PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2021/1235

Date: 21 December 2022

Queensland Government

calibre

# Aura Precinct 15 – Land Lease Community

Prepared for Stockland Development Pty Ltd

20 October 2022

Calibre Professional Services Pty Ltd
55 070 683 037

AMENDED IN RED

By: Andrew McKnight

Date: 15 November 2022

Queensland Government

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# Contents



# Figures



# Appendices

# 1. Introduction

This Engineering Services Report has been prepared by Calibre Professional Services Pty Ltd on behalf of Stockland Development Pty Ltd for the proposed Land Lease Community (LLC) site located in Precinct 15 of Aura. Specifically, this Technical Memo will discuss:

1. Earthworks;
2. Stormwater Quality and Quantity;
3. Roads and Connectivity;
4. Water and Wastewater Reticulation; and
5. Utilities.

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Refer approved context plan

The detail provided in the sections below refers to conditions of development contained within Aura's Masterplanning Approvals including (but not limited to) Unitywater Infrastructure Agreement and the Local Government Infrastructure Agreement. The proposed school site location is identified in the following images.

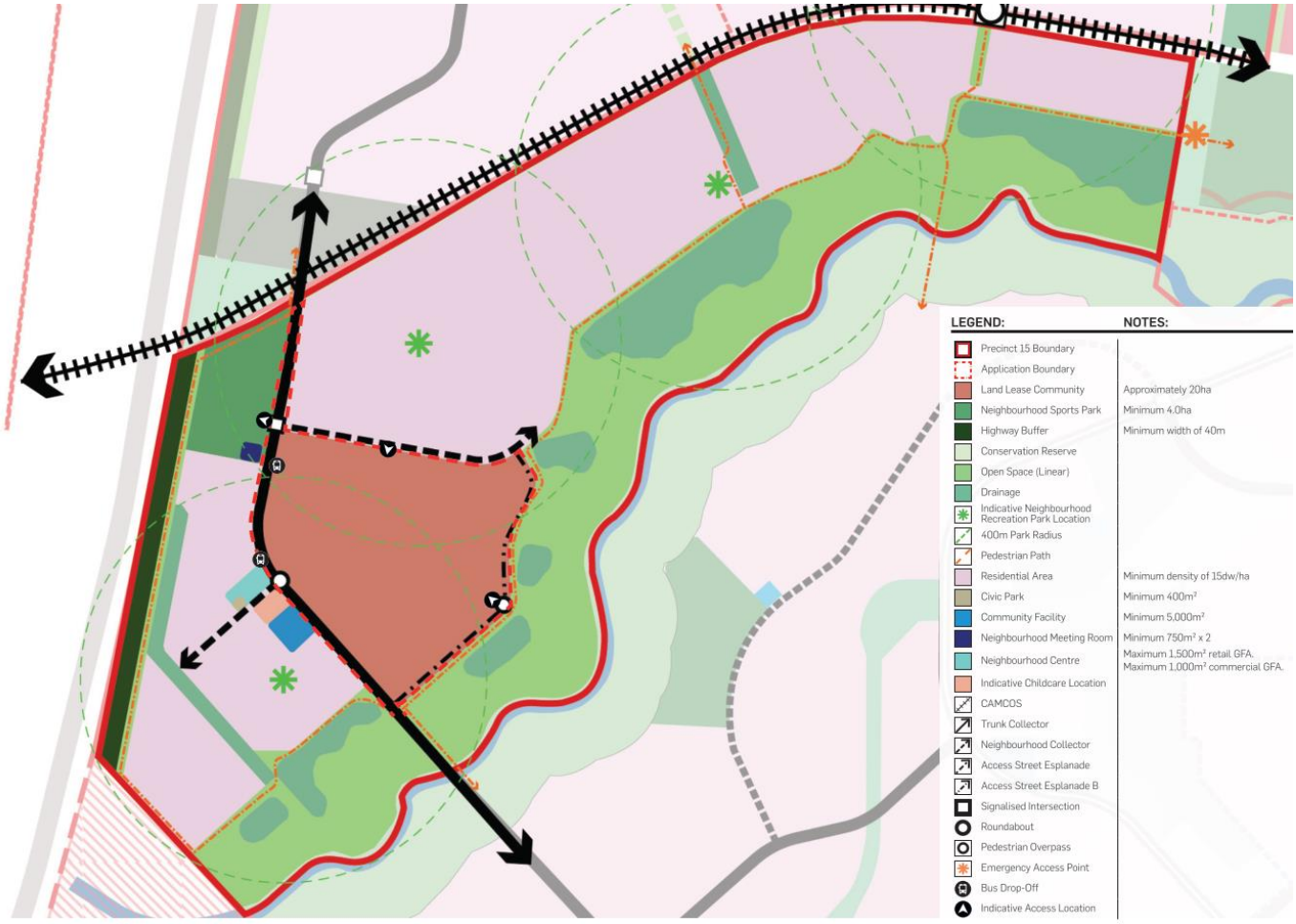



Figure 1. Context Plan (Urbis)

The development area as shown in the proposed development site plan below consists of the two following elements combined:

1. Proposed LLC Site – 19.8Ha.
2. Associated and connecting Trunk Roads.

Refer to Appendix A for a copy of the proposed Development site plan.

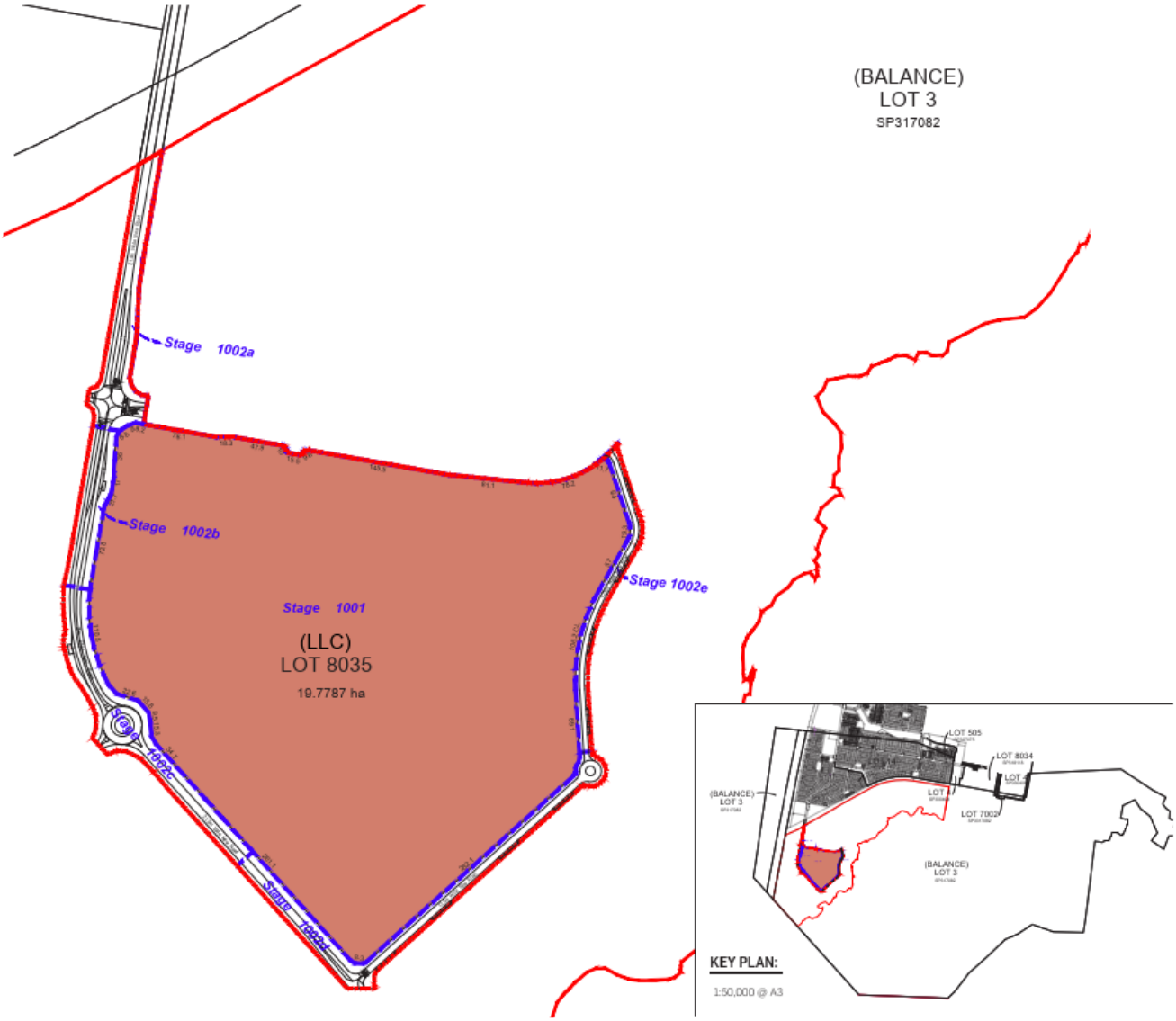



Figure 2. Reconfiguration of Lot Plan (Urbis)

## 1.1 Amendments to Engineering Services Report – Revision C

Amendments have been made to the Engineering Services Report, Revision C, in response to the Request for Information dated 24 May 2022 in relation to Development Approval Application DEV2021/1235.

Refer to Cover Letter 17-000934-3051-CL02.AMC.oh(A) for formal response to this Information Request.

Section 3.2.2.1 and 3.2.2.3 have been updated to reflect the amended stormwater strategy.

Section 4.3 has been updated to provide additional details on proposed access, including the removal of a left in access to the Land Lease Community at intersection 1503.

Section 4.6 has been added to provide information on proposed bus stops.

## 1.2 Amendments to Engineering Services Report – Revision D

Amendments have been made to the Engineering Services Report, Revision D, in response to the Request for Information dated 15 and 16 August 2022.

Refer to Cover Letter 17-000934-3051-CL03.OH.oh for a formal response to this Information Request.

References to the context plan have been updated to reflect the amended layout, including the adjustment to the Sports Park, School and Precinct 15 West boundaries. There have also been slight adjustments to the position of the North-South Trunk Connector and boundaries of the Land Lease Community.

Section 4.4 has been updated to reflect the new intersection configurations.

## 1.3 Amendments to Engineering Services Report – Revision E

Amendments have been made to the Engineering Services Report, Revision E, in response to the Request for Information dated 23 September 2022.

Refer to Cover Letter 17-000934-3051-CL04.OH.oh for a formal response to this Information Request.

References to the context plan have been updated to reflect the amended layout, including the removal of the school within Precinct 15 West.

Section 4.4 has been updated to reflect the new intersection configurations.

# 2. Earthworks

## 2.1 Earthworks Level Control

The proposed application boundary is bordered by future residential development within Precinct 15 to both the north and west and fronts onto Bells Creek South to the south. The proposed earthworks strategy within these development constraints comply with the following objectives:

- Facilitate the Stockland development phasing in coordination with current ROL approvals;
- Be in accordance with the current Aura Regional Flood Model, by BMT (Model ID245);
- Be able to achieve objectives in the BMT Caloundra South Water Quality Management Plan;
- Comply with requirements of the BMT Environmental Management Plan;
- Satisfy the requirements of the Caloundra South Public Environment Report Supporting Document;
- Be in accordance with the approved Caloundra South Master Plan;
- Satisfy the Water Sensitive Urban Design objectives;
- Be in accordance with the Wallum Sedge Frog Management Plan;
- Be in accordance with the Operational Work for Waterway Barrier Works Preliminary Approval and Development Permit;
- Optimise the use of developable area through efficient design;
- Efficient design and utilisation of the natural topography of the site as best as possible; and
- Be economical and cost effective.

Regional flood levels have been established for Bells Creek North and South through modelling undertaken by BMT (TUFLOW Model ID245).

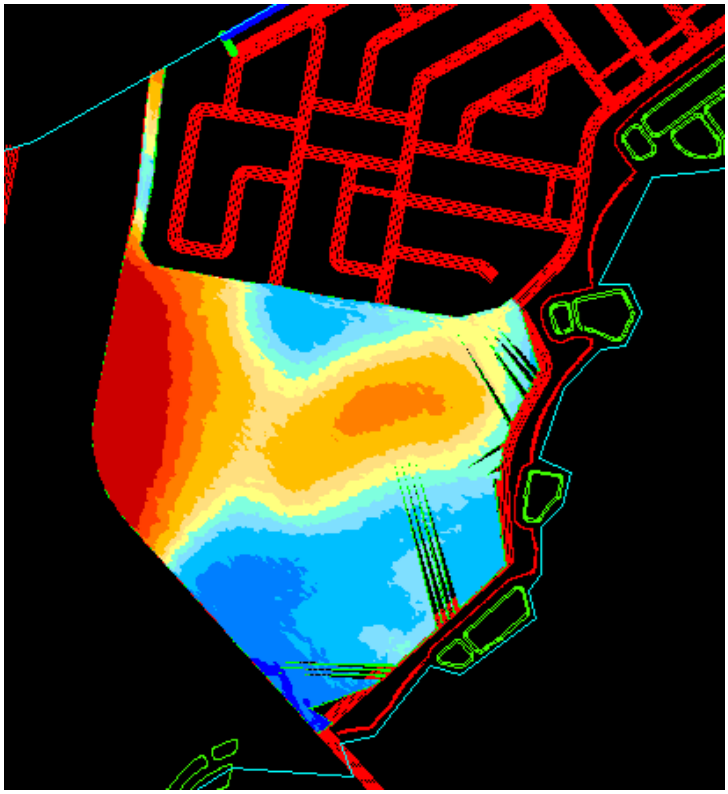
In general, these flood levels control the minimum earthworks levels at the stormwater outlets and embankments.

Bulk earthworks operations are required to achieve an earthworks balance for the greater development while also ensuring flood immunity for the Site. Refer to Table 1 below for indicative earthworks volumes, subject to detailed design.

Table 1. Indicative Earthworks volumes

| | **Volume** |
|---|---|
| **Earthworks in Cut** | 137,369m$^3$ |
| **Earthworks in Fill** | 65,178m$^3$ |
| **Balance** | 72,191m$^3$ |

Indicative cut and fill earthworks depths over the subject area is shown in Figure 3 below, noting that this is subject to change pending the overall Precinct 15 earthworks design.



| | From | To | Colour |
|---|---|---|---|
| 1 | -999 | -2 | acad 012 |
| 2 | -2 | -1.5 | acad 020 |
| 3 | -1.5 | -1.0 | acad 030 |
| 4 | -1.0 | -0.5 | acad 040 |
| 5 | -0.5 | -0.25 | acad 041 |
| 6 | -0.25 | 0 | acad 051 |
| 7 | 0 | 0.25 | acad 121 |
| 8 | .25 | 0.5 | acad 141 |
| 9 | 0.5 | 1 | acad 140 |
| 10 | 1 | 1.5 | acad 150 |
| 11 | 1.5 | 2 | acad 170 |
| 12 | 2 | 999 | acad 190 |

Figure 3. Indicative Earthworks Volume

## 2.2 Geotechnical

Geotechnical investigations have been undertaken by Douglas Partners comprising a broadscale investigation in 2014 and a second Additional Geotechnical Investigation of Precincts 6 -16 in 2017. Key findings from these reports are summarised as follows:

- Broadly, the area is gently undulating of low relief, with the ground surface overall falling gradually from west to east with several localised knolls associated with the larger trending ridgeline on the western side of the Bruce Highway;
- Subsurface conditions generally comprise topsoil of between 100mm to 350mm overlying silty and clayey sands;
- It is anticipated that the majority of material won from excavations on site will generally be suitable for reuse as bulk filling provided they are placed in a controlled manner;
- Groundwater seepage was typically encountered between 1.2m and 2.8m depth;
- CBR testing (16 samples) returned results of between 0.5% to 18.0% with an average result of 7% across the greater Aura Development;
- Emerson class dispersion tests (8 samples) returned values of 5 and 6 on a scale of 1 to 8 indicating a slight potential for erosion;
- Topsoil depth varies from 0.1m to 0.35m. Quality of topsoil is poor and it is anticipated that treatment would be needed to improve nutrient value;
- Drainage for the site during construction is necessary to maintain site trafficability. Consideration for providing a working platform may be necessary in some instances;
- Recommended compaction factors in the calculation of fill volumes vary between 0.80 and 1.10 with the silty/ clayey sands which comprise the majority of the site being 0.80 to 0.85; and
- Site classification of ‘Class S’ would be anticipated under normal soil moisture conditions.

Further detail regarding existing ground condition and geotechnical suitability for development can be found within the aforementioned geotechnical reports.

## 2.3 Adopted Standards and Design Principles

To comply with the Aura Regional Flood Model 2020 (Model ID245) prepared by BMT, the minimum habitable floor levels for allotments is based on providing 500mm freeboard to the 100-year ARI peak flood level with increased rainfall intensity and sea levels taken into account for climate change to a planning horizon of the year 2100. As per previous stages in Aura, the flood planning level for earthworks fill levels includes a 350mm freeboard. The remaining 150mm freeboard will be achieved through slab construction to satisfy the habitable floor level requirements to provide a freeboard of 500mm as required. In approaching the freeboard requirements in this manner, the earthworks volumes across the site can be optimised therefore providing economically sustainable development whilst achieving the flood immunity requirements.

The concept bulk earthworks design provides appropriate flood immunity for various land uses in accordance with the master plan as flows:

- Allotments and roads are designed for immunity to the 100-year ARI peak flood level with climate change;
- Major and district sports parks have been designed for 20-year ARI flood immunity (with 100-year ARI flood immunity for structures); and
- Recreational areas have been designed for the 5-year ARI flood immunity (with 100-year ARI flood immunity for structures).

The design principles, which have been adopted for this concept bulk earthworks strategy, are:

- To be in accordance with flood immunity requirements set by regional flood levels along Bells Creek North and Bells Creek South;
- To be in accordance with local flood levels from the internal stormwater catchments and Aura Brook;
- All allotments to be graded at minimum and 1 in 200 towards the road;
- Roads to have minimum grade of 0.3%;
- Cut/fill volumes to be developed to best match requirements of other Precincts;
- To be consistent with the Construction Environmental Management Plan by Calibre; and
- To be consistent with the Additional Geotechnical Investigation report for Aura Precincts 6-16 by Douglas Partners.

# 3. Stormwater Quality and Quantity

## 3.1 Precinct 15 - Stormwater Quality

The proposed Land Lease Community site is located within stormwater catchment S4 as nominated within the Aura Precinct 15 Stormwater Quality Management Plan by DesignFlow, June 2022.

