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P2300.002T Flagstone DCC ROL Change Application (Traffic)	A. Payne	L. Darragh	A. Payne	14/04/2021	Louisa Sloan, sent via: Louisa.Sloan@rpsgroup.com.au

Flagstone City District Community Centre (DCC)

ROL Change Application | Traffic and Transport Technical Memorandum

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL



Approval no: DEV2021/1186

Date: 05 November 2021

1. Introduction

1.1 Background

Bitzios Consulting was commissioned by PEET Limited to undertake an assessment for the Reconfiguration of Lot (ROL) for the future District Community Centre (DCC) Lot located within Context Area 1 of the future Flagstone City Town Centre development. It is understood the land will be transferred and the DCC will be a Logan City Council (Council) asset. The ROL will be a two into three lot subdivision, subdividing Lot 30008 on SP315462 & Lot 907 on SP315400 to create Lots 30013 / 50050 / 50051, as well as defining a new road reserve and access easement. The proposed 0.3ha DCC site will be located on Lot 30013.

This document provides an assessment of the traffic considerations associated with the ROL changes.

1.2 Site Location

The DCC Lot (30013) site location is shown overleaf in Figure 1.1. As shown, the lot location sits on the western boundary of the Regional Recreation Park (RRP) and north of the Stage 1 Town Centre. Further details of the ROL and site location are outlined in **Appendix A**.

1.3 Proposed ROL

The key details associated with the ROL include the following:

- Network Changes:
 - Construction of a new road on the southern boundary of the existing RRP
 - Provision of an easement for design flexibility in terms of the site access point to the proposed DCC Lot (as well as *possible* future access to the RRP and future Council's assets)
 - Modifications to intersection arrangements at the Flagstonian Drive / New Road intersection
- Proposed Yield:
 - 0.3ha 'Community Centre' tenancy as per the endorsed Community Facilities IMP

1.4 Scope of Work

The scope of this technical memorandum included:

- Review of road network considerations
- Assessment of proposed new road design / form
- Evaluation of alternate transport connectivity in the surrounding network
- Traffic assessment to determine key details relevant to the Flagstonian Drive / New Road intersection at 'initial', 'interim' and 'ultimate' stages, including:
 - Micro-simulation modelling
 - Intersection modelling
 - Turn warrants assessments
- Staged assessment of access easement / intersection arrangements
- Assessment of parking impacts of proposed works at 'initial', 'interim' and 'ultimate' stages.

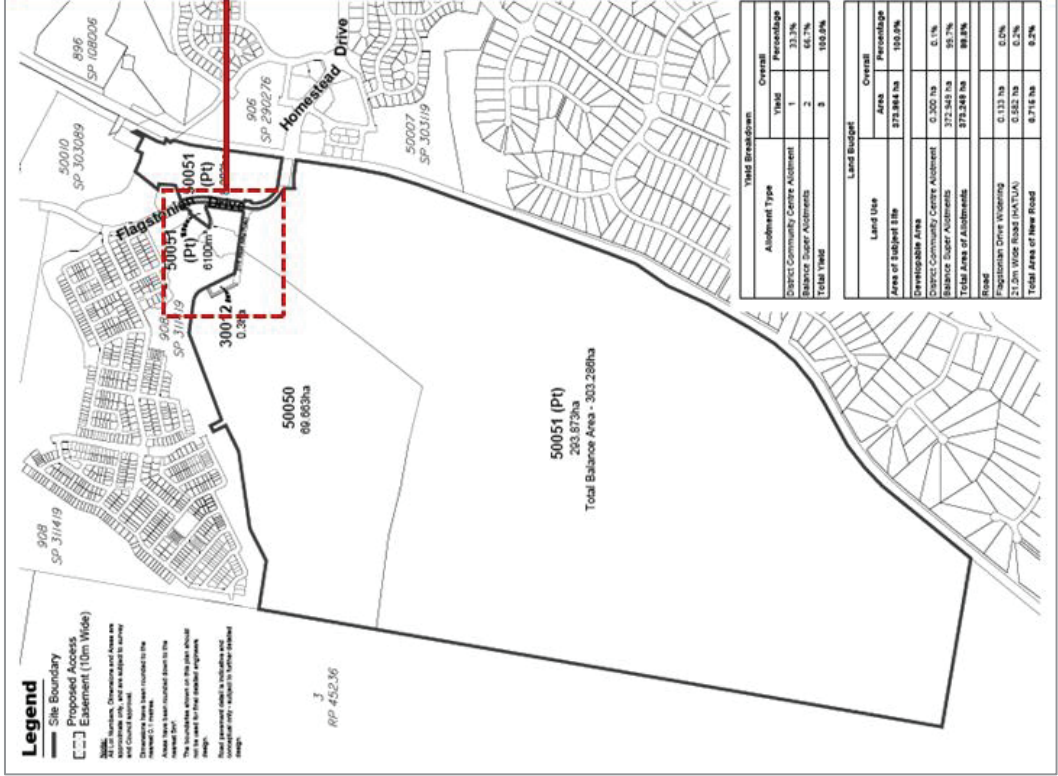
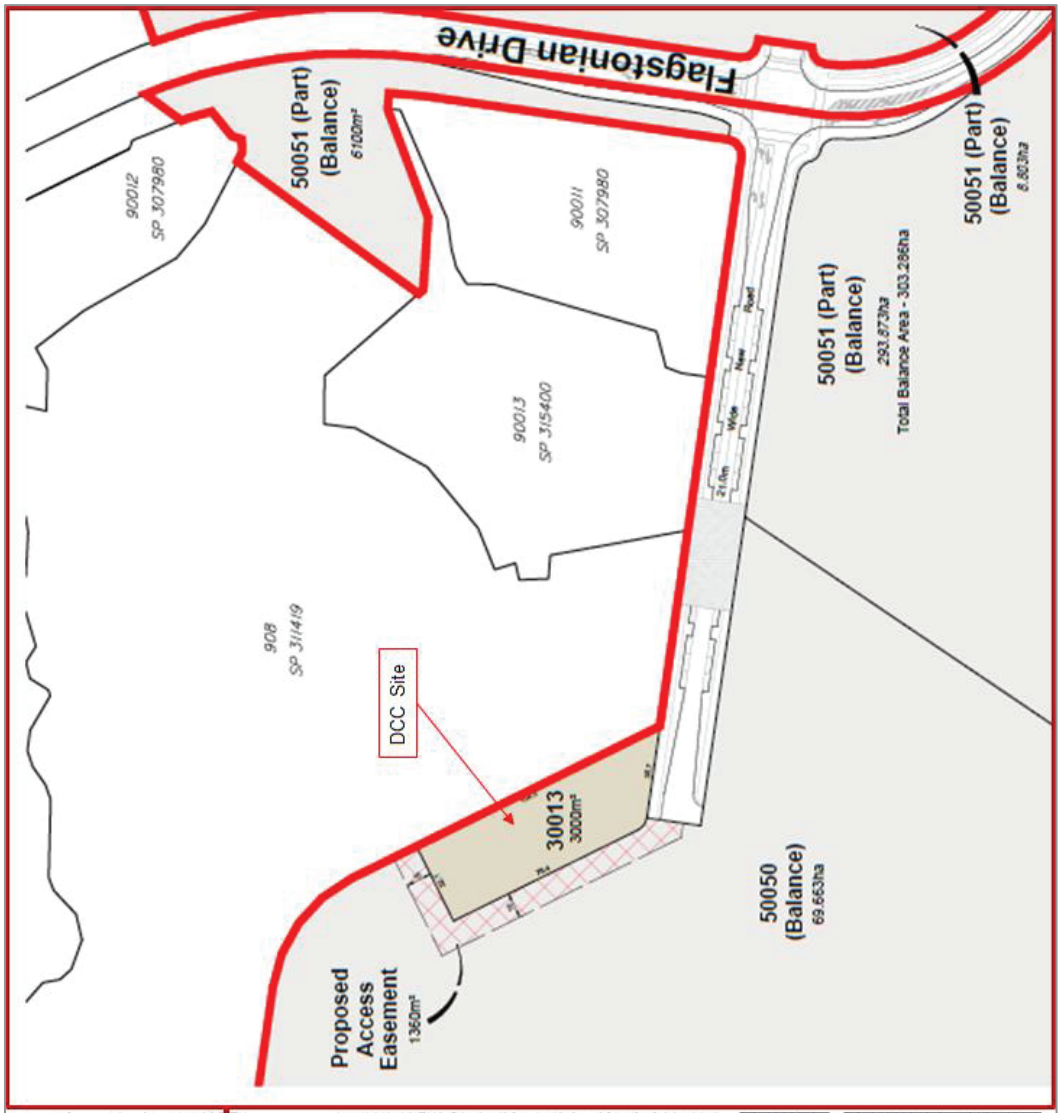


Figure 1.1: DCC Lot ROL – Site Location



2. Road Network Considerations

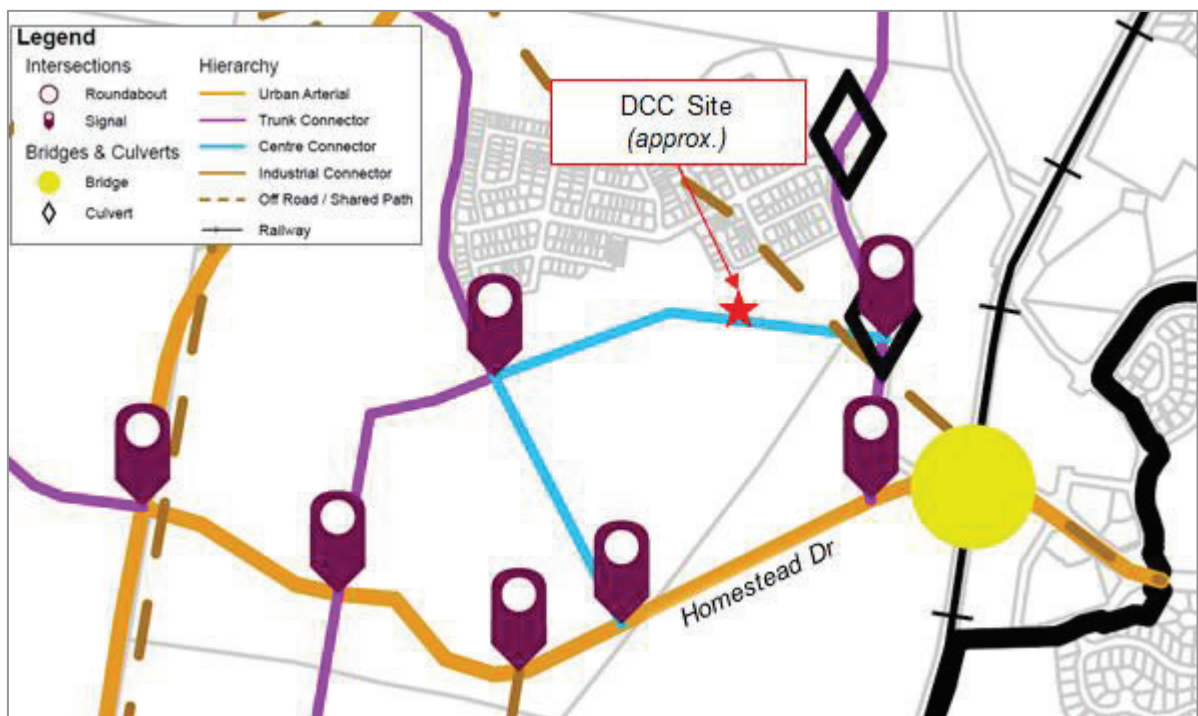
2.1 Overview

The following provides information around the location and context of the proposed DCC lot and the road network considerations surrounding it. This includes considerations of the *Greater Flagstone PDA Infrastructure Charging Offset Plan (ICOP)*, the current and future planning in the region, and the proposed arrangements to support ROL and use itself.

2.2 Context

As per the Greater Flagstone PDA ICOP, the east-west road link on the southern boundary of the DCC and RRP is defined as an *offsetable centre connector* servicing the PDA.

The relevant section of the latest ICOP Transport Network map is illustrated in Figure 2.1.



Source: ICOP Maps – Transport Network (edited by Bitzios)

Figure 2.1: Transport Network ICOP Map

The proposed road is therefore considered to provide a key link for traffic and buses from local / neighbourhood roads to the wider urban arterial network. This traffic carrying function is supported by strategic modelling with a forecast 2066 daily traffic volume of 7,867veh/day on this road (as outlined in the *VLC Cordon Modelling of Flagstone City – Final Report*).

However, as detailed below, this link is also highly pedestrianised, fronts large recreational / retail / leisure precincts and forms a key gateway to the Town Centre. Considering this mix of road users, design of this road shall consider a balance of *Movement and Place* functions. Consistent with the *IPWEAQ Street Design Manual* this will provide a 'Main Street' function for the Town Centre providing a connection to the broader through-street network while creating a high-amenity place for alternate road users.

The design considerations for the road are outlined in the following sections.

2.3 High Active Transport User Area (HATUA)

To achieve a level of high pedestrian amenity and placemaking while maintaining sufficient traffic throughput, a High Active Transport User Area (HATUA) road is proposed for the length of the road between Stage 1 of the Flagstone City Town Centre and the RRP. This is consistent with the TMR *Manual of Uniform Traffic Control Devices (MUTCD)*: Part 4, which states that a HATUA should be considered with roads of the following characteristics:

- There is a significant number of pedestrians travelling adjacent to the road corridor
- There is a high demand for pedestrians to cross the road corridor.

