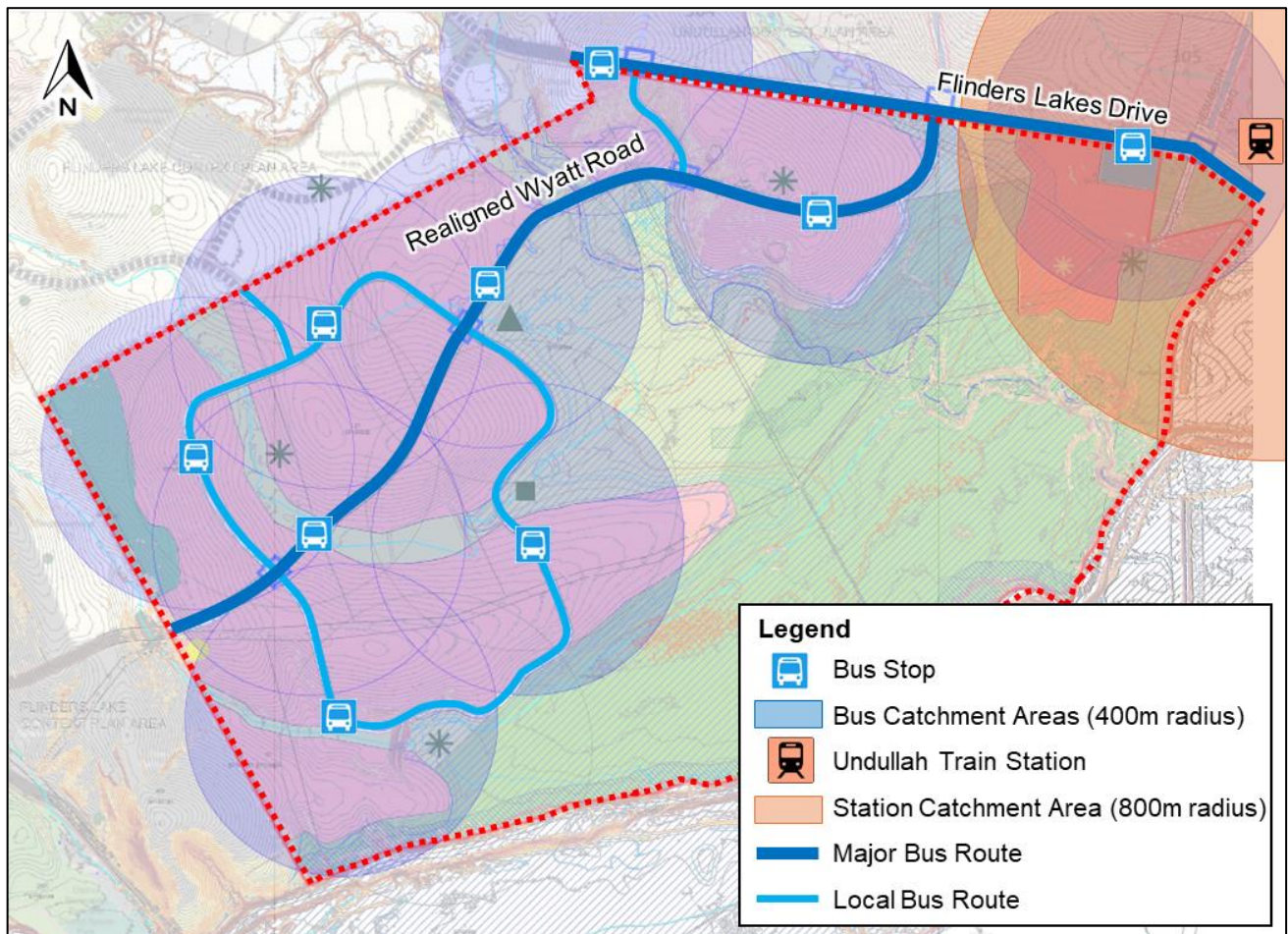


Figure 4.3: Public Transport Stop Locations and Coverage

The bus routes identified in Figure 4.3 are summarised as “Major Routes” and “Local Routes” which include:

Major Bus Routes: *proposed primarily on the major (spine) road network with arterial / trunk roads.*

Local Bus Routes: *proposed on Connector Roads.*

It should be noted that these bus routes are indicative only and subject to public transport planning by TMR’s TransLink Division. The key criteria for bus stop types and location includes (but not limited to) the following:

- Stops on “Major Bus Routes” (Arterial and Trunk Connector roads) shall be provided as ‘Regular’ or ‘Intermediate’ stops with indented bus bay in accordance with TransLink’s Public Transport Infrastructure Manual (PTIM)
- Stops on “Local Bus Routes” (Connectors and Access roads) shall be provided as ‘Regular’ stops without indented bus bay and can be provided as in-lane (on-road) stops subject to demand and traffic volume

The above stop type criteria can be subject to change with subsequent development applications based on traffic volume, spatial and locational constraints and ensuring road user safety.

4.5.2 Rail Infrastructure

As shown in Figure 4.3 above, the future Undullah Rail Station is within close proximity to the subject site with the north-east portion of the subject site within the station's 800m catchment area. A transit interchange will also be provided at the station allowing for bus services to interchange with rail services and include appropriate active transport connections.

The combination of the rail and bus infrastructure and services achieves the overarching principles for the movement network, in particular contributes to a *highly accessible public transport network reducing reliance on private vehicles with ~95% of dwellings within 400m of public transport, aspiring to achieve strategic mode share targets.*

4.6 Active Transport

4.6.1 Overview

The key overarching principle related to active transport infrastructure and provisions is that the movement network contributes to:

A comprehensive, connected, coordinated and fit-for-purpose active transport network based around major active transport spines to provide safe and direct links to key destinations...

The proposed active transport network has considered provisions both inside and outside of the road reserve, different road user groups, key attractors / generators, road user safety, crime prevention through environmental design (CPTED) and active transport desire lines through the subject site.

The active transport network consists of a mix of existing / constructed infrastructure and future planned / proposed infrastructure within the subject site and connecting with neighbouring properties and infrastructure while ensuring continuity of active transport routes.

4.6.2 Active Transport Strategy Development

An active transport strategy was developed for the site overall to deliver a hierarchy of active transport provisions. The strategy is based on:

- Key active transport trip attractors
- Relevant pedestrian user types
- Key pedestrian desire line routes.

Key active transport **attractors** consist of the major land uses within the subject site and surrounding context areas such as the neighbourhood centre, various parklands, retail / commercial centres, business / industry sectors, schools and the future Undullah rail station.

The key trip attractors within the subject site and surrounding context areas are shown in Figure 4.4. This figure includes 1km and 2km catchment areas centralised around the major attractors (primary destinations).

