

To: Graeme Knox

From: Brendyn Rheinberger

Company: Lendlease Communities

SLR Consulting Australia Pty Ltd

cc:

Date: 21 September 2023

Project No. 620.V11743.00000

**RE: Yarrabilba Masterplan Community, Precinct 4G Application
Traffic Engineering Statement**

1.0 Introduction

SLR Consulting Australia Pty Ltd (**SLR**) has been commissioned by Lendlease Communities (Lendlease) to provide traffic engineering and transport planning advice for the Yarrabilba master planned development area. The Yarrabilba master planned development is located within the extents of the Yarrabilba Priority Development Area (**PDA**), which is situated approximately 20km south of Logan Central and Springwood. When fully developed, it is anticipated that the ultimate Yarrabilba development will yield approximately 17,000 residential dwellings, and approximately 45,000 residents.

The traffic and transport aspects of the overall Yarrabilba master plan have been extensively documented within several reports which are referenced in Section 1.1. This memorandum specifically addresses the traffic and transport aspects of Precinct 4G (which is a sub-precinct of Precinct 4). The proposed layout plan for the Precinct 4G application is included at **Appendix A**.

1.1 Previous Reporting

The traffic and transport aspects of the entire Yarrabilba master plan development (and other relevant precincts) have been previously addressed within a number of documents including the following:

- *Yarrabilba Master Plan Micro-simulation Modelling - Revised Land Use and Road Network* (Cardno, May 2015).
- *Yarrabilba Movement Infrastructure Master Plan* (Cardno, October 2015) – endorsed by EDQ on 11 November 2015, and on 3 July 2019. Referred to herein as the 'Endorsed MIMP (2019)'.
- *Yarrabilba Master Plan Development – Movement Infrastructure Master Plan* (SLR, April 2017).
- *Traffic Impact Assessment – Yarrabilba Master Plan Development Precinct 5* (SLR, September 2017). Note that the traffic impacts of Precinct 4G has been previously considered in this report, when Precinct 4G was referred to as Precinct 5.
- *Yarrabilba Master Plan Community Precinct 4C North – Traffic Engineering Statement* (SLR, June 2021).
- *Yarrabilba Master Plan Development Traffic Model and Intersection Analysis Data Compendium* (SLR, November 2019) – submitted to and under review by EDQ.
- *Yarrabilba Master Plan Development Movement Infrastructure Master Plan (Version 8)* (SLR, October 2022) – submitted to and under review by EDQ. Referred to herein as the 'Current MIMP (2022)'.

For clarity, it is acknowledged that:

**PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL**

Approval no: DEV2023/1441

Date: 29 February 2024



- The October 2015 Movement IMP (Cardno) has been endorsed by EDQ but uses traffic modelling information that is superseded.
- Updated traffic modelling was undertaken in 2018 and the volumes from this are most representative of current Yarrabilba planning and have been used for all traffic design and assessment since 2018.
- The updated traffic modelling (2018) is included in the Current MIMP (2022) and represents the most recent traffic forecasts and assessment for Yarrabilba.
- The Precinct 4G assessment herein uses volumes from the traffic model update in 2018.

Where relevant, some elements of these reports have been used to inform the traffic assessment herein. In particular, it is intended that the traffic and transport aspects of Precinct 4G are generally consistent with both the Endorsed MIMP (2019) and the Current MIMP (2022).

1.2 Movement Infrastructure Master Plan Update

An update to the Movement Infrastructure Master Plan (**MIMP**) has been prepared by SLR. This version (Version 8) reflects updated traffic modelling (undertaken in 2018) using the revised major road network and revised development layout. Note, the total development yields remain consistent with the Endorsed MIMP (2019). The Current MIMP (2022) was issued to EDQ in October 2022, pending endorsement.

1.3 Traffic Model Update

The overall Yarrabilba road network and demographics have been revised (2018) since that which was included in the initial traffic model (2015) and in the endorsed Movement IMP (2015). Whilst the demographics have been updated in various precincts, the demographics for the total Yarrabilba PDA are largely unchanged.

The Precinct 4G assessment herein has been based upon the most recent traffic model volumes and demographics (2018). This is discussed in **Section 4** herein.

Whilst the 2018 traffic model has not been documented, the traffic volume results from such modelling have been considered and incorporated herein. Such results include updated forecasts of traffic volumes and updated intersection capacity analysis. The latter includes key intersections providing access to Precinct 4G.

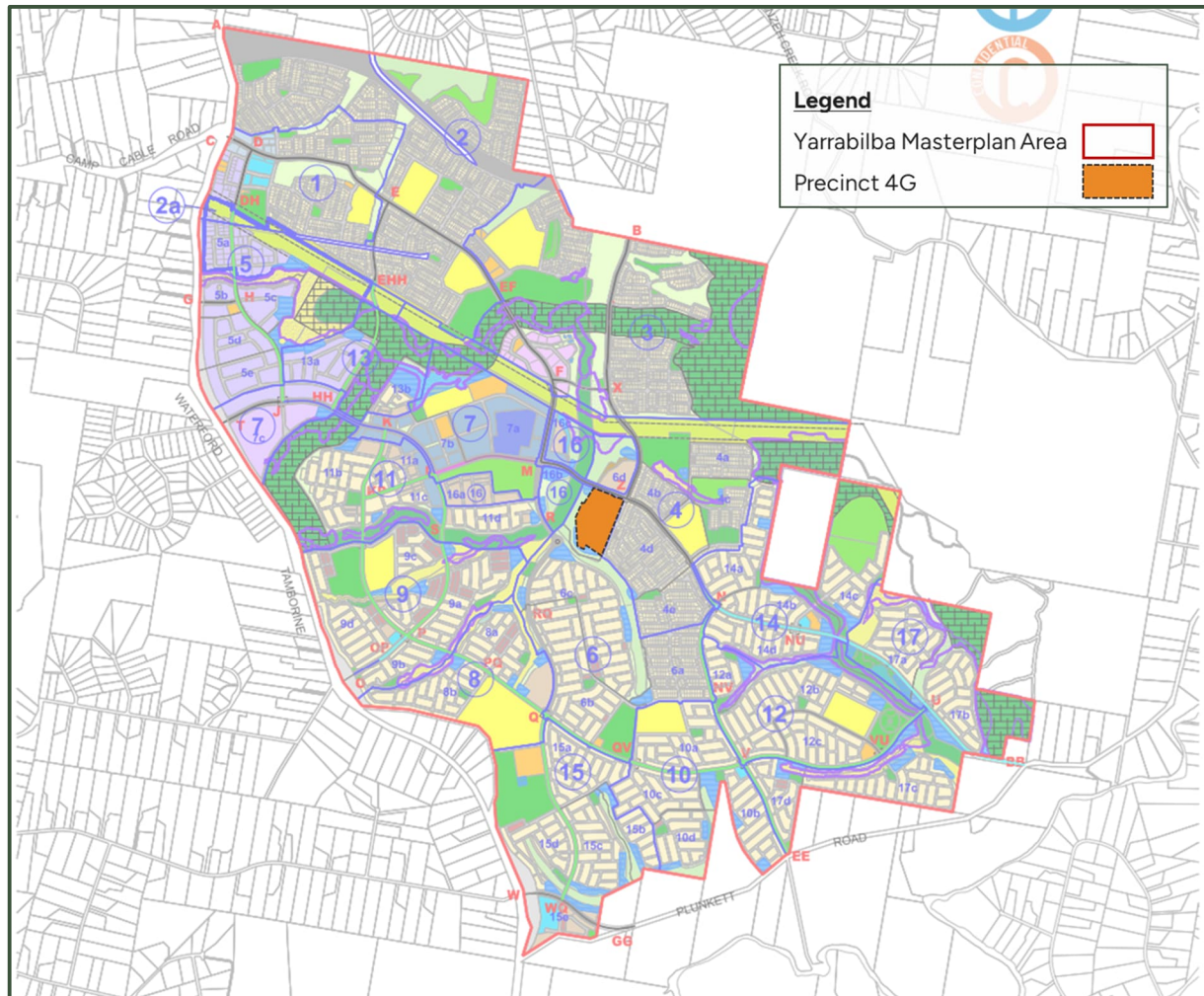


2.0 Proposed Development

The proposed Precinct 4G development is located to the west of the broader Precinct 4 area and immediately west of Precinct 4D. Primary vehicular access for this precinct will be via Diamond Drive which provides connectivity to Wentland Avenue, and travels along the northern boundary of Precinct 4G.

The proposed yield represents 116 residential lots and the location is illustrated on **Figure 1** in the context of precinct staging and the overall Yarrabilba Development Area.

Figure 1: Precinct 4G Site Context



The proposed development plan for Precinct 4G has been prepared by Lendlease and incorporates input from the wider design team (including advice on traffic and transport design matters provided by SLR). The plan will be submitted as part of the planning documents for the application and has been used as the basis of the traffic assessment herein.