As such, the location of the proposed HATUA is considered consistent with the above characteristics given the likely pedestrian demands traversing the road fronting the Stage 1 uses of the Town Centre, and given the location of the Regional Recreation Park (RRP) on the northern side of the road. This aligns with typical activity centres considered appropriate for HATUA's as per the MUTCD.

Further, HATUA's are typical of Central Business District (CBD) locations such as this, in which traffic carrying roads must also facilitate high pedestrian demands and place-making. Specific place-making and pedestrian priority treatments are not specified and should be considered on a case-by-case basis for HATUA's.

Key treatments typically used to define a HATUA include:

- Reduced posted speed limit, typically 40km/h
- High quality pedestrian crossing treatments (i.e. zebra / wombat crossings)
- Indented on-street parking separated by street trees or other similar embellishments
- Potentially narrower through traffic lanes
- Pavement treatments i.e. paved indented parking, HATUA entry threshold treatments.

Landscaping plans have been prepared by Urbis outlining the overarching place making treatments proposed and are provided at **Attachment B**.

2.4 Proposed Road Cross-Section

The cross-section of the proposed HATUA road adjacent to the RRP and Town Centre Stage 1 is provided in Figure 2.2.

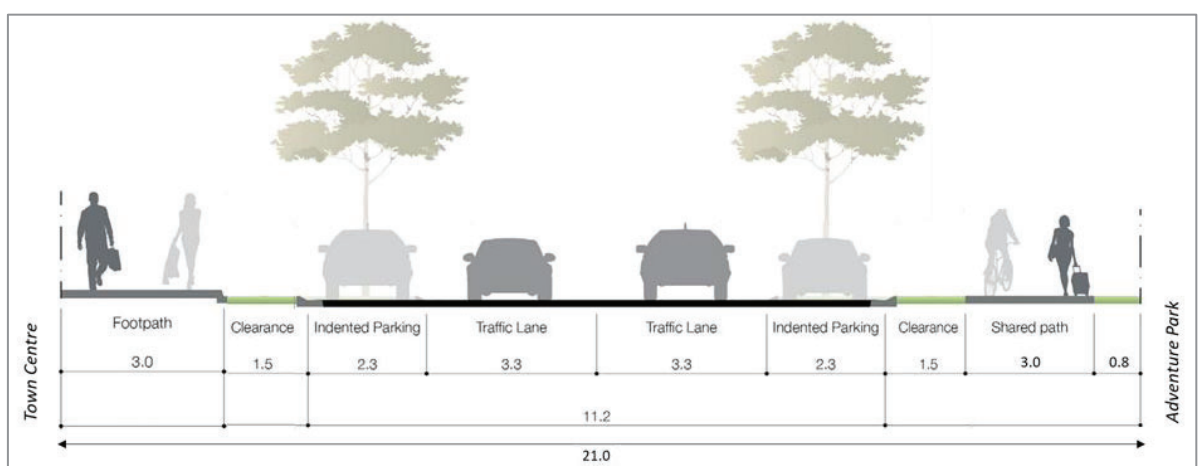


Figure 2.2: Proposed HATUA Typical Cross-Section

The above cross-section is an amalgamation of 'Neighbourhood Connector' and 'Centre Access Street' demonstration cross-sections defined in EDQ's *Guideline No. 6 Street and Movement Network*.

The 'Neighbourhood Connector' road carriageway was adopted noting the following:

- Provides indented parking
- Adopts a minimum traffic lane width suitable for bus routes (3.3m)
- Has a traffic carrying capacity of 7,500veh/day suitable for this location
- The slightly narrower traffic lane (3.3m vs. 3.5m) and indented parking encourages a lower speed / HATUA road environment.

With the future retail / restaurant / commercial land uses expected on the southern side of the proposed HATUA road, a wide footpath is desirable directly adjacent to the southern road reserve boundary. As such, a 3m wide footpath is proposed, consistent with a 'Centre Access Street'.

Pedestrians are therefore well catered for with 3m pathways on both sides of the HATUA. Recreational cyclists have the ability to travel east-west either on the proposed shared path adjacent to the RRP or within the RRP itself. While on-road cycle facilities are not provided within the HATUA for commuter cyclists, the reduced HATUA speed limit is considered to be sufficient to encourage commuter cycle travel. Regardless, key cycle routes within the region are provided as separated cycleways consistent with current policy and planning.

2.5 Road Network Summary

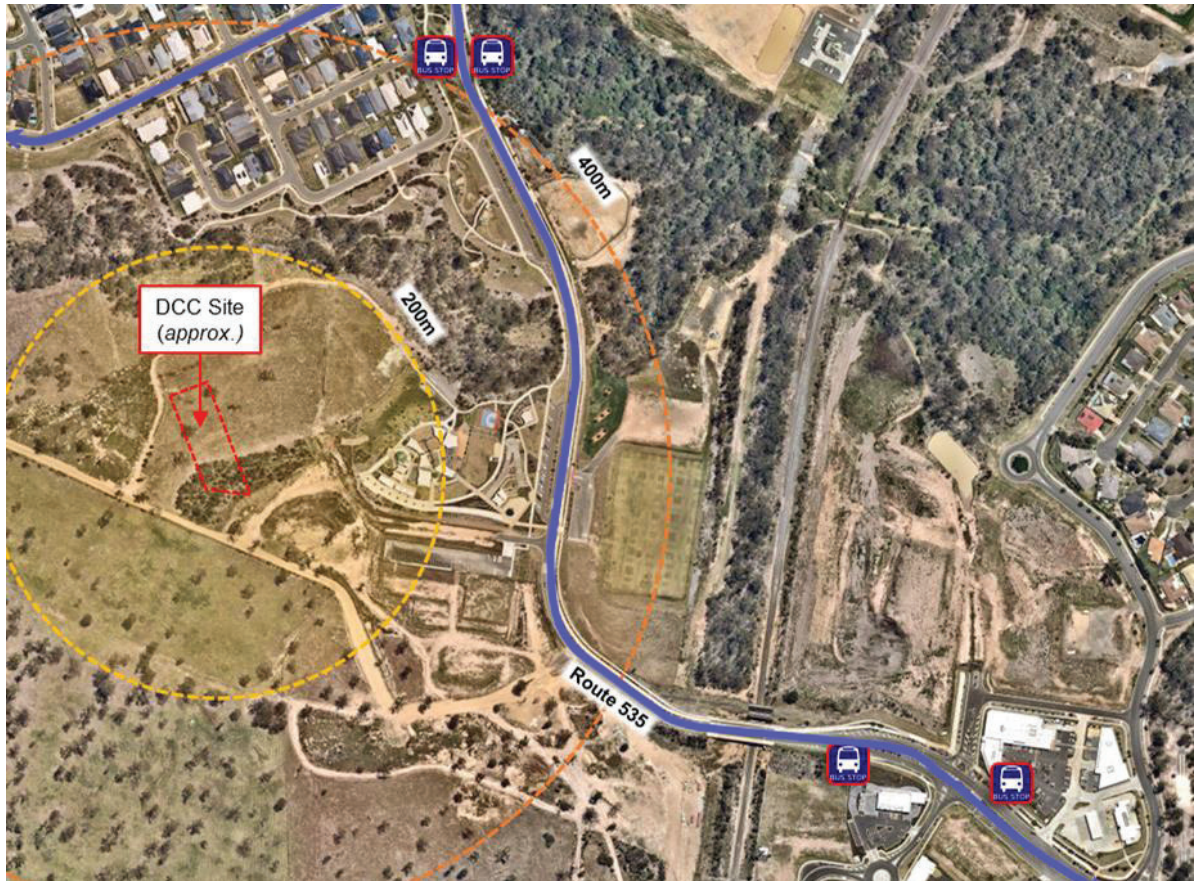
Based on the above road network considerations, the proposal to deliver a HATUA road is deemed the most appropriate outcome to cater for the high active transport activity while maintaining the vehicular traffic volumes predicted in the future and meeting higher order safety and efficiency objectives.

3. Public Transport Considerations

3.1 Existing Services

An existing bus service (Route 535) operates along Flagstonian Drive with bus stops located 500-600m walking distance from the RRP.

Location of existing bus stops are illustrated in Figure 3.1.



Source: Nearmap

Figure 3.1: Existing Bus Services

The proposed DCC lot is currently located outside the typical 400m walking distance catchment for existing bus stops, however these are considered to sufficiently cater for public transport demand for the site in the interim.

Additional bus stops are expected to be delivered closer to the subject site following further development of the Town Centre, considering the major attractor for business / enterprise, living and services that the town centre will accommodate.

3.2 Future Services

Future public transport services expected are illustrated in Figure 3.2 which is extracted from the *VLC Cordon Modelling of Flagstone City – Final Report*.

Note, the road network shown below is subject to change with ongoing planning of the Flagstone City Town Centre.



Source: VLC Cordon Modelling of Flagstone City – Final Report (edited by Bitzios)

Figure 3.2: Future Public Transport Connections

As shown, the key future public transport services are expected to include:

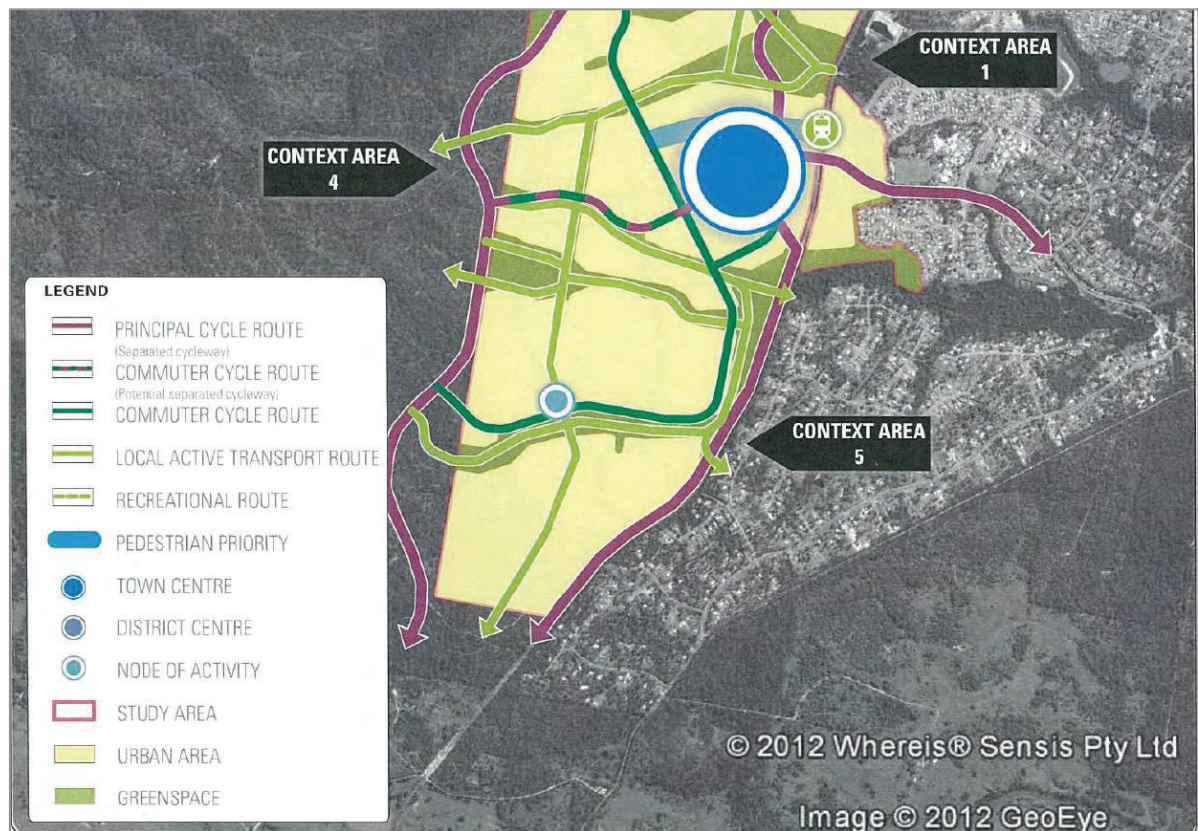
- Extension of the Brisbane-Sydney rail line and the new “Flagstone Central” rail station
- A bus-rail interchange located adjacent the Flagstone Central rail station
- Connecting bus services and infrastructure throughout the Flagstone Town Centre.

As shown, it is expected that a bus route(s) will operate on the proposed road along the southern side of the RRP and proposed DCC site connecting with surrounding catchments and land uses. As the bus interchange is likely to be provided at this location, the proposed roads and intersection forms shall be designed to cater for 14.5m buses as required by TransLink.

4. Active Transport Considerations

4.1 Overview

The active transport network from the 2015 endorsed Movement Network Infrastructure Master Plan (IMP) is illustrated in Figure 4.1.