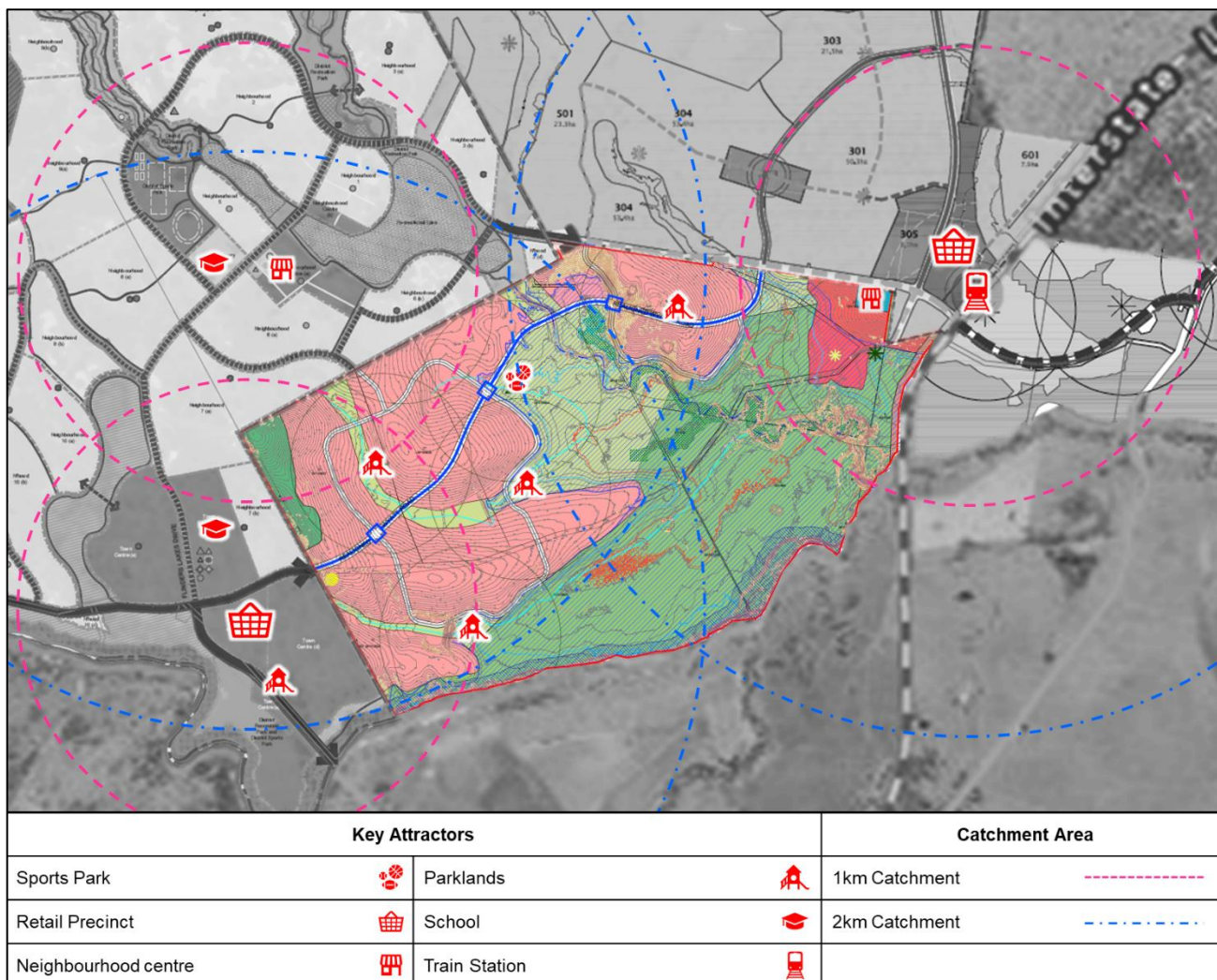


Figure 4.4: Active Transport Trip Attractors

Key desire line routes were then identified considering routes to / from key trip attractors. An active transport route hierarchy was therefore developed to specify a set of criteria and relevant infrastructure based on route classification.

The overarching hierarchy considers three classification levels, being:

- Major
- Medium
- Low.

The hierarchy does not suggest any lower level of importance or quality of infrastructure, rather defines the type of trip attractors and user types that are most likely to use the prevailing facility, and therefore assist in the determination of an appropriate facility/infrastructure type.

For example:

...a Major classification applies to routes / infrastructure that service multiple trip attractors and generators such as town centres and key pedestrian links to train stations etc. and services multiple user types. This hierarchy may warrant a wider treatment due to a higher volume of active transport users...

...a Low classification applies to routes / infrastructure that primarily service the immediate catchment, are not expected to service a large number of user types (by comparison) and warrant pathway treatments within the road reserve e.g. 1.5m footpath(s)...

The route hierarchy criteria are summarised in Table 4.8.

Table 4.8: Criteria to Determine Route Hierarchy

Classification	Criteria	Infrastructure
Major	Provides connections: ▪ Within or between key centres ▪ To schools, shopping centres, transit hubs/stops ▪ Along major, higher volume transport routes	Includes: ▪ Separated cycleways ▪ Shared paths outside road reserve ▪ Shared paths $\geq 3\text{m}$ inside road reserve both sides of road
Medium	Provides connections: ▪ Within and between residential areas ▪ To major active transport routes ▪ To open space / parks ▪ To public transport stops	Includes: ▪ Shared path inside road reserve one side ▪ Shared paths $\leq 3\text{m}$ inside road reserve both sides of road ▪ Pathways outside road reserve (open space)
Low	Provides connections: ▪ Within immediate catchment ▪ On lower order, lower volume transport routes	Includes: ▪ Pathways inside road reserve one side (e.g. 1.5m footpath) ▪ Shared path $\geq 2.5\text{m}$ inside road reserve one side

The key desire line routes consider routes inside and outside of the road reserve and are shown in Figure 4.5 along with the route hierarchy / classification based on the above criteria.

