AMENDED IN RED

By: Jennifer Davison

Date: 9 July 2024

Queensland Government

Stantec

Aura Lakes Precinct Engineering Services Report Precinct 18 – First Development

Prepared for Stockland Development Pty Ltd

Reference no. 304701171-001 | 3 July 2024

PLANS AND DOCUMENTS referred to in the PDA DEVELOPMENT APPROVAL

Approval no: DEV2023/1458

Date: 2 August 2024

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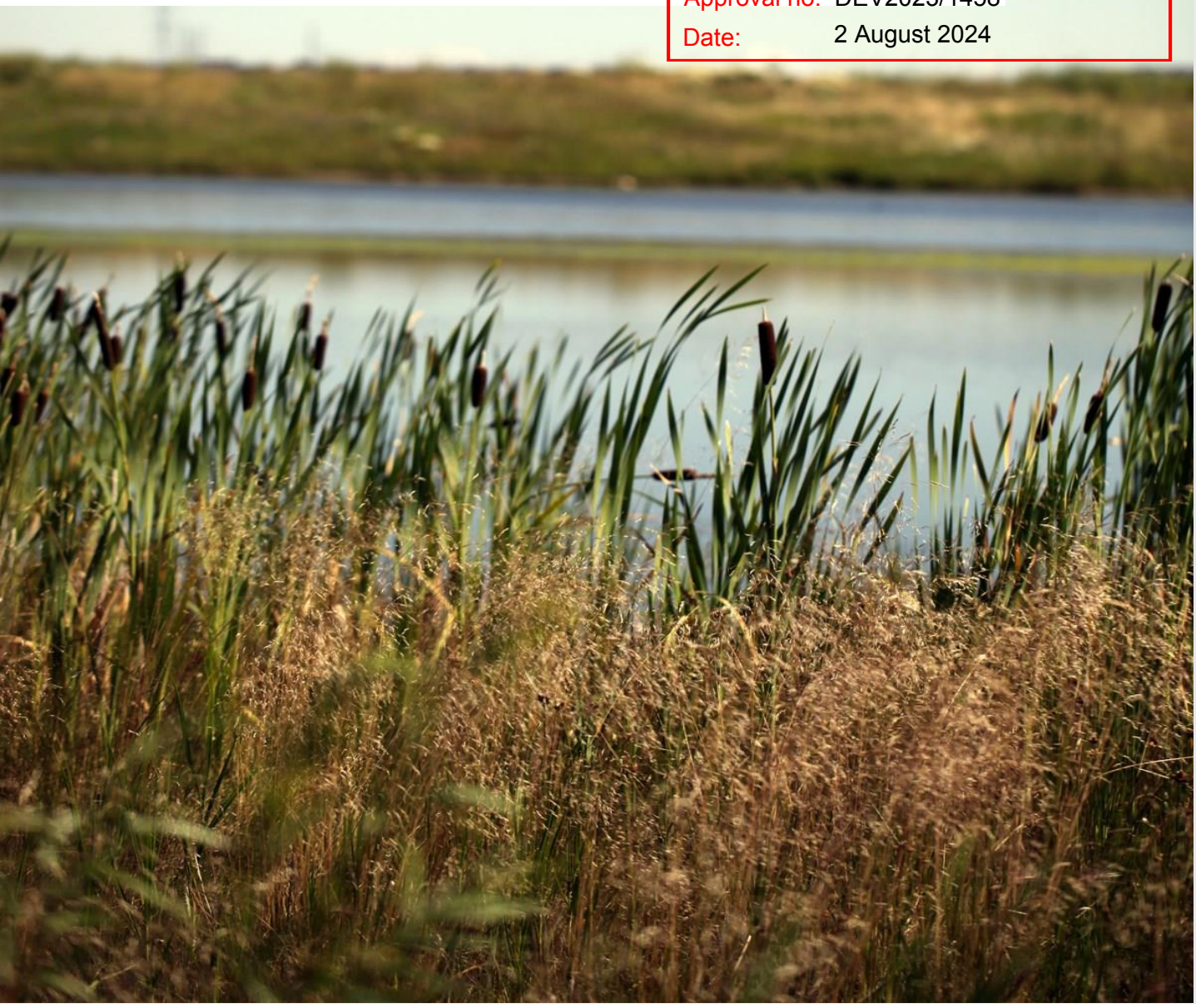

Revision	Date	Description	Author	Quality Check	Independent Review
1	13/11/2023	Draft for Review	NS	AG	
2	19/06/2024	Response to Further Issues Request	JC	AG	
3	03/07/2024	Updated for Revised Internal Intersection Configurations	JC	AG	