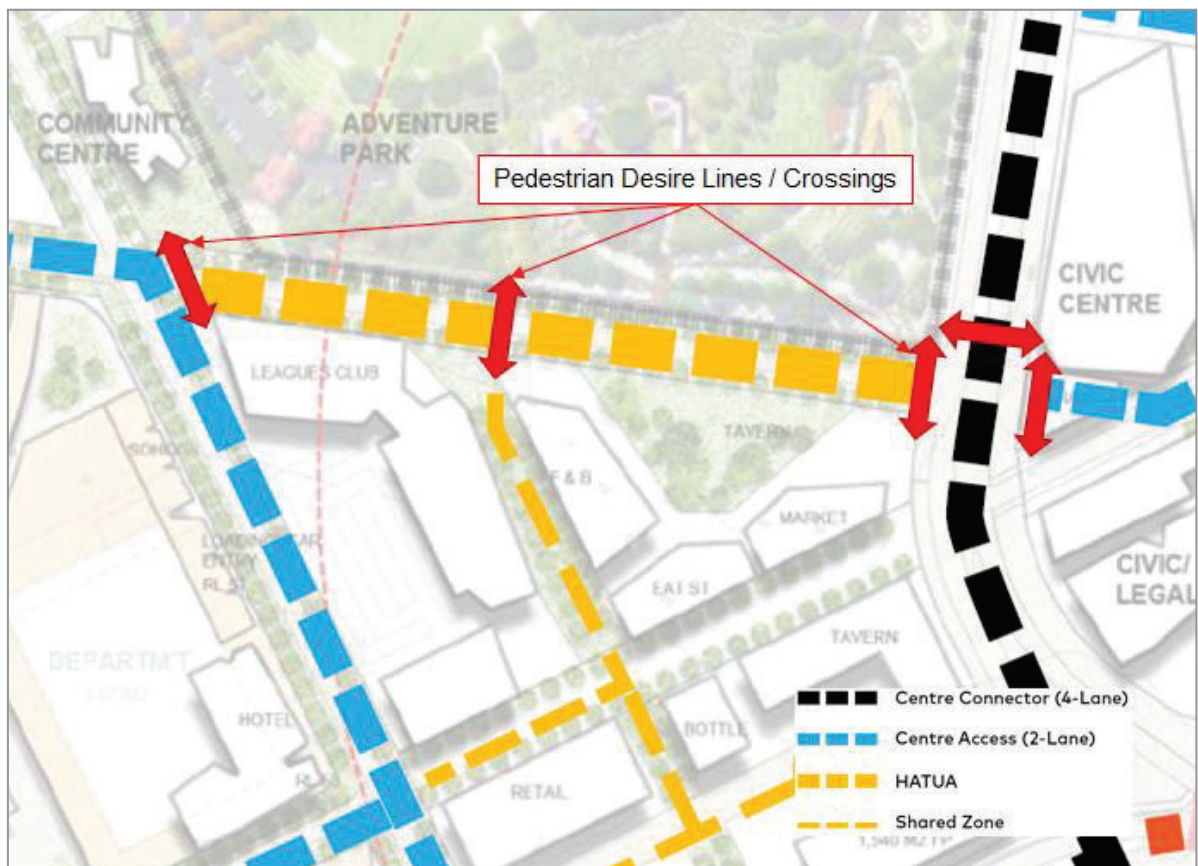
Source: Movement Network Infrastructure Master Plan

Figure 4.1: Endorsed Movement IMP Active Transport Network

As shown, the proposed road on the southern boundary of the DCC and RRP is identified as a pedestrian priority route. As per the endorsed IMP, this route shall provide efficient links to the town centre and associated transport hubs, including the future Flagstone Central rail station. This link is therefore expected to generate significant east-west pedestrian movements along the proposed road following development of the Town Centre and public transport services. As such, and as specified in the IMP, the road should support pedestrian priority and place-making where appropriate.

In addition to high east-west pedestrian volumes expected in the future, noting the prominent active transport trip generators in the vicinity, there is also expected to be a high level of pedestrian demand crossing the proposed road at key locations.

Key locations where pedestrian desire lines are expected to ultimately generate high pedestrian crossing demand are illustrated in Figure 4.2.



Source: Flagstone Town Centre Masterplan – Interim Report (edited by Bitzios)

Figure 4.2: Pedestrian Crossing Locations

Noting the above, the proposed road shall ultimately provision for appropriate pedestrian crossing treatments at intersections at each end of the road. A midblock pedestrian priority crossing is also recommended at the location in which the future shared zone intersects with the proposed road.

The above active transport considerations further support the proposed HATUA road design which prioritises the Movement and Place function of the road and the long-term planning for this particular location within the heart of the City.

5. Traffic Assessment

5.1 Strategic Modelling

The design horizons for assessment within the PDA are currently modelled using the *Greater Flagstone Strategic Transport Model* (GFSTM) developed by VLC. Design Horizons in the GFSTM are as follows:

- Interim: 2031
- Ultimate: 2066.

Specific land uses and yields within the Town Centre are currently being defined. It is however noted that a 'Civic Use' Lot was included in the GFSTM envisaged as a 'Community Centre' style land use. While the proposed location of the DCC varies from this Civic Use Lot, traffic generation and distribution throughout the wider network is expected to be comparable to outputs from the GFSTM for this zone.

The zone system and land uses from the GFSTM and the relocation of the Community Centre Zone is illustrated in Figure 5.1. It is noted that planning for future land uses in the Town Centre are developing and land uses and road network layouts shown below are not considered final.



Source: VLC Cordon Modelling of PEET's Flagstone City – Final Report (edited by Bitzios)

Figure 5.1: GFSTM Community Centre Zone Modification

In lieu of available traffic generation rates for a community centre land use, the GFSTM model cordon data was used to determine an appropriate level of traffic generation for the DCC. As per the OD matrices sourced from the GFSTM, the community centre land use is expected to generate in the order of 62 AM peak hour and 57 PM peak hour vehicle trips.

It is however noted that the 'Civic Use' zone modelled covered a site area of 0.66ha. As such, the proposed 0.3ha DCC is considered to have proportionally reduced peak hour traffic generation as follows:

- 28 AM peak hour vehicle trips
- 26 PM peak hour vehicle trips.

5.2 Micro-simulation Modelling

Bitzios Consulting has prepared Aimsun micro-simulation models of the PEET Flagstone City development area within the Flagstone PDA. This model adopted OD matrices from the VLC strategic modelling and is used to accurately model vehicle route choice therefore forecasting expected future traffic distribution and intersection turn volumes.

Micro-simulation models were prepared for 'interim' and 'ultimate' stages of development. The 'Interim' micro-simulation modelling adopted 2031 OD matrices from the VLC cordon modelling of the GFSTM with the level of development in Flagstone City as follows:

- Full development of Stage 1, Stages 2-5 and Stage 7
- Development of the proposed DCC and Stage 1 of the Town Centre
- Road connections to other development areas within the Flagstone PDA to the west and north of Flagstone City.

The 'Ultimate' micro-simulation models adopt 2066 OD matrices from the VLC cordon modelling, full development of Flagstone City and all external connections. The 'interim' and 'ultimate' micro-simulation networks are illustrated at Figure 5.2.

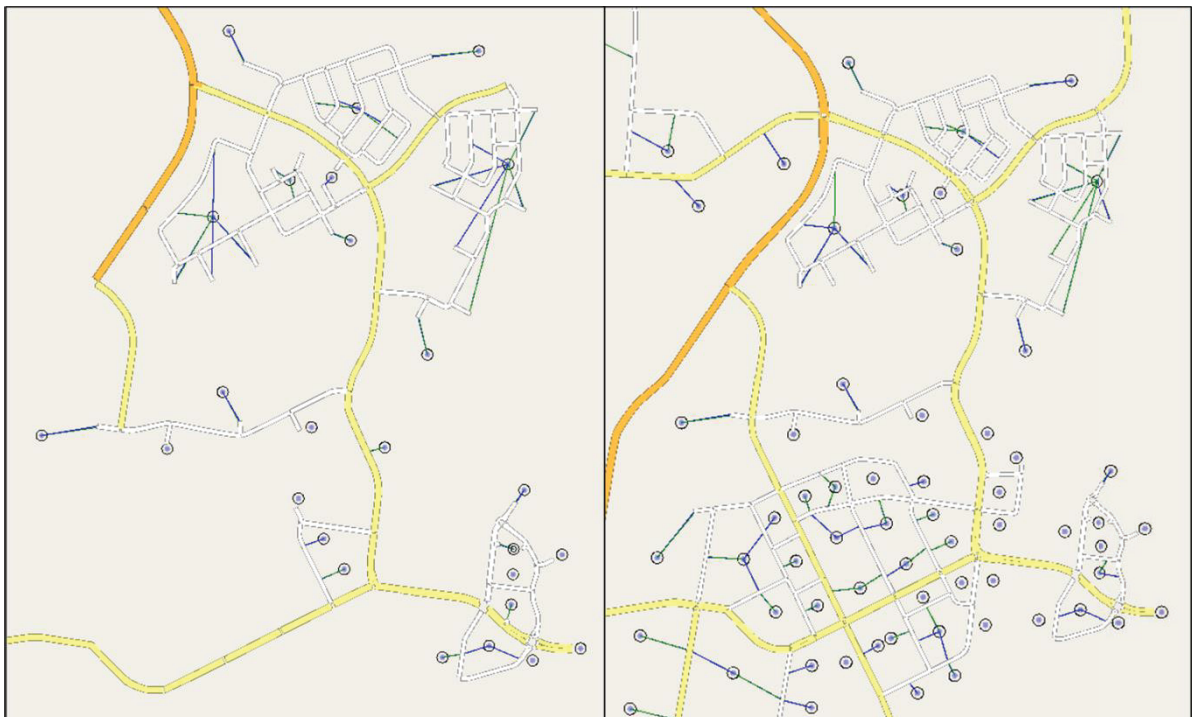


Figure 5.2: Interim and Ultimate Micro-simulation (Aimsun) Model Networks

A micro-simulation model was not prepared nor considered required for the 'initial' stage of assessment. The 'initial' stage of assessment is current levels of development and network operations with the addition of the proposed DCC.

5.3

A turn warrants assessment was undertaken at the Flagstonian Drive / HATUA intersection at 'initial' and 'interim' design stages based on traffic volumes extracted from the models. In lieu of current survey data, initial stage through traffic volumes are assumed as 50% of 'Interim' model results with DCC peak hour vehicle trips as above. Approximate turn volumes for the purpose of the turn warrants assessment are detailed in Figure 5.3

Initial				Interim																																																			
HATUA	7	6	L	7	161	HATUA	38	7	L	17	321																																												
	7	7	R	6	259		5	5	R	125	517											L	T					L	T					7	209					1	417					7	250	Flagstonian Drive				1	500	Flagstonian Drive	
	5	5	R	125	517																																																		
		L	T					L	T																																														
		7	209					1	417																																														
		7	250	Flagstonian Drive				1	500	Flagstonian Drive																																													

Figure 5.3: Flagstonian Drive / HATUA Turn Volumes

The turn warrants assessment at the 'Initial' stage is shown in Figure 5.4, noting that only the critical peak period is shown.

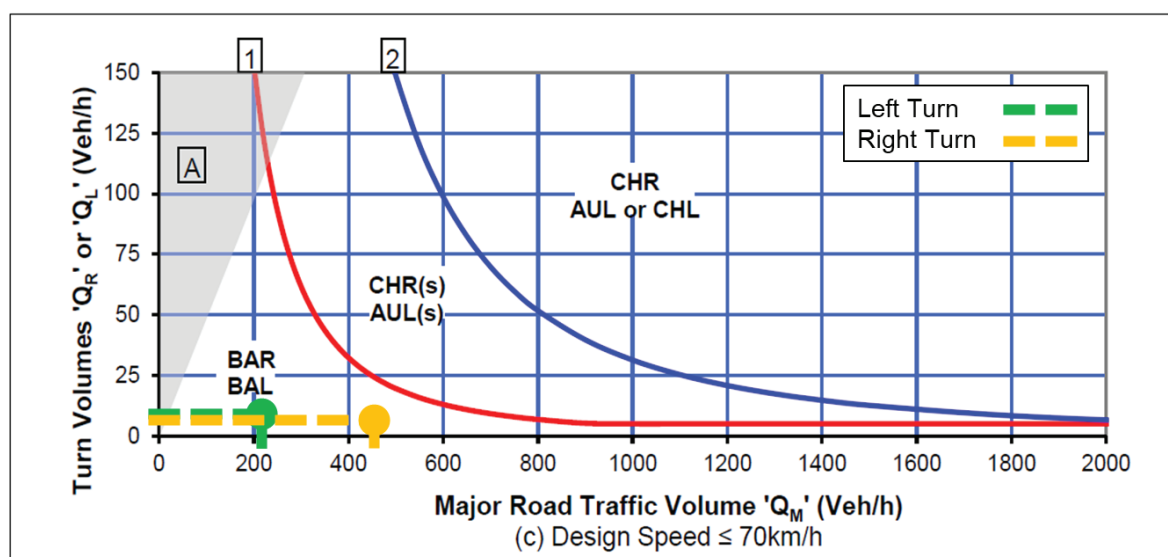


Figure 5.4: Initial Turn Warrants Assessment

As shown, channelised turn treatments are not required at the 'Initial' stage. While the above indicates that BAR / BAL treatments are warranted, such treatments are not considered to be required considering:

- Turn treatments are not provided at accesses to the temporary RRP parking or sports fields with similar turning volumes and as such no provisions is consistent with the surrounding road environment and provisions
- The existing intersection is located such that there are no sight line obstructions to a vehicle slowing to turn
- The intersection is interim in nature and will be upgraded with further development of the town centre.

Based on the above, the existing Flagstonian Drive / HATUA intersection layout is considered appropriate to cater for intersection turning volumes with the delivery of the DCC only ('Initial' Stage).

The turn warrants assessment at the 'Interim' stage is shown in Figure 5.5.