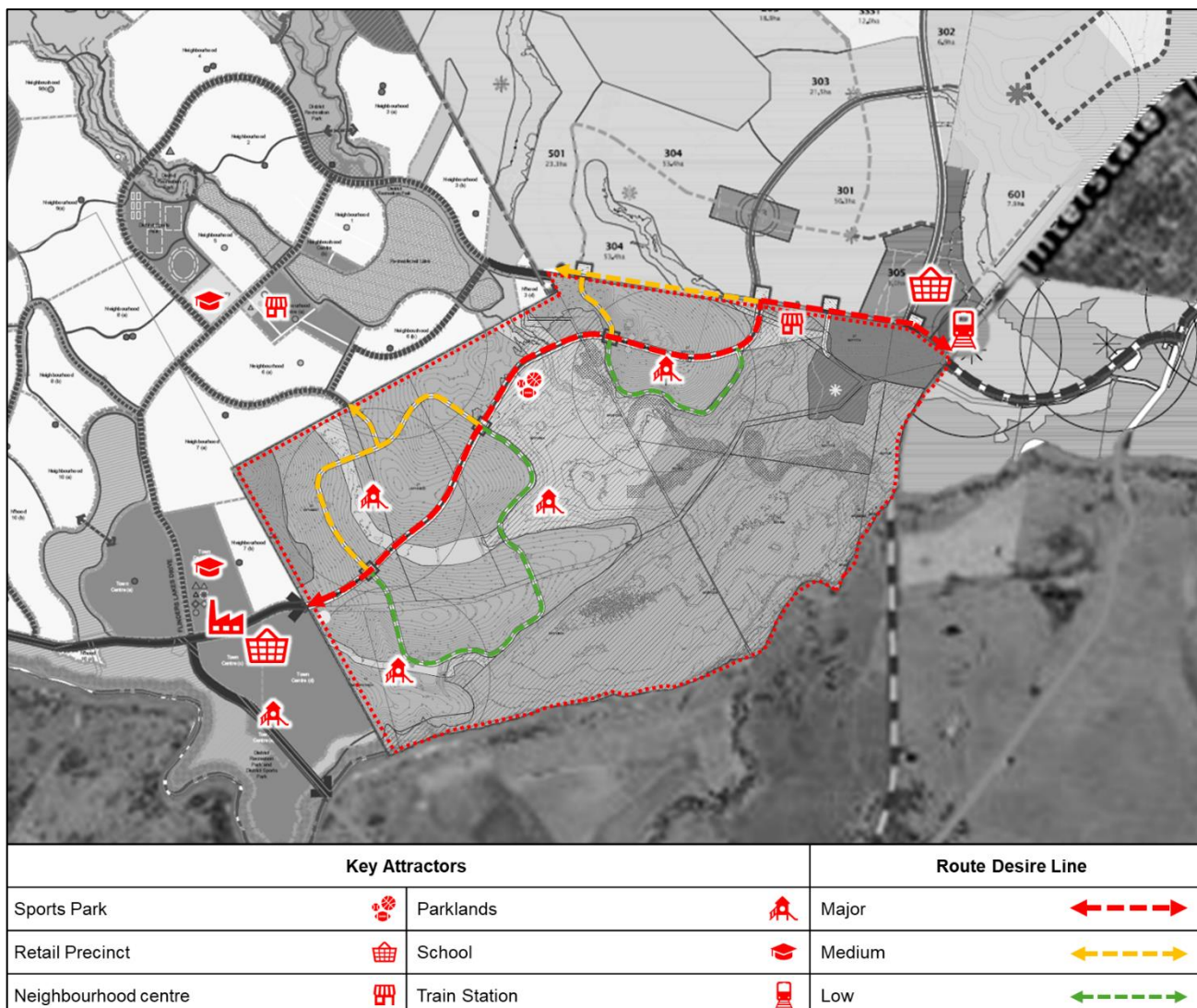


Figure 4.5: Active Transport Desire Line Routes and Classification

4.6.3 Considerations Inside the Road Reserve

The active transport infrastructure provided inside the road reserve is typically tied to the relevant road hierarchy as outlined in Table 4.9.

Table 4.9: Active Transport Infrastructure by Road Hierarchy

Hierarchy	Road Reserve	Seal Width	Lanes	Footpath	Cycling
Arterial (interim)	20m	10m	2	1.5m (both sides)	3m two-way (one side)
Arterial (ultimate)	33m	14m	4	1.5m (both sides)	3m two-way (both sides)
Trunk Connector (Interim 2-lane)	20m	7m	2	1.5m (one sides)	3m two-way (one side)
Trunk Connector (2-lane)	24m	11.8m	2	1.5m (both sides)	2m one-way (both sides)
Trunk Connector (4-lane)	32m	14m	4	1.5m (both sides)	3m two-way (one side) + 2m one-way (one side)
Neighbourhood Connector	22m	11.2m	2	1.5m (one side)	3m shared path (one side)
Neighbourhood Access	16m	7.5m	2	1.5m (one side)	On-road

The above provisions can be subject to change where concentrated around key attractors / generators and where key desire lines exist or where a higher order treatment may be warranted given higher active transport activity areas. Furthermore, cycling infrastructure identified above consists of *Separated Cycle Tracks* unless otherwise stated (e.g. shared paths, on-road, etc.).

4.6.4 Considerations Outside the Road Reserve

As per *Greater Flagstone Priority Development Area – Bicycle Network Plan (2017)* and the DCOP planning, active transport infrastructure will be provided predominately from within the road reserve. There is also opportunity to provide recreation pathways within the parklands within the subject site, however these pathways are not considered critical to the active transport network. Although provided outside of the subject site, planning identifies a shared path within the rail corridor located to the east of the subject site.

4.6.5 Active Transport Network

The key active transport linkages and infrastructure throughout subject site were therefore developed with consideration to key attractors, key desire lines and the criteria outlined in the route hierarchy classification, plus considerations inside and outside the road reserve. These key active transport linkages and route hierarchy are shown in Figure 4.6.

It should be noted that the figure shown below does not present the entirety of the pathway network inside the road reserve e.g., neighbourhood accesses are not shown on this level of plan. These footpaths are to be provided in accordance with the typical road hierarchies outlined in Section 4.3.2.