Based on plans provided by Lendlease and as detailed within the precinct layout plan, Precinct 4G is proposed to include the following key land uses and yields:

- 116 residential lots; and
- Open space parkland for stormwater detention.

The lot layout and road network are illustrated on **Figure 2**, with the full-scale plan provided at **Appendix A**.



Figure 2: Precinct 4G POD



It is recognised that in the interim, Precinct 4G will have vehicle access only via Wentland Avenue from the north via Yarrabilba Drive. In the ultimate, Wentland Avenue will connect to Plunkett Road Link to the south, providing access from the external road network at Waterford-Tamborine Road and Plunkett Road.

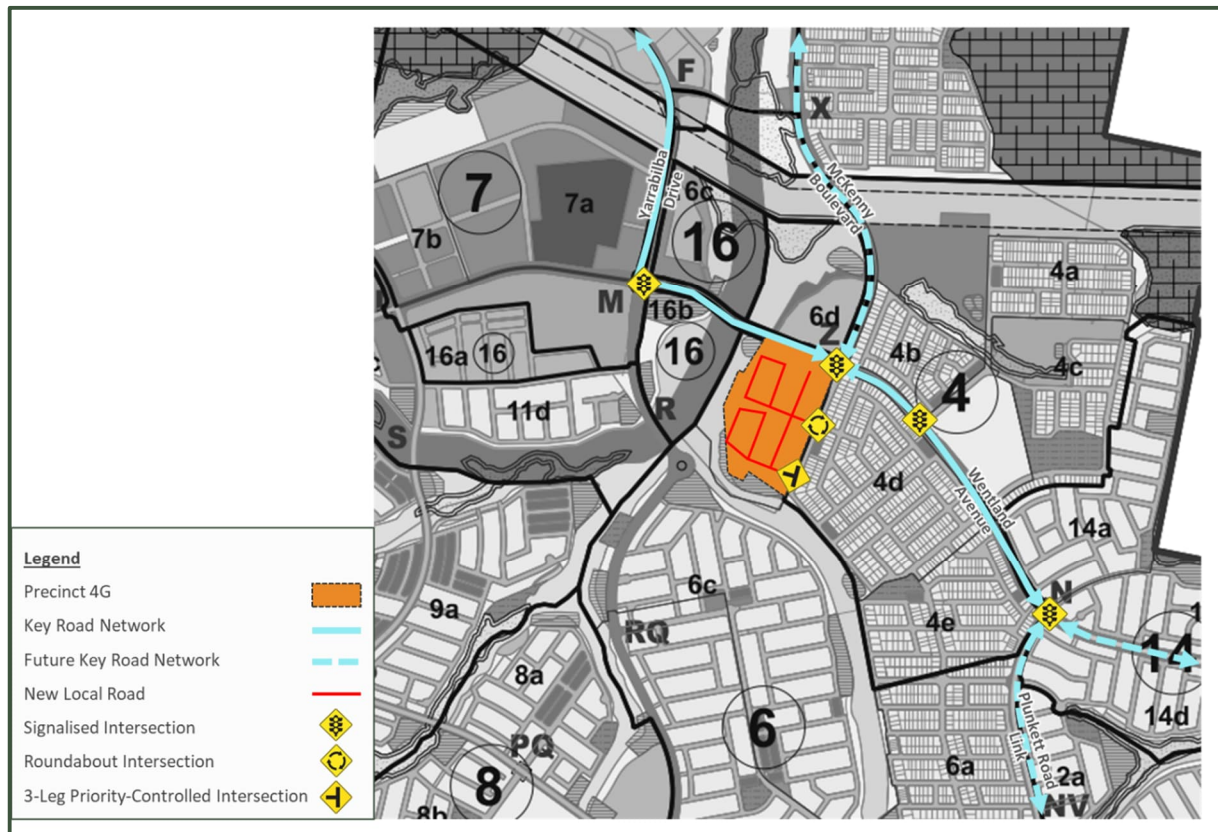


3.0 Design Review

Precinct 4G does not include any major road connections which differ to what was identified in the Endorsed MIMP (2019) or the Current MIMP (2022), nor does it propose any changes to these roads. As such, the design review undertaken as part of this traffic assessment focuses on the geometric suitability of the lower order roads and connections specific to the Precinct 4G network.

For completeness the location of Precinct 4G has been illustrated on **Figure 3** with respect to the wider road alignments, intersection locations and control types.

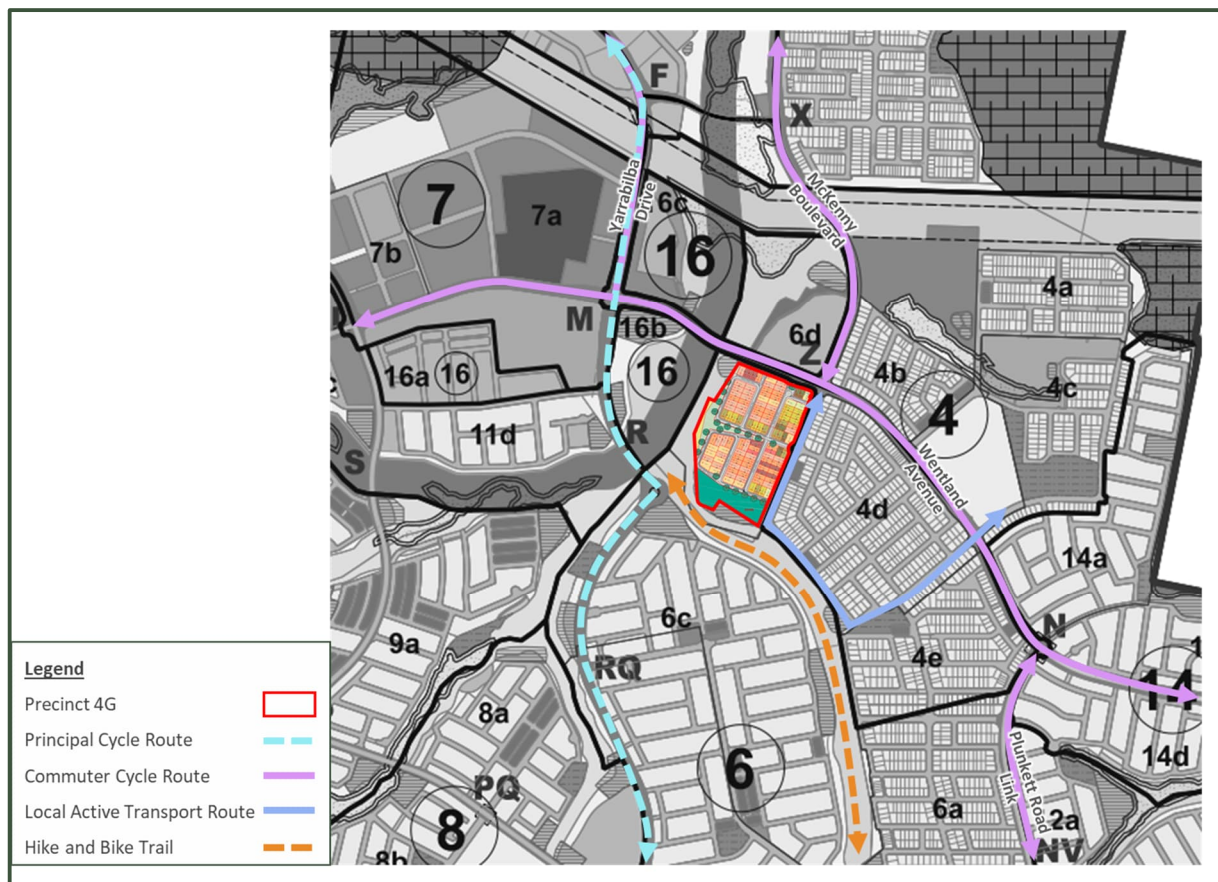
Figure 3: Precinct 4G External Road Connections



- Principal Cycle Route – On-road cycle lanes and off-road shared paths are constructed along both sides of Yarrabilba Drive, as consistent with the Movement IMP.
- Commuter Cycle Route – On-road cycle lanes are constructed along both sides of Wentland Avenue.
- Commuter Cycle Route – A dedicated off-road shared pedestrian / cycle path (or similar) exists, and is proposed to continue on the eastern / northern side of Wentland Avenue.
- Local Active Transport Routes – Shared pedestrian/cycle paths (2.5m wide) to provide connections between residential precincts throughout the Yarrabilba Master Plan Area.
- Hike and Bike Route – an off-road trail is proposed to travel north-south within the future green space along the southern side of Precinct 4G.

The indicative alignments of these routes as identified in the Endorsed MIMP (2019) and Current MIMP (2022) are illustrated on **Figure 4** in the context of Precinct 4G.