The earthworks design and subsequent catchment plan for Precinct 15 has been updated to reflect the latest Precinct 15 layout and master planning. Refer to Drawing 17-000934-3058-DA1420 within Appendix B which indicates the latest catchments. These catchments will be confirmed during detailed design.

Runoff from the future Sports Park, School, LLC and associated land uses within the western land area of Precinct 15 will drain to the south into either WSUD S2, S4 or S5 for end of line treatment prior to discharge to Bells Creek South. Rainwater tanks are proposed for use throughout the LLC Development Application area for toilet flushing and local irrigation. No further at source treatment is required within this Development Application area to achieve the stormwater quality objectives.

## 3.2 Precinct 15 - Stormwater Quantity

### 3.2.1 Regional Flooding

A regional flood investigation has been undertaken by BMT to assess the affects the proposed development would have on regional flooding. The subsequent report prepared by BMT, Aura Regional Flood Model 2020 (Model ID245) has guided Calibre's civil design and stormwater modelling for the development. From this, regional flood levels have been established for Bells Creek North, Bells Creek South and the future proposed Aura Brook. In general, these flood levels have directly influenced the minimum earthworks levels at the stormwater outlets, embankments and the tailwater conditions for Aura Brook's discharge to Bells Creek South.

The minimum habitable floor levels for allotments are based on providing 500mm freeboard to the 100-year ARI peak flood level with increased rainfall intensity and sea levels taken into account for climate change to a planning horizon of the year 2100. The flood planning level for earthworks fill levels includes a 350mm freeboard. The remaining 150mm freeboard will be achieved through slab construction to satisfy the habitable floor level.

### 3.2.2 External Drainage

Calibre Professional Services have undertaken a Stormwater Management Report for Precinct 15, which will be submitted to Economic Development Queensland separately.

Referring to Drawing 17-000934-3058-DA1400 within Appendix B, the external flows conveyance to and through Precinct 15 have been detailed, noting how they will integrate with the wider Precinct 15 development.

The commentary below relates to Precinct 15 as a whole precinct and is not to be inferred as all being required to service the proposed Land Lease Community Development.

#### 3.2.2.1 Bruce Highway and Precinct 14 flows

In the existing scenario, there are five stormwater culverts that cross under the Bruce Highway with an outlet in either Precinct 14 or Precinct 15. Referring to Drawing 17-000934-3058-DA1400 within Appendix B, three of these culverts will drain into a proposed drainage channel that runs adjacent to the western acoustic bund of Precinct 15, with an outlet into Bells Creek South.

For the three highway culverts that drain to Precinct 14, the flows will be piped through the acoustic bund into Precinct 14. This flow will be captured within infrastructure that will combine with the Precinct 14 stormwater network flows ultimately draining to Water Sensitive Urban Design Infrastructure S3, to ensure no worsening to the Bruce Highway. This Infrastructure will provide a detention function as well, prior to being conveyed through Precinct 15 to Water Sensitive Urban Design Infrastructure S2.

This proposed infrastructure will render the previously proposed conveyance channel within Precinct 15 redundant (being Lot 877 within Development Approval DEV2018/987).

The two remaining culverts from the Bruce Highway will drain into a drainage channel within 'Precinct 15 West'. Details of this will be provided with a future Development Application for 'Precinct 15 West'.

#### 3.2.2.2 Baby Brook

Part of Precinct 14 drains into the Baby Brook, which ultimately will flow through Precinct 15. This infrastructure forms the previously proposed Lot 876 as part of the parent approval for Precinct 12 (being DEV2018/987). For the wider Precinct 15 stormwater management strategy, a 40m wide allowance has been made within Precinct 15 for the provision of the Baby Brook channel. This is wider than within Precinct 12, to account for hydraulic impacts of the proposed road crossing as part of the ultimate Precinct 15 layout. The Baby Brook will convey flows from Precinct 14 as well as Precinct 15 to the Water Sensitive Urban Design Infrastructure S2 at the downstream end of the Brook. Local Precinct 15 stormwater will discharge into this channel.

#### 3.2.2.3 External flows from Precinct 12 near Whale Park

Detailed design for Precinct 12 has determined that 3 x 1050mm diameter stormwater pipes are required to cross from adjacent to the Whale Park, under CAMCOS into Precinct 15. The alignment of this infrastructure is shown on Drawing 17-000934-3058- DA1400 within Appendix B. This infrastructure is piping the 1% AEP + Climate Change flows crossing the CAMCOS corridor.

As part of the wider Precinct 15 stormwater strategy, it is proposed for all upstream P12 Whale Park flows up to the 1%AEP+CC to be piped from the crossing under the CAMCOS to the downstream WSUD device.

#### 3.2.2.4 External flows from Precinct 11

Detailed design for Precinct 11 has determined that 2 x 1350mm diameter stormwater pipes are required to cross from adjacent to the Aura Brook, under CAMCOS into Precinct 15. The alignment of this infrastructure is shown on Drawing 17-000934-3058- DA1400 within Appendix B. This infrastructure is piping the minor storm event flows crossing the CAMCOS corridor.

This pipeline is part of the wider Precinct 11 and 15 stormwater quality strategy and is proposed to continue to ultimately discharge to the sediment pond of the proposed Water Sensitive Urban Design infrastructure S1. Local Precinct 15 stormwater will discharge into this pipeline.

### 3.2.3 Local Drainage

The proposed development area drains southward towards Bells Creek South via local stormwater drainage network. These flows follow an internal network of major drainage elements through a series of piped and surface flow channels. In accordance with Aura's Local Government Infrastructure Agreement, the lower order road network is designed to convey 2 year ARI storm flows through the piped system with the higher order roads designed to pipe 10% AEP (10 year ARI) storm flows. In locations where the road capacity is reached, the 1% AEP (100 year ARI) flows will be piped.

Refer to Appendix B for the indicative stormwater catchments and conceptual outflow locations to the proposed WSUD infrastructure. These catchments have been developed to be generally in accordance with the assumed catchments of Design Flow's Stormwater Quality Management Plan (dated February 2022). As with other major infrastructure elements, location and details of stormwater drainage elements are conceptual only and subject to further detailed design for operational works.

### 3.2.4 No Worsening Impact on the Pre-Development Condition

As the proposed development increases impervious area, without mitigation measures, and has the potential to impact pre-development flooding conditions. The flood risks impact of the proposed development was assessed by comparing modelled peak flood levels of the developed case vs base case (pre-development).

To mitigate the adverse implications for flood risk resulting from the proposed development, flood risk mitigation strategies were developed. These includes but is not limited to the integration of dedicated flood detention storage, flood conveyance and other appropriate mitigation measures to ensure no adverse offsite flooding impacts.

Reference should be made to the Aura Flood Risk Management Report (prepared by BMT, dated October 2021), for further details on elements of the Flood Risk Management Strategy, including flood detention basins formed by road infrastructure crossing Bells Creek South.

This report shows that holistic flood-constraints for the broader development have been considered in developing flood mitigation measures. This is to ensure that the proposed development does not worsen flood risk or flood warning times external to the site-wide Priority Development Area (PDA).

## 3.3 Precinct 15 Land Lease Community – Interim Stormwater Strategy

Referring to the above commentary in Sections 3.1 and 3.2, the following stormwater infrastructure will be required to facilitate the development of the proposed Land Lease Community:

- Water Sensitive Urban Design Infrastructure S4 including an outlet to Bells Creek South; and
- If Water Sensitive Urban Design infrastructure S3 has been constructed within Precinct 14, the pipeline for the lower Recurrence Interval flows underneath the proposed Trunk Connector / Neighbourhood Connector road will be required to be constructed. It is intended for flows to be channelised within the Neighbourhood Connector road reserve, until such a time that the road is constructed.

  The proposed Lot 877 within Development Approval DEV2018/987 would remain in place for higher Recurrence Interval flows, until the ultimate pipeline / overland flow for these flows is constructed as part of the Precinct 15 ‘East’ works.

Refer to drawing 17-000934-3058-DA1410 in Appendix B for a schematic of the above.

Remaining infrastructure referenced in the commentary within Sections 3.1 and 3.2 will progressively be required as Precinct 15 ‘East’ and ‘West’ is developed.

# 4. Roads and Connectivity

## 4.1 Road Hierarchy

The proposed road hierarchy and connectivity planning has been developed in accordance with the LGIA (2015).

Urbis have prepared a co-ordinated road hierarchy plan for the surrounding road networks. Refer to Appendix A for details.

In addition to this, PwC have completed a Traffic Modelling Report based on Urbis' proposed road hierarchies and development yields to determine final design requirements for traffic network and intersection performance. PwC's Traffic Modelling Report assumptions in Precinct 15 are reflected in the Urbis planned road hierarchy, provided by appropriate lane types and intersections (signalised and unsignalized).

The proposed trunk road network associated with this development application is identified on Urbis' Development Application Plans (refer to Appendix A).

A Trunk Connector road (Type C) has been proposed to connect to the existing Trunk Connector road adjacent Lot 8034 SP318118. It is proposed to follow the same alignment as the approved road within Precincts 11-14. Within Precinct 15, this Trunk Connector road is proposed to extend along the south-western boundary of the Land Lease Community. Superelevation will be introduced to ensure that the proposed horizontal curve radius complies with the guidelines and will be detailed during the Compliance Design phase.

A Neighbourhood Connector road (Type H) is proposed along the northern boundary of the Land Lease Community, intersecting with the proposed Trunk Connector road at a four-way signalised intersection.

The Economic Development Queensland PDA Guideline Number 06 (Street and Movement Network) nominates a Trunk Connector road to have 7,500 – 18,000 vehicles per day where as it nominates a Neighbourhood Connector road to have 3,000 – 7,499 vehicles per day. Refer to Table 2 below which indicates that the proposed road hierarchy has sufficient capacity. Estimates of vehicles per day have been determined based on the AM/PM peak volumes for the road links identified within the PWC traffic report. A factor of twelve (12) has been applied to the average AM/PM peak volume to determine an estimated total vehicles per day, in accordance with Section 6.1 of the MWH Ultimate Caloundra South Transport Model Revised Model Development Report (dated November 2013).

Table 2. Estimate of Vehicles per Day

| | AM/PM Peak Volume | Estimates Vehicles per Day |
|---|---|---|
| Trunk Connector Road | 624 | 7,488 |
| Neighbourhood Connector Road | 375 | 4,500 |

Whilst the estimated volume of vehicles per day on the trunk connector road is less than the minimum volume identified within the Economic Development Queensland guidelines, the trunk connector road profile has been adopted given it is forming the function of a trunk connector road (as it is a connecting road to a school, sports field and neighbourhood centre). This road profile will also allow for bus bays and the contraflow cycle path. Whilst the proposed road will perform the function of a trunk connector road, it will also comply with minimum requirements for a neighbourhood connector road.

A 13.5m wide esplanade road has also been proposed along the eastern boundary of the Land Lease Community, connecting to the Trunk Collector in the southern section of the Site and the Neighbourhood Connector at the northern end.

## 4.2 Pedestrian and Cyclist Connectivity

The development site is also fully serviced with pedestrian and off-road bicycle networks to comply with the LGIA (Map 11). Granular design of the surrounding intersections will be assessed in detail as part of the forthcoming detailed design. Urbis' road cross sections include Neighbourhood Connector and Trunk Connectors. This conforms with the relevant LGIA road profiles with the notable exception of:

- Widening footpaths adjacent to two lane cycle tracks (increased from 1.5m to 1.8m) to match previous approvals in the development; and
- Removal of on road cycle lanes and provision of off-road cycle tracks (contra-flow cycle paths), providing continuity throughout development.

Further to the above, and to ensure the proposed development layout provides for the spatial requirements at intersections, Calibre has completed SIDRA intersection analysis for the proposed signalised intersection and prepared functional layouts to define the general arrangement for the proposed intersections. Proposed intersections are illustrated below in Section 4.4 .

This co-ordinated review with Urbis, PwC and Calibre confirms that the proposed road infrastructure is suitable for delivery of the proposed lot layout with reference to the current Structure Planning for Precinct 15 and yield data and is suitable for endorsement with this Development Application. It is noted also that further refinement of the proposed intersections will be completed with the forthcoming detailed design for this development area.

## 4.3 Access

### 4.3.1 Precinct 15 Access Points

Precinct 15 will ultimately be able to be accessed from both Precinct 14 to the North and Precinct 17 to the South. Initially, just access from Precinct 14 to the north will be available.

In addition to this, an ultimate trafficable emergency access / egress is proposed in the easternmost portion of the Precinct, over the Aura Brook. This will provide access in the emergency situations, where the Neighbourhood Connector / Trunk Connector intersection becomes impassable.

### 4.3.2 Land Lease Community Access and Egress Points

The proposed Land Lease Community will be able to be accessed from the proposed Esplanade Road.

An additional egress only point will be available at intersection INT1502.

To facilitate emergency access, it is also proposed to enable Intersection 1502 with emergency access functionality. In addition, the Land Lease Community can also be accessed from the linear park to the south of the Site in emergencies.

Access points have been reviewed in further detail within Section 4.4.

## 4.4 Intersections

Key intersections as part of this application have been assessed, to determine suitable functional layouts for each intersection.

Refer to

Figure 4 below for the location of the intersections reviewed.

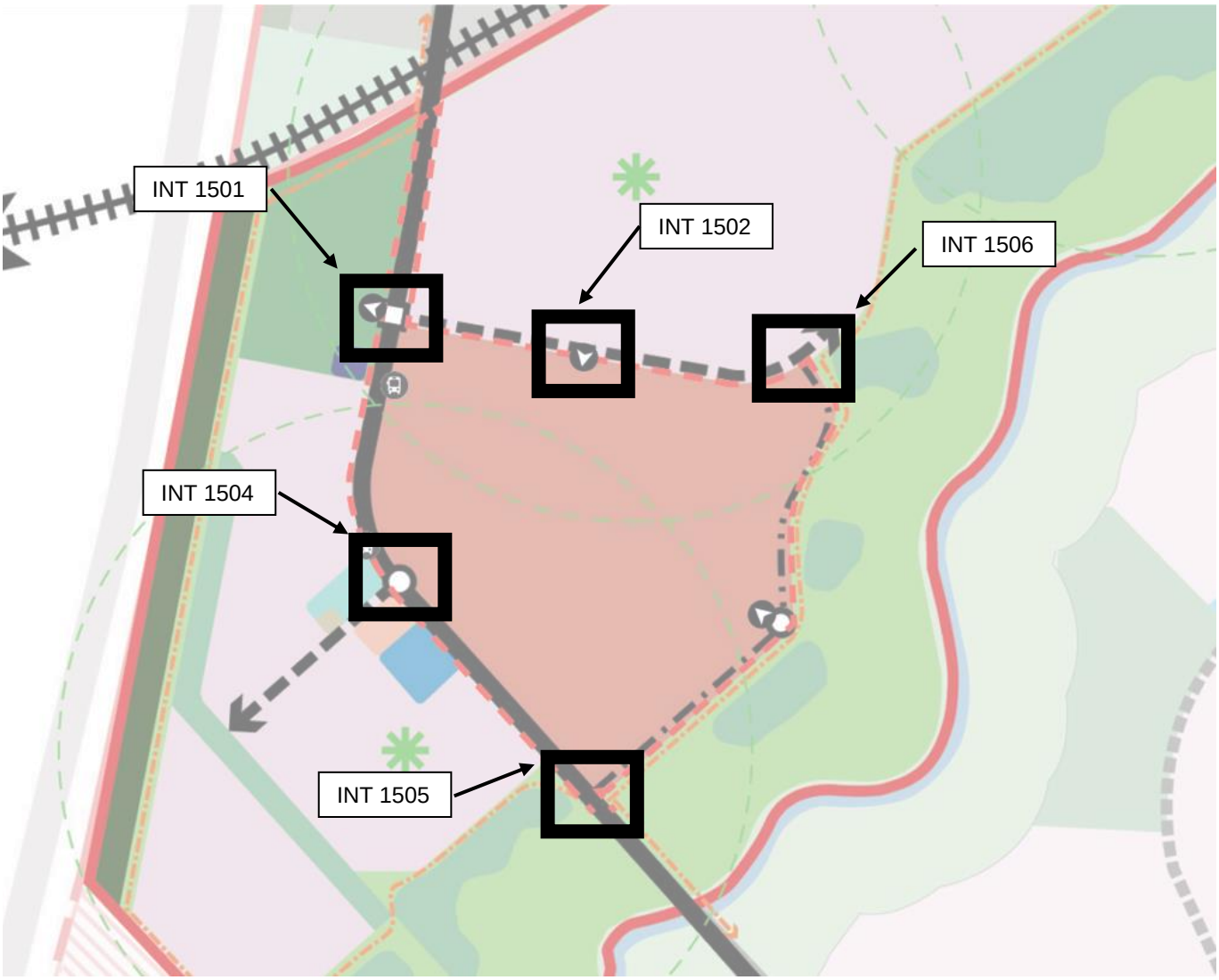



Figure 4. Intersection Reference Numbers

### 4.4.1 Intersection 1501 – Trunk Connector, Neighbourhood Connector and Sports Park entrance

Intersection 1501 is proposed to be signalised as per the PWC Traffic Report and has been assessed utilising the SIDRA modelling software, to determine appropriate turning lane lengths as well as to ensure an appropriate level of service.

Refer to Appendix B for the proposed functional layout of this intersection.

Signal phasing has also been assessed using the SIDRA modelling software. Pedestrian crossings have been allowed for on all legs, as well as a cyclist crossing over the eastern leg of the intersection to suit the location of the contraflow cycle path on the Trunk Connector road. The Sidra analysis assumed a 20% modal shift to cycle movements, consistent with previous modelling undertaken for Aura.

Refer to Appendix C for details of the Sidra Analysis.

The results indicate that an appropriate Level of Service and Degree of Saturation can be achieved, whilst also showing that the proposed turning lane length is sufficient for the 95$^{th}$ percentile back of queue length.

It is noted that this Sidra Analysis allows for:

- Left and right turn storage lanes for approaches conflicting with the contraflow cycle path;
- Cyclists movements to be on the same phase as southbound through traffic on the Trunk Connector road;
- A 6 seconds late start was applied to left turning traffic on the Trunk Connector due to the conflict with the contraflow cycle path (noting that Sidra also considers an additional 3 seconds start loss).

### 4.4.2 Intersection 1502 – Emergency Access to Land Lease Community

Refer to Appendix B for the proposed functional layout of this intersection.

In its interim configuration, this access is proposed as a construction access into the Land Lease Community, with an appropriate turning bay on the East-West Neighbourhood Connection. This construction access would remain in place until the Land Lease Community is fully developed.

Following construction completion, in the ultimate configuration, this access would be a left out egress only from the Land Lease Community. “Emergency only” left-in access would also be available. Appropriate signage to facilitate this would be detailed in the future Land Lease Community Material Change of Use Development Application.