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Response to Further Issues Letter

Further to the Further Issues Letter provided by Economic Development Queensland dated 29 May 2024 and subsequent meetings we provide the following responses to engineering items raised:

Further Issues Letter Item	Description	Response
2 (b) (iii)	Provide a revised lot layout and bulk earthworks strategy / lot grading plan that reduces the overall heights of retaining walls and acoustic fence treatment. Retaining walls should be a maximum of 2.5m tall, with a preference for tiered structures taller than 1.5m.	Revised earthworks design has been provided as detailed on drawing SK1010 with retaining wall heights included within the engineering design detailed on drawing SK1011. Proposed retaining wall details are discussed in section 3.4 of this report.
2 (b) (iv)	For inclusion in the Engineering Services Report, provide detailed sections (top of wall RL) at any fence height change intervals along the proposed acoustic attenuation areas (i.e. overall retaining wall and acoustic fence combined).	Cross-sections and a detailed elevation of the proposed retaining wall and acoustic barrier configuration at the interface of the development site and Bells Creek Arterial is included within drawings SK1135 to SK1137.
4	Flooding and Development Staging	Further to recent meetings and discussions with DTMR, it has been agreed that this item be appropriately conditioned within the development approval to be addressed prior to the plan sealing of the first allotments within the site. Discussion of this item is included within Section 6.1 of this report.
5	Stormwater Management Plan	The contents of this item are addressed by revised Stormwater Quality Management Reporting prepared by Bligh Tanner dated 19 June 2024.
5 (d)	Provide concept drawings for the WSUD treatment devices (Stages 23 and 25, Lots 9004 and 9005; and Stage 45 Lot 9018) to demonstrate the basin footprint can be located within the drainage reserve boundaries.	Preliminary design of the proposed water quality management devices associated with this development are included on drawing SK1300. Discussion of this item is included within section 6.2 of this report.
6 (a) (i)	Undertake further investigation to the road network design including: Removal of two signalised intersections circled in red below. The side roads (access street) for these signalised intersections have reasonably low traffic volume.	In accordance with section 4.2.1 of this report removal of signalised intersections as shown on the overall context plan is not supported. The intersecting roads are anticipated to be of a neighbourhood connector hierarchy servicing significant catchments of development. Removal of intersections as proposed will result in large catchments of development being serviced by single points of access which is not considered an acceptable solution.
6 (a) (ii)	Priority-controlled intersection can be utilised; T-intersection with reasonable spacing.	In accordance with section 4.2.1 of this report transitioning of proposed intersection locations on the sub-arterial roadway to priority controlled intersections is not supported. The anticipated ultimate traffic volumes, ultimate width of the sub-arterial road cross-section and all movements configurations of the proposed

Further Issues Letter Item	Description	Response
		intersections are most appropriately managed via provision of signalised intersections.
6 (a) (iii)	Realignment of Aura Boulevard near the Mixed Residential precinct to avoid the tight sweeping bend. The small curve radius may be problematic for intersection sight distance.	It is confirmed that the proposed roadway geometry for the sub-arterial roadway complies with the requirements for a design speed of 70km/h. Accordingly, no changes are proposed to the alignment of the sub-arterial roadway.
7 (a)	At the northeast corner of the school site (Stages 41-43 at Lot 8003), the proposed signalised intersection is not warranted. Remove this signalised intersection and incorporate prioritised pedestrian crossings leading to the northeastern and eastern direction.	The intersection signalisation at this location has been removed from the proposal documents and updated in accordance with the further issues request.
7 (b)	Update Neighbourhood Connector N2 cross section to indicate the school bus bay on the southern side of the road. Provide a minimum 1.5m wide front verge to allow for appropriate shade tree.	The proposed Neighbourhood Connector N2 cross-section has been updated as requested with a on-street indented bus bay provided within the southern side of the roadway on the State Primary School frontage as requested.
8	Active Transport At Local Park lot 9015 adjacent to Bells Creek Arterial, allow for a future connection to Bells Creek Arterial Road Reserve (future regional active transport route). Demonstrate how the retaining wall and acoustic fence could be redesigned to accommodate a connection at this location e.g. interim and ultimate.	In accordance with section 4.4 of this report, provision has been made within the engineering design for connectivity to the future active transport corridor within Bells Creek Arterial. Detailed engineering design of the acoustic fence at this location will be required to confirm the required dimensions and details of this treatment.
9 (a)	Referring to the intersection of Aura Boulevard/P19 access road, it is anticipated that a left-turn lane is required here. Provide a turn warrant assessment in accordance with Austroads and amend the engineering drawing SK1055 and SK1056. In Drawing SK1056, the left-turn lane can be incorporated as part of the bus lane and therefore road reserve widening is not required.	In accordance with section 4.2.4 of this report provision for a channelised left hand turn lane has been made at this location as requested.
9 (b)	Identify the posted speed limit of Aura Boulevard as a sub-arterial.	In accordance with section 4.2 of this report the sub-arterial roadway is proposed to have a design speed of 70km/h with a posted speed of 60km/h.
9 (c)	Drawing SK1011 shows more than 3.0m high retaining wall located within the drainage reserve at the corner of Aura Boulevard and Neighbourhood Connector C2. This is not accepted in the drainage reserve. Retaining wall higher than 2.0m is to have 1.5m step (horizontal and vertical).	In accordance with the revised engineering design drawings and section 3.4 of this report the retaining walls have been updated to show a tiered configuration with maximum 1.5m height terraces.