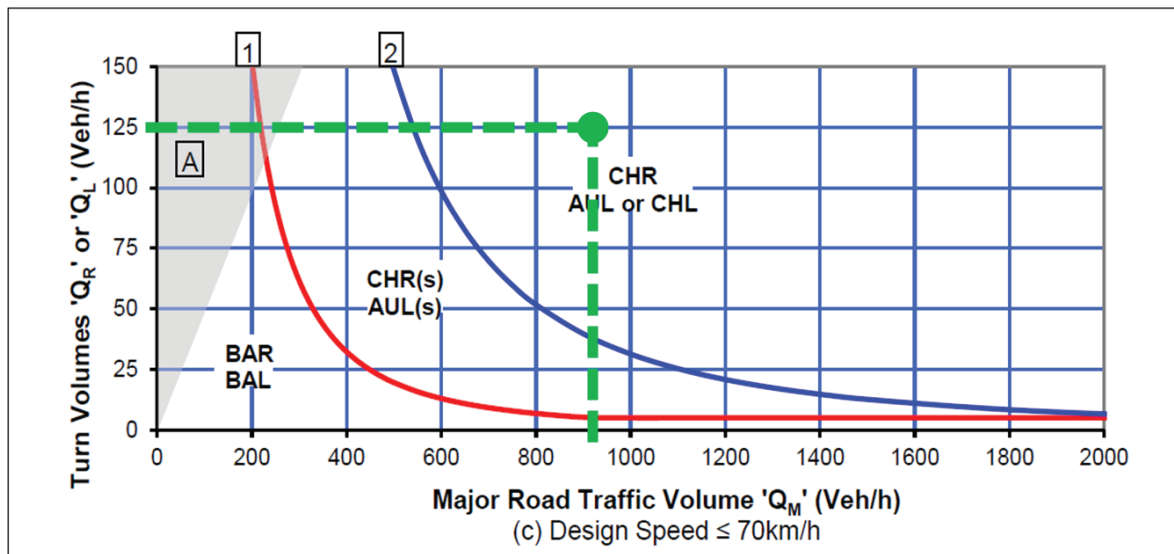


Figure 5.5: Interim Southbound Right Turn Warrants Assessment

As shown, a channelised right turn (CHR) treatment is required for the southbound right turn at the 'Interim' design stage.

Based on the modelling and trip assignment, low volumes were assigned for the left turn into the HATUA. However, applying sound engineering judgement and prioritising safety, it is recommended that the interim arrangement include a short, left turn lane (AUL(S)) to allow any left turners to decelerate clear of northbound through traffic. This also ensures that any trips associated with the RRP / adventure park (which aren't typically picked up in detail in this level of modelling in terms of land use trip generation) are catered for via this left turn treatment

5.4 Intersection Modelling

The Flagstonian Drive / HATUA intersection was modelled in SIDRA Intersection (Version 9) for 'interim' and 'ultimate' scenarios. Traffic volumes were imported from the micro-simulation outputs detailed above.

Intersection layouts assessed, as modelled in SIDRA, are illustrated in Figure 5.6.

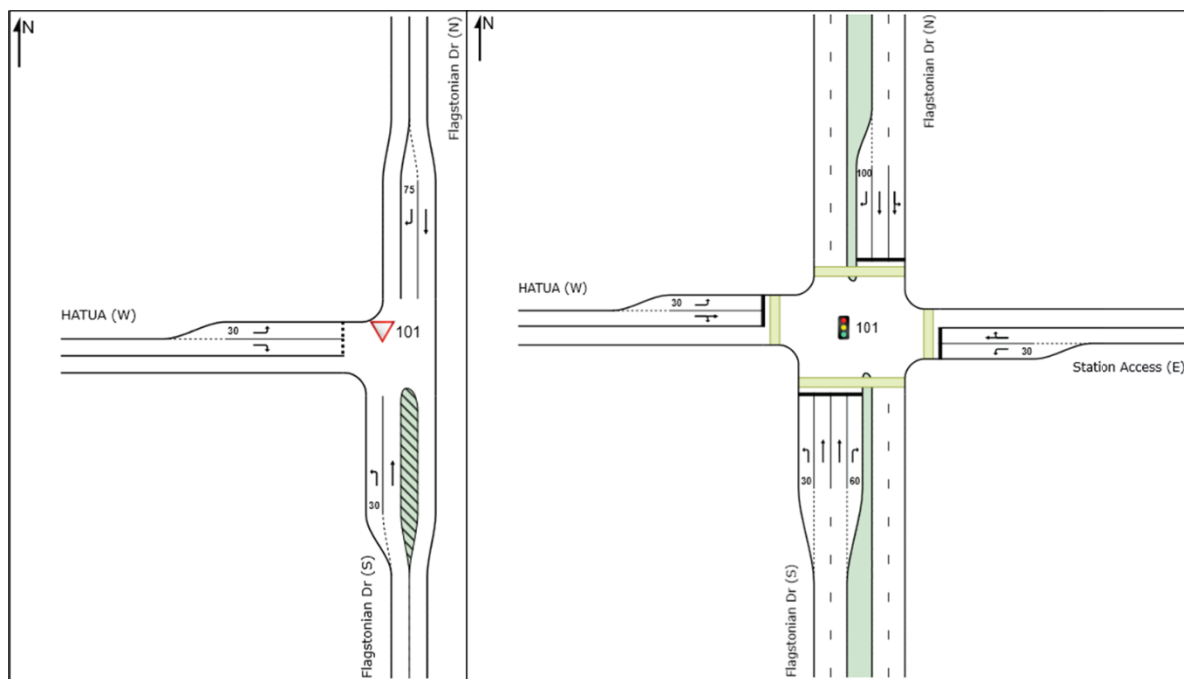


Figure 5.6: Interim and Ultimate SIDRA Intersection Layouts

SIDRA intersection results at the Flagstonian Drive / HATUA intersection are summarised in Table 5.1 for 'Interim' and 'Ultimate' intersection design and development yield scenarios.

Table 5.1: SIDRA Intersection Results Summary

Approach	AM Peak				PM Peak			
	Volume	DOS	LOS	Queue (m)	Volume	DOS	LOS	Queue (m)
Interim (2031)								
Flagstonian Drive (S)	418	0.23	NA	0	501	0.27	NA	0
Flagstonian Drive (N)	642	0.28	NA	4	338	0.17	NA	1
HATUA (W)	12	0.03	NA	1	43	0.05	A	1
Overall	1072	0.28	NA	4	928	0.27	NA	1
Ultimate (2066)								
Flagstonian Drive (S)	976	0.88	D	166	1,003	0.88	D	159
Station Access (E)	75	0.17	D	18	91	0.13	C	12
Flagstonian Drive (N)	1,135	0.86	D	145	828	0.84	D	95
HATUA (W)	238	0.36	C	34	319	0.52	C	40
Overall	2,424	0.88	D	166	2,241	0.88	D	159

As shown, the Flagstonian Drive / HATUA intersection is expected to operate within acceptable performance limits at 'Interim' and 'Ultimate' design and development scenarios based on the intersection footprints / designs adopted.

Detailed SIDRA outputs are provided at **Attachment C**.

6. Flagstonian Drive / HATUA Intersection Design

6.1 Overview

As above, the Flagstonian Drive / HATUA intersection geometric design was assessed at three stages as follows:

- Initial – As per existing priority-controlled layout
- Interim – Upgraded priority-controlled layout with turn pockets as required
- Ultimate – Final signalised intersection layout with a 4-lane Flagstonian Drive cross-section and turn pockets as required.

'Interim' and 'Ultimate' concept plans are provided at **Attachment D**, noting that these are high-level sketches only for the purposes of informing the DCC ROL application only. Further detailed assessment and design shall be undertaken at a later date with further planning and development of the Town Centre and greater PDA.

6.2 Interim Intersection Design

It is noted that the interim design plan provided at **Attachment D** is conceptual only. Detailed design plans shall be prepared in the future prior to the upgrade of the intersection. At this stage, further information will be available regarding development of the Town Centre, facilitating more accurate traffic assessments and therefore designs suitable to cater for the demands at that time.

The concept plan attached is based on the turn warrants and SIDRA modelling results provided above, with key minimum design criteria including the following:

- A channelised right turn (CHR) pocket in the southbound direction:
 - Storage Length: 14.5m
 - Lane Width: 3.5m
 - Deceleration Length: 75m
 - Taper Length: 23m
- A short auxiliary left-turn lane (AUL(s)) in the northbound direction:
 - Lane Width: 3.5m
 - Deceleration Length: 35m
 - Taper Length: 23m
- 3.5m wide through traffic lane width on Flagstonian Drive

A swept path assessment provided at **Attachment E** demonstrates that the interim intersection design can cater for all turn movements of a 14.5m bus. The intersection form is proposed to tie-in to the existing Flagstonian Drive layout to the north and south of the intersection, including the existing footpath and cycle path on the eastern side of the road.

Noting that duplication of Flagstonian Drive is not expected to occur for some time, further intersection works may be required before the delivery of the 'Ultimate' intersection form. As such, the 'Interim' intersection layout is proposed such that traffic signals can be retrofitted to the intersection if required. Signalisation of this intersection shall be triggered by the following:

- Construction of the fourth (eastern) leg of the Flagstonian Drive / HATUA intersection connecting to the future heavy rail station; or
- Further delivery of the Flagstone City Town Centre increasing intersection turning volumes to / from the proposed HATUA to an extent that exceeds the capacity of the intersection or introduces risks to the safety of road users.

Attached concept plans illustrate an indicative, future 4-leg interim signalised intersection.

6.3 Ultimate Intersection Design

An ultimate 4-way, signalised intersection layout is also provided at **Attachment D**. Left and right turn pockets are proposed on Flagstonian Drive with the exception of the left turn pocket from the northern approach. Traffic modelling indicates that southbound left turn volumes are negligible with the majority of left turn volumes expected to ultimately use the left-in / left-out intersection to the north. As such, a left-turn pocket is not warranted, which in turn minimises any potential impacts to verge width and adjacent active transport facilities.

A swept path assessment provided at **Attachment E** demonstrates that the interim intersection design can cater for all turn movements of a 14.5m bus.

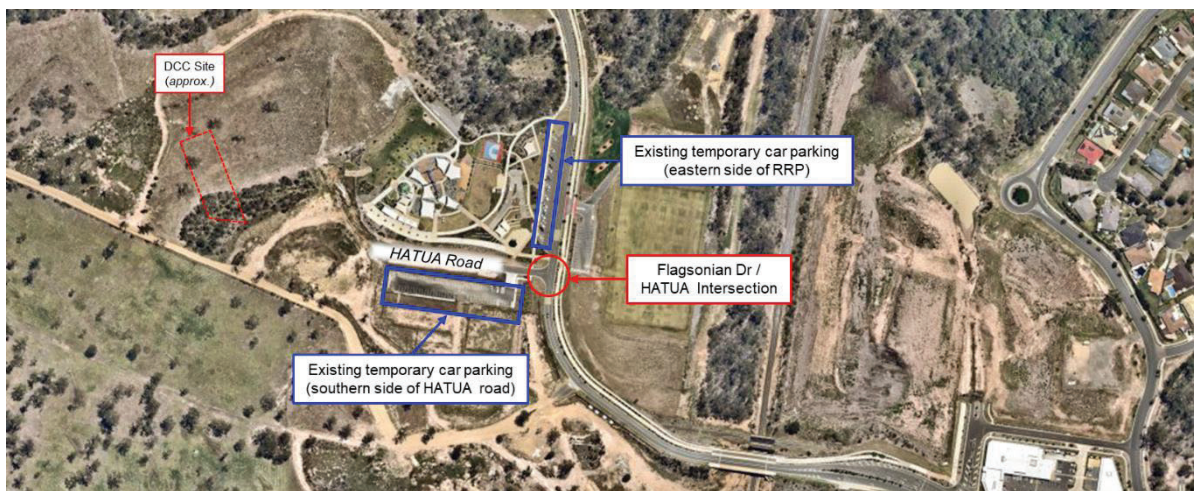
7. Parking Considerations

7.1 Overview

Parking for the proposed DCC is expected to be incorporated entirely on-site in a dedicated off-street car park, to be confirmed following design plans adopted by Logan City Council. Due to the nature of the use – and the planning of additional surrounding land uses – there is the opportunity for surrounding public parking to be utilised / shared for the DCC (e.g. on-street, town centre, nearby uses, etc.) as the likely temporal parking demands for the range of uses won't typically overlap.

Regardless, the future parking provision within the lot will be subject to future design (beyond the ROL stage) which is able to be accommodated within the 0.3ha lot.

The key locations relevant to the parking considerations are shown in Figure 7.1.



Source: Nearmap

Figure 7.1: Key Parking Locations / Considerations

7.2 Initial Considerations

It is further noted that the construction of the HATUA road will provide additional indented on-street parking from the 'Initial' development stage. Subject to further development of Town Centre plans, this is expected to generate in the order of 30 on-street car parking spaces for use by the DCC, RRP and future surrounding land uses.

7.3 Interim Considerations

The construction of the 'interim' Flagstonian Drive / HATUA intersection is expected to require the removal of the existing (temporary) angled car parking on the eastern side of the RRP. This loss is likely offset by the on-street parking provided within the HATUA road. However, if development of Stage 1 of the Town Centre in the 'Interim' scenario requires removal of the existing temporary car parking south of the HATUA, this shall be reinstated elsewhere. The removal of the temporary car park can be offset either with provision of permanent parking within the RRP or temporary parking provisions at an alternate location.