Figure 4: Surrounding Active Transport Routes



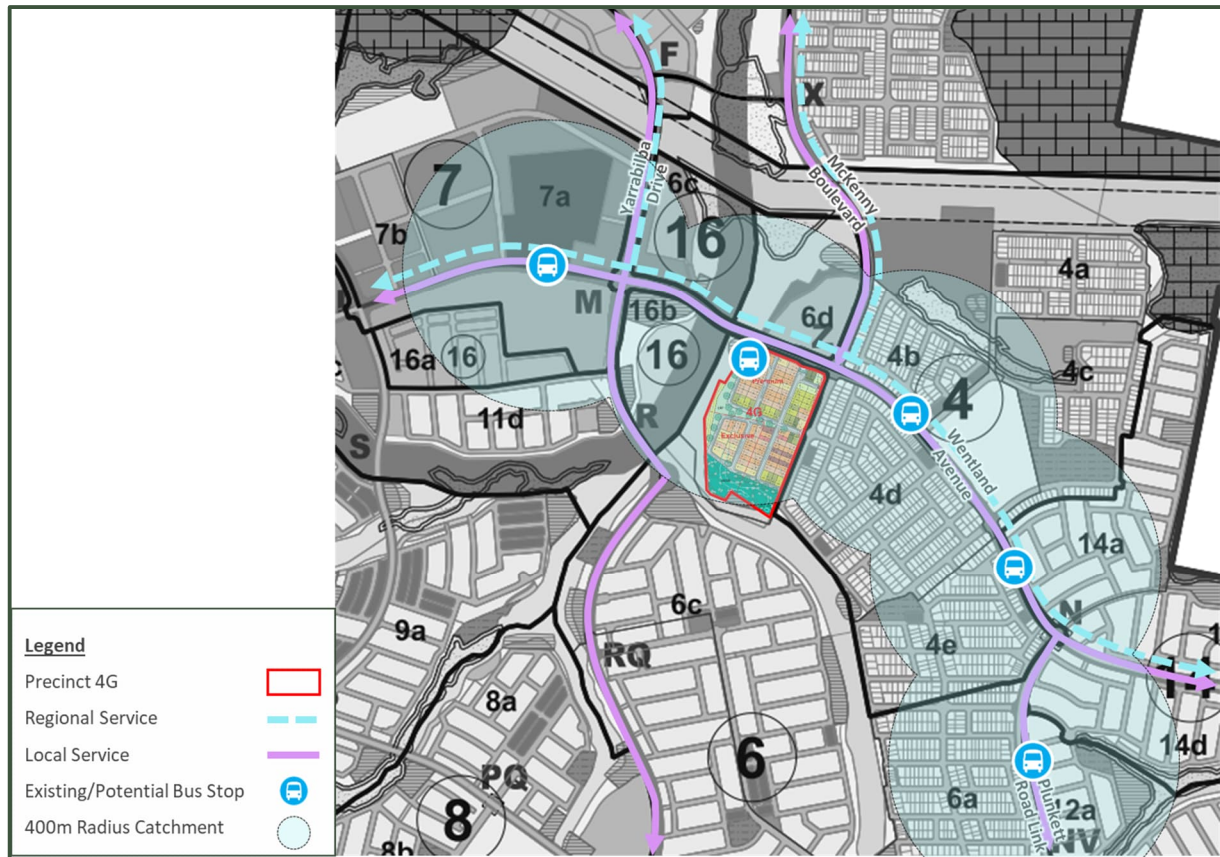
3.3 Public Transport Provisions

In accordance with the provisions outlined in the Movement IMP, the Yarrabilba Master Plan Area aims to provide public transport connections within a 400m walking distance of residents within precinct developments. Whilst Precinct 4G does not include any bus stops or potential routes within the ROL boundary, a catchment assessment has been completed on the broader planned network to ensure appropriate accessibility is achieved.



Figure 5 highlights the indicative bus routes as well as indicative bus stops (existing and planned) surrounding the Precinct 4G development. This identifies that all lots in Precinct 4G will be within 400m of a proposed bus stop.

Figure 5: Public Transport Accessibility



It is recognised that bus services may not be implemented by TransLink on the identified routes (this is to be negotiated by contract with the bus operator, Lendlease and TransLink), however the relevant roads have been designed to enable such bus routes to occur. Existing bus stops which formed part of previous applications have been approved and constructed in accordance with TransLink's Public Transport Infrastructure Manual (**PTIM**).

On this basis, the public transport stops proposed to be constructed within the wider Precinct 4 will adequately service the catchment and satisfy the requirements of the Endorsed MIMP (2019) and the Current MIMP (2022).



4.0 Traffic Analysis

4.1 Assessment Scope

As addressed in **Section 1.3**, after the traffic modelling exercise was completed in 2015, the internal road network and land use zoning has been continually revised by Lendlease as construction has progressed and development master planning has been revised to reflect market conditions. As such, new traffic modelling was conducted in 2018 to facilitate a more accurate assessment of the development as it is currently proposed or in place, the results of which have been utilised herein.

This 2018 traffic model update was completed using the most recent demographic (land use, yield, and location) and geographic (road alignment) information provided by Lendlease at the time. This consisted of indicative land use zoning, proposed internal road network (including geometry and hierarchy). The movement and road network has been informed by the anticipated traffic demands using the outputs of the traffic modelling.

In particular, the development yield now proposed (i.e., 116 residential lots) for the Precinct 4G area (and hence its traffic generation) is much lower compared to the assumptions adopted in this most recent modelling (i.e., 279 residential lots). The latter modelling has been used to inform the design of the intersections, including those along Wentland Avenue. For that reason, no further traffic analysis is necessary for the intersections along Wentland Avenue.

Note that the traffic impacts of Precinct 4G has been previously considered in this report, when Precinct 4G was referred to as Precinct 5.

The roundabout intersection located to the south of Wentland Avenue, identified as Diamond Drive/Belhaven Avenue/Access to Precinct 4D, will function as the main access to Precinct 4G. This intersection has yet to be assessed and has been evaluated herein.

4.2 Development Scenarios

In accordance with the traffic model undertaken in 2018 the following two scenarios have been considered:

- Scenario 1: Interim (2031) – assumes partial (approximately 75%) development of the Yarrabilba Masterplan excluding some precincts to the south and east predominantly. This scenario also assumes no external road connections to the south via Plunkett Road are constructed.
- Scenario 2: Ultimate – which assumes the full development of the wider Yarrabilba Masterplan, with a completed external road network in line with the Movement IMP (including a future connection to the Southern Infrastructure Corridor).

The following aspects influencing the traffic volumes associated with the identified intersection (Diamond Drive/Belhaven Avenue/Precinct 4D/4G Access) during the two scenarios listed above have been considered:

- Both precincts 4G and 4D that will obtain access off the identified roundabout, will be fully constructed before 2031 and therefore operational during both scenarios.
- The connectivity to the wider area established as part of the ultimate scenario will not affect the traffic distribution at the identified intersection.

Taking cognisance of the above and considering the operation at the identified intersection during the two scenarios, it was deemed sufficient that only the Ultimate Year Scenario be evaluated.



4.3 Precinct 4G Development Traffic Assumptions

4.3.1 Traffic Generation

In line with previous assessments and the traffic model of 2018, a traffic generation rate of 0.7vph/lot has been applied to the development yield (see **Table 1**).