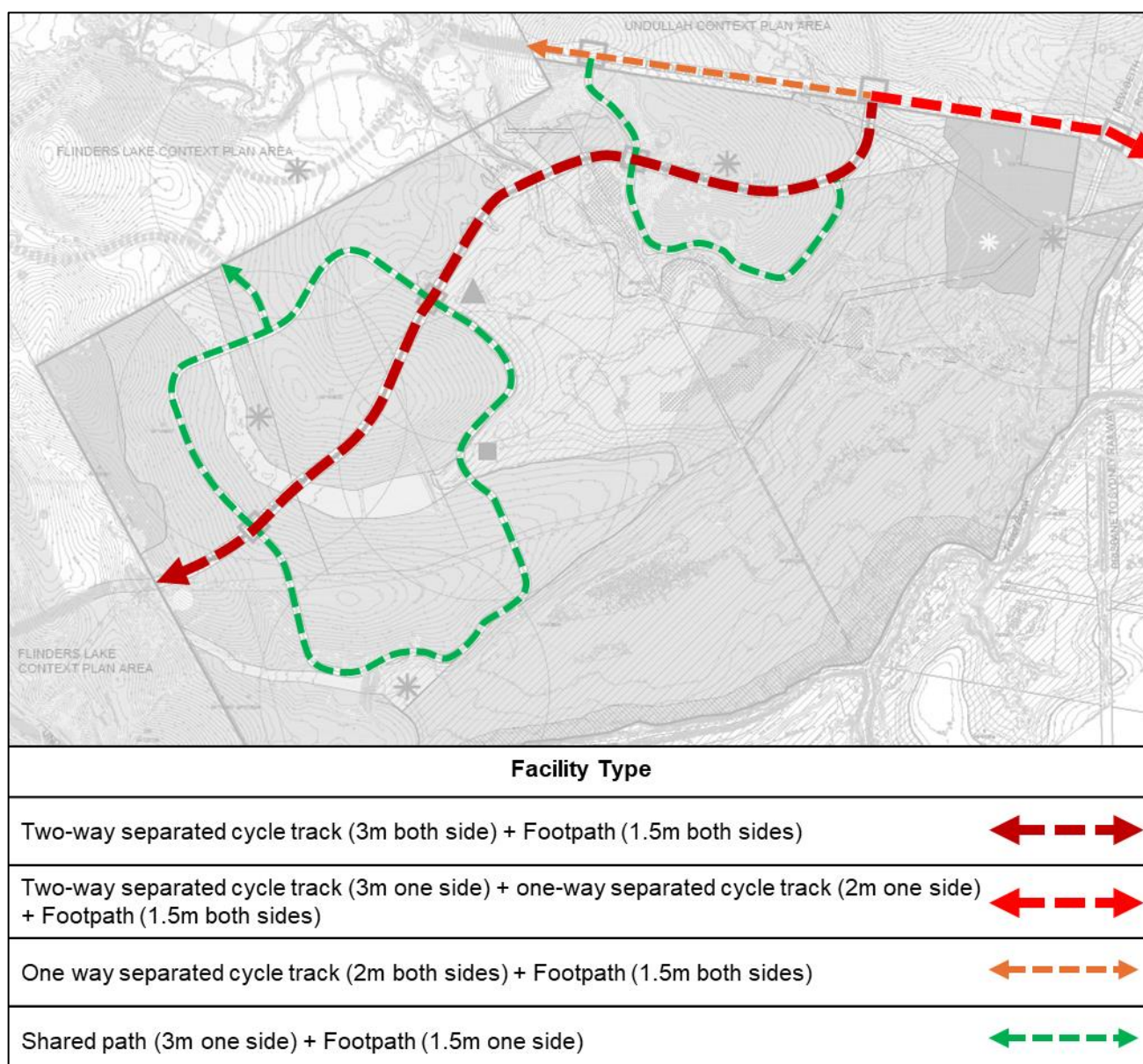


Figure 4.6: Active Transport Network

As shown, the proposed active transport network is considered to appropriately service the subject site and provide connectivity to surrounding services and properties. The active transport network aims to provide suitable infrastructure along continuous routes throughout.

4.7 Innovation & Flexibility

The transport network identified in this Movement IMP will be developed in stages, led by demand as the region grows. This allows for flexibility in design and implementation of the key transport corridors to adapt as the demand is realised / changes over the years.

This Movement IMP does not preclude the incorporation of innovative new and developing technologies to be delivered as the area progresses. The specifics of certain technologies will be considered as each DA is submitted and staged throughout the development. Regardless, the key changes in technology anticipated to occur over this timeline are likely to include:

- Consideration of electric vehicle (EV) charging stations (*refer “Queensland’s Zero Emissions Vehicle Strategy and Action Plan” and EDQ’s “Electric Vehicle (EV) Charging Infrastructure”*)
- Integration of Autonomous and Semi-autonomous vehicles
- Implementation and roll-out of Mobility as a Service (MaaS)
- Implementation of Travel Demand Measures (TDM), including (but not limited to):
 - Share parking
 - Unbundled parking
 - Bicycle / motorcycle parking
- The implementation of Demand Responsive Transport (DRT) and accommodation of on-demand transport / rideshare facilities
- The provision of bicycle parking / storage facilities at bus stops and railway stations
- Consideration of e-bike and e-mobility users in the delivery of cycling infrastructure
- Improvements to Crime Prevention Through Environmental Design (CPTED).

Considering the above, this Movement IMP is well placed to provide the flexibility to deliver a transport network that responds to changes in demand and capacity, and innovations in new technologies during the long-term development and planning of the site.

5. TRANSPORT MODELLING

5.1 Background

A strategic transport model was developed by Veitch Lister Consulting (VLC), on behalf of EDQ, known as the South Logan Strategic Transport Model (SLSTM). This model uses the planned and projected demographic data for population, enrolments and employment to plan and assess the road network needs and requirements for the broader area.

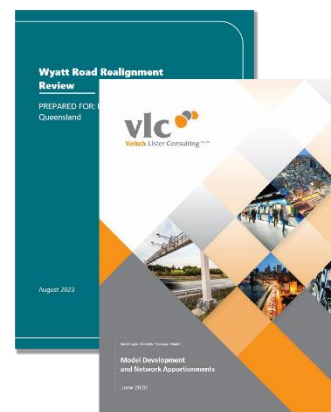
VLC was also recently engaged by EDQ to assess the realignment of the planned Wyatt Road trunk infrastructure link (DCOP R017). This assessment involved testing a number of scenarios with amendments to the SLSTM to investigate alternate alignments of Wyatt Road and subsequent impacts to surrounding trunk infrastructure.

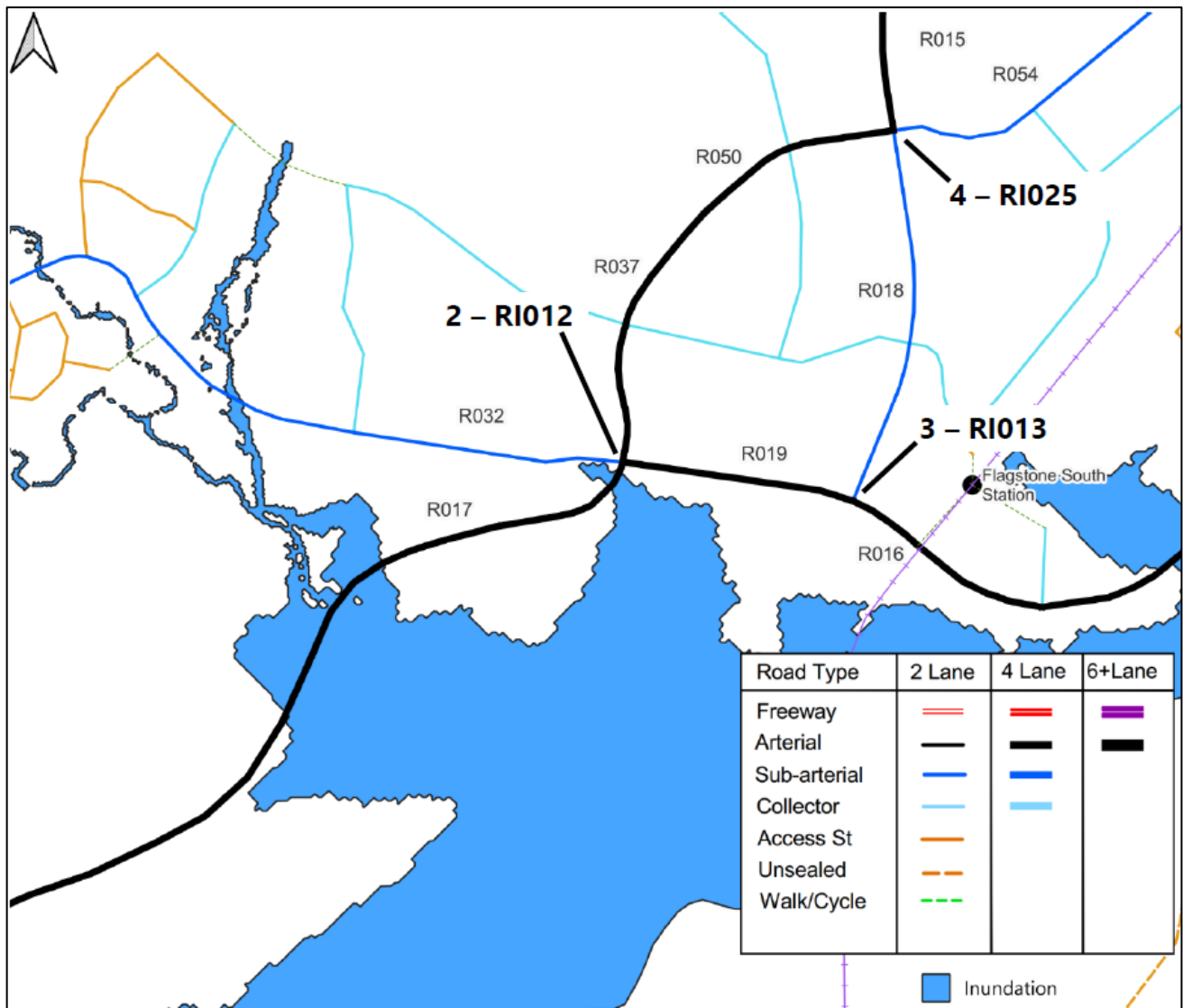
As detailed in the *Wyatt Road Realignment Review* (2023), Scenario 3 was recommended, incorporating a realignment of Wyatt Road (R017) as well as changes to R037 and R018 trunk roads. Advice from EDQ representatives was that this Scenario 3 trunk road network should be adopted for transport planning in the area instead of the road network shown in the DCOP mapping. Details of this updated trunk road network is detailed further below.