### 4.4.3 Intersection 1504 –Trunk Connector Road and Future Road

The intersection of the Trunk Connector Road and future road connection to the western portion of the site is proposed to be a roundabout, to limit impacts to the trunk connector road.

Refer to Appendix B for the proposed functional layout of this intersection and Appendix C for the SIDRA analysis.

### 4.4.4 Intersection 1505 –Trunk Connector Road and Esplanade Road

The intersection of the Trunk Connector Road and Esplanade Road is proposed to be a priority controlled intersection.

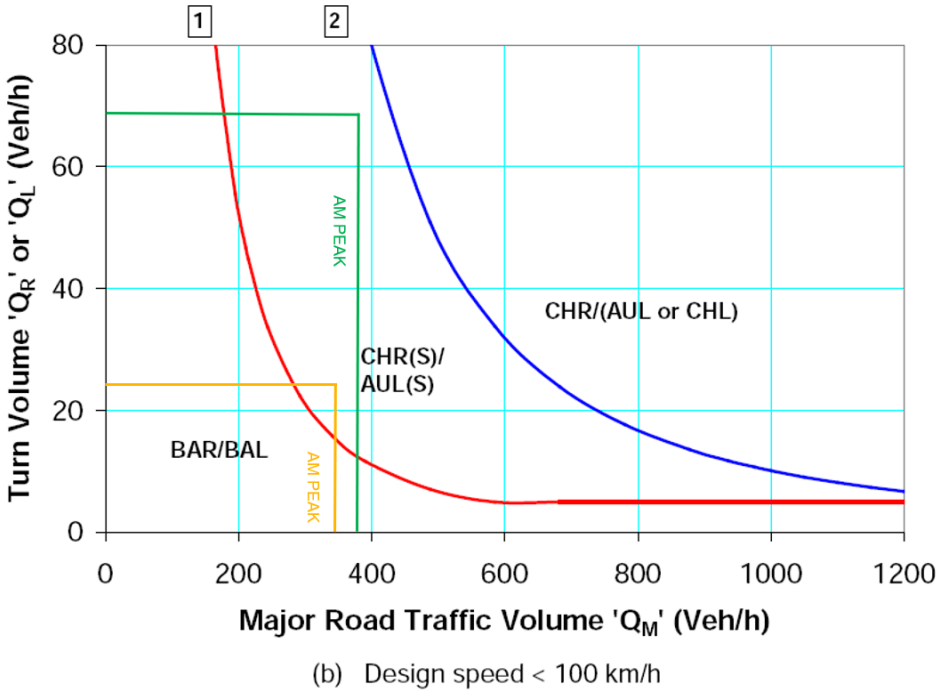
Refer to Appendix B for the proposed functional layout of this intersection and Appendix C for the SIDRA analysis.

The results indicate that an appropriate Level of Service and Degree of Saturation can be achieved. It is noted that the functional layout has identified sufficient space for a turning vehicle to wait for someone to cross the road, without impacting on through traffic.

A turn warrant assessment has been undertaken for Intersection 1505, using traffic volumes provided by PWC. Refer to Table 3 below for the traffic volumes, and Figure 5 below for the Turn Warrant Assessment. As a result of this assessment, a Channelised Right Turn Lane (Short) has been detailed on the amended functional layout. Refer to Sketch Plan DA1502, Appendix B.

Table 3. Traffic Volumes for INT1505 - AM and PM Peak

| | $Q_m$ (veh/h) | $Q_R$ (veh/h) |
|---|---|---|
| AM Peak | 349 | 25 |
| PM Peak | 381 | 68 |




(b) Design speed < 100 km/h

Figure 5. INT1505 - Turn Warrant Assessment

### 4.4.5 Intersection 1506 – Neighbourhood Connector and Esplanade Road

The intersection of the Neighbourhood Connector Road and Esplanade Road is proposed to be a left-in only intersection, primarily used as an emergency exit if required.

The width of the Esplanade Road is proposed to be 5m, to ensure that should a vehicle break down, another vehicle can pass it.

To restrict ‘rat-running’, local area traffic management devices, such as speed humps, will be implemented.

Refer to Appendix B for the proposed functional layout of this intersection.

## 4.5 Future School Zones

The proposed trunk road network with this Development Application presents two proposed collector roads that will require future delineation for a school zone in accordance with TMRs Traffic and Road Use Management Volume 2 – Guide to Road Safety. While the requirement for this delineation falls outside of this Development Application and will be included in the future application for the School site, it is noted here in general terms for completeness.

These roads will be retrofitted in the future with mandatory signage as per the typical treatment shown in the image below.

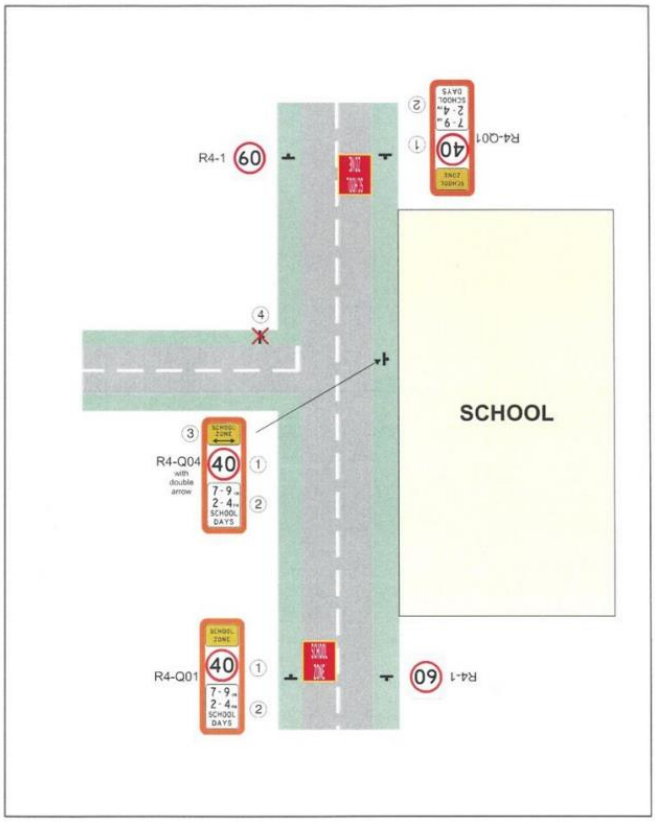



Figure 6. Typical School Zone Signing Treatment

The minimum length of the proposed school zone will be applied as 200m and the limits of the school zone will not extend more than 100m beyond the limits of the school frontage in either direction.

## 4.6 Bus Stops

Two bus stops have been proposed on the Trunk Connector road, to service Precinct 15. The south-bound bus stop has been proposed on the far side of the Intersection 1501, with an indented 3.0m wide bus bay.

The north-bound bus stop has been proposed adjacent to the school, with an indented 3.0m wide bus bay. It is intended for the bus stop to be a combined school bus stop and public bus stop, as allowed by the Public Transport Infrastructure Manual. Both proposed bus stops would be designed to be compliant with the Transport Standards and Public Transport Infrastructure Manual. Should the school wish to provide their own private bus bays, they will need to make provision on the Trunk Connector road, extending into their property boundary to ensure a 3.0m wide indent.

# 5. Water and Wastewater Reticulation

As part of the delivery process for water and wastewater infrastructure, the Unitywater Infrastructure Agreement requires development of a Preliminary Precinct Network Plan (PPNP) to be reviewed and approved by Unitywater before a Final Precinct Network Plan (FPNP) can be agreed for delivery.

## 5.1 Water and Wastewater Reticulation

The proposed trunk water and sewer servicing within the subject precincts is detailed in the Unitywater Approved Final Precinct Network Plan (FPNP), Aura – Precinct 11 (Part), 12 (Part) and 14 prepared by Calibre, (Rev C February 2021) The primary objective of this FPNP is to determine suitable staging of water and wastewater servicing strategies in support of the development with reference to the approved Infrastructure Master Plan. The proposed internal sewer and water network connections are shown indicatively in Appendix D.

Proposed potable water supply for the proposed Site will be provided via the proposed 600mm diameter watermain incoming from Precinct 14. Wastewater will discharge to the east via the proposed gravity trunk sewer alignment through to existing Sewer Pump Station 'B'.

Network modelling will be confirmed through a separate Technical Memo (in addition to the approved FPNP mentioned above) that will be issued directly to Unitywater in parallel with the submission of this Engineering Services Report.

All water and wastewater infrastructure is proposed to be designed generally in accordance with Unitywater Standards, the SEQ Water Supply and Sewerage Design and Construction Code or as otherwise agreed with Unitywater.

# 6. Utilities

The development will be serviced with electrical and telecommunications (National Broadband Network).

As per previous precincts with Aura the services are proposed to be co-located on a standard alignment within a corridor 0-900mm from the property boundary. Detailed design may determine that alternative alignments are required in some instances and these will be detailed on an as required basis. These services will be provided in accordance with conditions of, and through agreement with, the relevant service providers.

# 7. Conclusion

The above details are provided for assessment of civil engineering constraints in conjunction with the Development Application for the proposed Land Lease Community site at Aura Precinct 15.

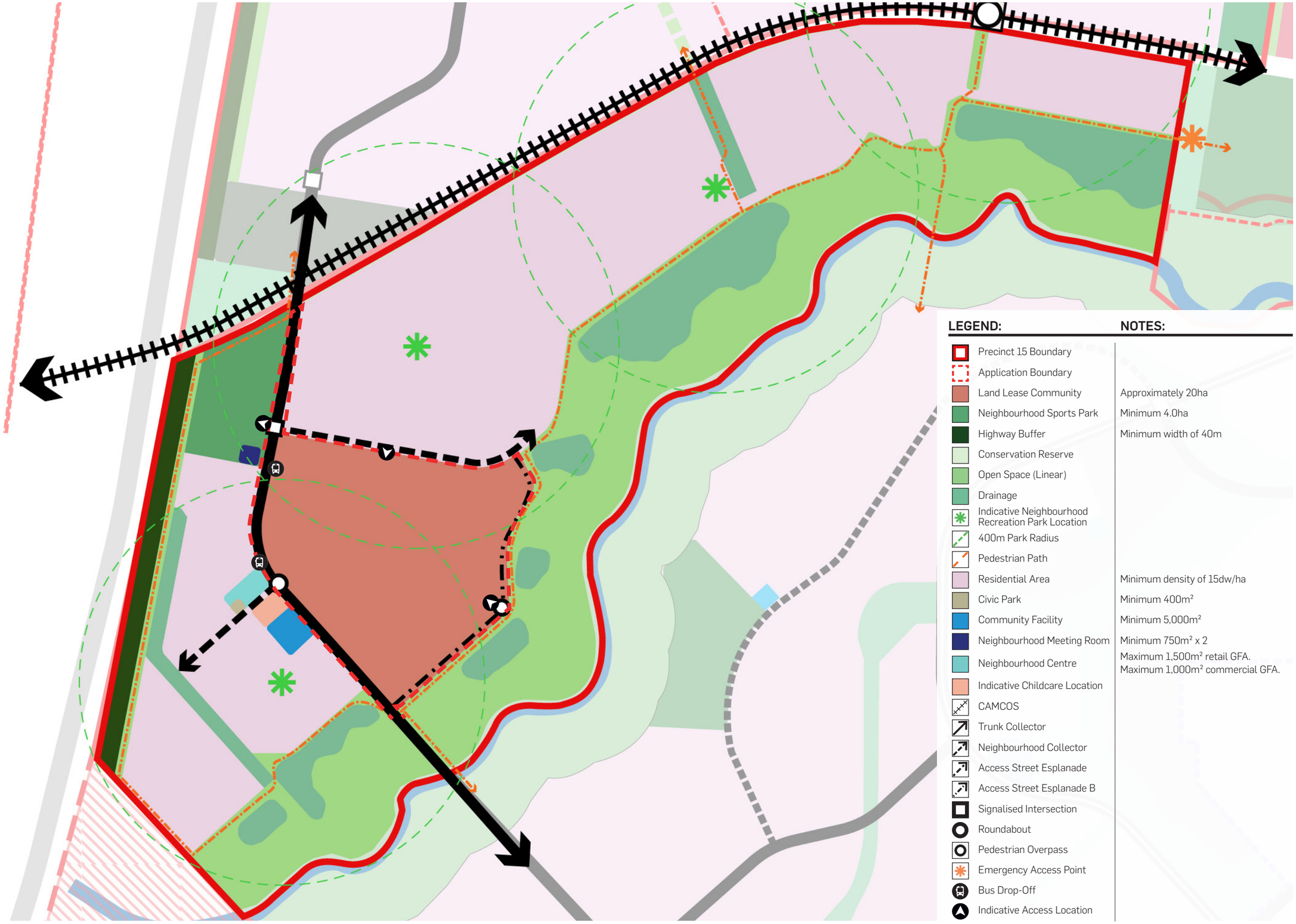
All elements of this submission have been prepared with reference to Aura's current Masterplanning Approval requirements and subsequent Development Approval conditions together with Stockland's construction phasing for the greater development.

As such, it is considered that the intended development proposal supports the developments target land use.

# Appendix A Urbis Development Application Plans

P0035656 DA-01 Context Plan
P0035635 DA-02 Reconfiguration of Lot Plan
P0035656 RH-01 Road Hierarchy

Refer approved context plan



**LEGEND:**

| | NOTES: |
|---|---|
| Precinct 15 Boundary | |
| Application Boundary | |
| Land Lease Community | Approximately 20ha |
| Neighbourhood Sports Park | Minimum 4.0ha |
| Highway Buffer | Minimum width of 40m |
| Conservation Reserve | |
| Open Space (Linear) | |
| Drainage | |
| Indicative Neighbourhood Recreation Park Location | |
| 400m Park Radius | |
| Pedestrian Path | |
| Residential Area | Minimum density of 15dw/ha |
| Civic Park | Minimum 400m² |
| Community Facility | Minimum 5,000m² |
| Neighbourhood Meeting Room | Minimum 750m² x 2 |
| Neighbourhood Centre | Maximum 1,500m² retail GFA. Maximum 1,000m² commercial GFA. |
| Indicative Childcare Location | |
| CAMCOS | |
| Trunk Collector | |
| Neighbourhood Collector | |
| Access Street Esplanade | |
| Access Street Esplanade B | |
| Signalised Intersection | |
| Roundabout | |
| Pedestrian Overpass | |
| Emergency Access Point | |
| Bus Drop-Off | |
| Indicative Access Location | |

URBIS

# AURA P15 - DA SUBMISSION
## CONTEXT PLAN

AMENDED IN RED
By: Andrew McKnight
Date: 15 November 2022

Queensland Government

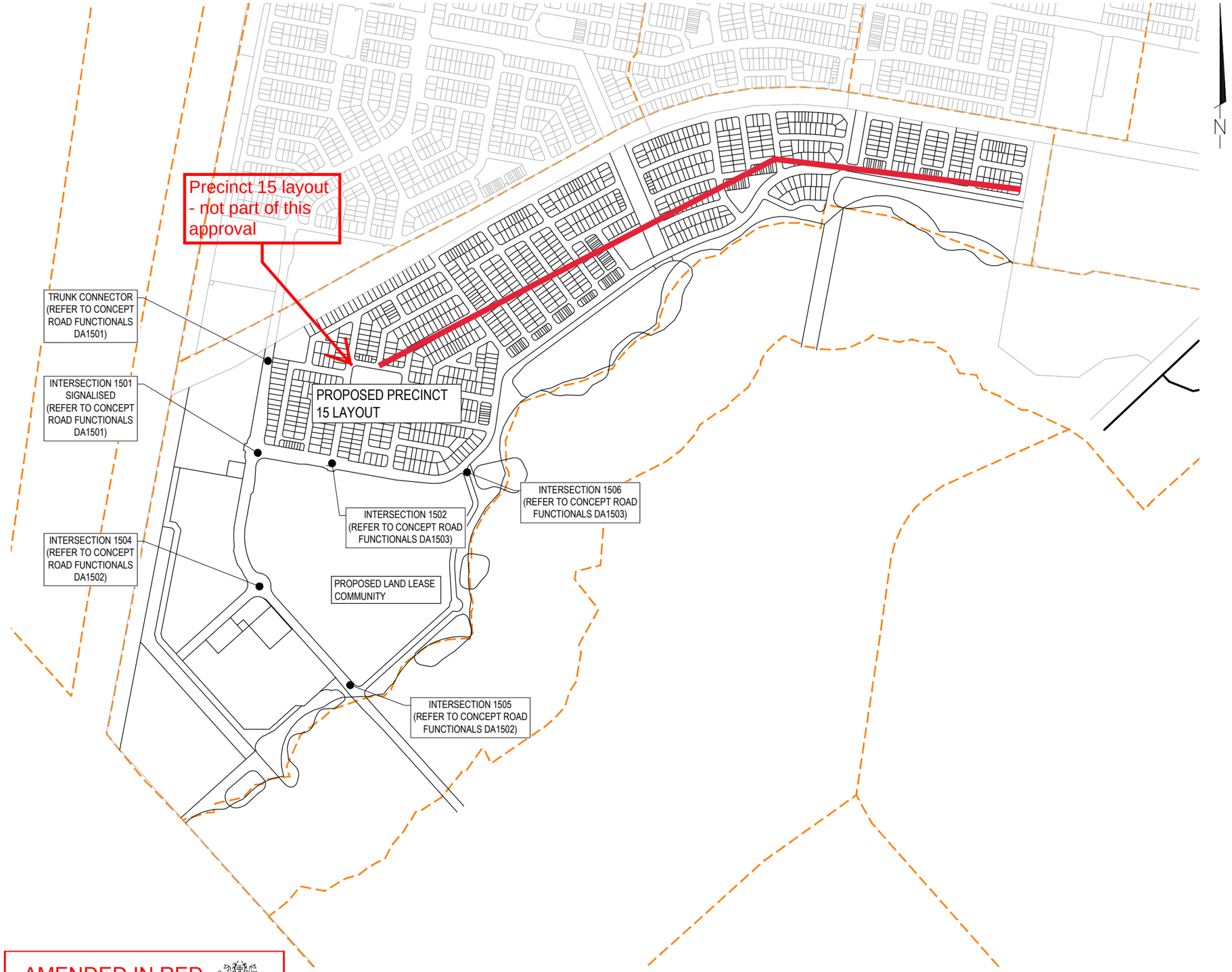


1:7500 @ A3
0 100 200 300 400

**DATE:** 30.09.2022
**JOB NO:** P0035656
**DWG NO:** DA-01
**REV:** 16

# Appendix B Calibre Sketch Plans

17-000934-3058-DA1400 Schematic Ultimate Stormwater Drainage Layout Plan
17-000934-3058-DA1410 Schematic Interim Stormwater Drainage Layout Plan
17-000934-3058-DA1420 Drainage Catchment Plan
17-000934-3058-DA1500 Key Intersection Functional Layout Overall Layout
17-000934-3058-DA1501 Intersection Functional Layout Sheet 1 of 3
17-000934-3058-DA1502 Intersection Functional Layout Sheet 2 of 3
17-000934-3058-DA1503 Intersection Functional Layout Sheet 3 of 3




## LEGEND

- PRECINCT BOUNDARY
- PROPOSED INVERT KERB (300mm CHANNEL) REFER IPWEAQ STD DRG RS-080
- PROPOSED BARRIER KERB AND CHANNEL TYPE B1 (300mm CHANNEL), REFER IPWEAQ STD DRG RS-080
- PROPOSED BARRIER KERB ONLY TYPE B2 REFER IPWEAQ STD DRG RS-080
- PROPOSED SEMI-MOUNTABLE KERB ONLY TYPE SM3 REFER IPWEAQ STD DRG RS-080
- PROPOSED CONTRAFLOW CYCLEWAY, REFER NOTE BELOW.
- PROPOSED FOOTPATH

**CONCEPT DESIGN:**

1. ALL INFORMATION ON THIS DRAWING IS CONCEPTUAL ONLY AND TO BE CONFIRMED IN SUBSEQUENT DETAILED DESIGN.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. THIS PLAN HAS BEEN SUBMITTED FOR APPROVAL WITH THE RECONFIGURATION OF A LOT - PRECINCT 15 EAST APPLICATION, FOR INFORMATION PURPOSES ONLY.
4. THIS PLAN FORMS PART OF THE LAND LEASE COMMUNITY RECONFIGURATION OF A LOT APPLICATION. IT HAS BEEN INCLUDED WITHIN THE PRECINCT 15 EAST RECONFIGURATION OF A LOT APPLICATION FOR INFORMATION PURPOSES ONLY.