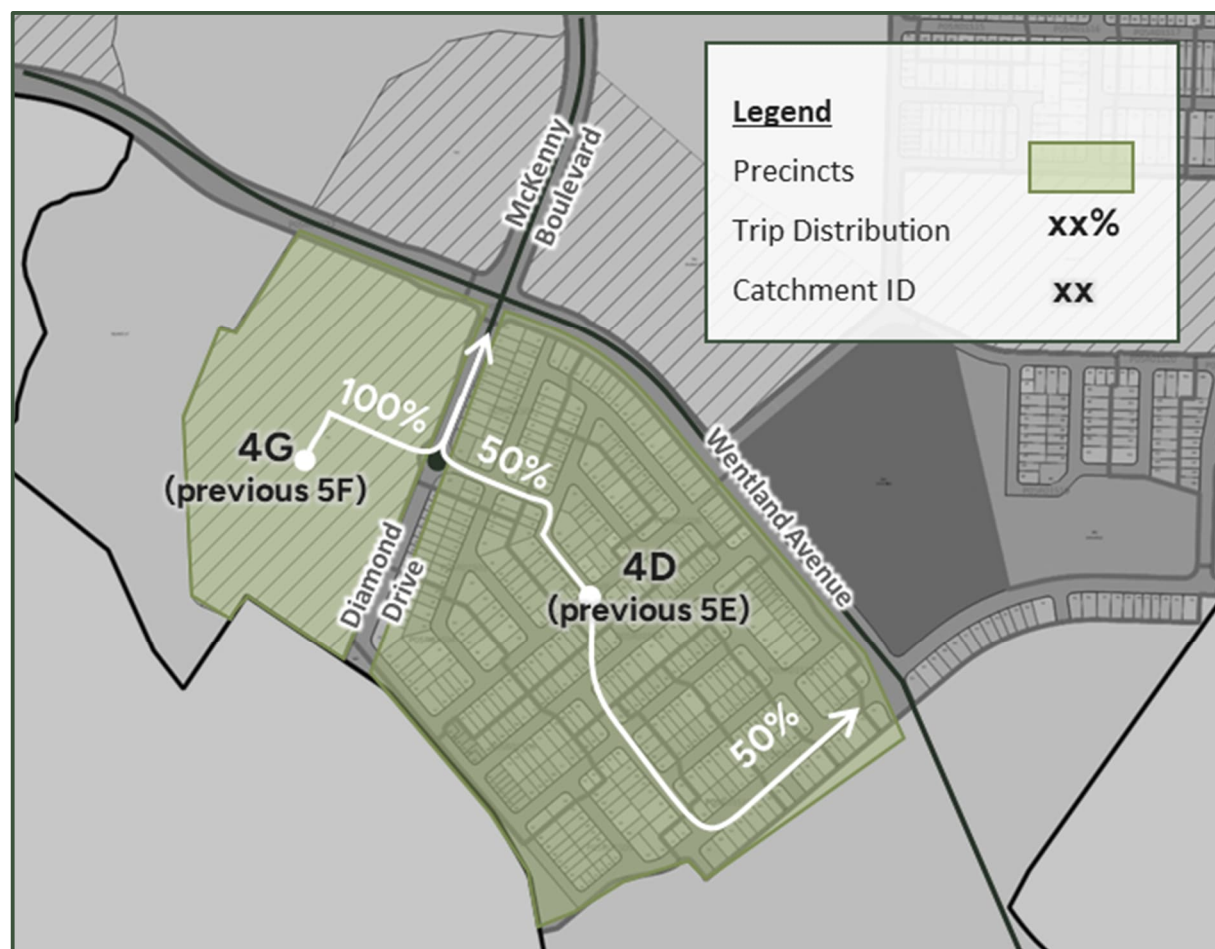
Table 1 Precinct 4D and 4G Trip Generation – Residential

Sub-Precinct	Number of Lots	AM Trip Rate	PM Trip Rate	AM Trips	PM Trips
4D	433	0.7 per lot	0.7 per lot	303	303
4G	116			81	81

4.3.2 Trip Distribution

To quantify the traffic movements at the identified roundabout, the trip distribution as per the 2018 traffic model was adopted and can be seen in **Figure 6**.

Figure 6 Traffic Distribution



4.3.3 In / Out Split

Typical industry adopted in / out splits have been adopted for the residential development, in accordance with the traffic model (2028) and is summarised in **Table 2**.



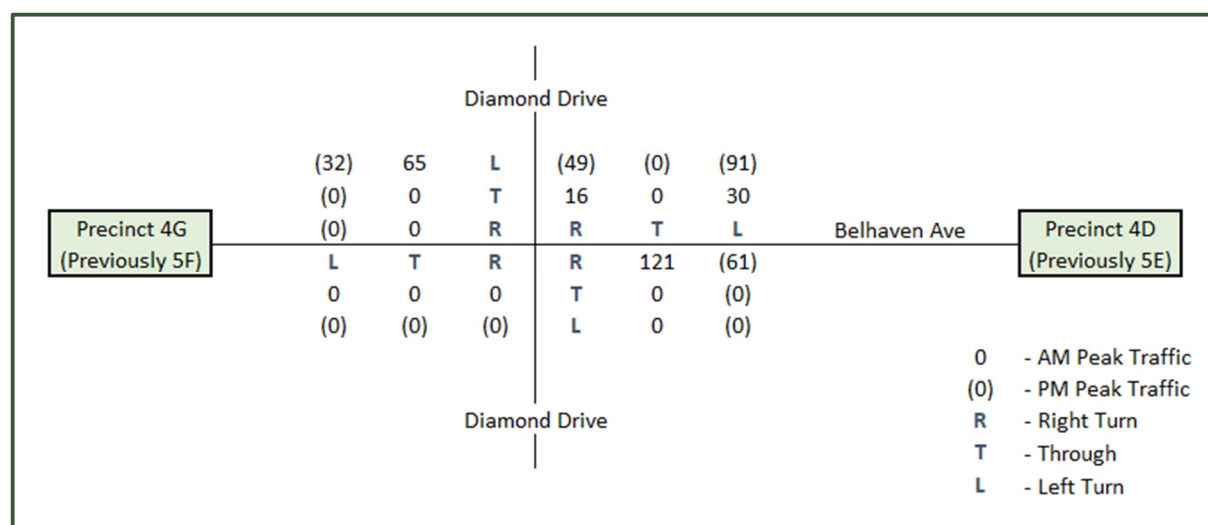
Table 2 In / Out Split

Peak Period	Residential Trips	
	IN	OUT
AM	20%	80%
PM	60%	40%

4.3.4 Traffic Volumes

The resultant traffic volumes are provided in the diagram below, see **Figure 7**.

Figure 7 Development Traffic



4.4 Scenario 2 – Ultimate

The performance of the identified intersection has been assessed for the Ultimate scenario in SIDRA 9.1. The analysis results are summarised in **Table 3**, with the detailed outputs (including intersection layout plans) provided in **Appendix B**.

Table 3 Summary of Intersection Results - Diamond Drive/Belhaven Avenue/Precinct 4D/4G Access

Peak Period	DoS	Average Delay (s)	95 th ile queue (m)
AM Peak	0.10	7	4
PM Peak	0.11	6	4

The results reported in **Table 3** confirm that the existing design for the roundabout will result in performance at acceptable conditions with ample spare capacity during the Ultimate scenario (Scenario 2).



5.0 Summary

The following summarises the key conclusions in respect of the traffic and transport aspects of Precinct 4G, with consideration of the Yarrabilba Movement Infrastructure Master Plan (MIMP):

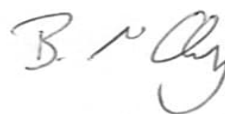
- Road Hierarchy – The roads proposed within Precinct 4G are consistent with and do not affect the alignment or provision of key roads as identified within the Endorsed MIMP (2019) and the Current MIMP (2022).
- Local Street Network – The local street network will comprise a network of local streets and local access streets. This is designed to achieve good street design principles, particularly related to local traffic speeds and active transport needs.
- Active Transport – The active transport provisions are consistent with the Endorsed MIMP (2019) and the Current MIMP (2022) and are appropriate to satisfy the needs of Precinct 4G in conjunction with the surrounding development of Yarrabilba.
- Public Transport – The layout and design of the surrounding network includes an appropriate provision for public transport (bus services) and potential bus stops. This is consistent with the Endorsed MIMP (2019) and the Current MIMP (2022).
- Traffic Considerations:
 - The design and configuration of the key road network has been informed by the anticipated traffic demands using the outputs of the most recent traffic modelling performed in 2018. The proposed development yield is lower than the adopted yield for the 2018 modelling. Thus, no further analysis is deemed necessary for intersections along Wentland Avenue.
 - The designed form of the roundabout located to the south of Wentland Avenue (Diamond Drive/Belhaven Avenue/Precinct 4D/4G Access) is appropriate to accommodate the anticipated traffic volumes within Precinct 4G and Precinct 4D and is adequate to facilitate the needs of the ultimate Yarrabilba development.

Regards,

SLR Consulting Australia Pty Ltd



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Appendix A Precinct 4G Development Plans



- PRECINCT FOUR - APPLICATION SEVEN BOUNDARY
- STAGE BOUNDARY
- OPEN SPACE - LINEAR AND STORMWATER QUALITY BASIN
- OPEN SPACE - LOCAL RECREATION PARK
- LOCAL STAGE ROAD

LOT YIELD BY LOT TYPE						
LOT TYPE	No.	No. %	AREA	AREA%	MINIMUM	MAXIMUM
T2	16	13.79%	9791.50m²	16.63%	576.00m²	611.97m²
T5	4	3.45%	2235.06m²	3.80%	540.00m²	597.09m²
C2	23	19.83%	10893.12m²	18.51%	448.00m²	583.04m²
C3	36	31.03%	19113.85m²	32.47%	512.00m²	608.03m²
C4	9	7.76%	4480.03m²	7.61%	480.00m²	552.00m²
C5	11	9.48%	5376.14m²	9.13%	420.00m²	664.75m²
PV	8	6.90%	3492.02m²	5.93%	400.00m²	557.12m²
PV2	6	5.17%	2445.03m²	4.15%	375.00m²	431.36m²
V	3	2.59%	1035.30m²	1.76%	336.00m²	345.10m²
TOTALS	116	100%	58862.05m²	100%	336.00m²	760.25m²

LAND USE	AREA (ha)
Residential	5.886 ha
Open Space - Local	0.809 ha
Open Space - Linear	5.444 ha
Road - Local Road	2.265 ha
TOTAL	14.404 ha

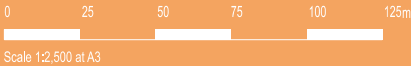
MINIMUM RESIDENTIAL DENSITY - 8.906ha
116dw
13.02 dw/ha
MAXIMUM RESIDENTIAL DENSITY - 8.906ha
116dw
13.02 dw/ha

NOTE:
MINIMUM DWELLINGS is based on the development of one dwelling on each single family and multi-family strata (MFS) lot.
MAXIMUM DWELLINGS is based on the development of one dwelling on each single family lot, and three dwellings on each multi family strata (MFS).