5.2 Wyatt Road Realignment Review

Scenario 3 modelled in the Wyatt Road Realignment Review involves the realignment of Wyatt Road (R017) to connect to R037 to form a new 4-way signalised intersection with R032, R019 and R037. This would encourage a shift in traffic movement from R018 to R037 & R050, north of Flinders Lake Drive. As such, to facilitate a more legible road network, R037 and R050 were modelled as a 4-lane arterial and R018 modelled as a 2-lane trunk connector in the Scenario 3 modelling.

The revised road network recommended as a part of the review, and subsequently to be used for transport planning and traffic modelling going forward, is illustrated in Figure 5.1.



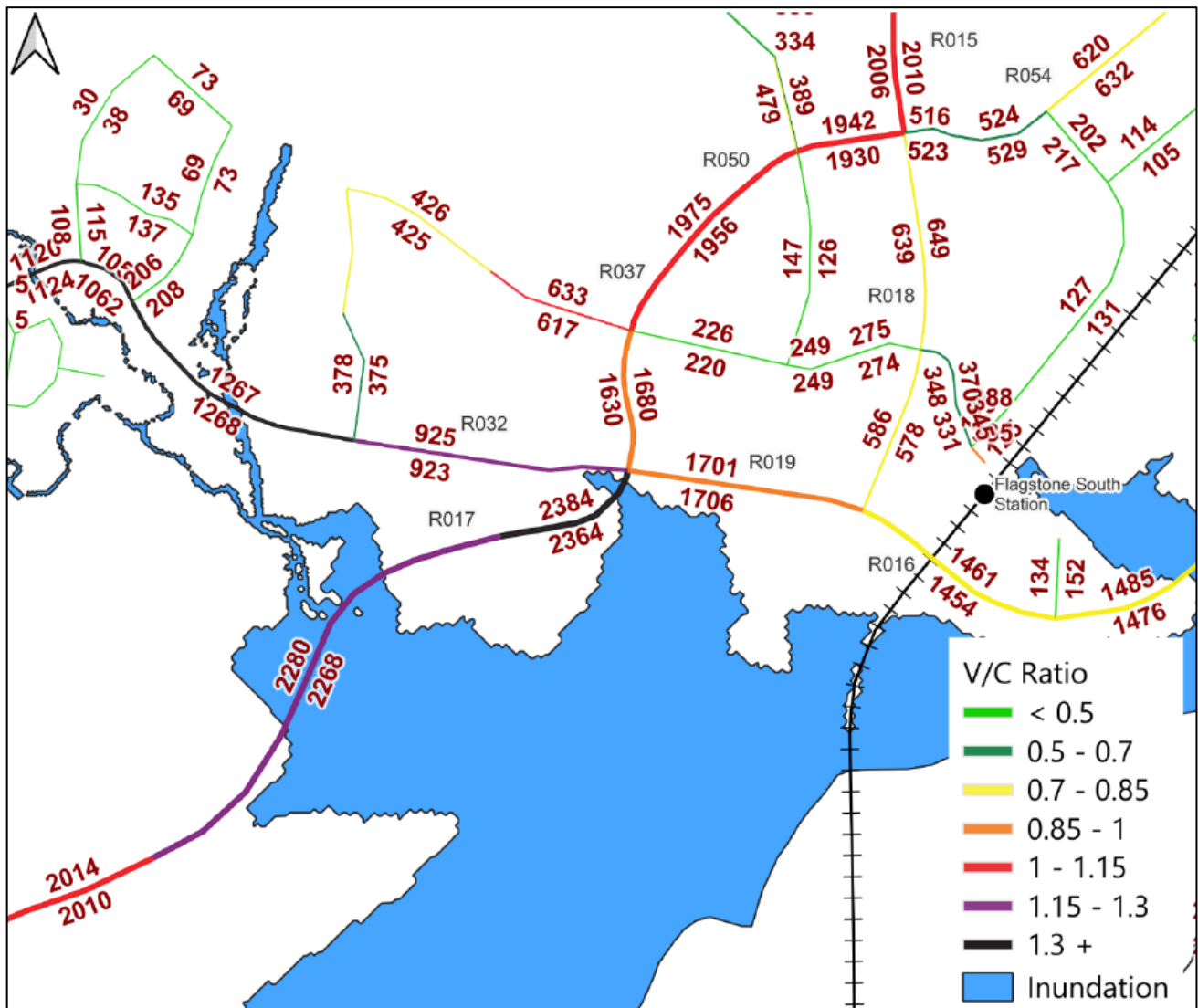


Source: VLC Wyatt Road Realignment Review (VLC, August 2023)

Figure 5.1: Scenario 3 Revised Trunk Road Network

The proposed Kagaru road network illustrated in Figure 4.1 generally aligns with the modelled road network shown above.

Forecast ultimate (2066) two-way daily traffic volumes for the Wyatt Road Realignment Scenario 3 modelling are illustrated in Figure 5.2.



Source: VLC Wyatt Road Realignment Review (VLC, August 2023)

Figure 5.3: Scenario 3 Maximum Peak Hour Volume and V/C Ratio

5.3 Intersection Modelling

5.3.1 Trunk Intersections

Intersection modelling for trunk intersections RI012 and RI013 was undertaken as a part of the Wyatt Road Realignment Review. Modified intersection forms from Scenario 3 modelling are illustrated in Figure 5.4 and Figure 5.5.