AMENDED IN RED

By: Andrew McKnight

Date: 15 November 2022

Queensland Government

## KEY INTERSECTION LAYOUT PLAN

SCALE: 1:5000 (A1)
SCALE: 1:10000 (A3)

FILE: 3058-DA1500.dwg DATE: 23-02-2022 USER: NICK VENESS
XREFS: X_17-000934-3058_TITLEBLOCK, X_17-000934-3058_P15 BASE, X-17-000934 - LOTS, X-17-000934-3015 - BASE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
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| A | 2/03/22 | ISSUE FOR ROL APPROVAL - LLC - PRECINCT 15 | IB | MH |
| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |
| E | 20.10.22 | UPDATED TO SUIT RFI | NV | NV |

DRAWN CHECK

DESIGN CHECK

STATUS: **PRELIMINARY**
**NOT FOR CONSTRUCTION**

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CLIENT: Stockland AURA

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PROJECT: STOCKLAND-AURA
PRECINCT 15

DISCLAIMER
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DRAWING TITLE: PRECINCT 15 - KEY INTERSECTION FUNCTIONAL LAYOUT OVERALL LAYOUT

| PROJECT No. | DRAWING No. | REVISION |
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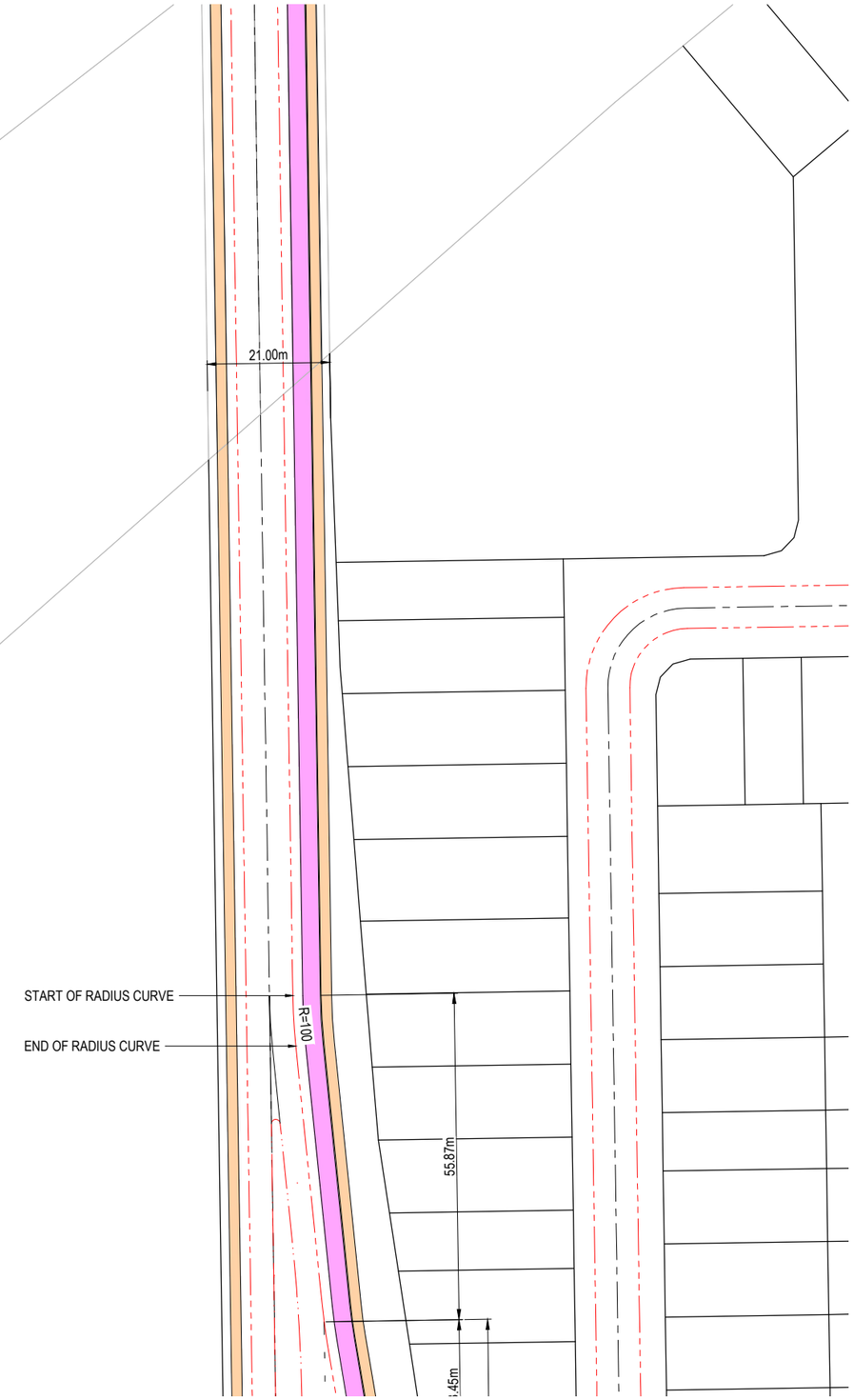


TRUNK CONNECTOR LAYOUT PLAN
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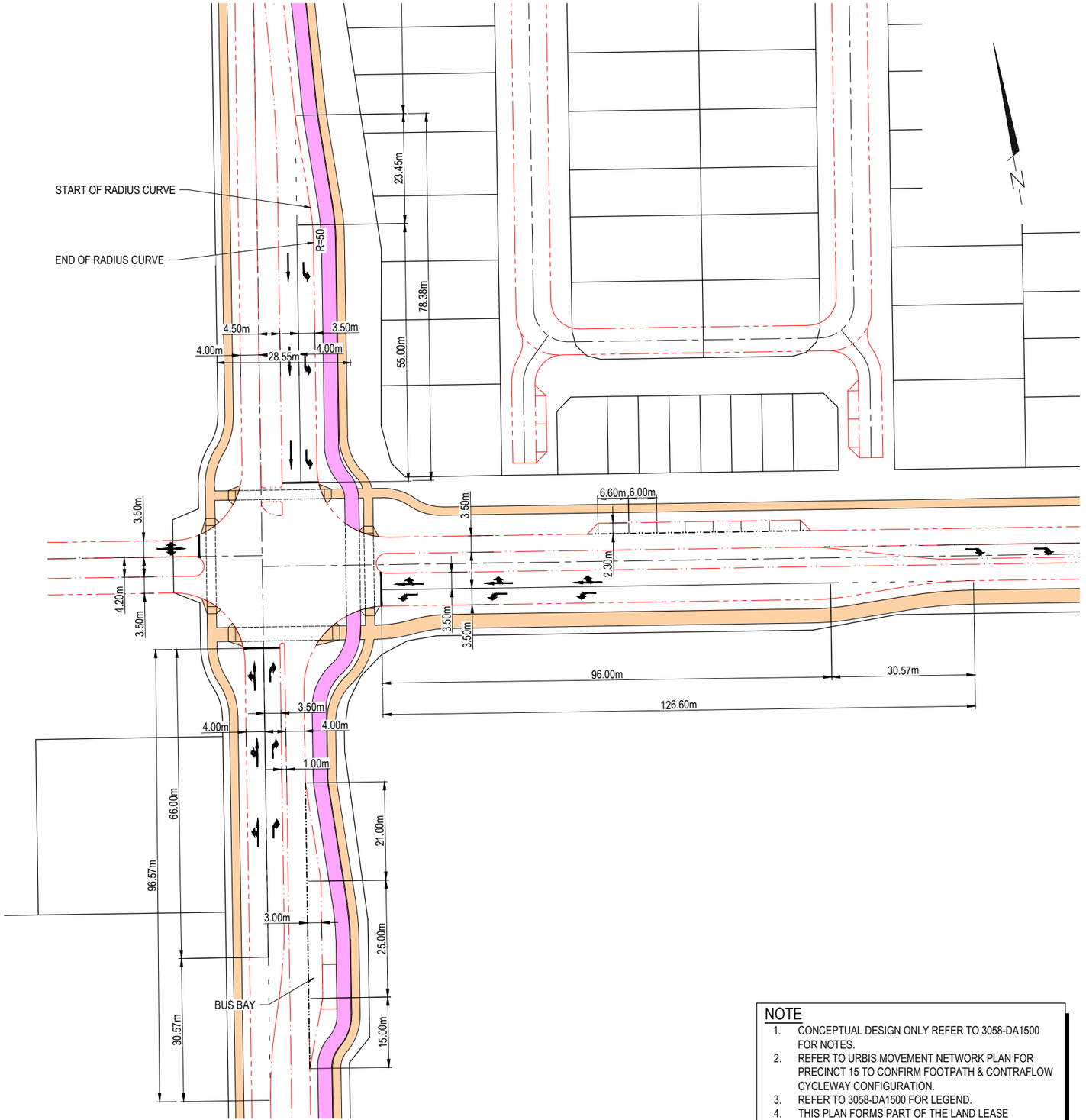


INTERSECTION 1501 LAYOUT PLAN
SCALE: 1:500 (A1)
SCALE: 1:1000 (A3)

## NOTE

1. CONCEPTUAL DESIGN ONLY REFER TO 3058-DA1500 FOR NOTES.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. REFER TO 3058-DA1500 FOR LEGEND.
4. THIS PLAN FORMS PART OF THE LAND LEASE COMMUNITY RECONFIGURATION OF A LOT APPLICATION. IT HAS BEEN INCLUDED WITHIN THE PRECINCT 15 EAST RECONFIGURATION OF A LOT APPLICATION FOR INFORMATION PURPOSES ONLY.

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| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
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| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |
| E | 8/29/2022 | UPDATE IN RESPONSE TO RFI | SD | SD |
| F | 20.10.22 | UPDATED TO SUIT RFI | NV | NV |

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DESIGN CHECK

STATUS
**PRELIMINARY**
**NOT FOR CONSTRUCTION**

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DRAWING TITLE
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| PROJECT No. | DRAWING No. | REVISION |
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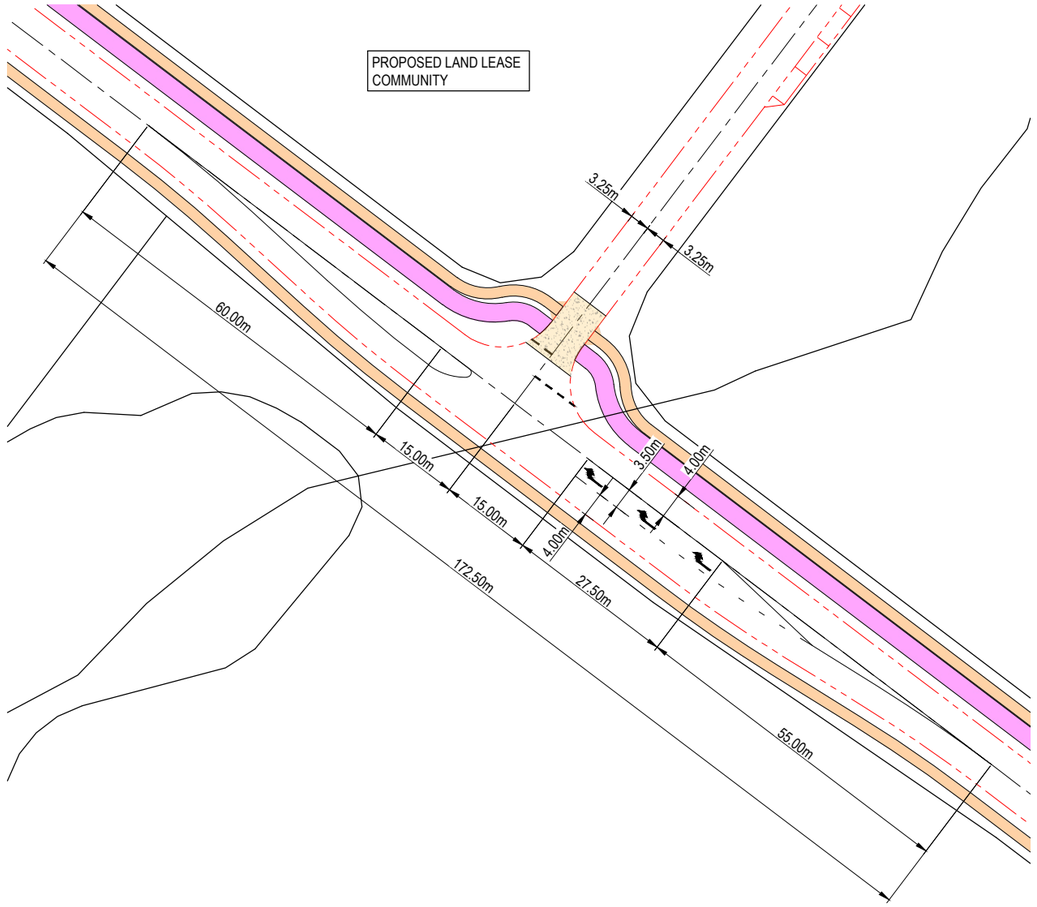


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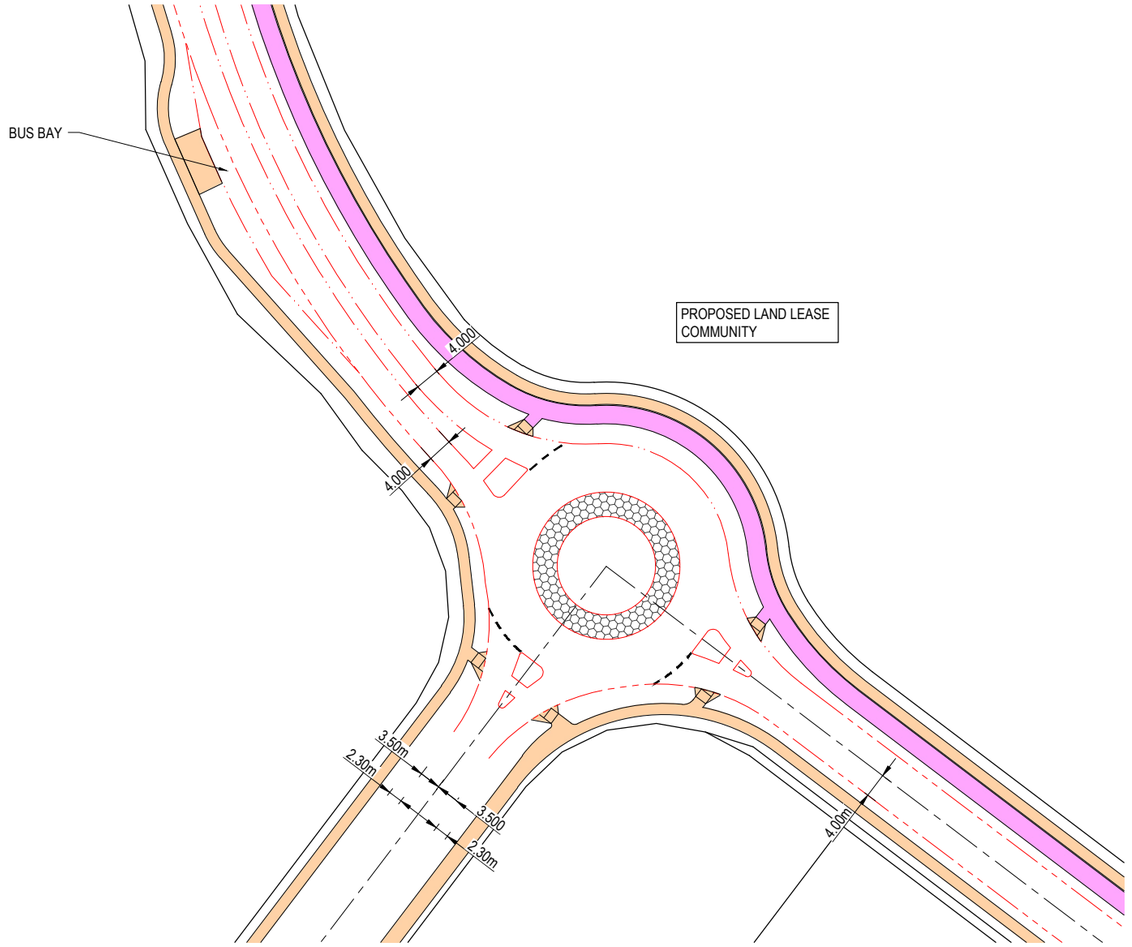


INTERSECTION 1504 LAYOUT PLAN
SCALE: 1:500 (A1)
SCALE: 1:1000 (A3)

## NOTE

1. CONCEPTUAL DESIGN ONLY REFER TO 3058-DA1500 FOR NOTES.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. REFER TO 3058-DA1500 FOR LEGEND.
4. THIS PLAN FORMS PART OF THE LAND LEASE COMMUNITY RECONFIGURATION OF A LOT APPLICATION. IT HAS BEEN INCLUDED WITHIN THE PRECINCT 15 EAST RECONFIGURATION OF A LOT APPLICATION FOR INFORMATION PURPOSES ONLY.