DENSITY calculations include the area of residential lots, local roads and credited park. The boundaries, roads and pathways shown hereon are subject to detailed engineering design, final survey and approval of subsequent development applications by the relevant authorities.

PRECINCT 04 - APPLICATION SEVEN
RECONFIGURATION OF A LOT

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- LEGEND
- OPTIONAL BUILD TO BOUNDARY
 - NO VEHICULAR ACCESS
 - PROPOSED STAGE BOUNDARY
 - PRECINCT 4 - APPLICATION SEVEN BOUNDARY
 - POTENTIAL ENTRY STATEMENT LOCATION
 - BIN PADS FOR SHARED COMMON DRIVEWAYS
 - MIN. BUILDING SETBACK TO UNMANAGED VEGETATION
 - ACOUSTIC ATTENUATION MAY BE REQUIRED (in accordance with Traffic Noise Assessment report prepared by MVA Environmental)
 - NO BUILDING ADJOINING ELECTRICAL TRANSFORMER

*** Dwelling to address the primary frontage by incorporating the following:
- Entry, porch/verandah
- Principal front door and windows
- Letterbox
- Pedestrian Access
- Max. fence height of 1.2m

SETBACK TABLE

LOT TYPE		GROUND FLOOR			FIRST FLOOR			CORNER LOTS - SECONDARY FRONTAGE
		FRONT - PRIMARY FRONTAGE	REAR AND SIDE (to wall)	BUILD TO BOUNDARY	FRONT	SIDE	REAR	
(T2, T5)	TRADITIONAL	3.0	0.9	N/A	3.0	2.0	0.9	1.5
(C2, C3, C4, C5)	COURTYARD	3.0	0.9	0.0	3.0	1.0	0.9	1.5
(PV, PV2)	PREMIUM VILLA	3.0	0.9	0.0	3.0	1.0	0.9	1.5
(V)	VILLA	3.0	0.9	0.0	3.0	1.0	0.9	1.5

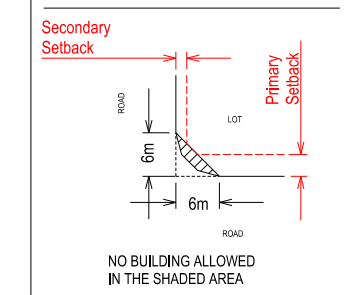
NOTE:
ALL GARAGES MUST BE SETBACK 5.0m TO THE FRONT WALL AND A FURTHER 240mm TO THE GARAGE DOOR. SETBACKS ARE AS PER TABLE UNLESS OTHERWISE DIMENSIONED. ALL SETBACKS ARE TO WALL (EXCLUDES TCD ALLOTMENTS).
WHERE THE LOWER FACE OF A REAR BOUNDARY RETAINING WALL EXCEEDS 2M IN HEIGHT THE MINIMUM SETBACK IS 2.5M TO THE GROUND AND SECOND FLOOR OF THE DWELLING.
* INCLUDES GARAGES

RETAINING WALL HEIGHT TABLE

	LOT TYPE	Traditional	Courtyard	Premium Villa	Villa	Maximum Retaining Height
EARTHWORKS						
Front	Cut Average	1.5	1.4	1.25	1.0	1.8
Boundaries						
Side	Cut Average	1.0	0.7	0.6	0.5	1.8
Boundaries	Fill Average	1.5	0.7	0.6	0.5	1.0
Rear	Cut Average	1.5	1.5	1.5	1.5	1.8
Boundary						
						Fill Maximum height of 1.0 m

NOTE: RETAINING WALLS WITH A HEIGHT OF 1.0M OR MORE REQUIRE RPEQ CERTIFICATION

SPECIAL SITING REQUIREMENTS FOR CORNER ALLOTMENTS



THESE CRITERIA MUST BE READ IN CONJUNCTION WITH RESIDENTIAL PLAN OF DEVELOPMENT SHEET 1 OF 2 [DGN No YAR-P04ROL7-POD230919] - DESIGN CRITERIA FOR RESIDENTIAL DEVELOPMENT

PRECINCT 04 - APPLICATION SEVEN
PLAN OF DEVELOPMENT

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- 1. General:**
- i. Easements over infrastructure have not been shown which may affect setbacks. Eaves must not protrude into easements.
 - ii. The maximum height of unattached buildings shall not exceed 8.5m above natural ground level. For attached buildings on lots greater than 450sqm a building height of 10.5m may be permitted as measured from the natural ground level.
 - iii. It is assumed that the pad level of each block will be the average of the four corners of the block.
 - iv. Buildings will be built to this pad level unless the consent of property owners on both sides of the block is obtained to vary the pad level.
 - v. Acoustic treatment may be required for some lots, refer to report prepared by MWA Environmental.
 - vi. Construction standards/setbacks may be affected by bushfire risk. Refer to the Sub-Precinct Specific Bushfire Hazard Assessment and Mitigation Plan for Precinct 4 Application 7 Yarrabilba, prepared by Bushfire Protection Systems Pty Ltd.

- 2. Setbacks:**
- i. Setbacks are as per the Setback Table included on the Plan of Development unless otherwise specified.
 - ii. All setbacks are measured to the wall. No projection will be closer to a side boundary than 450mm including gutter or fascia, with the exception of any eave returning to a build to boundary wall.
 - iii. Front verandah and covered areas to the front door are permitted to extend into the front setback on the condition that the roofed area is not enclosed. For front setbacks, this roofed area can extend to 1.0m from the front property line.
 - iv. The build to boundary line is nominated on this plan. The length of wall built to this boundary is not to exceed 15.0m (excluding the terrace product) unless specified otherwise in a Plan of Development. Parapets are considered to be a wall and are to comply with the Setback table included on the Plan of Development.
 - v. Buildings to be sited in accordance with the 'Special Siting Requirements for Corner Allotments'.
 - vi. Front setbacks on corner lots are determined by the frontage that the primary facade is addressing. The primary frontage is taken to be the frontage where the front door and letterbox is located.
 - vii. Allotments containing or adjoining the lower face of a rear retaining wall exceeding 2.0 metres in height are required to have a minimum rear setback of 2.5m to the rear property boundary from the ground and second floor of the dwelling.

- 3. Site Cover and Amenity:**
- i. Site cover for each lot is not to exceed the following:
 - a. 80% for dual attached lots;
 - b. 65% for build to the boundary lots;
 - c. 60% for lots that do not use a build to boundary;
 - ii. Total outdoor private open space accessible from the ground floor dwelling, either covered or uncovered, should be generally flat without any fall exceeding 70mm vertical or every 1.0 m horizontally. Private outdoor space excludes area for driveways and must include an area with a minimum dimension of 2.4m. The total outdoor space should equal at least 15% of the total site area.

- 4. Parking, Garages and Carports:**
- i. Each allotment must provide one covered car parking space.
 - ii. Carports must include a roof design, design features and materials which are consistent with the form and materials of the home.
 - iii. Carports must include either a garage door at the front or screening to the rear.
 - iv. Any column or wall provided to support a carport must be set back a minimum of 5.0m from the front boundary of the property.
 - v. For garages on front loaded lots less than 10m in width the following criteria must be met:
 - Single storey homes must have a single or tandem garage
 - Double storey homes can have a double garage provided the 2nd floor front wall or balcony is a minimum of 560mm forward of the garage wall.

- 5. Driveways:**
- i. The driveway must be laid at the grade of the adjacent verge area. No grade change to the verge for the construction of a driveway will be allowed.
 - ii. Where there is a footpath within the verge, the driveway prevails, i.e. the portion of the footpath where the driveway crosses is removed.
 - iii. Maximum driveway grades within lots must not exceed 1:5 or 1:4 with transitions at both ends of the driveway.
 - iv. Driveways must be offset at least 300mm from the side property boundary.
 - v. Driveways must be completed prior to occupation and be located as shown on the approved Functional Layout Roadworks Plan, unless otherwise agreed by DSDMIP.
 - vi. Driveways across the verge cannot exceed 3.0m for a single garage or 5.0m for a double garage.
 - vii. Driveways, unless varied by a provision above, shall accord with Logan City Council's standards (except for the driveway siting requirements in relation to intersections which is as per the approved POD). Prior to construction, approval from Logan City Council for Vehicular Access to Residential Premises is required.