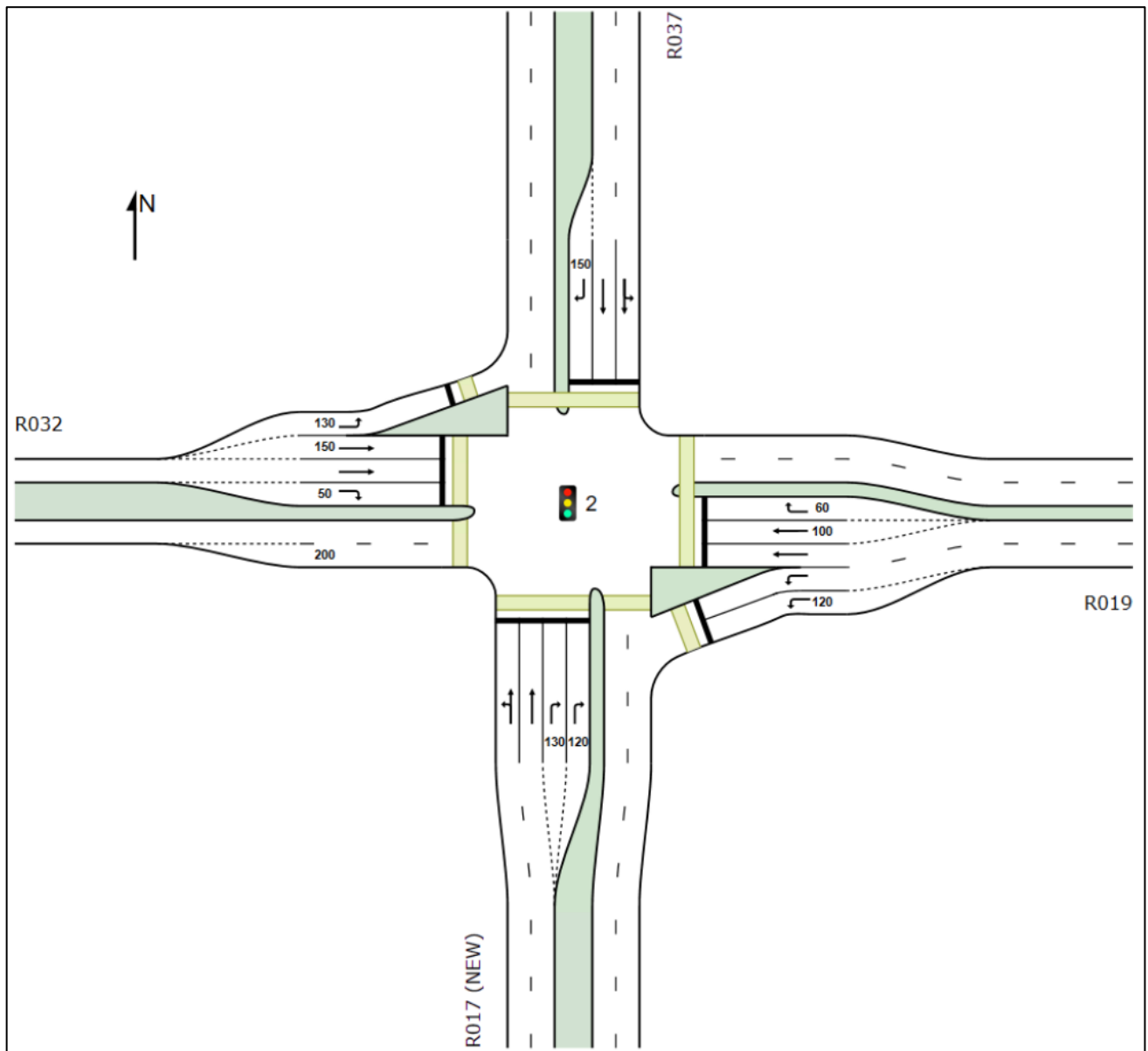


Figure 5.4: R012 Scenario 3 Intersection Form

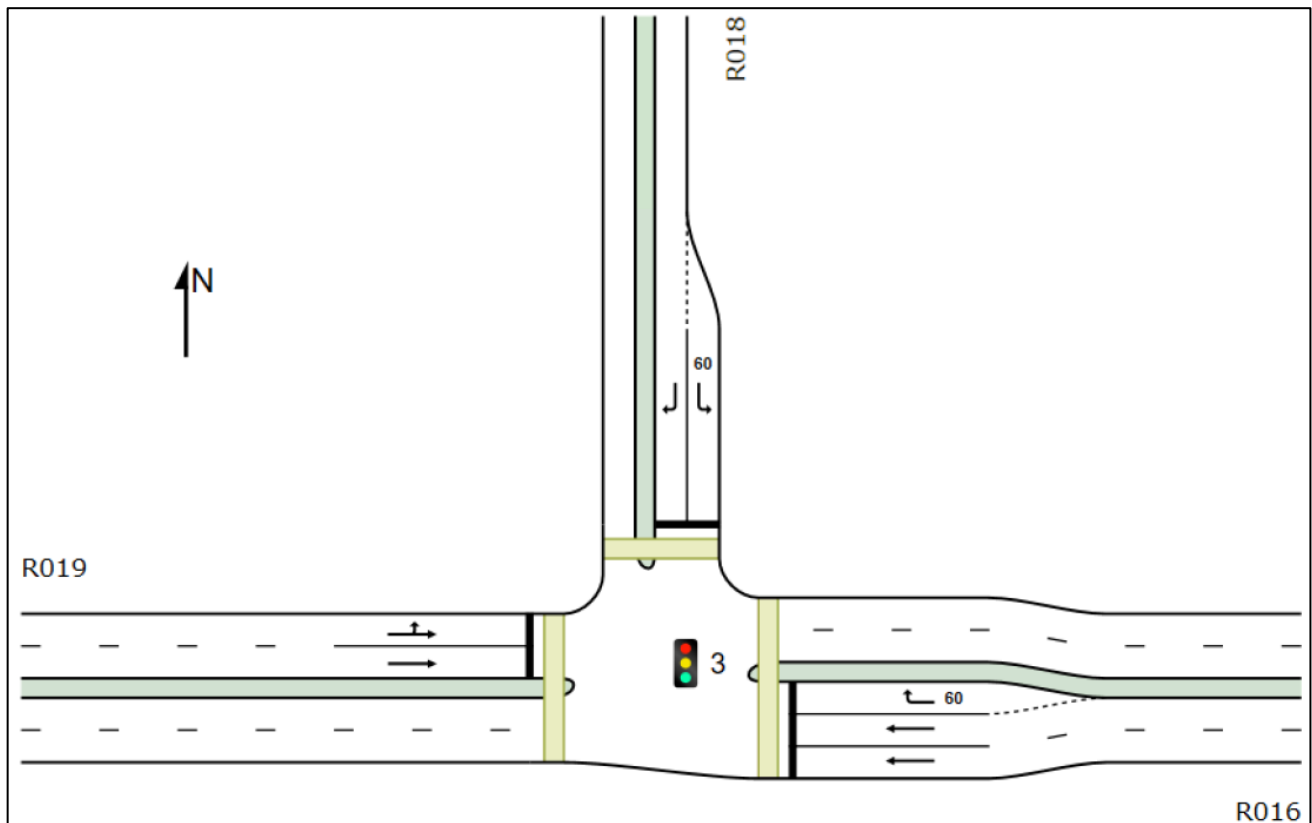
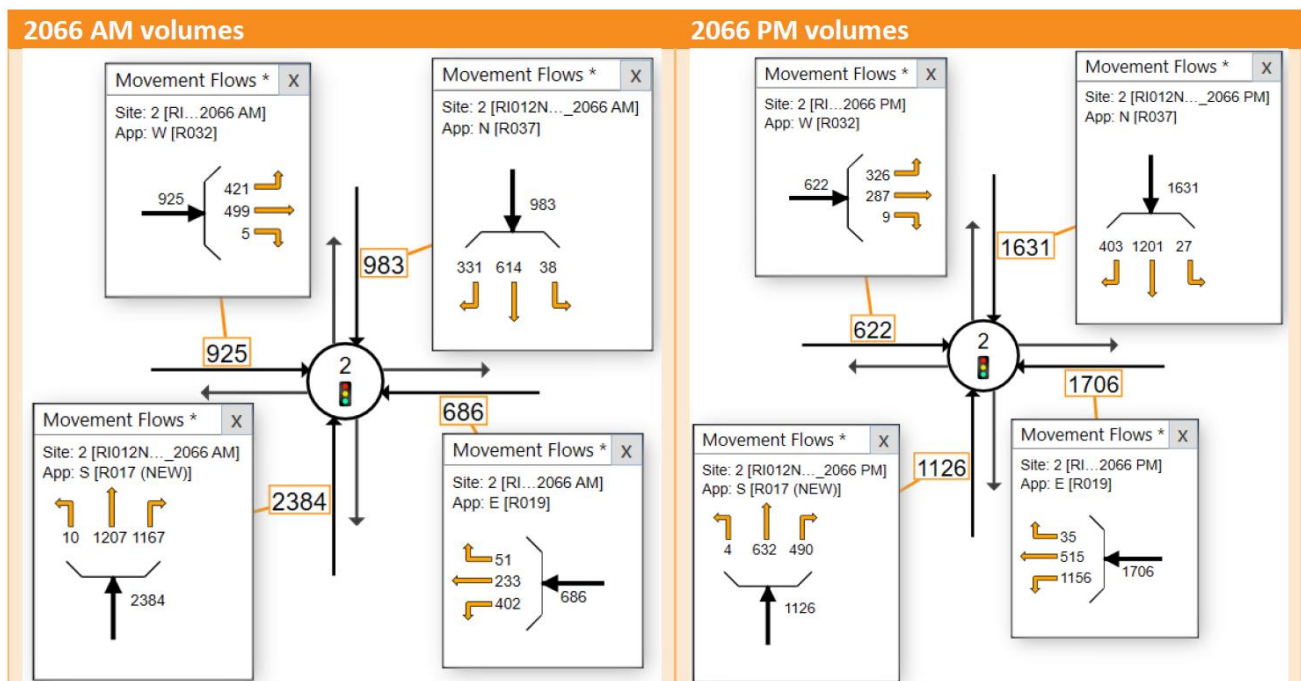