Further Issues Letter Item	Description	Response
9 (d)	Referring to Drawing SK1300, Catchment B is required to be discharged into an open drain in accordance with the LGIA, Infrastructure Network 4, Table 3. Catchment B is larger than 30Ha.	In accordance with the updated engineering drawings and section 6.2.1 of this report an open channel has been provided for the Catchment B stormwater discharge as requested. The integration of this open channel into the future development works is to be reviewed under cover of further design works for the subsequent precints.
9 (e)	Catchments B, C and D drain into the same wetland bio-retention basin. An interim HES basin catering for Catchment B post dwelling construction is not appropriate. There is no certainty regarding the timing of the WSUD basin. As an alternative, Catchment B is to be discharged into a partly constructed WSUD basin. Other 'cells' of the WSUD basin can be constructed at a later date when Catchment C and D are developed.	As discussed in section 6.2.1 of this report a staged delivery of the WSUD basin to cater for the requirements of Catchment B has been acknowledged as requested.
9 (f)	Update Drawing SK1011 Lot Grading and Retaining Wall plan to detail the proposed school site at Lot 8003 (Stage 43) including the additional one-hectareland Lot 8006, including RL's, retaining walls, batters etc to manage slope.	In accordance with section 3.6 of this report the proposed grading of the neighbourhood sports park and state primary school sites has an average slope of 1.58% which is considered to be a flat and appropriate gradient for the development of the proposed sites without the provision of retaining walls. Any detailed grading of the sites is to be completed in conjunction with further design works for each site.

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TABLES

FIGURES

APPENDICES

1 Introduction

Stantec has been commissioned by Stockland Development Pty Ltd to provide an engineering assessment of the proposed development application over a portion of the Aura Lakes Development, located within precinct 17-19 of the Caloundra South Priority Development Area (PDA).