- 6. Retaining Walls, Earthworks and Sloping Land (where occurring following construction by Lendlease):**
- i. Retaining wall heights must not exceed those nominated in the Retaining Wall Heights table included on the Residential Plan of Development.
 - ii. If these requirements are not able to be achieved, construction methods other than slab on ground construction are to be used.
 - iii. If elevated construction is to be used, under floor services must be located or screened to minimise their appearance to adjoining properties and public spaces.
 - iv. Retaining walls along street or park frontages cannot exceed 1.0 m in height. A planted strip of a minimum width of 500mm must exist between any terraced retaining walls.
 - v. Retaining walls to side boundaries between lots cannot exceed 1.8 metres high at the front wall of the house and must taper down to natural ground level forward of the house.
 - vi. Retaining walls over 900mm high require a 1 metre high fence above the wall and adequate landscape screening.
 - vii. Where the block allows for build to the boundary, the build to the boundary wall must be projected to 150mm below the likely pad level of the adjacent block. The pad level can be assumed to be the average of the four corners of the adjacent block using the As Built levels. The build down or the build to boundary wall must be in a material consistent with the wall above it.
 - viii. The front wall of the home must not be more than 50% below the midpoint level of the front boundary.

7. External Building Materials:
No raw, unfinished or untreated materials are permitted for external building works. This includes galvanised iron, zinc or aluminium coated steel, corrugated or unpainted fibre cement sheeting and bare, painted or uncoloured concrete block work or commons brickwork.

- 8. Front Facade Articulation:**
- i. Facades of the home fronting the street must include a highly visible entry and include a substantial verandah or include two materials or finishes to the entry.
 - ii. Homes must include articulation between the alignment of the front wall and the garage on the primary frontage. The minimum acceptable alignment variation is 560mm. Garages are permitted to be a maximum 1.0m forward of the front building wall where the roof of the entry is positioned forward of the roof of the garage.
 - iii. Double storey homes which incorporate a verandah or balcony to the first floor to at least 40% of the front elevatio width do not require articulation between the alignment of the front wall and the garage.

9. Homes with more than one Visible Facade (Corner Homes/Homes with frontage to park):
Homes on corners or with park frontage must provide feature windows and detailing to match the front elevation along the secondary frontage or extend the detailing of the priority street facade to the front four metres of the secondary frontage.

- 10. Fencing:**
- i. Any fencing on the primary street frontage is to be a maximum of 1.2 metres in height and decorative in style, except for regulation fencing required around pools.
 - ii. Fencing up to 1.5 m in height will be permitted on primary street frontages if it is:
 - a. an open style fence that is 50% transparent, or
 - b. is a courtyard wall constructed of face brickwork or masonry piers with coloured render or textured finish
 - iii. Fencing provided to a secondary street frontage can be up to 1.8 metres in height and must be decorative fencing.
 - iv. All side fencing must either return to the house a minimum of 1.0 metre behind the front building line or continue forward of the front building line as decorative fencing.
 - v. Decorative fencing is to be constructed of rendered and painted masonry piers or painted or stained posts, with infill panels of coloured metal tube, painted or stained timber palings or horizontal battens. Timber paling fences will only be accepted if they are painted and treated with decorative capping or trims and provided with pronounced posts.
 - vi. Secondary street frontage fencing must finish 4 metres behind the front wall of your home.
 - vii. Untreated or coloured metal sheeting or fibrous cement is not acceptable as a decorative fence.
 - viii. Fencing and retaining walls erected by Lendlease must not be altered, removed or modified in any way, without the prior written approval from Lendlease.

11. Landscaping:
At least 50% of your front yard is landscaped with grass and/or garden beds. 25% of the front yard must be planted garden beds with trees and/or shrubs capable of growing to 3 metres tall and at least 600mm high at the time of planting. Refer to the preferred Yarrabilba plant species list for guidance.

- 12. Outdoor Structure and Services**
- i. All outdoor structures visible from the street or public spaces including but not limited to, roof or wall mounted air-conditioning units, satellite dishes, antennas, sheds, water tanks and clotheslines must be suitably screened and located to minimise detrimental visual impact.
 - ii. Solar panels and collectors for hot water units are the exception to this standard when orientated to maximise their effectiveness.

- 13. Houses on Narrow Residential Lots (10m-12.49m in width)**
Houses on Lots 10m-12.49m in width must adhere to the following design criteria:
- i. The front facing building wall, which comprises the garage door must not exceed an external width of 5.7m.
 - ii. The garage door:
 - a. Width must not exceed 4.8m;
 - b. Must have a minimum 450mm eave above it;
 - c. Must be setback a minimum of 240mm behind the garage wall and
 - d. Must have a sectional, tilt or a roller door.
 - iii. The front facade of the dwelling must be forward of the alignment of the garage wall and must include the following:
 - a. A front entrance door and glass and/or a side light is required where there is no habitable room facing the street.
 - b. A front verandah, portico or porch located over the front entrance, which extends a minimum of 1600mmmm forward of the entrance door.
 - c. The verandah, portico or porch is to include front piers with distinct materials and / or colours.

- 14. Residential Lots with Park Frontage**
- i. Fencing along park frontages must be:
 - a. 1.2m high solid; or
 - b. Up to 1.8m high if containing openings that make it more than 50% transparent.
 - ii. Dwellings are designed to include habitable rooms that face the park.

15. Secondary Dwellings

Minimum Lot Size	Secondary dwellings are not permitted on lots less than 400sqm in size.
Floor Area of Secondary Dwelling	Maximum 60sqm GFA
Design and Siting of buildings and structures	The dwelling / secondary dwelling must have the design effect of one (1) single dwelling from the road / street frontage or within public view.
Materials and Detailing	Materials, detailing, colours and roof forms and consistent with those of the primary house.
Outdoor Living Space	Minimum 9sqm with a minimum dimension of 3m and directly accessible from a main living area.
Driveway	The secondary dwelling must share the driveway of the primary dwelling.
Car Parking and Garaging	Minimum one space in addition to the primary dwelling requirement – with minimum dimensions of 5m x 3m.
Street Surveillance	On a single street frontage, the secondary dwelling entry must be hidden from view from the street, so as to give the effect that the home is one (1) single residential dwelling.
Letterboxes	Any secondary dwelling is not permitted its own letterbox and must be shared with the primary dwelling.
Titling	Any secondary dwelling is unable to be separately titled to the primary dwelling.
Separate Services	No separate infrastructure servicing to the secondary dwelling is permitted (i.e., water, gas, electricity).

16. Electronic Vehicle Readiness:
Each dwelling is to include a separate dedicated electrical circuit (conduit and wiring) into the garage or carport to enable the installation of Electric Vehicle Supply Equipment. Where not used for Electric Vehicle Supply Equipment, the circuit is to be fitted with a minimum 15amp GPO outlet.

- 17. Criteria for Variations to an approved plan assessed via compliance assessment**
Applications for compliance assessment to vary the layout must be in accordance with the criteria outlined below. Changes that are not in accordance with these criteria will require lodgement of a change application, pursuant to Section 99 of the Economic Development Act 2012.
- i. Minor variation to the boundaries of parks subject to achieving the following:
 - a. The size of the park does not vary by +/- 5%;
 - b. The boundary of a park does not vary by more than 10m in any direction; and
 - c. No change to the location and classification of the proposed park are made; and
 - d. Minimum park size and embellishments under Community Greenspace IMP and EDQ Park Planning and Design Guideline 12 and met; and if it is required to accommodate a pad mount transformer- with a maximum area of 5m x 5m.
 - ii. Minor variations to the road network subject to achieving the following:
 - a. The classification of the road is not varied;
 - b. The location of a road is moved by not more than 10m in any direction;
 - c. Any change to a road location does not result in a new intersection within 50m of another intersection; and
 - d. The change of the road does not result in a block length of more than 200m; and
 - e. Retains grid or modified grid responsive to site characteristics; and
 - f. Does not result in an additional cul de sac; and
 - g. Demonstrate the variation accords with provisions within Guidelines 5, 6 and 13.
 - iii. Variation to lots subject to achieving the following:
 - a. The total number of lots is within +/- 5% of the number of lots already approved; and
 - b. The footprint of the lots is within the existing residential lot footprint (with the exception being where a road is moved in accordance with the provisions in Item b(i) above; and
 - c. It can be demonstrated where a lot increase is proposed that adequate on-street parking exists for visitors to the lots; and
 - d. Where a paramount transformer is required - max 5m x 5m.
 - iv. Variation to the approved POD where:
 - a. To amend setbacks as a result of a lot change; or
 - b. To change the location of a built to boundary wall or driveway.
 - c. It is noted a compliance assessment process cannot be used once any lot in the stage subject to the change has been sold.
 - v. Variations to staging or creation of sub-stages:
 - a. Permitted when not resulting in a park being created in a stand-alone stage or where a park is in the final stage with less than 10 residential lots associated with it.