7.4 Ultimate Considerations

Ultimately, car parking demands for relevant land uses will be catered for on-site with further on-street parking also available typical of a major town centre.

8. Access Considerations

8.1 DCC Access

8.1.1 Overview

It is proposed that the DCC access is provided as an easement from the north of the proposed HATUA road. Design considerations for the proposed access include:

- A short section of the access road north of the intersection with the HATUA should be dedicated as public road to facilitate future signal infrastructure for 4-way arrangement
- Appropriate active transport connections shall be provided within the access easement
- The access roadway shall be designed to accommodate bus services in the event that group arrivals / departures from the DCC occur in the future.

The access arrangements have been considered under the initial, interim and ultimate horizons further below.

8.1.2 Initial Access

Initial access arrangement to the DCC shall be provided as per the ROL plans provided at **Attachment A** with the proposed access easement connecting to the end of the proposed HATUA. At the initial stage the roadway within the easement may be provided as either a driveway or as an access type roadway with relevant kerb and gutter etc.

8.1.3 Interim Access

Interim development of the Town Centre is expected to include a public road (north-south) on the western side of Stage 1. At this point, the access to the DCC will form a priority-controlled T-intersection with the HATUA and this new road.

8.1.4 Ultimate Access

Ultimately, it is expected that the access road to the DCC and adjacent community facilities will form the northern leg of a 4-way intersection. At the point that the 4th leg of the intersection is open to traffic, the intersection shall be signalised. Ultimately, it is recommended that the DCC access easement can cater for bus services accessing the range of community facilities in the area. As such, the signalised intersection should cater for 14.5m bus turning movement and a bus turnaround area should be provided north of the intersection (e.g. integrated with the frontage of the DCC).

8.2 Future HATUA Accesses

Noting the intended movement and place functions of the proposed HATUA (i.e. primary town centre access, highly pedestrianised, vibrant streetscaping, etc.) it is recommended that direct vehicle accesses be limited to intersections with the DCC access and future shared zone.

Additional midblock, direct vehicle accesses to sites within Stage 1 of the Town Centre should therefore be minimised within the HATUA to maintain uninterrupted / prioritised pedestrian movements and limit conflict points. No direct vehicle access to the RRP is proposed midblock on the northern side of the HATUA road, with RRP vehicle access ultimately via the DCC access intersection.

9. Conclusion

The traffic and transport implications of the proposed ROL changes for the proposed Flagstone City District Community Centre development were assessed with findings summarised below:

- The proposed ROL will be a two into three lot subdivision to facilitate the proposed 0.3ha DCC Lot as well define new road reserve and access easement
- Noting the competing demands of the proposed road link, a HATUA is proposed to cater for high active transport activity while maintaining capacity for future traffic volumes
- Existing bus services are located outside the typical 400m walking distance from the proposed DCC however, additional bus stops are expected to be provided with further development of the Town Centre. The Flagstone City rail station and associated bus interchange are also expected east of the site
- Future active transport trip generators in the vicinity of the proposed DCC are expected to result in high-east west pedestrian volumes and pedestrian crossing demands across the proposed road
- Traffic generations and distributions were extracted using VLC's GFSTM and micro-simulation modelling undertaken by Bitzios Consulting to determine staged road network volumes
- Turn warrants assessments indicate that the existing Flagstonian Drive / HATUA intersection can cater for delivery of the DCC, with an interim intersection upgrade including a CHR and AUL(s) required with further delivery of the Town Centre
- SIDRA assessments show that Interim and Ultimate intersection forms can cater for expected traffic volumes at each stage
- Interim and Ultimate intersection concept design plans are provided at **Attachment D**
- Swept path assessments provided at **Attachment E** demonstrate that 14.5m buses can make all required turn movements at proposed intersections
- Parking for the DCC is expected to be incorporated entirely on-site
- The proposed 'Interim' intersection form is expected to result in the loss of temporary parking on the eastern side on the RRP which will in-turn be offset by on-street parking within the HATUA
- Should development of Stage 1 of the Town Centre remove existing temporary parking on the southern side of the HATUA, this parking shall be offset elsewhere and addressed as part of future applications over the TC
- The DCC access is proposed as an easement to the north of the proposed HATUA road. Staged HATUA / DCC access intersection works shall be delivered with continued development of the Town Centre

Based on the findings herein, the proposed ROL changes for the District Community Centre were found to result in acceptable traffic arrangements and operating conditions without adverse traffic and transport impacts, subject to timely delivery of appropriate infrastructure identified herein.

The proposal was found to align with existing planning in the region and result in an improved outcome overall for active transport modes, while maintaining safe and efficient vehicular traffic provisions.

Attachment A: ROL Plans

Legend

- Site Boundary
- Proposed Access Easement (10m Wide)

Note:

All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Road pavement detail is indicative and conceptual only - subject to further detailed design.

3
RP 45236

908
SP 311419

50010
SP 303089

896
SP 108006

908
SP 311419

50051
(Pt)
6100m²

50051
(Pt)
8.803ha

30012
0.3ha

50050
69.663ha

50051 (Pt)
293.873ha
Total Balance Area - 303.286ha

906
SP 290276

50007
SP 303119

Homestead Drive

Flagstonian Drive

21m Wide New Road

Yield Breakdown

Allotment Type	Overall	
	Yield	Percentage
District Community Centre Allotment	1	33.3%
Balance Super Allotments	2	66.7%
Total Yield	3	100.0%

Land Budget

Land Use	Overall	
	Area	Percentage
Area of Subject Site	373.964 ha	100.0%
Developable Area		
District Community Centre Allotment	0.300 ha	0.1%
Balance Super Allotments	372.949 ha	99.7%
Total Area of Allotments	373.249 ha	99.8%
Road		
Flagstonian Drive Widening	0.133 ha	0.0%
21.0m Wide Road (HATUA)	0.582 ha	0.2%
Total Area of New Road	0.715 ha	0.2%

PLAN REF: **110056 - 509A**

DATE: 24 MARCH 2021
CLIENT: PEET
DRAWN BY: MD
CHECKED BY: MD/DG
SHEET: 1 of 2



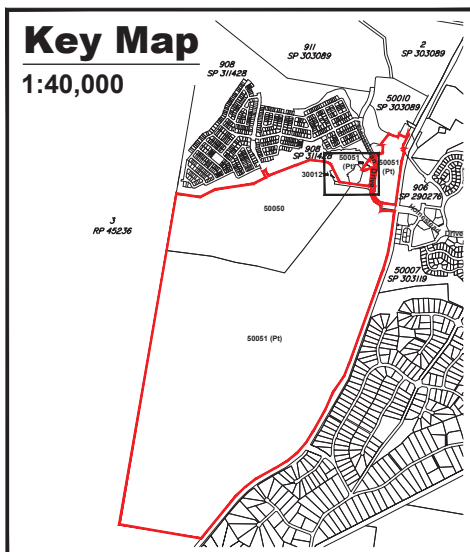
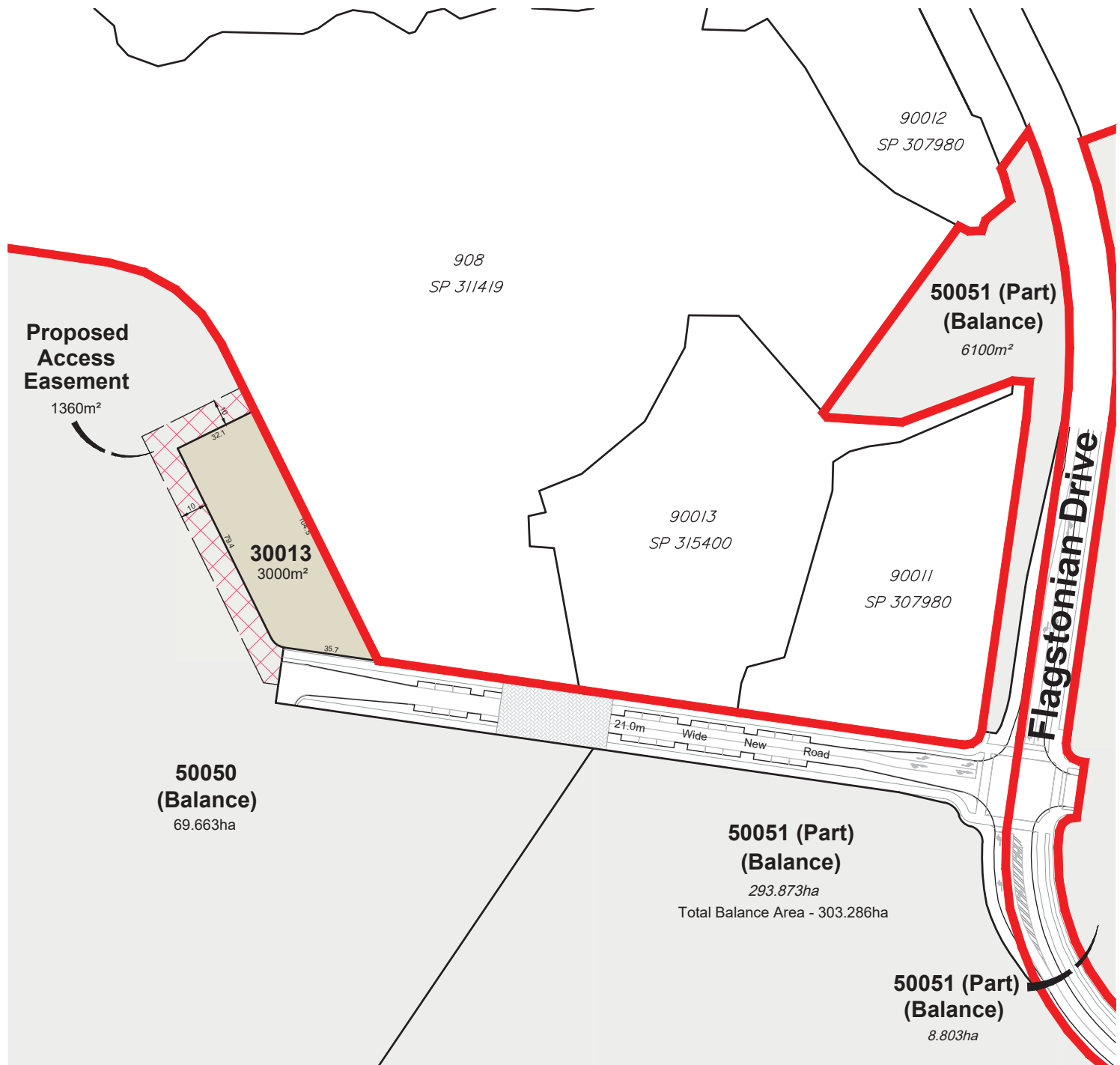
FLAGSTONE TOWN CENTRE PROPOSED SUBDIVISION - 2 INTO 3 ALLOTMENTS CANCELLING LOT 30008 ON SP315462 & LOT 907 ON SP315400

0 100 200 300 400 500 1:10,000 @ A3

URBAN DESIGN
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Yield Breakdown		
Allotment Type	Overall	
	Yield	Percentage
District Community Centre Allotment	1	33.3%
Balance Super Allotments	2	66.7%
Total Yield	3	100.0%

Land Budget		
Land Use	Overall	
	Area	Percentage
Area of Subject Site	373.964 ha	100.0%
Developable Area		
District Community Centre Allotment	0.300 ha	0.1%
Balance Super Allotments	372.949 ha	99.7%
Total Area of Allotments	373.249 ha	99.8%
Road		
Flagstonian Drive Widening	0.133 ha	0.0%
21.0m Wide Road (HATUA)	0.582 ha	0.2%
Total Area of New Road	0.715 ha	0.2%

Legend

- Site Boundary
- Proposed Access Easement (10m Wide)
- Indicative Shared Zone

Note:

All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Road pavement detail is indicative and conceptual only - subject to further detailed design.