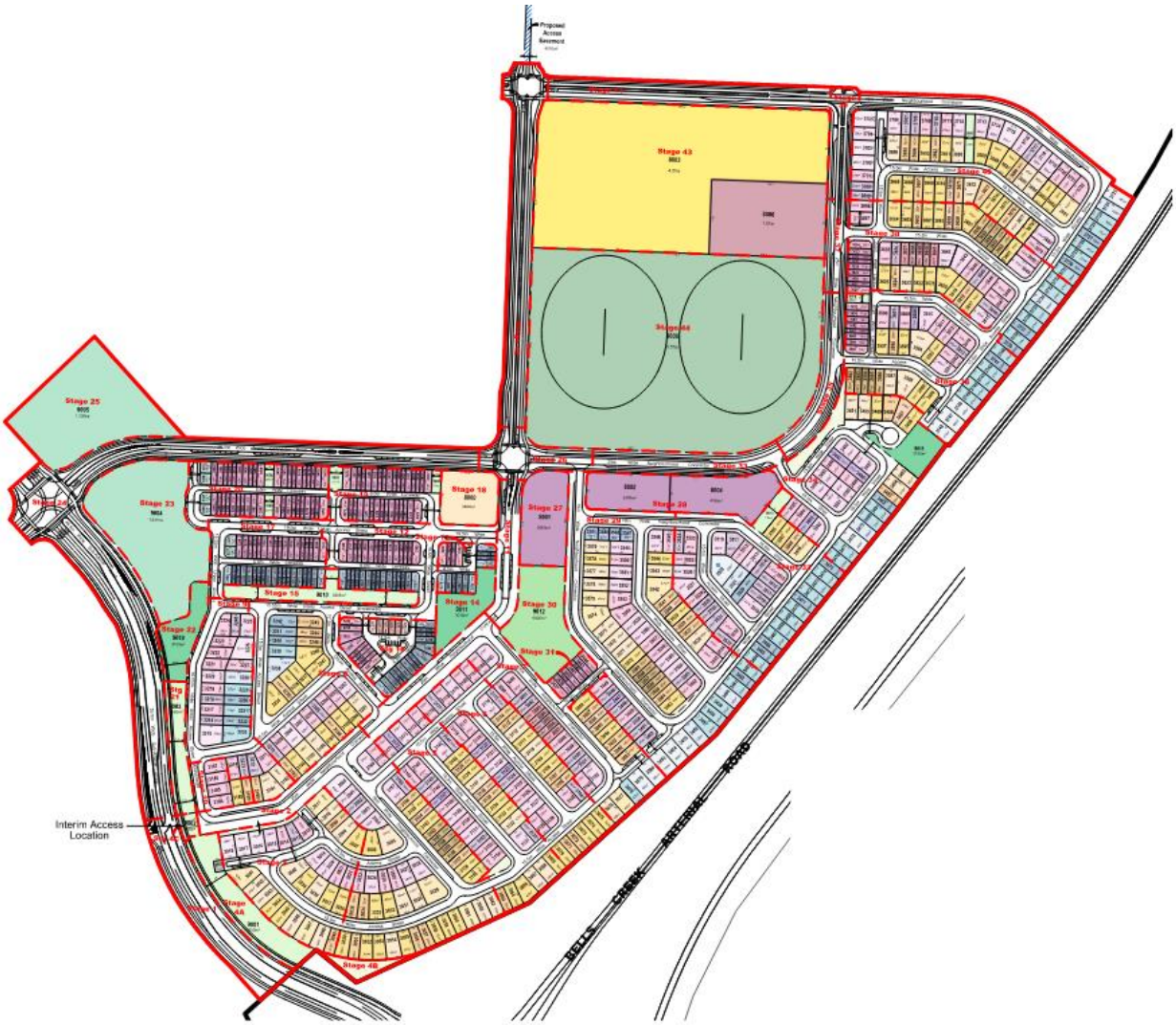
This reporting has been produced to support the development of the initial stages of Precinct 18. While the analysis herein will support the overall development strategy, this engineering servicing report has been prepared to assess the impacts of the first 762 lots within Precinct 18.

The development is part of approved precinct 18 of the Caloundra South Priority Development Area (PDA). The site is located within Gagalba in the Sunshine Coast and is proposed to be accessed via Bells Creek Arterial Road, which runs along the south/east boundary of the precinct.

The site is undeveloped, although the site has been cleared through the historical use as a pine plantation. Portions of the site have been utilised throughout the previously bulk earthworks operations completed as part of the Bells Creek Arterial construction works.

The development under the current proposal generally consists of 762 lots, 3 medium density sites, 1 emerging community lot, 1 childcare centre, 1 neighbourhood recreation park, 1 neighbourhood sports park, 4 local recreation parks, and 1 primary school site. The proposed layout of the precinct is generally described below in **Figure 1-1**

Figure 1-1 Proposed Precinct 18 Initial Development



2 Existing Site Characteristics

The Aura Precinct 17-19 development is located east of the Bruce Highway, north of the Bells Creek Road/Roys Road overpass. The development footprint for the precinct covers an area of approximately 446ha, excluding environmental and open space buffers surrounding the site. The land area subject to the current application is approximately 70.2 hectares located immediately to the north of the proposed Bells Creek Arterial access roundabout.

The site consists of largely undeveloped land and has been previously cleared to accommodate farming and pine plantation activity. Ground cover consists mostly of grasses and low shrub cover with more dense vegetation located adjacent to the existing Bells Creek South. The natural topography of the site is gently undulating with natural grades between 0 and 5% with existing levels ranging between approximately RL. 20 and RL. 2.5.

The site naturally grades towards the northern boundary of the site via a central overland flow corridor which discharges to Bells Creek South. The stormwater catchments within the site are self-contained with the Bells Creek Arterial generally representing the crest of the topography within this area.