Where a variation is proposed, the applicant must submit to EDQ for compliance assessment:

- i. A statement demonstrating compliance with the criteria above and relevant section of PDA Guidelines and Practice Notes.
- ii. Where minor variations are required due to detailed engineering design a statement outlining the
- iii. Reason for the variation and how the variation responds to Guidelines 13-Engineering Standards.
- iv. Updated RCL and POD plans as applicable.
- v. Updated Functional Layout Plans (if applicable)



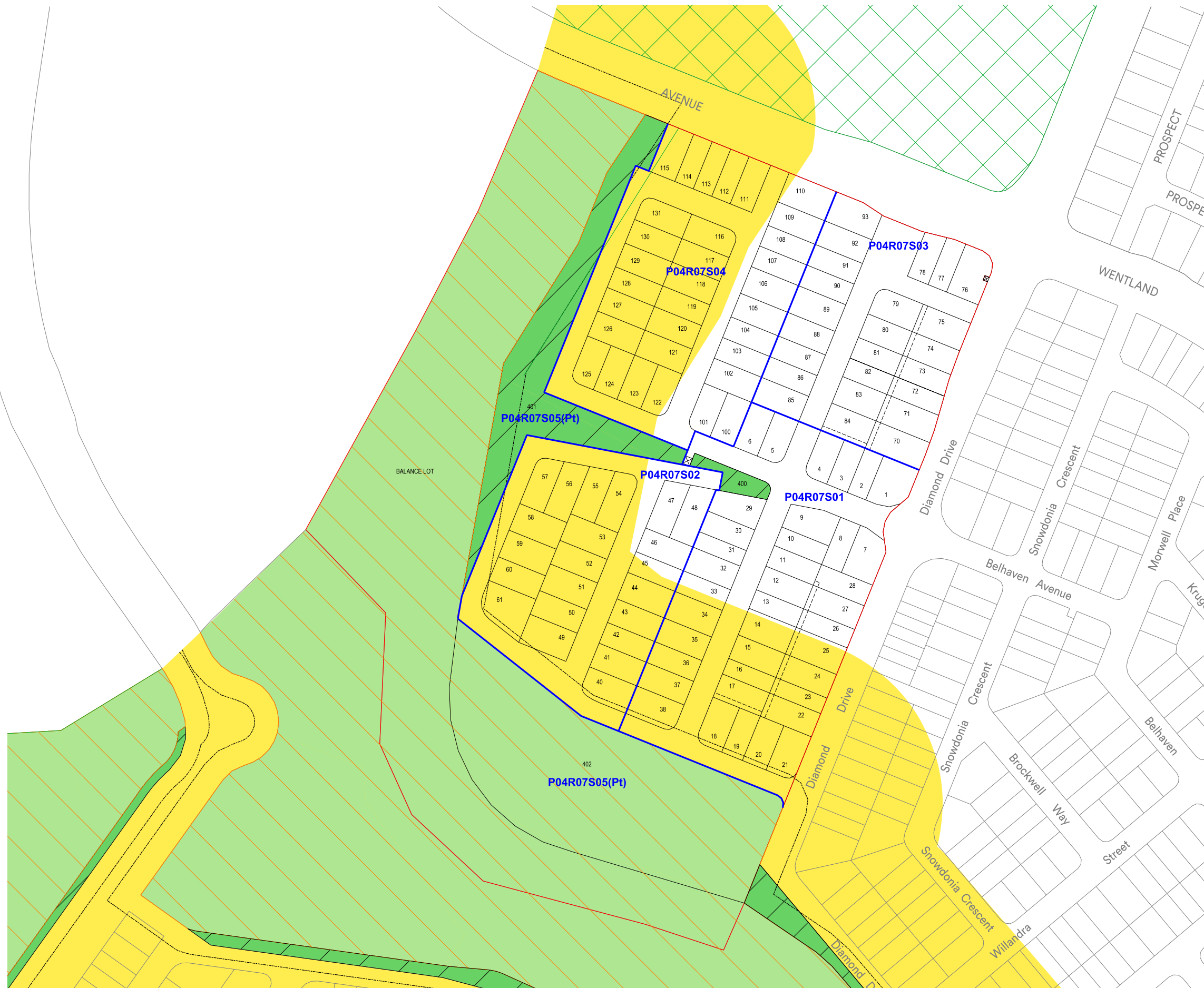
PRECINCT 04 - APPLICATION SEVEN - PLAN OF DEVELOPMENT - DESIGN CRITERIA

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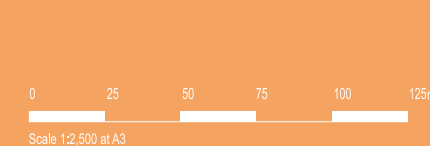
- PRECINCT FOUR - APPLICATION SEVEN BOUNDARY
- STAGE BOUNDARY
-  LOW BUSHFIRE HAZARD RATING
-  MEDIUM BUSHFIRE HAZARD RATING
-  POTENTIAL BUSHFIRE IMPACT ZONE
-  LINEAR PARK MANAGED
-  LINEAR PARK UNMANAGED
-  MINIMUM BUILDING SETBACKS

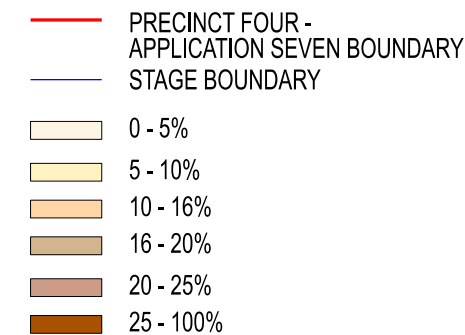
PREPARED BY LENDLEASE ON BEHALF OF
BUSHLAND PROTECTION SYSTEMS



PRECINCT 04 - APPLICATION SEVEN BUSHFIRE HAZARD ASSESSMENT AND MANAGEMENT PLAN

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PRECINCT 04 - APPLICATION SEVEN DESIGN SURFACE ANALYSIS

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- PRECINCT FOUR - APPLICATION SEVEN BOUNDARY
- STAGE BOUNDARY
- LOTS LESS THAN 250sqm
- LOTS BETWEEN 250sqm AND 450sqm

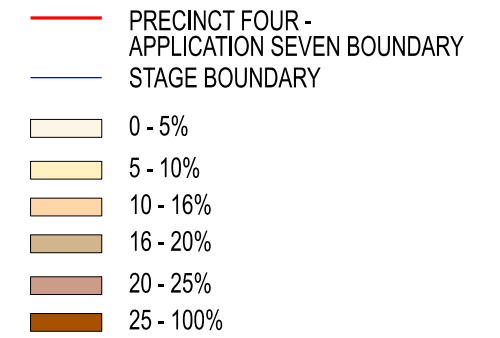


PRECINCT 04 - APPLICATION SEVEN LOTS LESS THAN 450sqm

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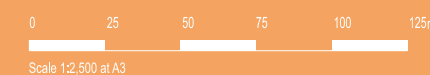
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Scale 1:2,500 at A3





PRECINCT 04 - APPLICATION SEVEN NATURAL SURFACE ANALYSIS

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- PRECINCT FOUR - APPLICATION SEVEN BOUNDARY
- STAGE BOUNDARY
- OPEN SPACE - LINEAR
- OPEN SPACE - STORMWATER QUALITY BASIN
- OPEN SPACE - LOCAL RECREATION PARK