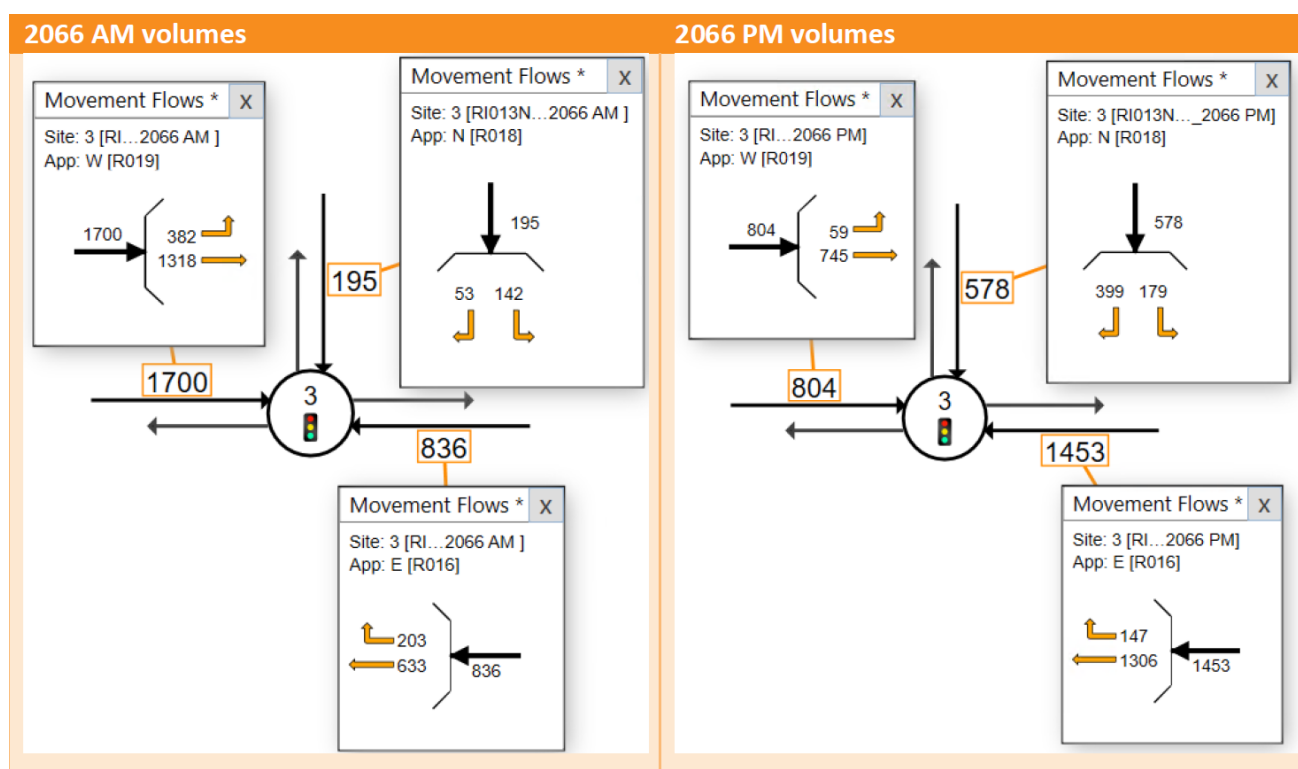
Figure 5.5: RI013 Scenario 3 Intersection Form

Ultimate (2066) peak hour intersection turn volumes are shown at Figure 5.6 and Figure 5.7 for RI012 and RI013 respectively.



Source: VLC Wyatt Road Realignment Review (VLC, August 2023)

Figure 5.6: RI012 Ultimate (2066) Peak Turn Volumes



Source: VLC Wyatt Road Realignment Review (VLC, August 2023)

Figure 5.7: RI013 Ultimate (2066) Peak Turn Volumes

The findings of the Wyatt Road Realignment Review demonstrated that modelled trunk intersection layouts modelled can sufficiently cater for forecast ultimate (2066) peak hour traffic volumes. As such, trunk intersections identified in the DCOP shall be delivered in accordance with the intersection forms modelled in the Wyatt Road realignment review, as required to provide access to the proposed development area.