FILE: 3058-DA1500.dwg DATE: 23-02-2022 USER: NICK VENESS
XREFS: X_17-000934-3058_TITLEBLOCK, X_17-000934-3058_P15 BASE, X-17-000934 - LOTS, X-17-000934-3015 - BASE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 8/03/22 | ISSUE FOR ROL APPROVAL - LLC - PRECINCT 15 | IB | MH |
| B | 1/07/22 | EDQ RFIs | IB | MH |
| C | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |
| D | 20.10.22 | UPDATED TO SUIT RFI | NV | NV |

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STATUS
**PRELIMINARY**
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DRAWING TITLE
PRECINCT 15 - INTERSECTION FUNCTIONAL LAYOUT SHEET 2 OF 3

| PROJECT No. | DRAWING No. | REVISION |
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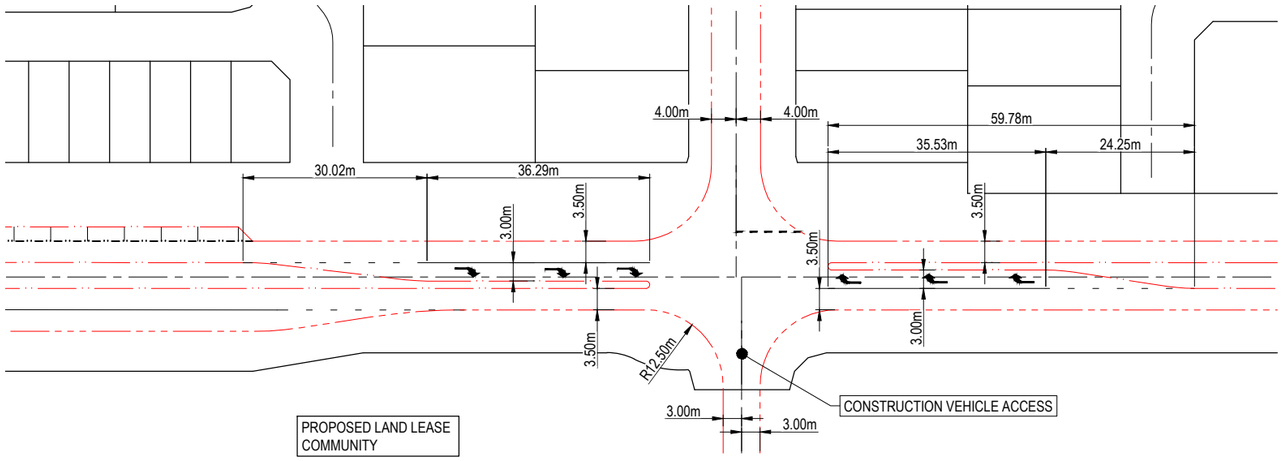


## INTERIM INTERSECTION 1502 LAYOUT PLAN

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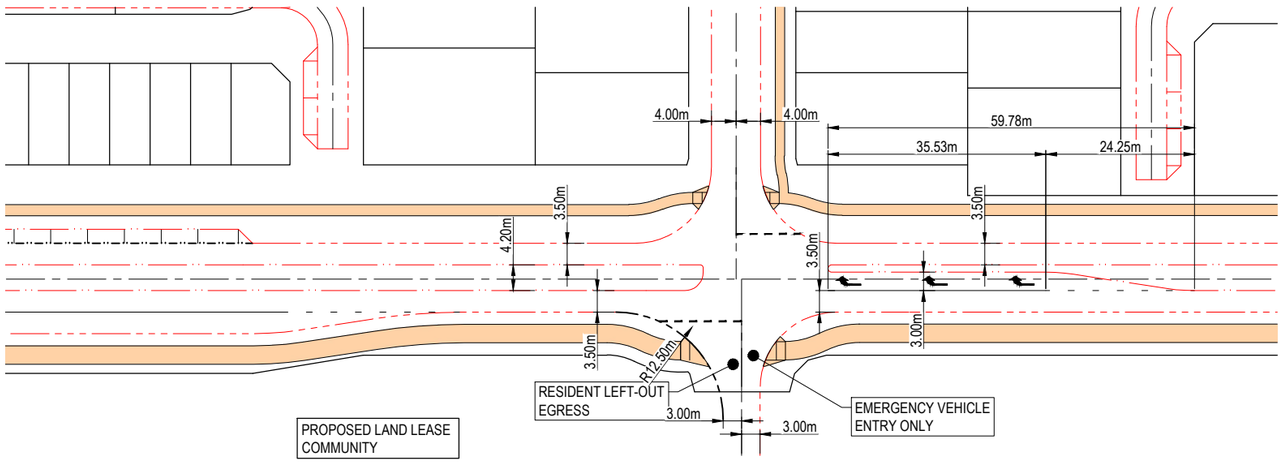


## ULTIMATE INTERSECTION 1502 LAYOUT PLAN

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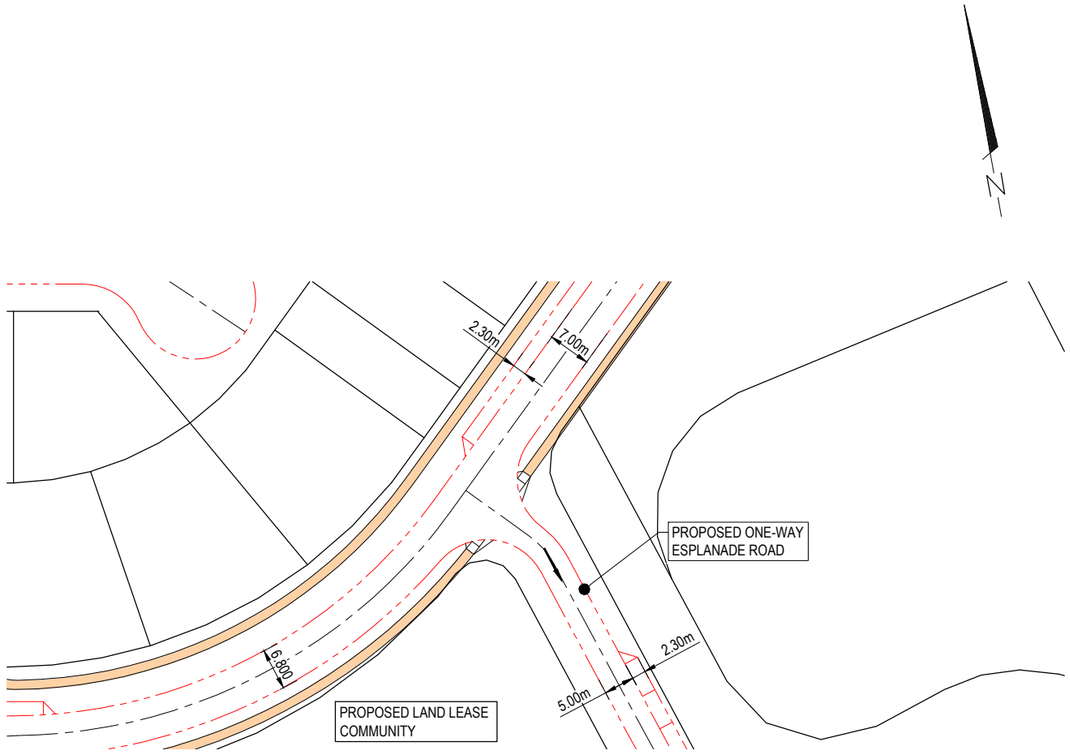


## INTERSECTION 1506 LAYOUT PLAN

SCALE: 1:500 (A1)
SCALE: 1:1000 (A3)

## NOTE

1. CONCEPTUAL DESIGN ONLY REFER TO 3058-DA1500 FOR NOTES.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. REFER TO 3058-DA1500 FOR LEGEND.
4. THIS PLAN FORMS PART OF THE LAND LEASE COMMUNITY RECONFIGURATION OF A LOT APPLICATION. IT HAS BEEN INCLUDED WITHIN THE PRECINCT 15 EAST RECONFIGURATION OF A LOT APPLICATION FOR INFORMATION PURPOSES ONLY.

FILE: 3058-DA1500.dwg DATE: 23-02-2022 USER: NICK VENESS
XREFS: Y:\17-000934-3058_TITLEBLOCK_Y-17-000934-3058_R15 BASE_Y-17-000934 - LOTS_Y-17-000934-3015 - BASE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
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| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 6/07/22 | UPDATED MEDIAN & KERB RETURN | IB | MH |
| E | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |
| F | 20.10.22 | UPDATED TO SUIT RFI | NV | NV |

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DESIGN CHECK

STATUS
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DRAWING TITLE
PRECINCT 15 - INTERSECTION FUNCTIONAL LAYOUT SHEET 3 OF 3

| PROJECT No. | DRAWING No. | REVISION |
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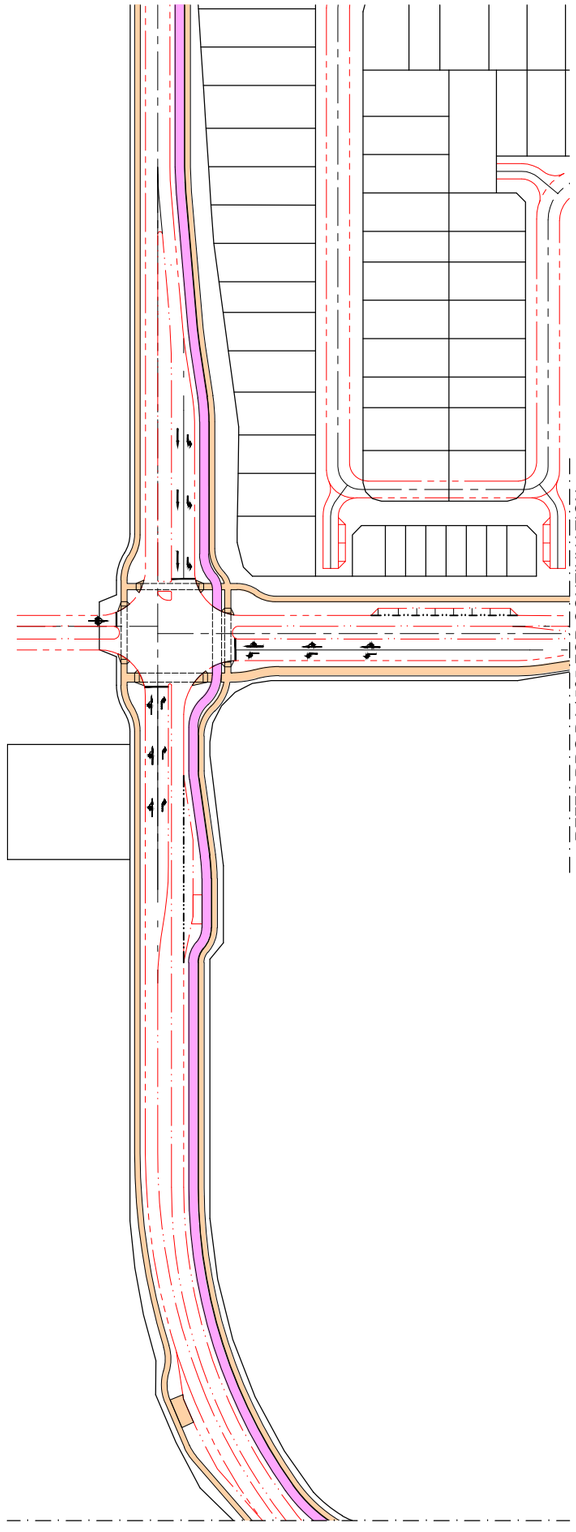
REFER ABOVE FOR CONTINUATION



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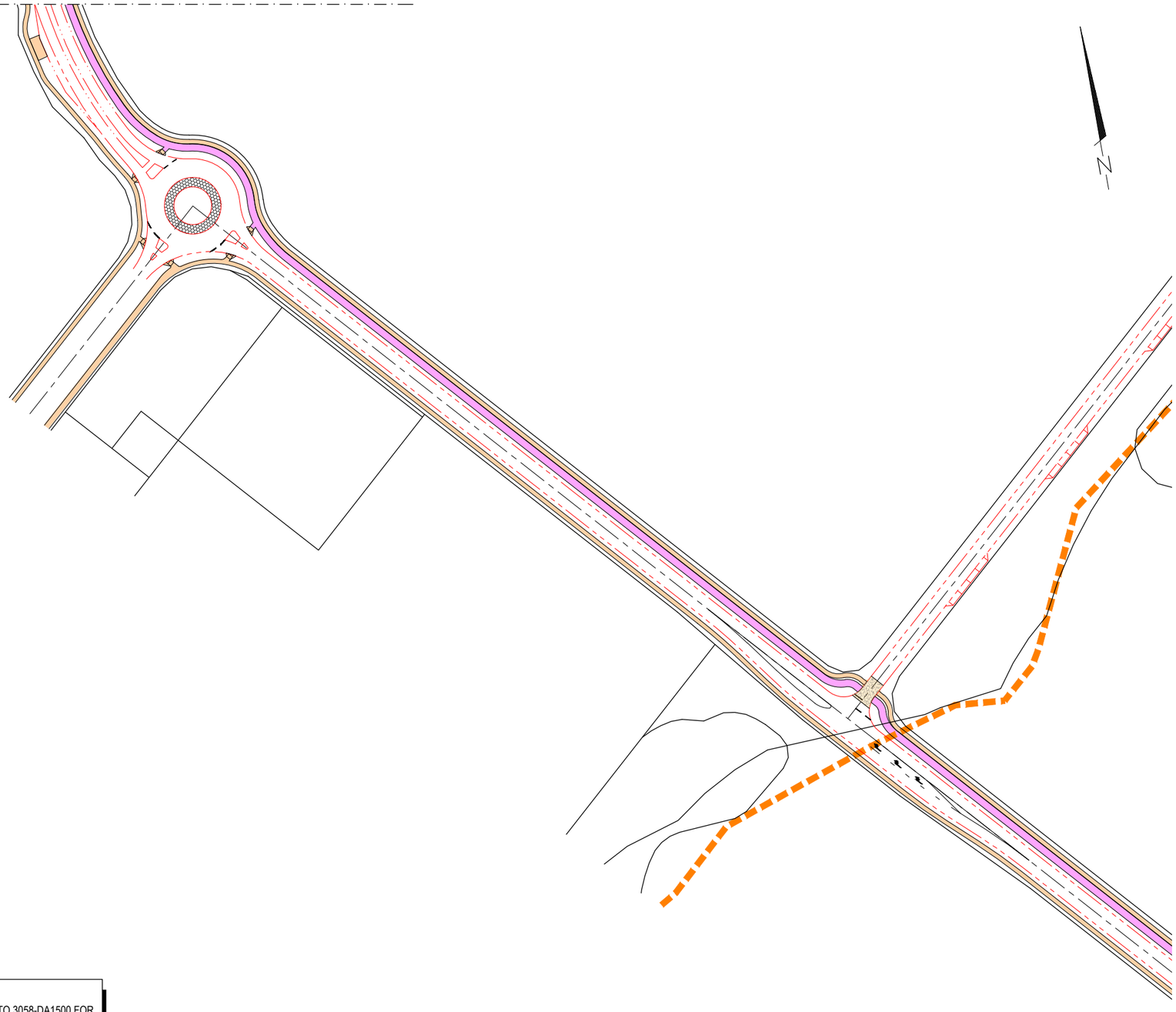

NOTE

1. CONCEPTUAL DESIGN ONLY REFER TO 3058-DA1500 FOR NOTES.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. REFER TO 3058-DA1500 FOR LEGEND.
4. THIS PLAN FORMS PART OF THE LAND LEASE COMMUNITY RECONFIGURATION OF A LOT APPLICATION. IT HAS BEEN INCLUDED WITHIN THE PRECINCT 15 EAST RECONFIGURATION OF A LOT APPLICATION FOR INFORMATION PURPOSES ONLY.