PLAN REF: **110056 - 509A**

DATE: 24 MARCH 2021
CLIENT: PEET
DRAWN BY: MD
CHECKED BY: MD/DG



FLAGSTONE TOWN CENTRE PROPOSED SUBDIVISION - 2 INTO 3 ALLOTMENTS CANCELLING LOT 30008 ON SP315462 & LOT 907 ON SP315400

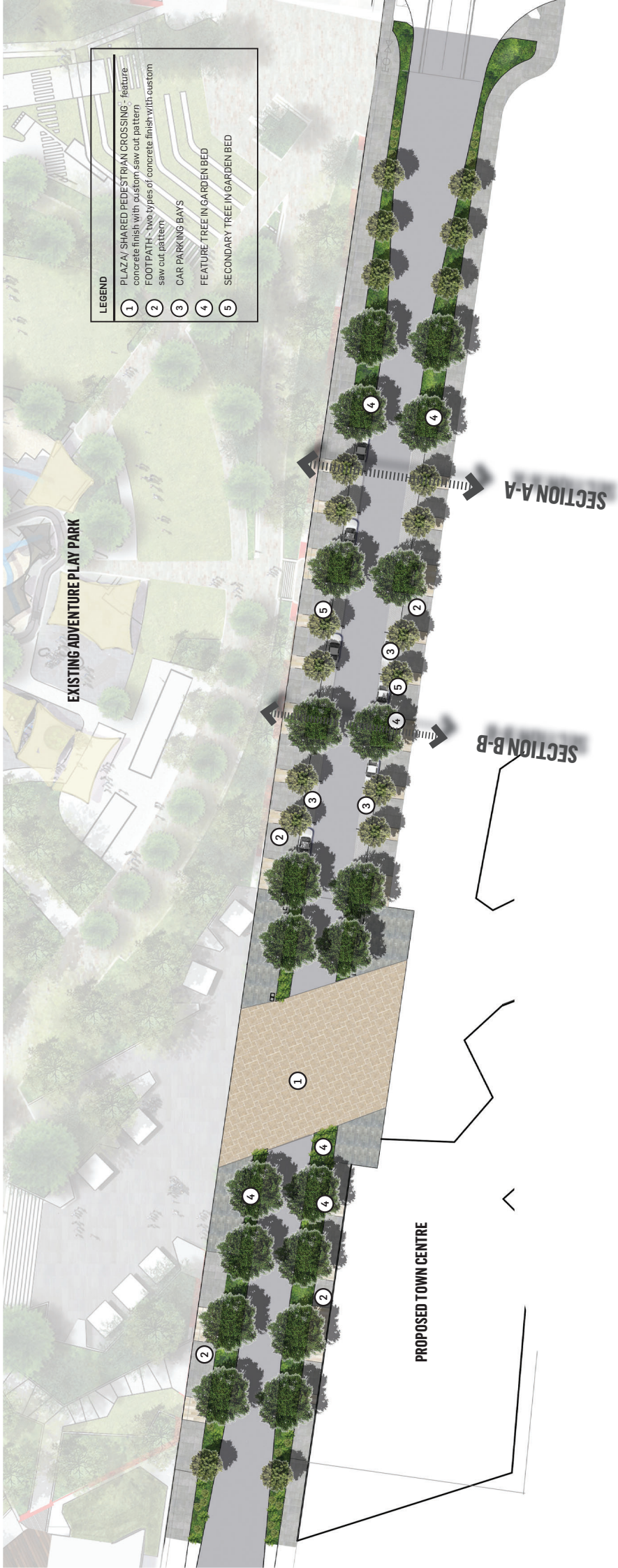
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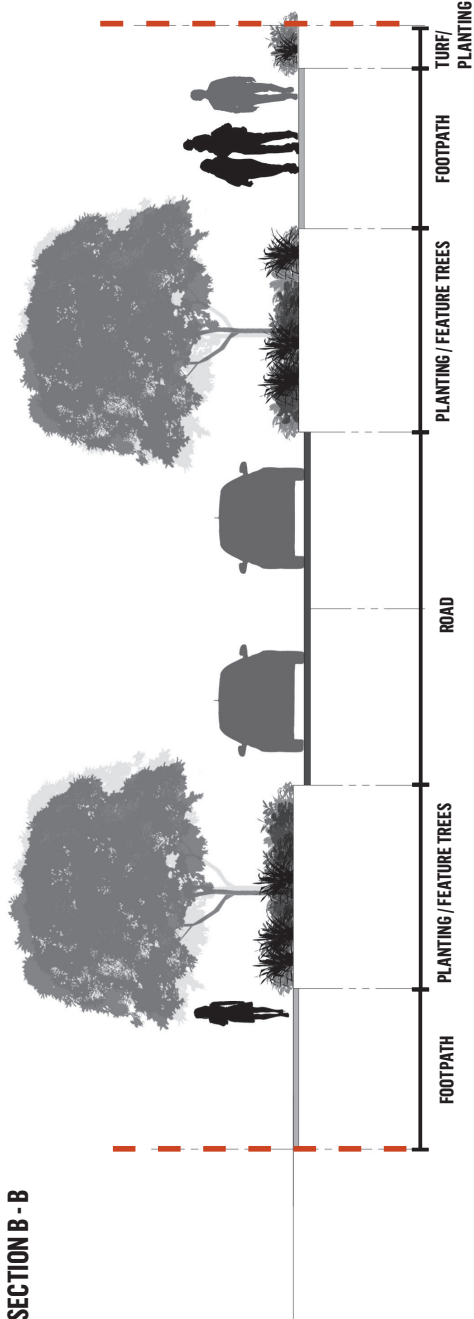
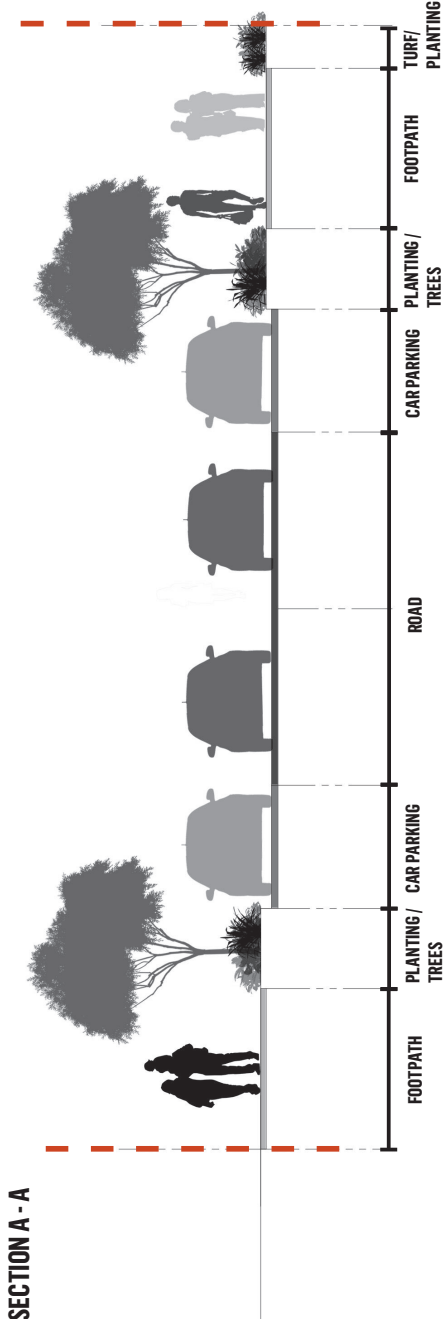
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Attachment B: HATUA Landscaping Plans





Attachment C: SIDRA Intersection Results

SITE LAYOUT

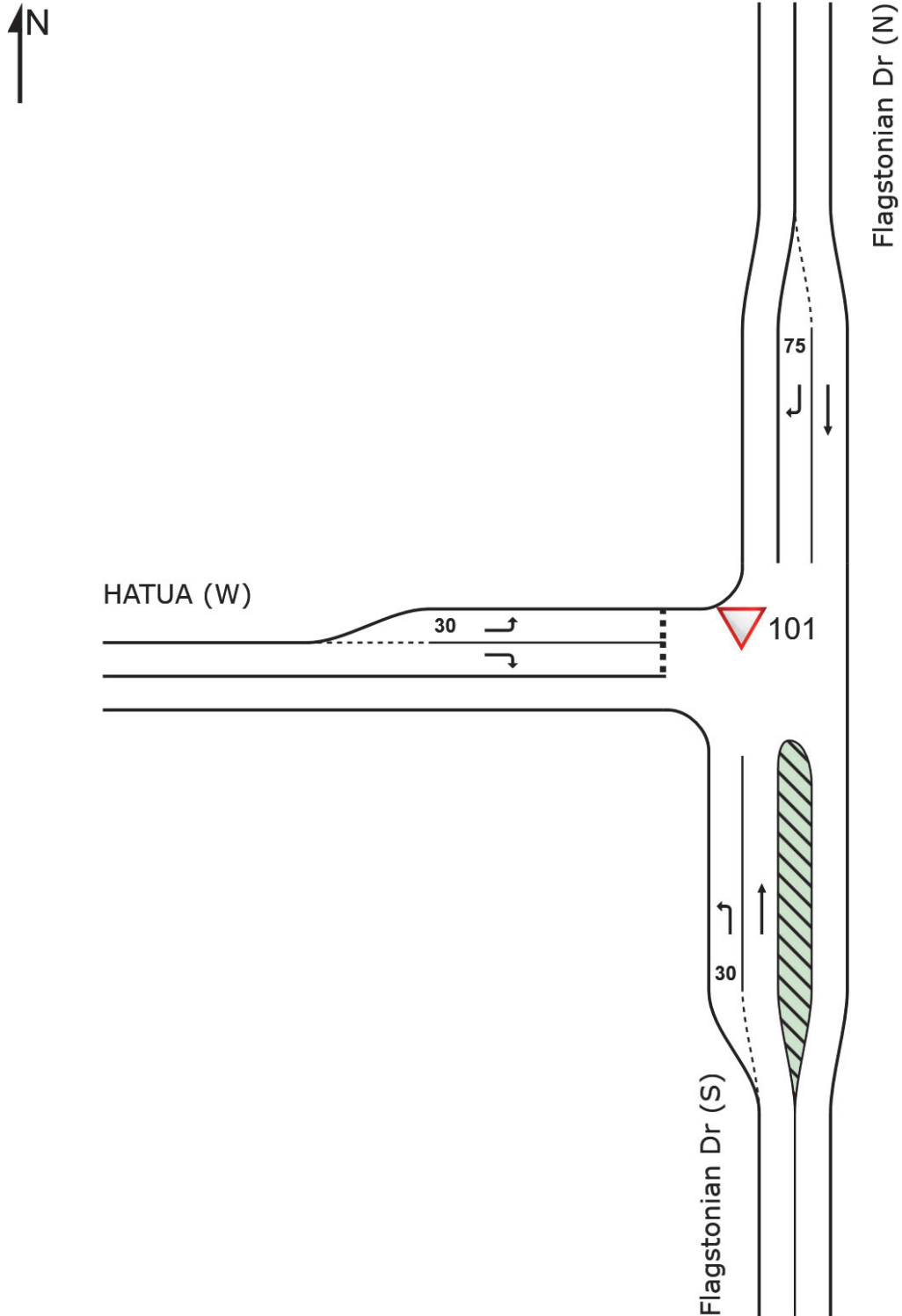
▼ Site: 101 [Interim AM (Site Folder: General)]

Flagstonian Drive / HATUA

Site Category: (None)

Give-Way (Two-Way)

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



MOVEMENT SUMMARY

▼ Site: 101 [Interim AM (Site Folder: General)]

Flagstonian Drive / HATUA

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flagstonian Dr (S)														
1	L2	1	0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	46.5
2	T1	417	7	439	1.7	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		418	7	440	1.7	0.225	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Flagstonian Dr (N)														
8	T1	517	10	544	1.9	0.282	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
9	R2	125	0	132	0.0	0.144	7.8	LOS A	0.6	4.2	0.49	0.70	0.49	45.0
Approach		642	10	676	1.6	0.282	1.6	NA	0.6	4.2	0.10	0.14	0.10	55.8
West: HATUA (W)														
10	L2	7	0	7	0.0	0.009	5.3	LOS A	0.0	0.2	0.43	0.53	0.43	45.2
12	R2	5	0	5	0.0	0.025	19.2	LOS C	0.1	0.6	0.81	0.90	0.81	27.6
Approach		12	0	13	0.0	0.025	11.1	LOS B	0.1	0.6	0.59	0.69	0.59	38.4
All Vehicles		1072	17	1128	1.6	0.282	1.1	NA	0.6	4.2	0.06	0.09	0.06	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: P:\P2300 Flagstone City Stages 2-5\Technical Work\Models\SIDRA\2021_03_31 Flagstonian - HATUA Intersection\P2300 Flagstonian Drive - HATUA.sip9

MOVEMENT SUMMARY

▼ Site: 101 [Interim PM (Site Folder: General)]

Flagstonian Drive / HATUA

Site Category: (None)

Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flagstonian Dr (S)														
1	L2	1	0	1	0.0	0.001	5.5	LOS A	0.0	0.0	0.00	0.58	0.00	46.5
2	T1	500	0	526	0.0	0.267	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		501	0	527	0.0	0.267	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Flagstonian Dr (N)														
8	T1	321	0	338	0.0	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
9	R2	17	0	18	0.0	0.022	8.0	LOS A	0.1	0.6	0.50	0.66	0.50	44.8
Approach		338	0	356	0.0	0.171	0.4	NA	0.1	0.6	0.03	0.03	0.03	58.8
West: HATUA (W)														
10	L2	38	0	40	0.0	0.052	6.1	LOS A	0.2	1.3	0.49	0.63	0.49	44.7
12	R2	5	0	5	0.0	0.017	13.1	LOS B	0.1	0.4	0.71	0.78	0.71	31.2
Approach		43	0	45	0.0	0.052	6.9	LOS A	0.2	1.3	0.51	0.65	0.51	43.4
All Vehicles		882	0	928	0.0	0.267	0.5	NA	0.2	1.3	0.03	0.05	0.03	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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SITE LAYOUT