5.3.2 Key Intersections

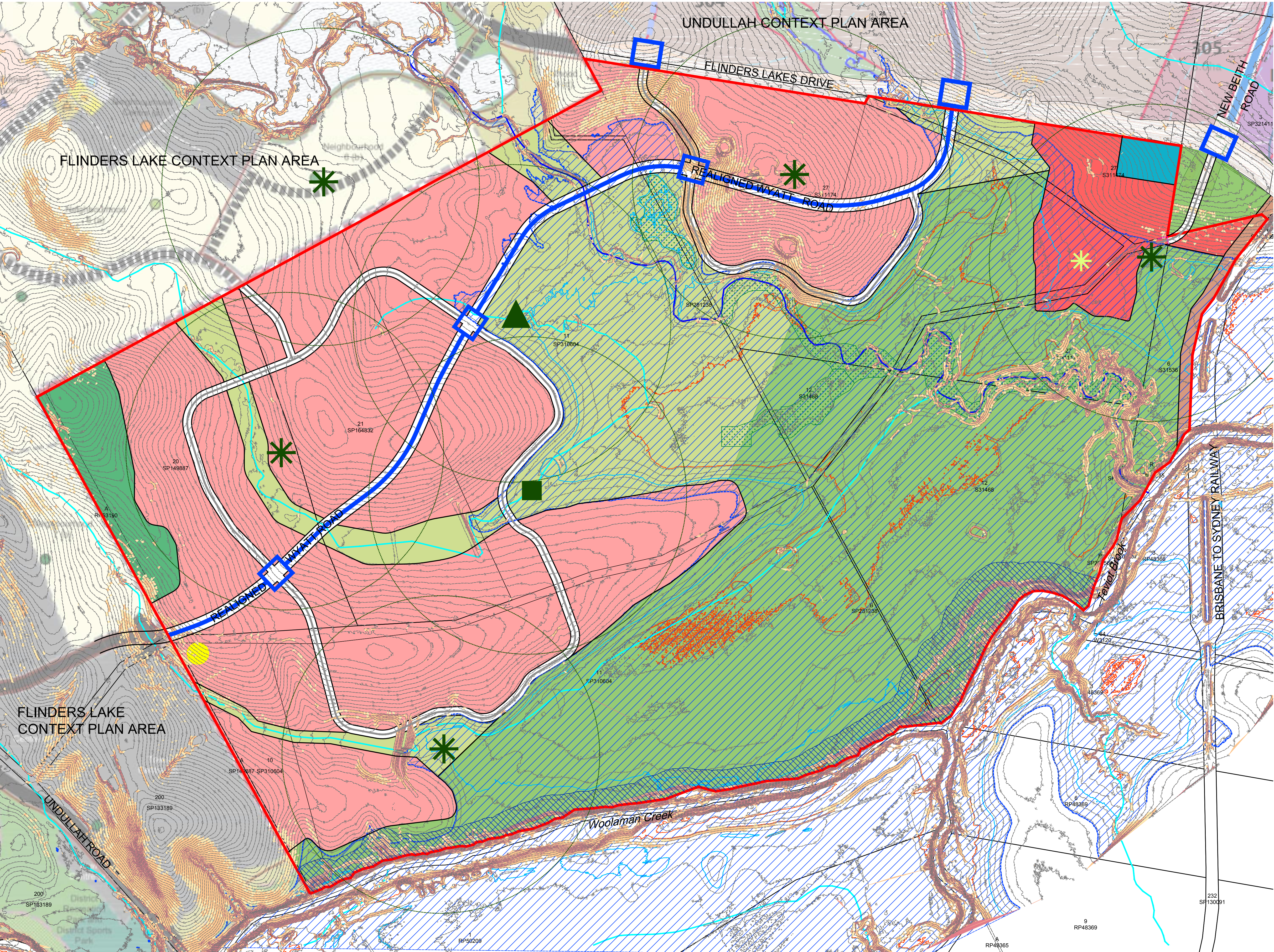
Beyond trunk intersections identified in the DCOP, the form of intersections within the Context Area shall be identified with detailed intersection modelling as a part of subsequent applications for relevant precincts. Intersection control and intersection spacing shall be in accordance with Section 4.4 above. Additional intersection design criteria shall be as follows:

- Proposed intersection forms shall cater for forecast ultimate (2066) peak traffic volumes
- Pedestrian crossings shall be provided on all approaches to signalised intersections
- Intersection slip lanes should be avoided where possible and should a slip lane be proposed, the left-turn movement shall be controlled by signals
- Pedestrian / cycle protection shall be implemented for turning movements across signalised crossings.

Appendix A: Wyatt Road Context Area Plan



CONTEXT PLAN



NOT TO BE USED FOR ENGINEERING DESIGN
OR CONSTRUCTION

NOTES

This plan was prepared as a conceptual layout only. The information on this plan is not suitable for any other purpose.

Property dimensions, areas, numbers of lots and contours and other physical features shown have been compiled from existing information and may not have been verified by field survey. These may need verification if the development application is approved and development proceeds, and may change when a full survey is undertaken or in order to comply with development approval conditions.

No reliance should be placed on the information on this plan for detailed subdivision design or for any financial dealings involving the land.

Pavements and centrelines shown are indicative only and are subject to Engineering Design.

Saunders Havill Group therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying a development application and which may be subject to alteration beyond the control of the Saunders Havill Group. Unless a development approval states otherwise, this is not an approved plan.

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PROJECTION - GDA2020 MGA56
SUBJECT BOUNDARIES OBTAINED FROM DCDB

LEGEND

- Context Plan Area
- Major Contour (1.0m interval)
- DFE Flood Level - RL 35.2
- ARI 20 - RL 32.6 AHD
- ARI 5 - RL 29.8 AHD
- Urban Residential (min 15 dw/ha)
- Medium Density Residential (20-50 dw/ha)
- Local Centre
- Major Linear Park
- Local Linear Park (where not Regional Sports or Regional Recreation)
- Environmental Park (retain existing vegetation)
- State Wetland
- Slope 15% - 16.7%
- Slope 16.7% - 25%
- Slope 25% - 33.3%
- Slope 33.3% +
- Neighbourhood Recreation Park
- Neighbourhood Recreation Park (400m Walking Catchment)
- Wyatt Road Realignment - 33m Urban Arterial
- 22m Neighbourhood Collector Road
- '4-way Signalised Intersection'
- Potential School Site PS015 - 'Subject to State Acquisition'
- Regional Recreation Park - Refer to Greenspace IMP
- Potential Regional Sports Park - Refer to Greenspace IMP
- Potential Police Station P003 (0.6ha) - Subject to State Acquisition
- 30m Railway Corridor Widening
- 50m Riparian Zone

NOTE:
A Rehabilitation Management Plan is to be prepared for any development that includes areas shown as Major Linear Park or within a wetland area

SCALE A1 1:5000 @A3 1:10000 - LENGTHS ARE IN METRES
50 0 50 100 150 200 250 300 350 400 450 500 550 600

Gold Coast

Suite 26, 58 Riverwalk Avenue
Robina QLD 4226
P: (07) 5562 5377

Brisbane

Level 2, 428 Upper Edward Street
Spring Hill QLD 4000
P: (07) 3831 4442

Sydney

Studio 203, 3 Gladstone Street
Newtown NSW 2042
P: (02) 9557 6202



W: www.bitziosconsulting.com.au

E: admin@bitziosconsulting.com.au