FILE: 3058-DA1500.dwg DATE: 23-02-2022 USER: NICK VENESS
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| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 20.10.22 | AMENDED TO SUIT RFI | NV | NV |

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STATUS

**PRELIMINARY**
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DRAWING TITLE

PRECINCT 15 - OVERALL FUNCTIONAL LAYOUT PLAN SHEET 1 OF 2

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
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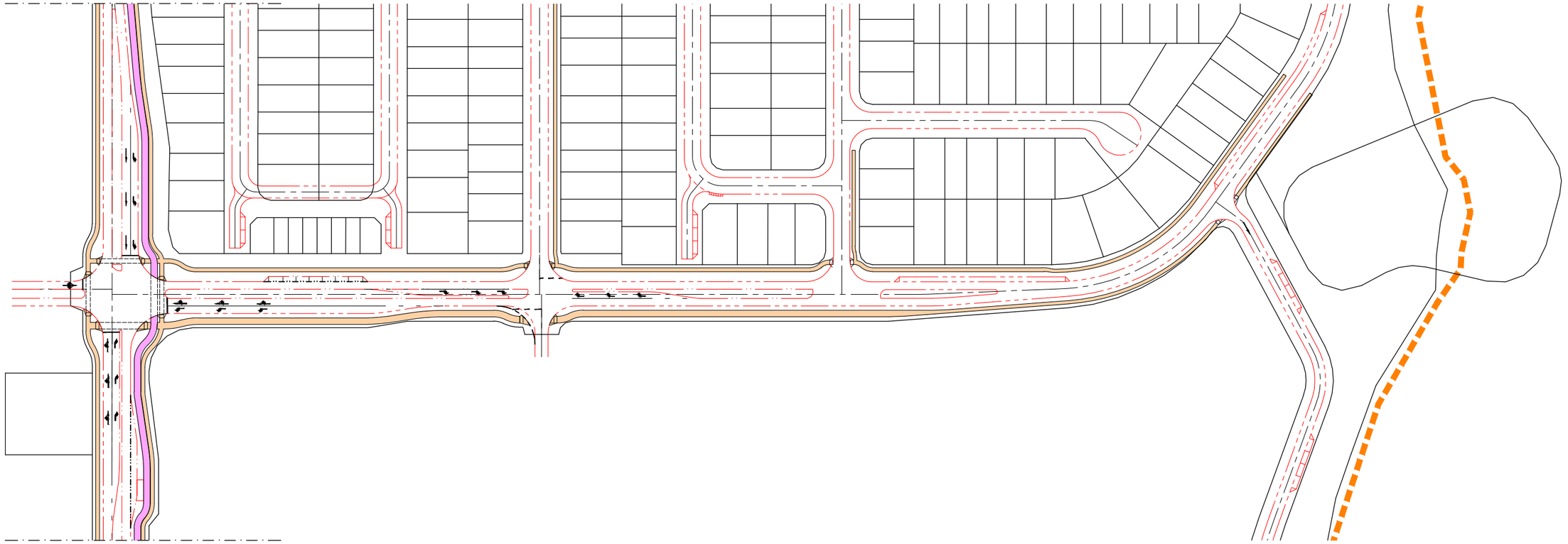


NOTE

1. CONCEPTUAL DESIGN ONLY REFER TO 3058-DA1500 FOR NOTES.
2. REFER TO URBIS MOVEMENT NETWORK PLAN FOR PRECINCT 15 TO CONFIRM FOOTPATH & CONTRAFLOW CYCLEWAY CONFIGURATION.
3. REFER TO 3058-DA1500 FOR LEGEND.
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FILE: 3058-DA1500.dwg DATE: 23-02-2022 USER: NICK VENESS
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|---|---|---|---|---|
| A | 20.10.22 | AMENDED TO SUIT RFI | NV | NV |

DRAWN CHECK

DESIGN CHECK

STATUS
**PRELIMINARY**
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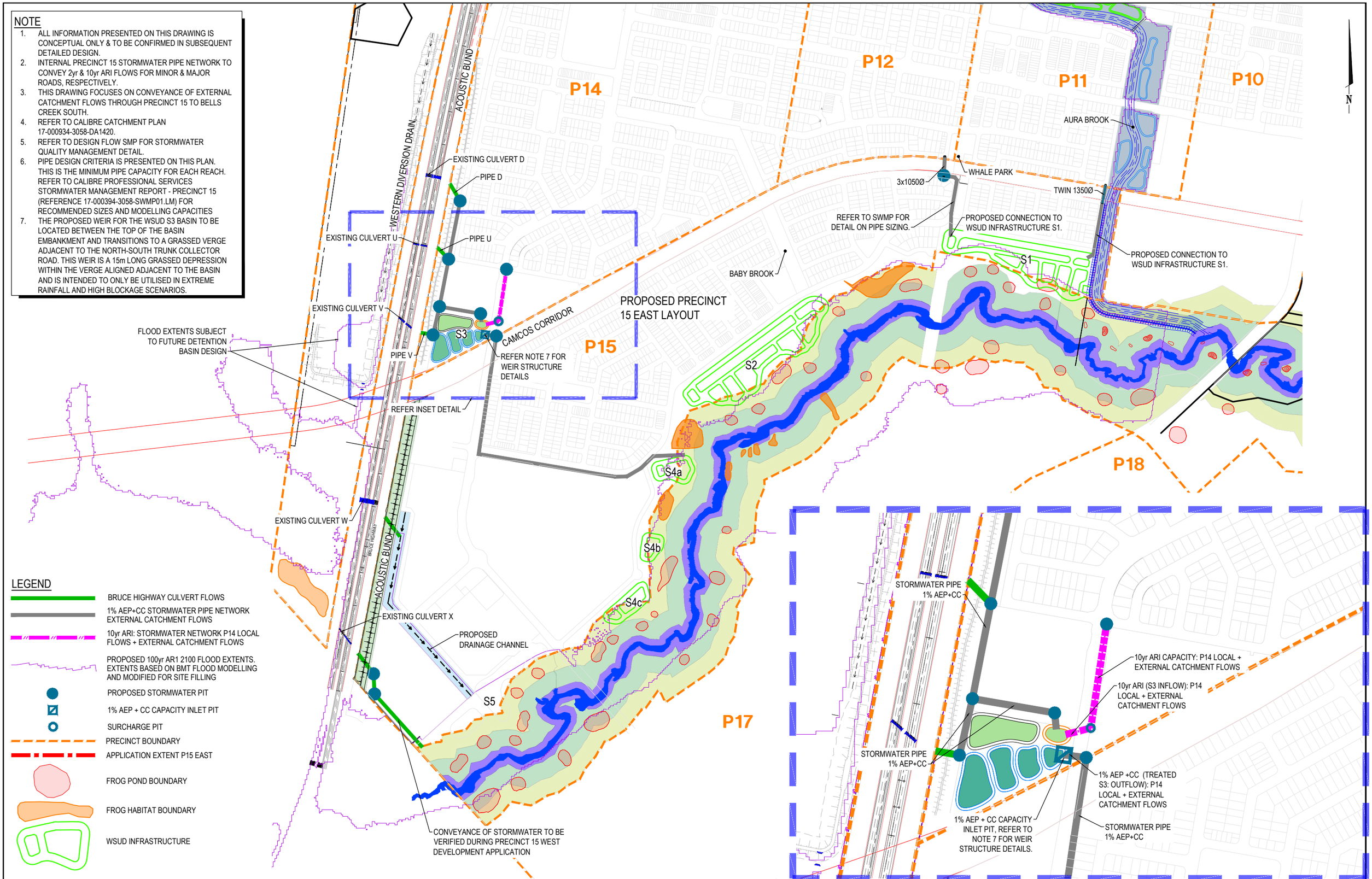
DRAWING TITLE
PRECINCT 15 - OVERALL FUNCTIONAL LAYOUT PLAN
SHEET 2 OF 2

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 17-000934-3058 | DA1505 | A |

NOTE

1. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPTUAL ONLY & TO BE CONFIRMED IN SUBSEQUENT DETAILED DESIGN.
2. INTERNAL PRECINCT 15 STORMWATER PIPE NETWORK TO CONVEY 2yr & 10yr ARI FLOWS FOR MINOR & MAJOR ROADS, RESPECTIVELY.
3. THIS DRAWING FOCUSES ON CONVEYANCE OF EXTERNAL CATCHMENT FLOWS THROUGH PRECINCT 15 TO BELLS CREEK SOUTH.
4. REFER TO CALIBRE CATCHMENT PLAN 17-000934-3058-DA1420.
5. REFER TO DESIGN FLOW SMP FOR STORMWATER QUALITY MANAGEMENT DETAIL.
6. PIPE DESIGN CRITERIA IS PRESENTED ON THIS PLAN. THIS IS THE MINIMUM PIPE CAPACITY FOR EACH REACH. REFER TO CALIBRE PROFESSIONAL SERVICES STORMWATER MANAGEMENT REPORT - PRECINCT 15 (REFERENCE 17-000394-3058-SWMP01.LM) FOR RECOMMENDED SIZES AND MODELLING CAPACITIES
7. THE PROPOSED WEIR FOR THE WSUD S3 BASIN TO BE LOCATED BETWEEN THE TOP OF THE BASIN EMBANKMENT AND TRANSITIONS TO A GRASSED VERGE ADJACENT TO THE NORTH-SOUTH TRUNK COLLECTOR ROAD. THIS WEIR IS A 15m LONG GRASSED DEPRESSION WITHIN THE VERGE ALIGNED ADJACENT TO THE BASIN AND IS INTENDED TO ONLY BE UTILISED IN EXTREME RAINFALL AND HIGH BLOCKAGE SCENARIOS.




LEGEND

- BRUCE HIGHWAY CULVERT FLOWS
- 1% AEP+CC STORMWATER PIPE NETWORK EXTERNAL CATCHMENT FLOWS
- 10yr ARI: STORMWATER NETWORK P14 LOCAL FLOWS + EXTERNAL CATCHMENT FLOWS
- PROPOSED 100yr AR1 2100 FLOOD EXTENTS. EXTENTS BASED ON BMT FLOOD MODELLING AND MODIFIED FOR SITE FILLING
- PROPOSED STORMWATER PIT
- 1% AEP + CC CAPACITY INLET PIT
- SURCHARGE PIT
- PRECINCT BOUNDARY
- APPLICATION EXTENT P15 EAST
- FROG POND BOUNDARY
- FROG HABITAT BOUNDARY
- WSUD INFRASTRUCTURE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
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| A | 2/03/22 | ISSUE FOR ROL APPROVAL - LLC - PRECINCT 15 EAST | IB | MH |
| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 6/07/22 | WEIR DETAILS ADDED | IB | MH |
| E | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |

DRAWN CHECK

DESIGN CHECK

STATUS
**PRELIMINARY**
**NOT FOR CONSTRUCTION**

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PRECINCT 15

DISCLAIMER
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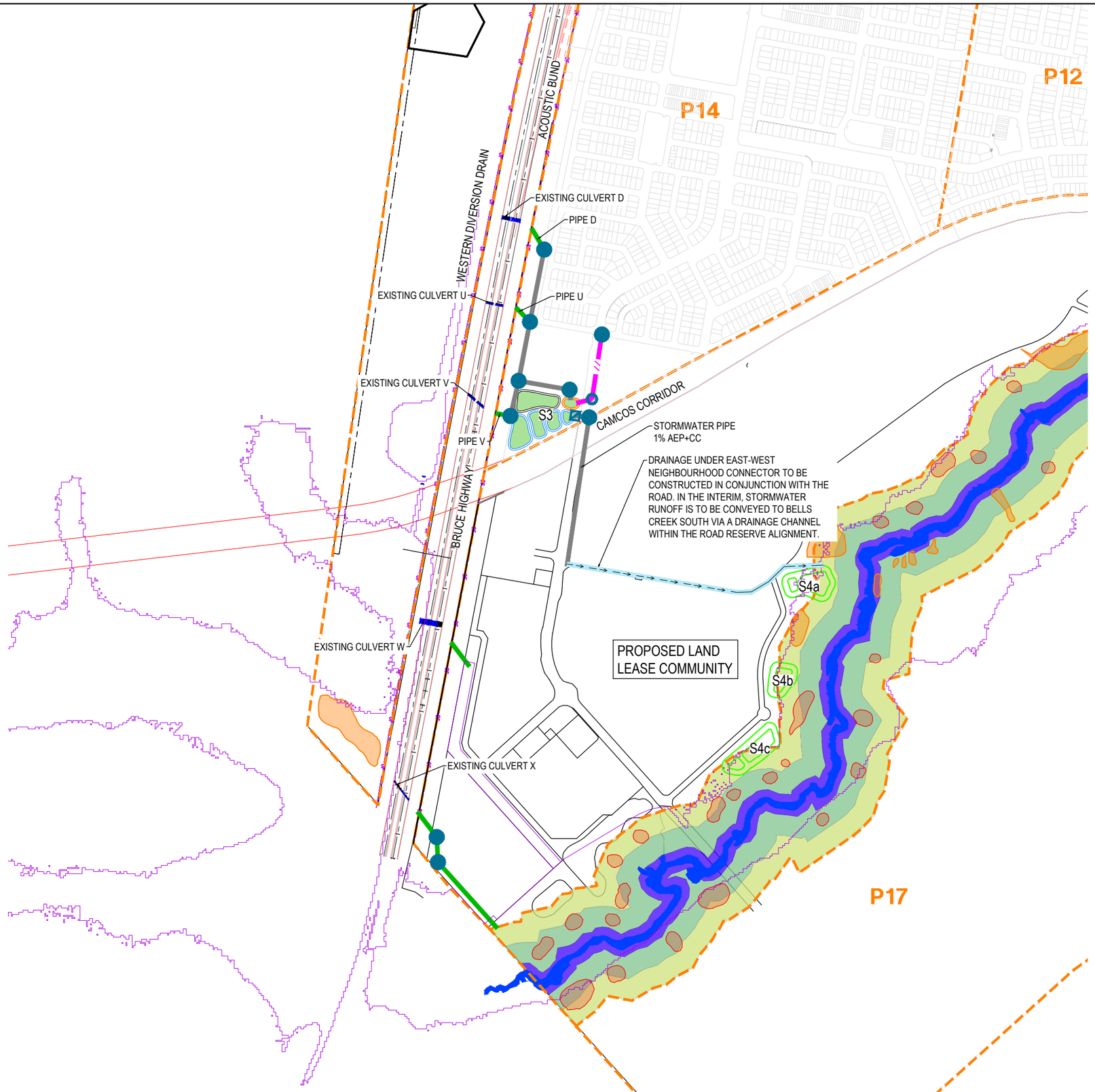
DRAWING TITLE
PRECINCT 15 - ULTIMATE SCHEMATIC STORMWATER DRAINAGE LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 17-000934-3058 | DA1400 | E |

NOTE

1. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPTUAL ONLY & TO BE CONFIRMED IN SUBSEQUENT DETAILED DESIGN.
2. INTERNAL PRECINCT 15 STORMWATER PIPE NETWORK TO CONVEY 2yr & 10yr ARI FLOWS FOR MINOR & MAJOR ROADS, RESPECTIVELY.
3. THIS DRAWING FOCUSES ON AN INTERIM STRATEGY FOR THE CONVEYANCE OF EXTERNAL CATCHMENT FLOWS THROUGH PRECINCT 15 TO BELLS CREEK SOUTH FOR THE PURPOSES OF THE PROPOSED LAND LEASE COMMUNITY.
4. REFER TO CALIBRE CATCHMENT PLAN 17-000934-3058-DA1420.
5. REFER TO DESIGN FLOW SMP FOR STORMWATER QUALITY MANAGEMENT DETAIL.
6. THIS LAYOUT IS STILL UNDER DEVELOPMENT AND IS TO BE SUBMITTED TO ECONOMIC DEVELOPMENT QUEENSLAND FOR APPROVAL UNDER A SEPARATE APPLICATION.

N




LEGEND

- BRUCE HIGHWAY CULVERT FLOWS
- 1% AEP+CC STORMWATER PIPE NETWORK EXTERNAL CATCHMENT FLOWS
- 10yr ARI: STORMWATER NETWORK P14 LOCAL FLOWS + EXTERNAL CATCHMENT FLOWS
- INTERIM DRAINAGE CHANNEL TO CONVEY STORMWATER FLOWS TO BELLS CREEK SOUTH
- PROPOSED 100yr AR1 2100 FLOOD EXTENTS. EXTENTS BASED ON BMT FLOOD MODELLING AND MODIFIED FOR SITE FILLING
- PROPOSED STORMWATER PIT
- 1% AEP + CC CAPACITY INLET PIT
- SURCHARGE PIT
- PRECINCT BOUNDARY
- FROG POND BOUNDARY
- FROG HABITAT BOUNDARY
- WSUD INFRASTRUCTURE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 2/03/22 | ISSUE FOR ROL APPROVAL - LLC - PRECINCT 15 EAST | IB | MH |
| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 6/07/22 | UPDATED FLOOD LINE | IB | MH |
| E | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |

DRAWN CHECK

DESIGN CHECK

STATUS
**PRELIMINARY**
**NOT FOR CONSTRUCTION**

SCALE
1:5000 100 50 0 100 200m A1
1:10000 A3

CLIENT
Stockland AURA

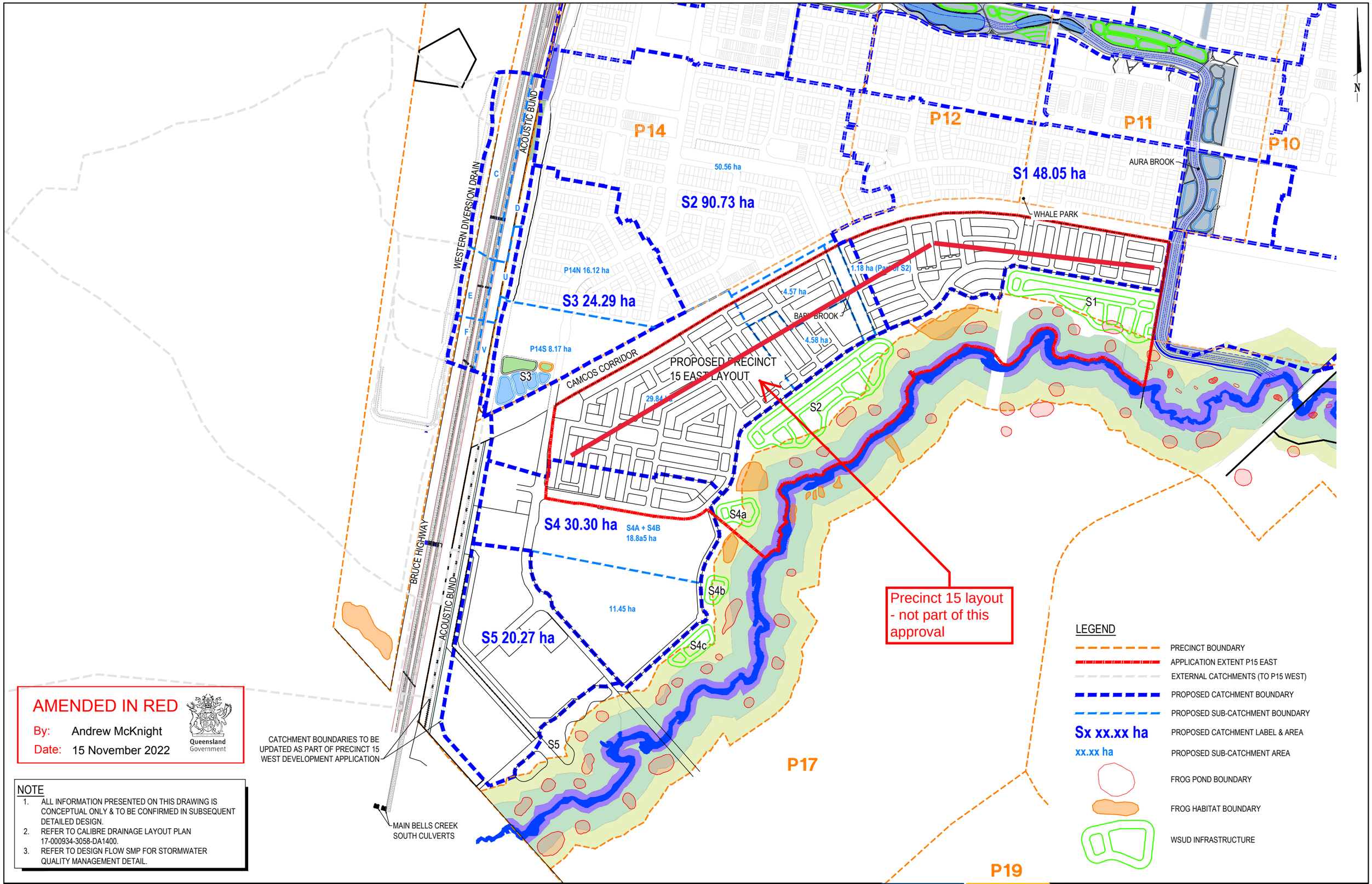
calibre
calibregroup.com


PROJECT
STOCKLAND-AURA
PRECINCT 15

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE
PRECINCT 15 LLC - INTERIM SCHEMATIC STORMWATER DRAINAGE LAYOUT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 17-000934-3058 | DA1401 | E |




AMENDED IN RED

By: Andrew McKnight

Date: 15 November 2022

Queensland Government

NOTE

1. ALL INFORMATION PRESENTED ON THIS DRAWING IS CONCEPTUAL ONLY & TO BE CONFIRMED IN SUBSEQUENT DETAILED DESIGN.
2. REFER TO CALIBRE DRAINAGE LAYOUT PLAN 17-000934-3058-DA1400.
3. REFER TO DESIGN FLOW SMP FOR STORMWATER QUALITY MANAGEMENT DETAIL.