PRECINCT 04 - APPLICATION SEVEN OPEN SPACE PLAN

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Scale 1:2,500 at A3



Appendix B SIDRA Analysis Results



SITE LAYOUT

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

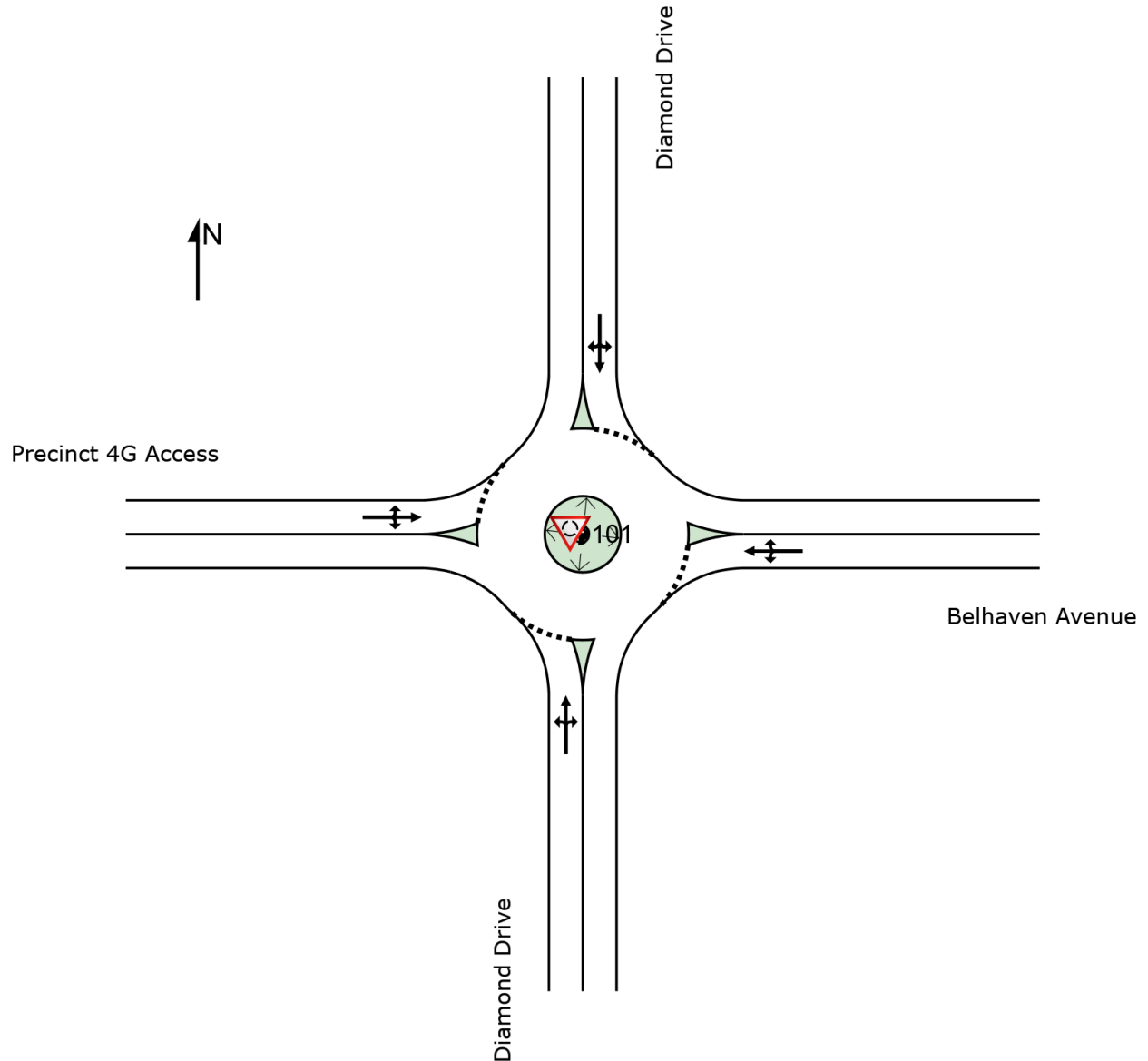
Diamond Drive / Belhaven Ave / G4 Access

Prepared: NN

Site Category: (None)

Roundabout

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



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Project: H:\Projects-SLR\620-BNE\620-BNE\620.11743 Yarrabilba Master Plan Development\06 SLR Data\Precinct 4 (previous P5)\2023 07 05 - P4G SIDRA\4G Roundabout_Diamond Drive & Belhaven Ave.sip9

MOVEMENT SUMMARY

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

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Diamond Drive / Belhaven Ave / G4 Access

Prepared: NN

Site Category: (None)

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Diamond Drive															
1	L2	All MCs	5	3.0	5	3.0	0.015	5.4	LOS A	0.1	0.5	0.30	0.55	0.30	51.9
2	T1	All MCs	5	3.0	5	3.0	0.015	5.6	LOS A	0.1	0.5	0.30	0.55	0.30	52.3
3	R2	All MCs	5	3.0	5	3.0	0.015	8.7	LOS A	0.1	0.5	0.30	0.55	0.30	51.5
Approach			16	3.0	16	3.0	0.015	6.6	LOS A	0.1	0.5	0.30	0.55	0.30	51.9
East: Belhaven Avenue															
4	L2	All MCs	5	3.0	5	3.0	0.103	4.8	LOS A	0.5	3.6	0.12	0.62	0.12	51.1
5	T1	All MCs	5	3.0	5	3.0	0.103	5.0	LOS A	0.5	3.6	0.12	0.62	0.12	51.5
6	R2	All MCs	127	3.0	127	3.0	0.103	8.1	LOS A	0.5	3.6	0.12	0.62	0.12	50.8
Approach			138	3.0	138	3.0	0.103	7.9	LOS A	0.5	3.6	0.12	0.62	0.12	50.8
North: Diamond Drive															
7	L2	All MCs	32	3.0	32	3.0	0.041	4.7	LOS A	0.2	1.4	0.09	0.56	0.09	52.6
8	T1	All MCs	5	3.0	5	3.0	0.041	4.9	LOS A	0.2	1.4	0.09	0.56	0.09	53.0
9	R2	All MCs	17	3.0	17	3.0	0.041	8.0	LOS A	0.2	1.4	0.09	0.56	0.09	52.2
Approach			54	3.0	54	3.0	0.041	5.8	LOS A	0.2	1.4	0.09	0.56	0.09	52.5
West: Precinct 4G Access															
10	L2	All MCs	68	3.0	68	3.0	0.072	5.5	LOS A	0.3	2.5	0.31	0.55	0.31	52.5
11	T1	All MCs	5	3.0	5	3.0	0.072	5.6	LOS A	0.3	2.5	0.31	0.55	0.31	53.0
12	R2	All MCs	5	3.0	5	3.0	0.072	8.8	LOS A	0.3	2.5	0.31	0.55	0.31	52.2
Approach			79	3.0	79	3.0	0.072	5.7	LOS A	0.3	2.5	0.31	0.55	0.31	52.5
All Vehicles			286	3.0	286	3.0	0.103	6.8	LOS A	0.5	3.6	0.18	0.59	0.18	51.6

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

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

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Diamond Drive / Belhaven Ave / G4 Access

Prepared: NN

Site Category: (None)

Roundabout

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Diamond Drive															
1	L2	All MCs	5	3.0	5	3.0	0.014	5.3	LOS A	0.1	0.5	0.27	0.54	0.27	51.9
2	T1	All MCs	5	3.0	5	3.0	0.014	5.4	LOS A	0.1	0.5	0.27	0.54	0.27	52.4
3	R2	All MCs	5	3.0	5	3.0	0.014	8.6	LOS A	0.1	0.5	0.27	0.54	0.27	51.6
Approach			16	3.0	16	3.0	0.014	6.4	LOS A	0.1	0.5	0.27	0.54	0.27	52.0
East: Belhaven Avenue															
4	L2	All MCs	5	3.0	5	3.0	0.063	5.0	LOS A	0.3	2.1	0.20	0.61	0.20	51.0
5	T1	All MCs	5	3.0	5	3.0	0.063	5.2	LOS A	0.3	2.1	0.20	0.61	0.20	51.4
6	R2	All MCs	64	3.0	64	3.0	0.063	8.3	LOS A	0.3	2.1	0.20	0.61	0.20	50.7
Approach			75	3.0	75	3.0	0.063	7.9	LOS A	0.3	2.1	0.20	0.61	0.20	50.8
North: Diamond Drive															
7	L2	All MCs	96	3.0	96	3.0	0.108	4.7	LOS A	0.5	3.9	0.09	0.57	0.09	52.5
8	T1	All MCs	5	3.0	5	3.0	0.108	4.9	LOS A	0.5	3.9	0.09	0.57	0.09	52.9
9	R2	All MCs	52	3.0	52	3.0	0.108	8.0	LOS A	0.5	3.9	0.09	0.57	0.09	52.2
Approach			153	3.0	153	3.0	0.108	5.9	LOS A	0.5	3.9	0.09	0.57	0.09	52.4
West: Precinct 4G Access															
10	L2	All MCs	34	3.0	34	3.0	0.038	5.1	LOS A	0.2	1.3	0.22	0.53	0.22	52.6
11	T1	All MCs	5	3.0	5	3.0	0.038	5.2	LOS A	0.2	1.3	0.22	0.53	0.22	53.1
12	R2	All MCs	5	3.0	5	3.0	0.038	8.4	LOS A	0.2	1.3	0.22	0.53	0.22	52.3
Approach			44	3.0	44	3.0	0.038	5.5	LOS A	0.2	1.3	0.22	0.53	0.22	52.7
All Vehicles			287	3.0	287	3.0	0.108	6.4	LOS A	0.5	3.9	0.15	0.57	0.15	52.0

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

Roundabout LOS Method: SIDRA Roundabout LOS.

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.

Roundabout Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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