3 Bulk Earthworks Strategy

3.1 General Principals

Significant bulk earthworks are required across the entire Precinct 17-19 site in order to provide a suitable development profile for the subdivision which aligns with the objectives of the greater Aura masterplan. The development of the proposed bulk earthworks design for the initial Precinct 18 development has taken into a number of factors considerations including the following:

- Development of proposed stormwater catchment boundaries which align with the layout but generally reflect the pre-development conditions. Stormwater catchments have been shaped in order to direct flows to areas in which stormwater quality management devices may be appropriately positioned;
- Providing a well-resolved interface with key roadway corridors including Bells Creek Arterial Road and Aura Boulevard. All major roadways have been master planned in order to ensure that the initial alignments and levels will be well-integrated with the ultimate development form and required bridge connections to connect with existing precincts of the Aura development;
- Ensuring that the site generally grades internally away from the Bells Creek Arterial Road corridor in order to control stormwater flows and also ensure that catchments reporting to the ultimate lake areas are maximised;
- Allowing for the staged delivery of erosion and sediment control facilities within the site in order to manage the impacts of bulk earthworks; and
- Optimise the use of developable area through efficient design.

All excess earthworks material from this stage will be transported internally to the development for use within the Town Centre development area (Precinct 7-9).

Proposed earthworks and erosion control arrangements are included on the relevant plans within **Appendix A**.

3.2 Design Constraints

The existing development site is largely cleared land without significant internal constraints. The constraints upon the bulk earthworks design for the wider development are located predominantly to the perimeter of the site in the form of existing infrastructure and environmental corridors. The bulk earthworks design has been developed to tie in with the following elements:

- Bells Creek Arterial design levels provided by KBR which bounds the southern and eastern boundaries of the site. This data has been cross-checked against ultimate design long-sections for the BCA corridor provided by TMR and confirmed to be accurate against the proposed long-term planning for this corridor;
- Proposed bridge levels to cross into Precinct 9 and Precinct 15 in accordance with regional flood modelling allowances;
- Existing and proposed frog habitat areas identified in the overall environmental management plans. The location of retained and recently constructed habitats has been provided by RPS in line with recent on site studies;
- Achieving freeboard to the 1% AEP 2100 RCP8.5 climate change scenario flood model levels as provided by BMT;
- The overall bulk earthworks balance for the Precinct 17-19 site is required to have a net export of material in order to service the requirements of the Aura Town Centre; and
- Aligning proposed major flow paths and open space corridors within the development site with the significant existing gully traversing the centre of the development site in order to achieve an efficient bulk earthworks design outcome.

The bulk earthworks design for this initial application has been aligned with an overall development model which considers the above methodology in order to ensure that the works completed

3.3 Erosion and Sediment Control Strategy

In addition to the requirements of the CEMP, establishment of erosion and sediment controls within the site which are able to be maintained for the duration of proposed bulk earthworks operation represent the most efficient design outcome in terms of stormwater treatment and achieving longevity out of the facilities established.

Bulk earthworks within precincts in the higher elevation zones of the site are proposed to be prioritised, including the proposed first development area, with significant regional HES sediment basins aligned with existing overland flow corridors in the downstream areas of the site in order to manage and mitigate the impacts of bulk earthworks operations upon the downstream waterways throughout the construction period.

Prior to the commencement of bulk earthworks within each of the respective major stormwater drainage catchments in the first development area, sediment basins will be established downstream in order to treat run-off water prior to discharge into the receiving waterways. The positioning of the basins is to be selected in order to allow for the devices to remain throughout future development stages to cater for staged earthworks completion. Clean water flows from developed catchments shall be diverted away from sediment basins and towards ultimate WSUD devices at such time that the catchments are appropriately developed.

The proposed strategy and location of proposed basins are included within **Appendix A** of this report.

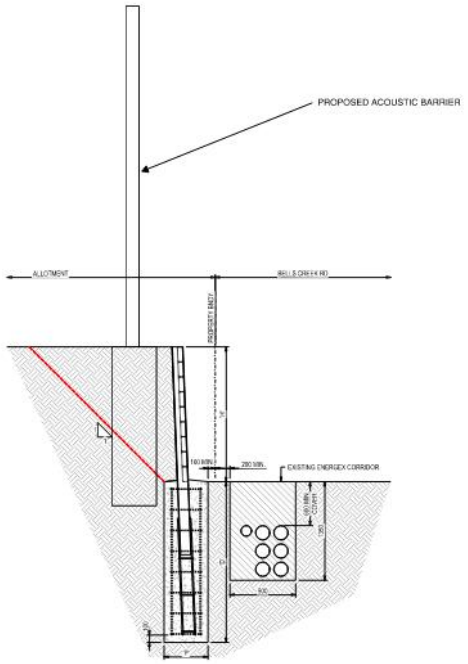
3.4 Retaining Walls

Retaining walls have been included within the overall bulk earthworks design in locations where necessary to take up level differences between the allotment profiles, surrounding road network and existing terrain.