LEGEND

- PRECINCT BOUNDARY
- APPLICATION EXTENT P15 EAST
- EXTERNAL CATCHMENTS (TO P15 WEST)
- PROPOSED CATCHMENT BOUNDARY
- PROPOSED SUB-CATCHMENT BOUNDARY
- Sx xx.xx ha — PROPOSED CATCHMENT LABEL & AREA
- xx.xx ha — PROPOSED SUB-CATCHMENT AREA
- FROG POND BOUNDARY
- FROG HABITAT BOUNDARY
- WSUD INFRASTRUCTURE

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 2/03/22 | ISSUE FOR ROL APPROVAL - LLC - PRECINCT 15 EAST | IB | MH |
| B | 8/03/22 | ISSUE FOR ROL APPROVAL - PRECINCT 15 EAST | IB | MH |
| C | 1/07/22 | EDQ RFIs | IB | MH |
| D | 6/07/22 | UPDATED CATCHMENT AREAS | IB | MH |
| E | 26/08/22 | UPDATE IN RESPONSE TO RFI | SD | SD |

DRAWN CHECK

DESIGN CHECK

STATUS: **PRELIMINARY**
**NOT FOR CONSTRUCTION**

SCALE: 1:5000 / 1:10000 — 100 50 0 100 200m — A1 / A3

CLIENT: Stockland AURA

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PROJECT: STOCKLAND-AURA
PRECINCT 15

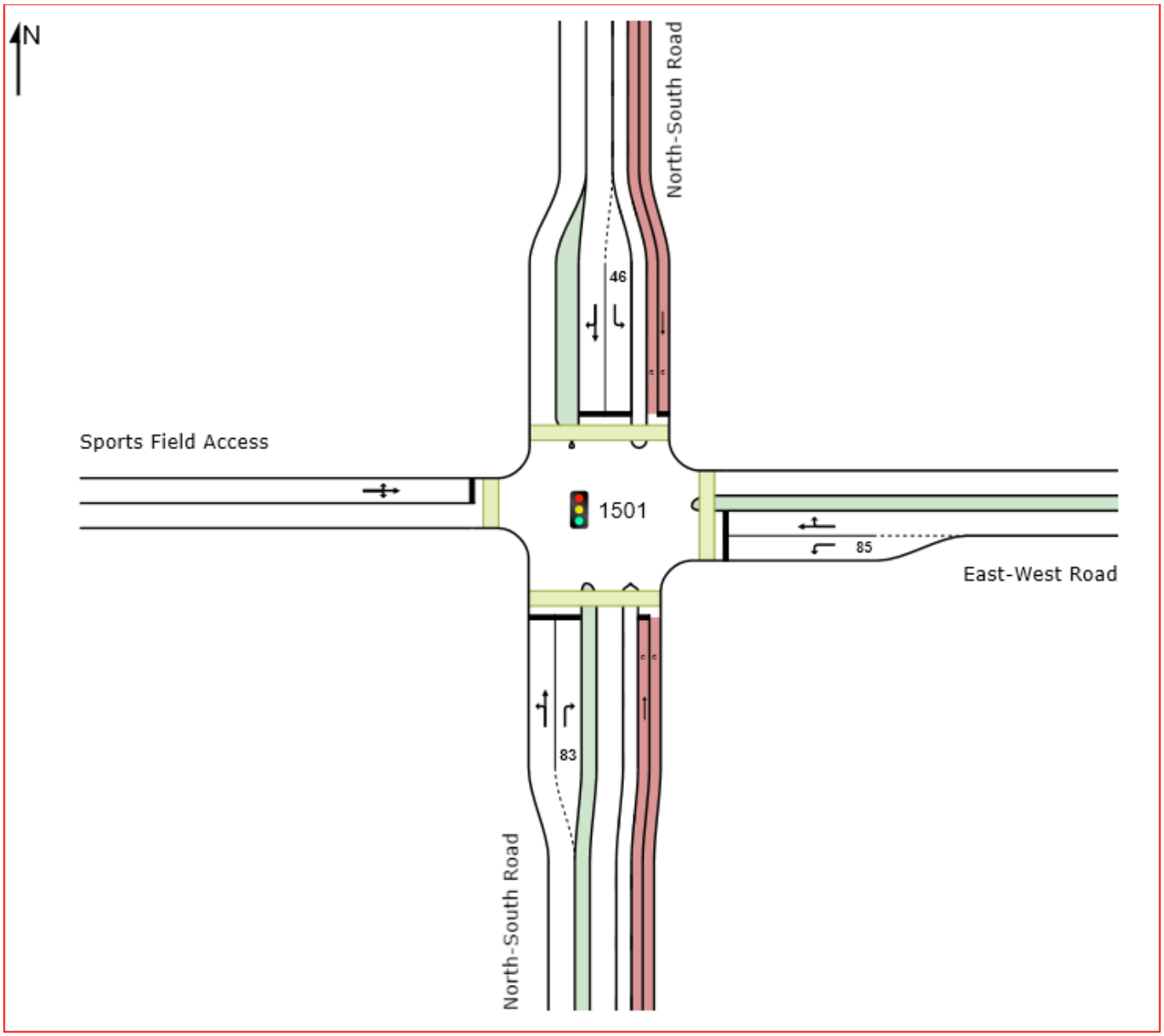
DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: PRECINCT 15 - DRAINAGE CATCHMENT PLAN

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 17-000934-3058 | DA1420 | E |

# Appendix C SIDRA Intersection Modelling

# Intersection 1501



# LANE SUMMARY

## Site: 1501 [Aura Intersection 1501 - (signalised) - AM - Updated Oct 22 (Site Folder: 2022)]

Aura Precinct 15
Site Category: 4 leg intersection
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 110 seconds (Site User-Given Cycle Time)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 113 | 6.2 | 300 | 0.377 | 100 | 45.4 | LOS D | 5.5 | 40.7 | Full | 141 | 0.0 | 0.0 |
| Lane 2 | 43 | 5.0 | 296 | 0.146 | 100 | 48.6 | LOS D | 2.0 | 14.7 | Short | 83 | 0.0 | NA |
| Lane 3 (C) | 27 | 0.0 | 1014 | 0.027 | 100 | 40.3 | LOS D | 1.2 | 3.2 | Full | 141 | 0.0 | 0.0 |
| Approach | 183 | 5.0 | | 0.377 | | 45.4 | LOS D | 5.5 | 40.7 | | | | |
| East: East-West Road | | | | | | | | | | | | | |
| Lane 1 | 22 | 5.0 | 456 | 0.048 | 100 | 38.7 | LOS D | 0.9 | 6.5 | Short | 85 | 0.0 | NA |
| Lane 2 | 209 | 4.9 | 555 | 0.378 | 100 | 37.6 | LOS D | 8.8 | 64.3 | Full | 153 | 0.0 | 0.0 |
| Approach | 232 | 5.0 | | 0.378 | | 37.7 | LOS D | 8.8 | 64.3 | | | | |
| North: North-South Road | | | | | | | | | | | | | |
| Lane 1 (C) | 28 | 0.0 | 1014 | 0.028 | 100 | 40.3 | LOS D | 1.2 | 3.3 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 56 | 5.0 | 758 | 0.074 | 100 | 16.2 | LOS B | 1.0 | 7.2 | Short | 46 | 0.0 | NA |
| Lane 3 | 119 | 6.2 | 309 | 0.386 | 100 | 45.5 | LOS D | 5.8 | 43.0 | Full | 500 | 0.0 | 0.0 |
| Approach | 203 | 5.0 | | 0.386 | | 36.7 | LOS D | 5.8 | 43.0 | | | | |
| West: Sports Field Access | | | | | | | | | | | | | |
| Lane 1 | 6 | 4.2 | 181 | 0.035 | 100 | 53.7 | LOS D | 0.3 | 2.3 | Full | 110 | 0.0 | 0.0 |
| Approach | 6 | 4.2 | | 0.035 | | 53.7 | LOS D | 0.3 | 2.3 | | | | |
| Intersection | 624 | 5.0 | | 0.386 | | 39.8 | LOS D | 8.8 | 64.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

# LANE SUMMARY

## Site: 1501 [Aura Intersection 1501 - (signalised) - PM - Updated Oct 22 (Site Folder: 2022)]

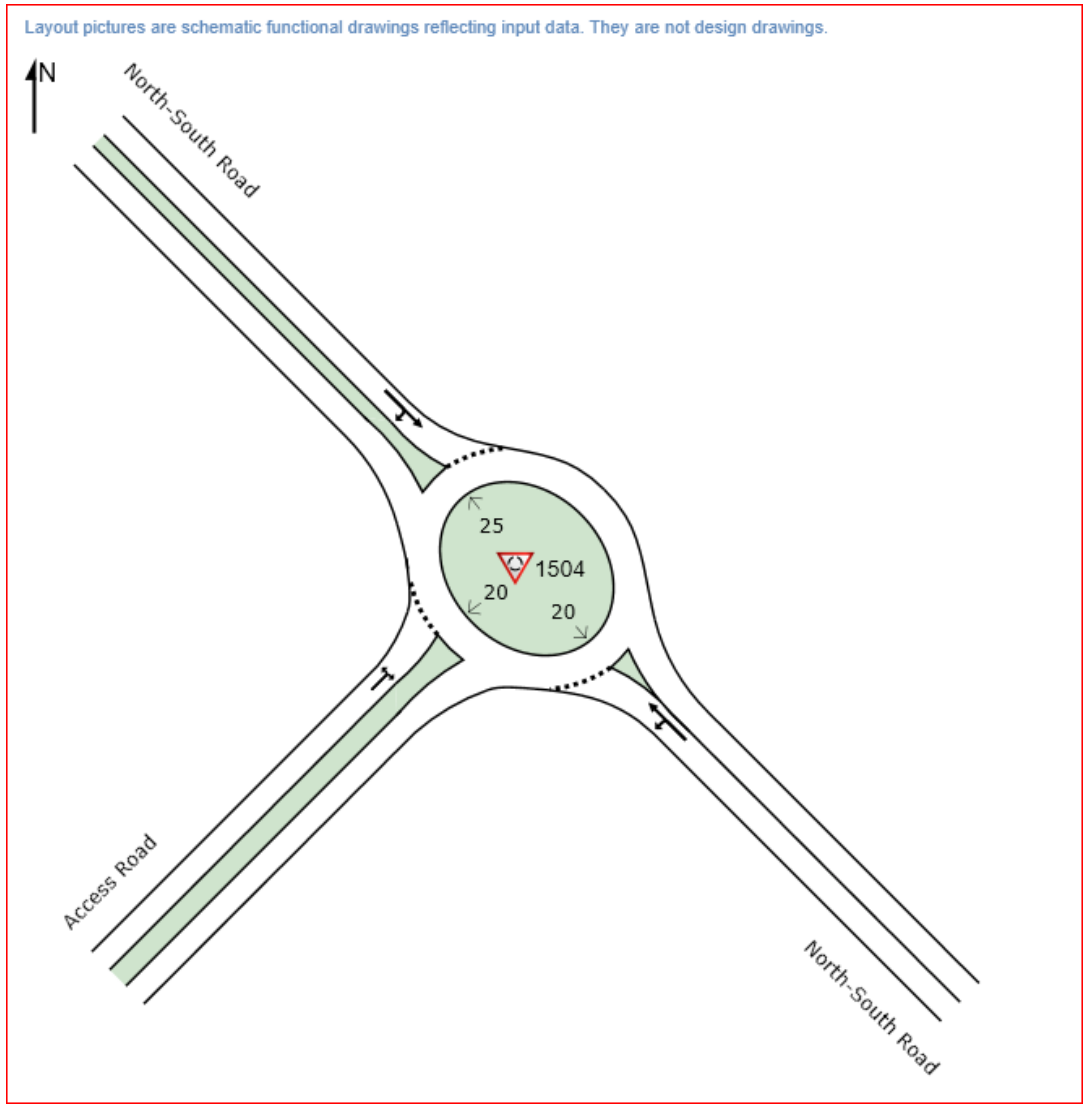
Aura Precinct 15
Site Category: 4 leg intersection
Signals - EQUISAT (Fixed-Time/SCATS) Isolated  Cycle Time = 110 seconds (Site User-Given Cycle Time)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 78 | 6.2 | 438 | 0.178 | 100 | 36.4 | LOS D | 3.4 | 24.7 | Full | 141 | 0.0 | 0.0 |
| Lane 2 | 104 | 5.0 | 428 | 0.243 | 100 | 42.4 | LOS D | 4.6 | 33.3 | Short | 83 | 0.0 | NA |
| Lane 3 (C) | 19 | 0.0 | 1239 | 0.015 | 100 | 36.6 | LOS D | 0.8 | 2.1 | Full | 141 | 0.0 | 0.0 |
| Approach | 201 | 5.0 | | 0.243 | | 39.5 | LOS D | 4.6 | 33.3 | | | | |
| East: East-West Road | | | | | | | | | | | | | |
| Lane 1 | 18 | 5.0 | 261 | 0.069 | 100 | 49.8 | LOS D | 0.8 | 6.1 | Short | 85 | 0.0 | NA |
| Lane 2 | 89 | 4.9 | 359 | 0.249 | 100 | 45.9 | LOS D | 4.1 | 29.9 | Full | 153 | 0.0 | 0.0 |
| Approach | 107 | 5.0 | | 0.249 | | 46.5 | LOS D | 4.1 | 29.9 | | | | |
| North: North-South Road | | | | | | | | | | | | | |
| Lane 1 (C) | 22 | 0.0 | 1239 | 0.018 | 100 | 36.6 | LOS D | 0.9 | 2.5 | Full | 500 | 0.0 | 0.0 |
| Lane 2 | 149 | 5.0 | 626 | 0.239 | 100 | 19.8 | LOS B | 3.1 | 22.4 | Short | 46 | 0.0 | NA |
| Lane 3 | 93 | 6.2 | 378 | 0.245 | 100 | 40.5 | LOS D | 4.2 | 31.1 | Full | 500 | 0.0 | 0.0 |
| Approach | 264 | 5.0 | | 0.245 | | 28.5 | LOS C | 4.2 | 31.1 | | | | |
| West: Sports Field Access | | | | | | | | | | | | | |
| Lane 1 | 15 | 4.6 | 187 | 0.079 | 100 | 53.8 | LOS D | 0.7 | 5.3 | Full | 110 | 0.0 | 0.0 |
| Approach | 15 | 4.6 | | 0.079 | | 53.8 | LOS D | 0.7 | 5.3 | | | | |
| Intersection | 587 | 5.0 | | 0.249 | | 36.2 | LOS D | 4.6 | 33.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

# Intersection 1504



# LANE SUMMARY

## Site: 1504 [Aura Intersection 1504 - Roundabout - AM - updated - Updated Oct 22 (Site Folder: 2022)]

Aura Precinct 15
Site Category: 3 leg intersection
Roundabout

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: North-South Road | | | | | | | | | | | | | |
| Lane 1[d] | 172 | 5.0 | 1499 | 0.114 | 100 | 4.2 | LOS A | 0.7 | 4.9 | Full | 260 | 0.0 | 0.0 |
| Approach | 172 | 5.0 | | 0.114 | | 4.2 | LOS A | 0.7 | 4.9 | | | | |
| NorthWest: North-South Road | | | | | | | | | | | | | |
| Lane 1[d] | 134 | 5.0 | 1361 | 0.098 | 100 | 5.1 | LOS A | 0.6 | 4.2 | Full | 208 | 0.0 | 0.0 |
| Approach | 134 | 5.0 | | 0.098 | | 5.1 | LOS A | 0.6 | 4.2 | | | | |
| SouthWest: Access Road | | | | | | | | | | | | | |
| Lane 1[d] | 106 | 5.0 | 1230 | 0.086 | 100 | 6.7 | LOS A | 0.5 | 3.5 | Full | 120 | 0.0 | 0.0 |
| Approach | 106 | 5.0 | | 0.086 | | 6.7 | LOS A | 0.5 | 3.5 | | | | |
| Intersection | 412 | 5.0 | | 0.114 | | 5.1 | LOS A | 0.7 | 4.9 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
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.