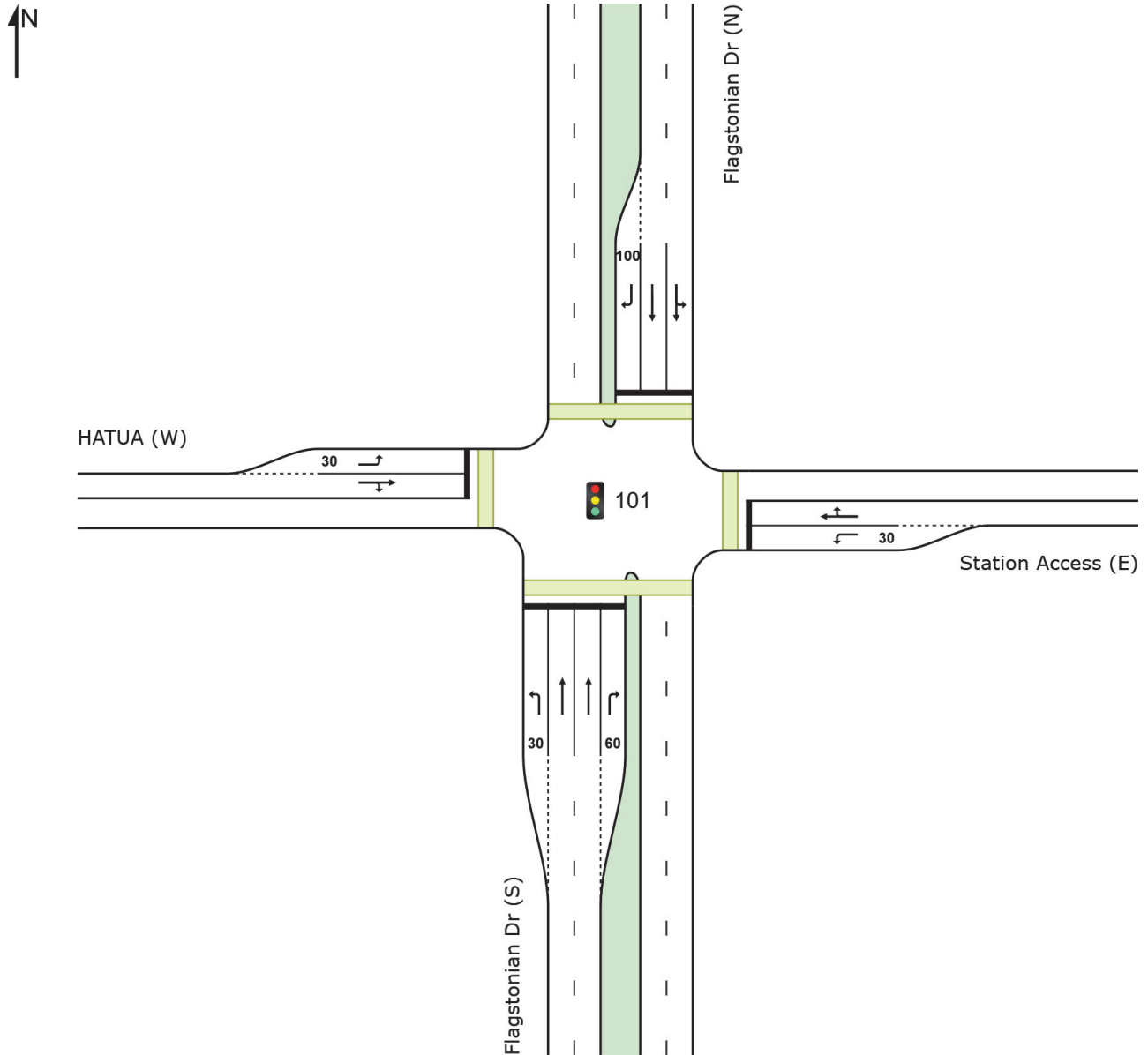
 **Site: 101 [Ultimate AM (Site Folder: General)]**

Flagstonian Drive / HATUA

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

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



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MOVEMENT SUMMARY

 **Site: 101 [Ultimate AM (Site Folder: General)]**

Flagstonian Drive / HATUA

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 110 seconds (Site Practical Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h veh/h		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Flagstonian Dr (S)														
1	L2	291	6	306	2.1	0.591	32.6	LOS C	12.0	85.3	0.78	0.80	0.78	23.6
2	T1	615	22	647	3.6	* 0.882	53.8	LOS D	23.0	166.0	0.97	0.99	1.26	27.2
3	R2	70	0	74	0.0	0.436	59.8	LOS E	3.9	27.5	0.99	0.76	0.99	17.2
Approach		976	28	1027	2.9	0.882	47.9	LOS D	23.0	166.0	0.91	0.92	1.10	25.6
East: Station Access (E)														
4	L2	27	0	28	0.0	0.073	24.9	LOS C	0.8	5.4	0.83	0.69	0.83	27.5
5	T1	16	3	17	18.8	* 0.166	43.8	LOS D	2.3	17.9	0.89	0.72	0.89	21.3
6	R2	32	2	34	6.3	0.166	46.9	LOS D	2.3	17.9	0.89	0.72	0.89	29.1
Approach		75	5	79	6.7	0.166	38.3	LOS D	2.3	17.9	0.87	0.71	0.87	26.8
North: Flagstonian Dr (N)														
7	L2	3	1	3	33.3	0.595	36.0	LOS D	18.2	132.2	0.86	0.75	0.86	36.6
8	T1	806	32	848	4.0	0.595	29.5	LOS C	18.4	133.1	0.86	0.75	0.86	37.5
9	R2	326	8	343	2.5	* 0.862	60.2	LOS E	20.2	144.5	1.00	0.94	1.23	25.4
Approach		1135	41	1195	3.6	0.862	38.4	LOS D	20.2	144.5	0.90	0.81	0.97	32.6
West: HATUA (W)														
10	L2	147	10	155	6.8	0.283	20.2	LOS C	3.9	29.2	0.80	0.74	0.80	37.0
11	T1	20	0	21	0.0	* 0.359	46.8	LOS D	4.8	34.2	0.94	0.76	0.94	20.8
12	R2	71	3	75	4.2	0.359	50.1	LOS D	4.8	34.2	0.94	0.76	0.94	18.1
Approach		238	13	251	5.5	0.359	31.3	LOS C	4.8	34.2	0.85	0.75	0.85	29.4
All Vehicles		2424	87	2552	3.6	0.882	41.5	LOS D	23.0	166.0	0.90	0.84	1.01	29.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Flagstonian Dr (S)												
P1	Full	50	53	48.3	LOS E	0.2	0.2	0.94	0.94	221.1	224.6	1.02
East: Station Access (E)												
P2	Full	50	53	48.3	LOS E	0.2	0.2	0.94	0.94	211.9	212.6	1.00
North: Flagstonian Dr (N)												
P3	Full	50	53	48.3	LOS E	0.2	0.2	0.94	0.94	218.6	221.3	1.01

West: HATUA (W)												
P4 Full	50	53	48.3	LOS E	0.2	0.2	0.94	0.94	211.9	212.6	1.00	
All Pedestrians	200	211	48.3	LOS E	0.2	0.2	0.94	0.94	215.8	217.8	1.01	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

 **Site: 101 [Ultimate PM (Site Folder: General)]**

Flagstonian Drive / HATUA

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 90 seconds (Site Practical Cycle Time)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total HV] veh/h veh/h		DEMAND FLOWS [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. Dist] veh m		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Flagstonian Dr (S)														
1	L2	163	6	172	3.7	0.219	23.5	LOS C	4.7	33.9	0.66	0.75	0.66	27.6
2	T1	776	26	817	3.4	* 0.878	43.6	LOS D	22.0	158.7	0.98	1.01	1.27	30.8
3	R2	64	0	67	0.0	0.326	48.0	LOS D	2.9	20.0	0.96	0.76	0.96	20.0
Approach		1003	32	1056	3.2	0.878	40.6	LOS D	22.0	158.7	0.93	0.95	1.15	29.7
East: Station Access (E)														
4	L2	49	1	52	2.0	0.127	20.4	LOS C	1.0	7.3	0.83	0.71	0.83	29.9
5	T1	20	0	21	0.0	* 0.133	35.5	LOS D	1.7	11.9	0.88	0.70	0.88	23.7
6	R2	22	1	23	4.5	0.133	38.7	LOS D	1.7	11.9	0.88	0.70	0.88	32.2
Approach		91	2	96	2.2	0.133	28.2	LOS C	1.7	11.9	0.85	0.71	0.85	29.0
North: Flagstonian Dr (N)														
7	L2	6	1	6	16.7	0.615	36.1	LOS D	13.1	94.2	0.91	0.78	0.91	36.6
8	T1	646	19	680	2.9	0.615	29.8	LOS C	13.2	94.8	0.92	0.79	0.92	37.3
9	R2	176	7	185	4.0	* 0.839	55.8	LOS E	9.1	65.9	1.00	0.94	1.34	26.4
Approach		828	27	872	3.3	0.839	35.4	LOS D	13.2	94.8	0.93	0.82	1.01	34.0
West: HATUA (W)														
10	L2	192	4	202	2.1	0.523	22.4	LOS C	5.1	36.6	0.93	0.79	0.93	36.6
11	T1	9	0	9	0.0	* 0.474	38.7	LOS D	5.5	40.2	0.96	0.78	0.96	22.7
12	R2	118	5	124	4.2	0.474	41.9	LOS D	5.5	40.2	0.96	0.78	0.96	19.9
Approach		319	9	336	2.8	0.523	30.1	LOS C	5.5	40.2	0.94	0.79	0.94	30.0
All Vehicles		2241	70	2359	3.1	0.878	36.7	LOS D	22.0	158.7	0.93	0.87	1.06	31.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
South: Flagstonian Dr (S)												
P1	Full	50	53	38.4	LOS D	0.1	0.1	0.92	0.92	211.1	224.6	1.06
East: Station Access (E)												
P2	Full	50	53	38.4	LOS D	0.1	0.1	0.92	0.92	201.9	212.6	1.05
North: Flagstonian Dr (N)												
P3	Full	50	53	38.4	LOS D	0.1	0.1	0.92	0.92	208.6	221.3	1.06

West: HATUA (W)												
P4 Full	50	53	38.4	LOS D	0.1	0.1	0.92	0.92	201.9	212.6	1.05	
All Pedestrians	200	211	38.4	LOS D	0.1	0.1	0.92	0.92	205.9	217.8	1.06	

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Attachment D: Flagstonian Drive Intersection Concepts



90013

SP 315400

90011

SP 307980

21.0m — Wide — New — Road

50051 (Part)
(Balance)

293.935ha

Total Balance Area - 303.416ha

Flagstonian Drive

NOTE

Intersection turn pocket lengths to be determined at detailed design

WARNING!

BEWARE OF AERIAL SERVICES
Aerial services may be operating in the vicinity of the project area. Contact service provider for advice prior to commencement of work.

WARNING!

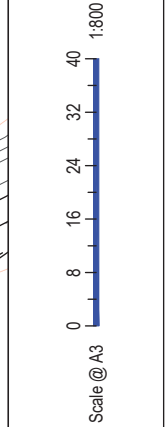
BEWARE OF UNDERGROUND SERVICES
Underground services may be present in the vicinity of the project area. Contact service provider for advice prior to commencement of work.



Gold Coast
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Sydney
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P: (02) 9557 6202

REVISIONS		
Issue	Revised	Date
001	Interim Intersection Concept	14.04.21

Project	
Flagstone DCC ROL	
Title	
Flagstonian Drive / HATUA Interim Intersection Concept	



Design	Drawn	Checked
A.P	A.P	L.D
CONCEPT ONLY		
Project Number	Sheet Number	Date
P2300	1	14.04.21
Issue		001



NOTE

Intersection turn pocket lengths to be determined at detailed design

LEGEND

- Proposed Kerb Line / Footpath Edge
- Lot Boundary
- Footpath / Shared Path
- Grass / Landscaping
- Indented Parking

WARNING!
BEWARE OF AERIAL SERVICES
Underground services may be located within the work area. Contact service provider for advice prior to commencement of work.

WARNING!
BEWARE OF UNDERGROUND SERVICES
Underground services may be located within the work area. Contact service provider for advice prior to commencement of work.

Existing separated cycleway / footpath arrangement / location

Indented parking / streetscaping indicative only (to be detailed by others)

Modified ultimate property boundary to cater for 4.5m verge

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REVISIONS

Issue	Revised By	Drawn By	Date
001	Flagstonian Dr / HATUA Intersection Ultimate Concept	A.P.	08/03/21
002	Flagstonian Dr / HATUA Intersection Ultimate Concept	A.P.	14/04/21

Project
Flagstonian DCC ROL

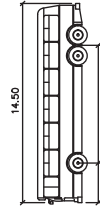
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Design	Drawn	Checked
A.P.	A.P.	L.D.