d Dominant lane on roundabout approach

# LANE SUMMARY

## Site: 1504 [Aura Intersection 1504 - Roundabout - PM - updated - Updated Oct 22 (Site Folder: 2022)]

Aura Precinct 15
Site Category: 3 leg intersection
Roundabout

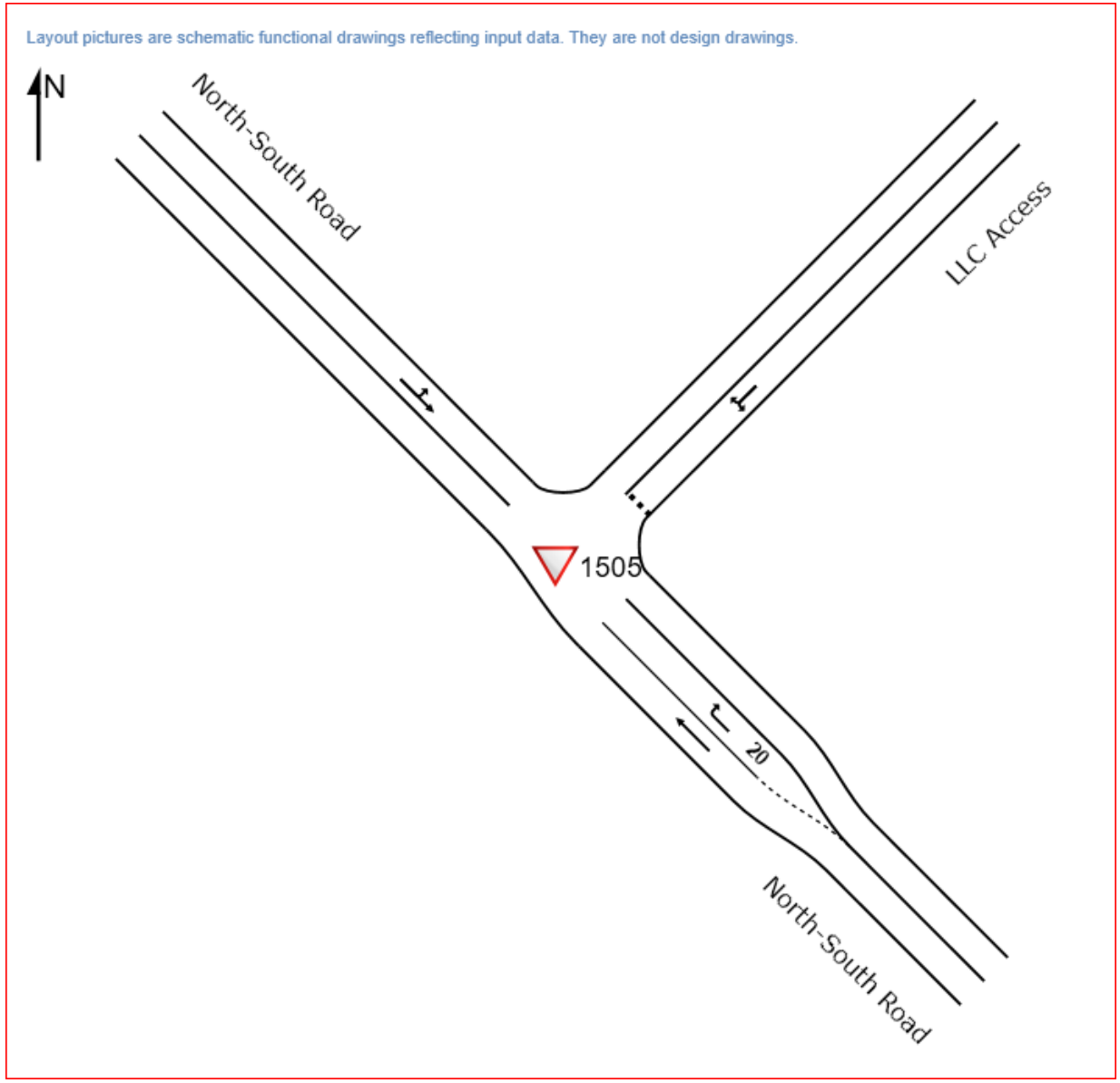
**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: North-South Road | | | | | | | | | | | | | |
| Lane 1[d] | 239 | 5.0 | 1529 | 0.156 | 100 | 4.1 | LOS A | 0.9 | 6.8 | Full | 260 | 0.0 | 0.0 |
| Approach | 239 | 5.0 | | 0.156 | | 4.1 | LOS A | 0.9 | 6.8 | | | | |
| NorthWest: North-South Road | | | | | | | | | | | | | |
| Lane 1[d] | 111 | 5.0 | 1376 | 0.080 | 100 | 5.1 | LOS A | 0.5 | 3.4 | Full | 208 | 0.0 | 0.0 |
| Approach | 111 | 5.0 | | 0.080 | | 5.1 | LOS A | 0.5 | 3.4 | | | | |
| SouthWest: Access Road | | | | | | | | | | | | | |
| Lane 1[d] | 80 | 5.0 | 1162 | 0.069 | 100 | 6.9 | LOS A | 0.4 | 2.8 | Full | 120 | 0.0 | 0.0 |
| Approach | 80 | 5.0 | | 0.069 | | 6.9 | LOS A | 0.4 | 2.8 | | | | |
| Intersection | 429 | 5.0 | | 0.156 | | 4.9 | LOS A | 0.9 | 6.8 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
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.

d Dominant lane on roundabout approach

# Intersection 1505



# LANE SUMMARY

## ▽ Site: 1505 [Aura Intersection 1505-(Priority Controlled- Giveway) - AM - Updated Oct 22 (Site Folder: 2022)]

Aura Precinct 15
Site Category: 3 leg intersection
Give-Way (Two-Way)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 164 | 5.0 | 1894 | 0.087 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 334 | 0.0 | 0.0 |
| Lane 2 | 25 | 5.0 | 1475 | 0.017 | 100 | 6.1 | LOS A | 0.1 | 0.5 | Short | 20 | 0.0 | NA |
| Approach | 189 | 5.0 | | 0.087 | | 0.8 | NA | 0.1 | 0.5 | | | | |
| NorthEast: LLC Access | | | | | | | | | | | | | |
| Lane 1 | 141 | 5.0 | 1303 | 0.108 | 100 | 5.3 | LOS A | 0.4 | 3.3 | Full | 290 | 0.0 | 0.0 |
| Approach | 141 | 5.0 | | 0.108 | | 5.3 | LOS A | 0.4 | 3.3 | | | | |
| NorthWest: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 185 | 5.0 | 1904 | 0.097 | 100 | 0.2 | LOS A | 0.0 | 0.0 | Full | 262 | 0.0 | 0.0 |
| Approach | 185 | 5.0 | | 0.097 | | 0.2 | NA | 0.0 | 0.0 | | | | |
| Intersection | 516 | 5.0 | | 0.108 | | 1.8 | NA | 0.4 | 3.3 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
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.

# LANE SUMMARY

## Site: 1505 [Aura Intersection 1505-(Priority Controlled- Giveway) - PM - Updated Oct 22 (Site Folder: 2022)]

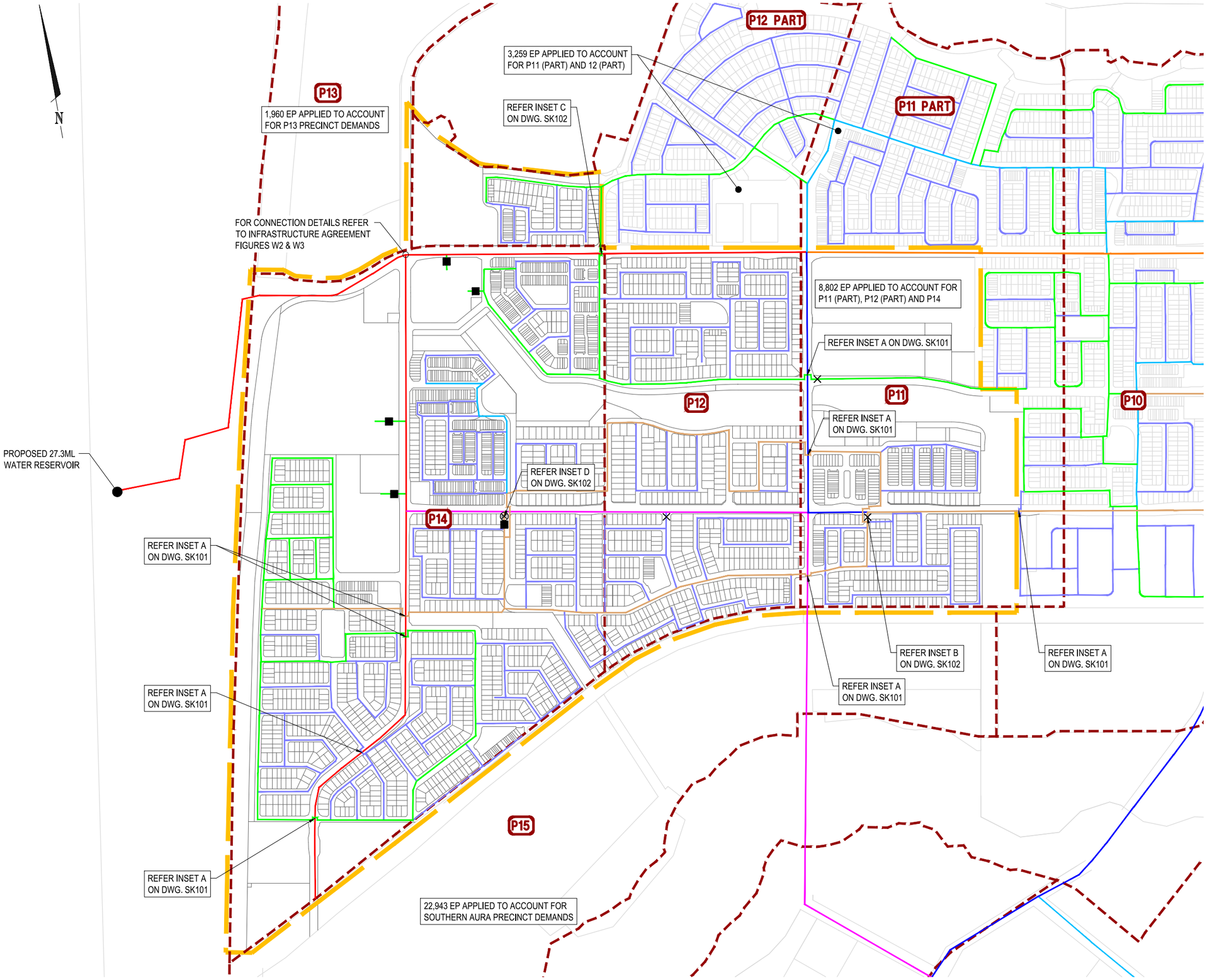
Aura Precinct 15
Site Category: 3 leg intersection
Give-Way (Two-Way)

**Lane Use and Performance**

| | DEMAND FLOWS [ Total veh/h | HV ] % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Aver. Delay sec | Level of Service | 95% BACK OF QUEUE [ Veh | Dist ] m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 235 | 5.0 | 1890 | 0.124 | 100 | 0.0 | LOS A | 0.0 | 0.0 | Full | 334 | 0.0 | 0.0 |
| Lane 2 | 68 | 5.0 | 1534 | 0.045 | 100 | 6.0 | LOS A | 0.2 | 1.5 | Short | 20 | 0.0 | NA |
| Approach | 303 | 5.0 | | 0.124 | | 1.4 | NA | 0.2 | 1.5 | | | | |
| NorthEast: LLC Access | | | | | | | | | | | | | |
| Lane 1 | 63 | 5.0 | 1319 | 0.048 | 100 | 5.2 | LOS A | 0.2 | 1.4 | Full | 290 | 0.0 | 0.0 |
| Approach | 63 | 5.0 | | 0.048 | | 5.2 | LOS A | 0.2 | 1.4 | | | | |
| NorthWest: North-South Road | | | | | | | | | | | | | |
| Lane 1 | 146 | 5.0 | 1900 | 0.077 | 100 | 0.5 | LOS A | 0.0 | 0.0 | Full | 262 | 0.0 | 0.0 |
| Approach | 146 | 5.0 | | 0.077 | | 0.5 | NA | 0.0 | 0.0 | | | | |
| Intersection | 513 | 5.0 | | 0.124 | | 1.6 | NA | 0.2 | 1.5 | | | | |

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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 lanes.
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.

# Appendix D Water and Wastewater Layout Plans




LEGEND:

- EXISTING LOT BOUNDARIES
- LOT BOUNDARY
- SITE BOUNDARY (PRECINCT 11,12, 14)
- PRECINCT BOUNDARY
- PROPOSED DN100 WATER MAIN
- PROPOSED DN150 WATER MAIN
- PROPOSED DN200 WATER MAIN
- PROPOSED DN250 WATER MAIN
- PROPOSED DN300 WATER MAIN
- PROPOSED DN450 WATER MAIN
- PROPOSED DN500 WATER MAIN
- PROPOSED DN600 WATER MAIN
- P1 PRECINCT NUMBER
- PROPOSED WATER RESERVOIR
- FLOW METER
- SHUT VALVE
- OPEN SHUT VALVE

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH CALIBRE REPORT No. 18-000340.05-WER01.
2. THIS DRAWING IS CONCEPTUAL AND INTENDED FOR DISCUSSION PURPOSES ONLY.

**CONCEPT PLAN ONLY**
NOT TO BE USED FOR CONSTRUCTION PURPOSES

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 30.11.18 | ISSUED FOR DRAFT REVIEW | DMP | JG |
| B | 09.01.19 | ISSUED FOR DRAFT REVIEW | JM | JG |
| C | 28.10.20 | UPDATED TO FPNP ISSUE | JM | JG |
| D | 15.01.21 | UPDATED LOT LAYOUT | JM | JG |
| E | 02.02.21 | MINOR AMENDMENTS | JM | JG |
| F | | | | |
| G | | | | |
| H | | | | |

DRAWN

DESIGN

STATUS: **PRELIMINARY** NOT FOR CONSTRUCTION

SCALE: 1:5000 100 50 0 100 200 A1; 1:10000 A3

CLIENT: **STOCKLAND DEVELOPMENT PTY LTD**

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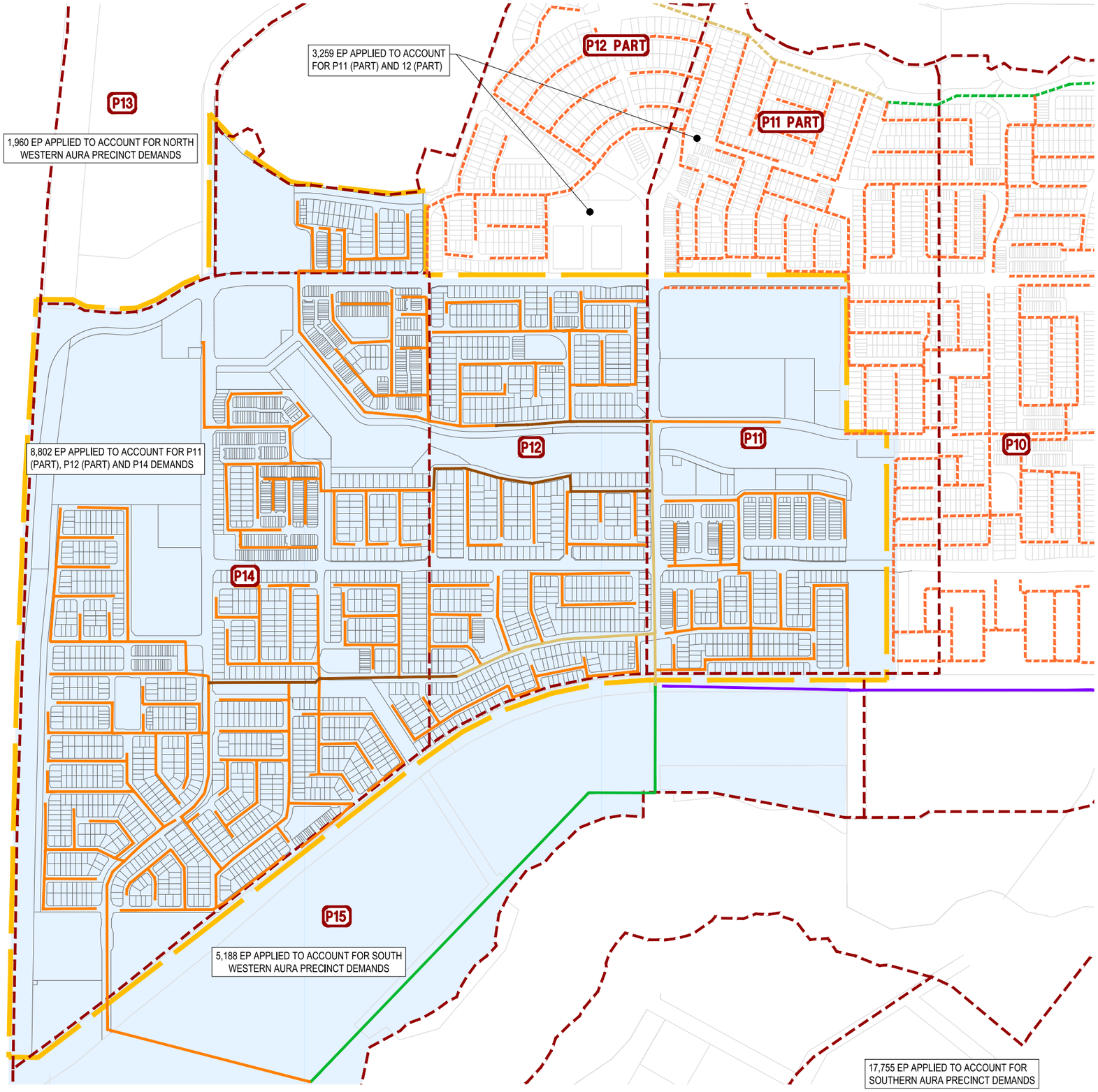
PROJECT: **AURA PRECINCTS 11 (PART), 12 (PART) & 14 (NIRIMBA)**

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: **45,001 EP - 60,000 EP HORIZON WATER STRATEGY**

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 18-000340.05 | SK104 | E |




LEGEND:

- CADASTRE
- LOT BOUNDARY
- SITE BOUNDARY
- PRECINCT BOUNDARY
- EXISTING DN150 WASTEWATER MAIN
- EXISTING DN300 WASTEWATER MAIN
- EXISTING DN375 WASTEWATER MAIN
- DN150 WASTEWATER MAIN
- DN225 WASTEWATER MAIN
- DN300 WASTEWATER MAIN
- DN375 WASTEWATER MAIN
- DN450 WASTEWATER MAIN
- DN600 WASTEWATER MAIN
- P1 PRECINCT NUMBER
- SPS-B CATCHMENT

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH CALIBRE REPORT No. 18-000340.05-WER01.
2. THIS DRAWING IS CONCEPTUAL AND INTENDED FOR DISCUSSION PURPOSES ONLY.

**CONCEPT PLAN ONLY**
NOT TO BE USED FOR CONSTRUCTION PURPOSES

| REVISION | DATE | ISSUE DETAILS | DRAWN | DESIGN |
|---|---|---|---|---|
| A | 30.11.18 | ISSUED FOR DRAFT REVIEW | DMP | DH |
| B | 09.01.19 | ISSUED FOR DRAFT REVIEW | JM | JG |
| C | 28.10.20 | UPDATED TO FPNP ISSUE | JM | JG |
| D | 15.01.21 | UPDATED LOT LAYOUT | JM | JG |
| E | 11.02.21 | MINOR AMENDMENTS | JM | JG |
| F | | | | |
| G | | | | |
| H | | | | |

DRAWN

DESIGN

STATUS: **PRELIMINARY**
**NOT FOR CONSTRUCTION**

SCALE: 1:4,000 40 0 40 80 120 160 200 A1
1:8,000 A3

CLIENT: **STOCKLAND DEVELOPMENT PTY LTD**

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PROJECT: **AURA PRECINCTS 11 (PART), 12 (PART) & 14 (NIRIMBA)**

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: **45,001 EP - 60,000 EP WASTEWATER STRATEGY**

| PROJECT No. | DRAWING No. | REVISION |
|---|---|---|
| 18-000340.05 | SK304 | E |


PROPOSED AMENDMENT TO
ALIGNMENT TO SUIT LAYOUT

# Contact Us

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