CONCEPT ONLY

Date	Issue
14.04.2021	2
Project Number	Sheet Number
P2300	002

Attachment E: Swept Path Diagrams



LONG RIGID BUS
meters
Width : 2.50
Lock : 6.0
Lock to Lock Time : 6.0
Steering Angle : 46.4

DESIGN VEHICLE



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E: admin@bitziosconsulting.com.au
Sydney
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P: (02) 9557 6202

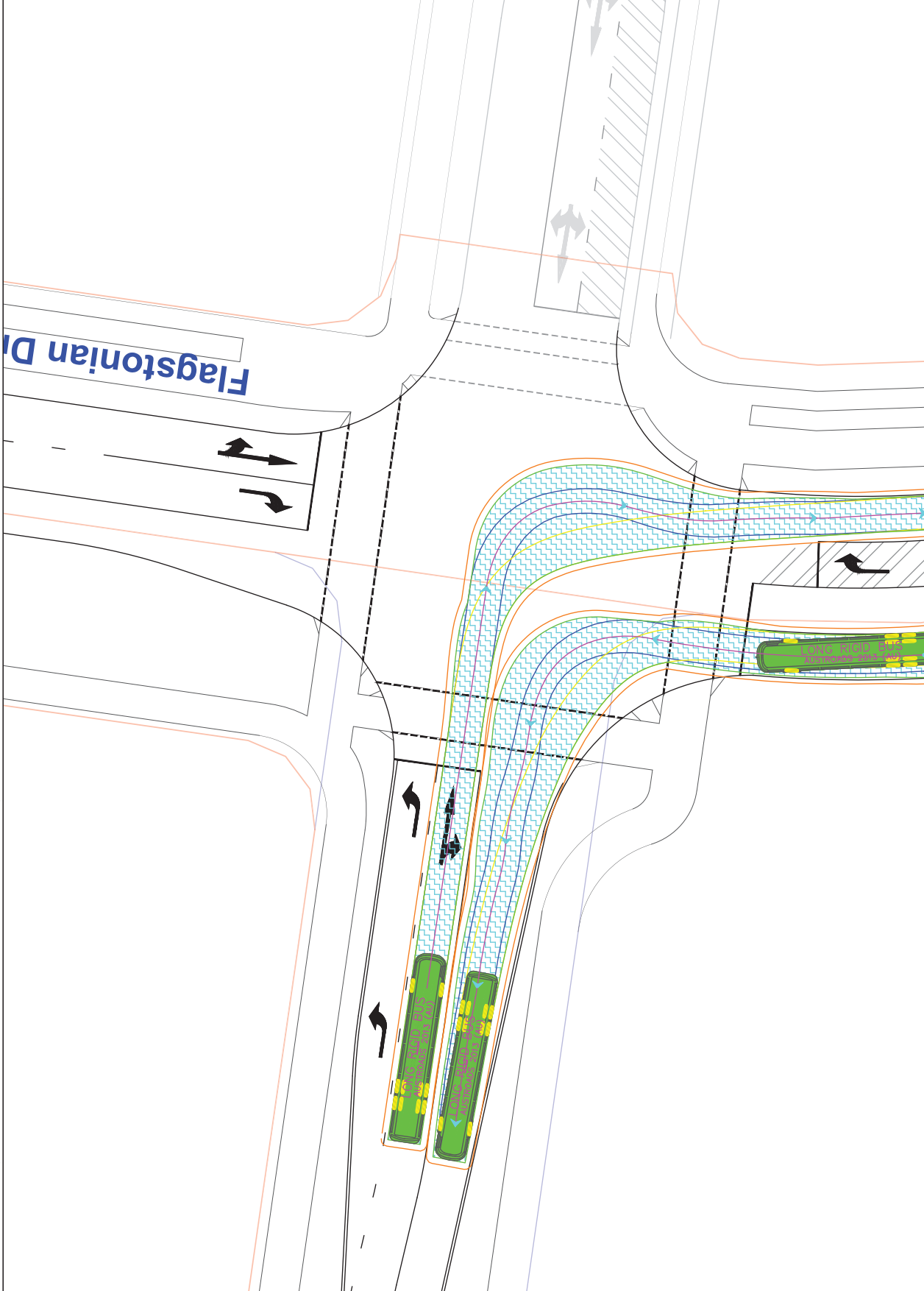
REVISIONS	
Issue	Revised
001	SWEPT PATH ASSESSMENT

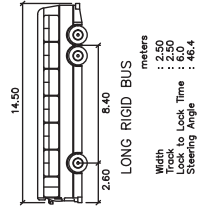
Design	Date
A.P	14.04.21

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Project	Flagstone DCC ROL
Title	Flagstonian Drive / HATUA Interim Swept Path Assessment

Design	A.P	Drawn	A.P	Checked	L.D
CONCEPT ONLY		Project Number	P2300	Sheet Number	1
		Issue		Date	14.04.21
					001





DESIGN VEHICLE



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E: admin@bitziosconsulting.com.au
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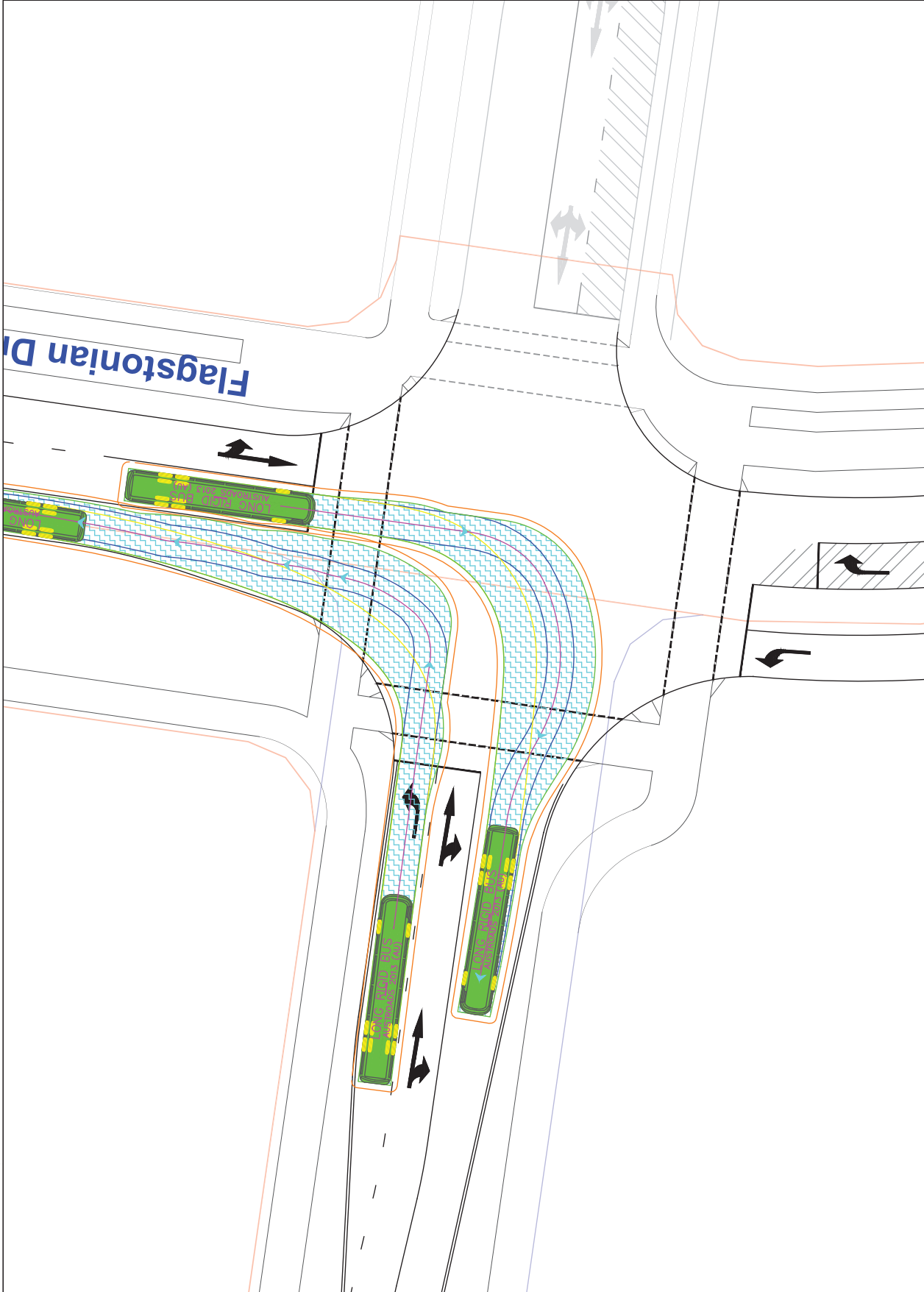
REVISIONS	
Issue	Revised
001	SWEEP PATH ASSESSMENT

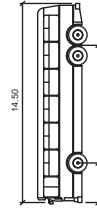
Design	Date
A.P.	14.04.21

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Project	Flagstone DCC ROL
Title	Flagstonian Drive / HATUA Interim Swept Path Assessment

Design	A.P.	Drawn	A.P.	Checked	L.D.
	CONCEPT ONLY			Date	14.04.21
Project Number	P2300	Sheet Number	2	Issue	001





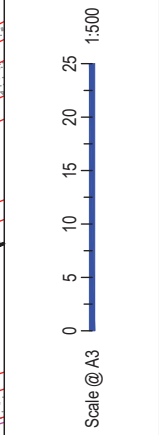
LONG RIGID BUS
measures
Width : 2.50
Wheelbase : 8.40
Lock to Lock Time : 6.0
Steering Angle : 46.4

DESIGN VEHICLE

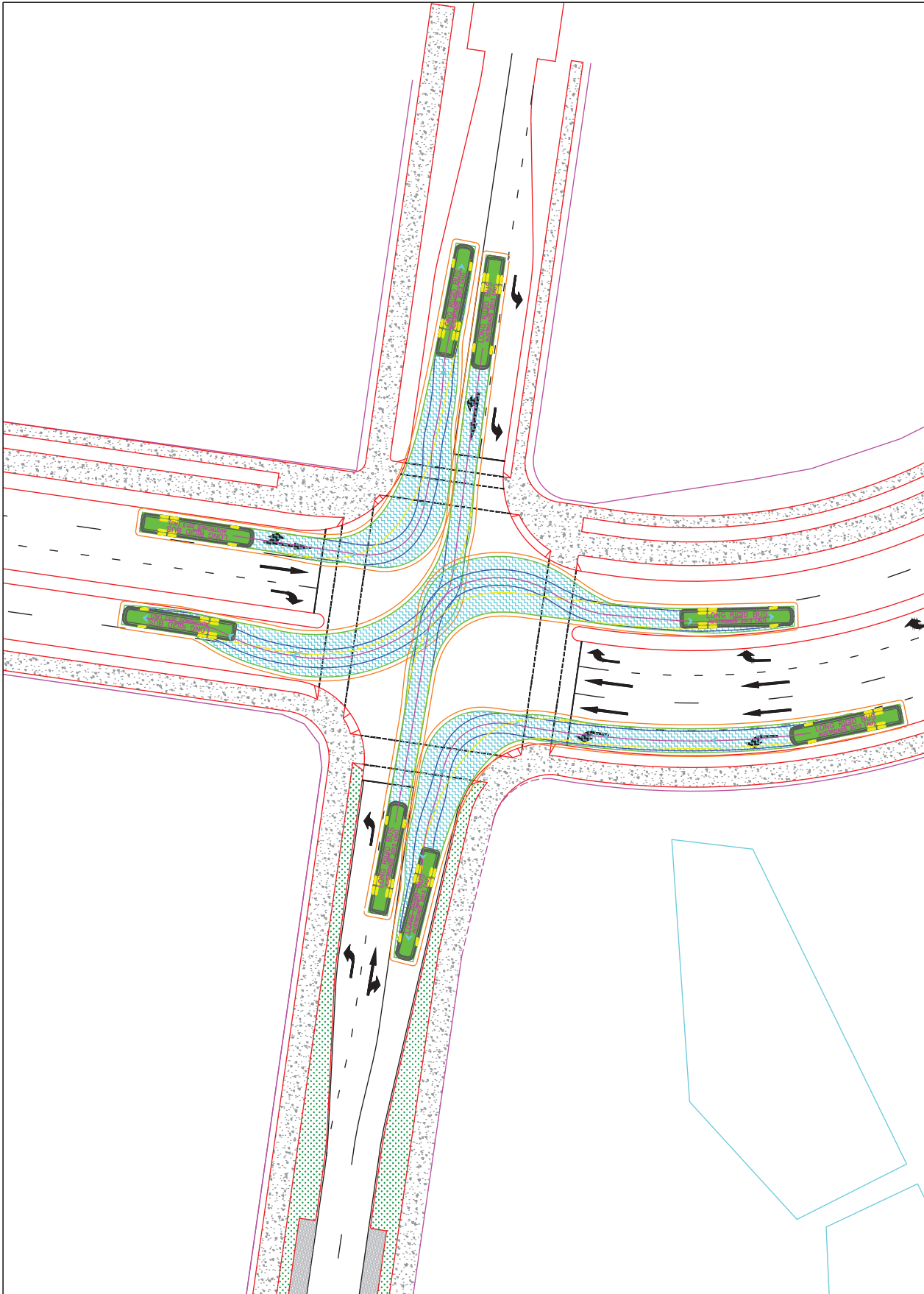


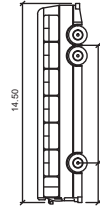
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REVISIONS		
Issue	Drawn	Date
001	A.A.	14.04.21



Project		Design		Checked	
Flagstone DCC ROL		A.P	A.P	L.D	
Flagstonian Drive / HATUA Ultimate Swept Path Assessment		CONCEPT ONLY		Date	
		Project Number	Sheet Number	Issue	
		P2300	3	14.04.21	
				001	





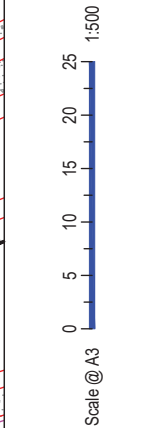
LONG RIGID BUS
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Width : 2.50
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Steering Angle : 46.4

DESIGN VEHICLE

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REVISIONS	
Issue	Date
001 SWEEP PATH ASSESSMENT	14.04.21



Project	
Flagstone DCC ROL	
Title	
Flagstonian Drive / HATUA Ultimate Swept Path Assessment	
Design	A.P
Drawn	A.P
Checked	L.D
Project Number	
P2300	
Sheet Number	
4	
Date	
14.04.21	
Issue	
001	