Generally, retaining walls have been designed with a maximum overall height of 2.5m with tiered retaining wall solutions employed in areas that the overall height difference is greater than 1.5m in accordance with design preferences of EDQ and SCC. There are two locations within the overall design that present exceptions to this approach:

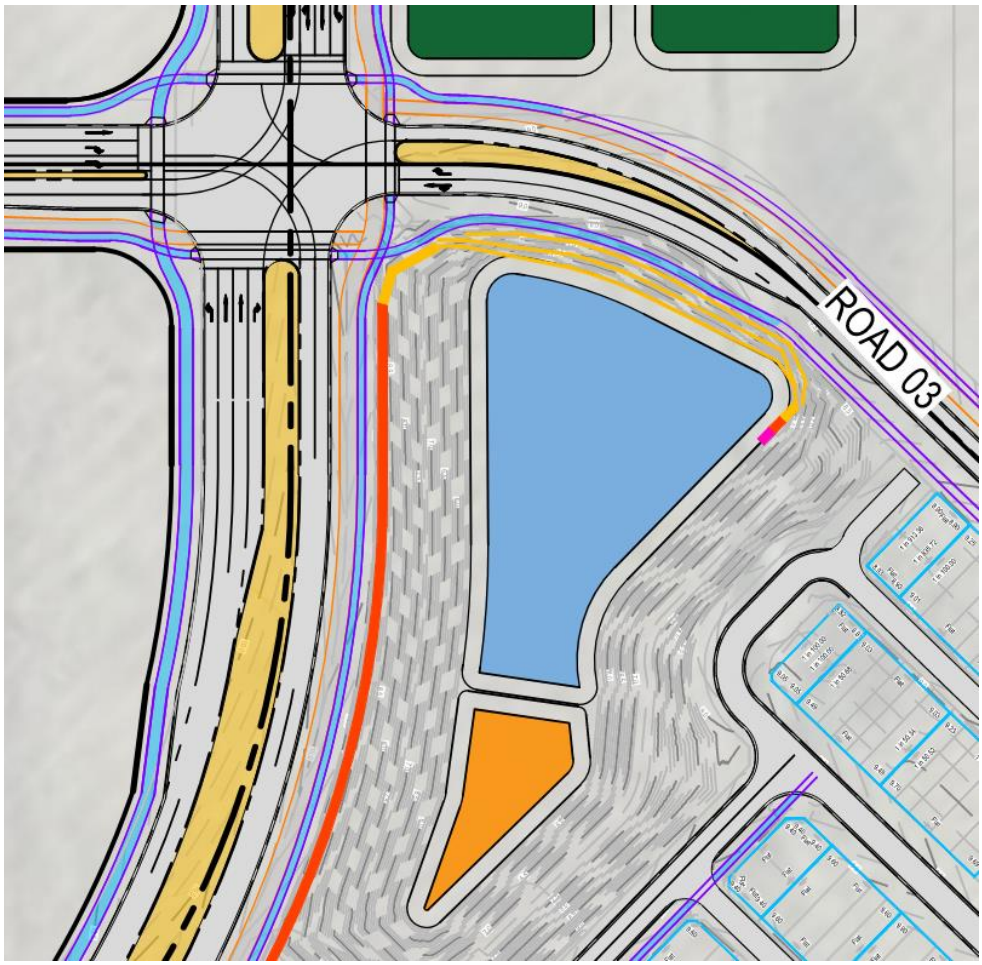
1. The proposed site boundary retaining walls between the development and the Bells Creek Arterial corridor are to be a single tier wall to eliminate the introduction of non-maintainable areas between the BCA property and rear of lot acoustic fences which will be located at the top of the retaining wall formation. Intermediate steps within the retaining wall foundation will not be readily accessible by the property owner as the rear boundary will be restricted by the solid acoustic barrier fence.

Figure 3-1 Proposed Boundary Wall Treatment



2. A tiered retaining wall solution is proposed to the interface of the proposed drainage corridor and Road 03 which has a total height in excess of 2.5m in order to make provision for future drainage infrastructure beneath Road 03 and a suitable cover height to allow for the provision of trunk electrical and water reticulation services within the Road 03 reserve. The height of this interface is to be confirmed through detailed engineering design.

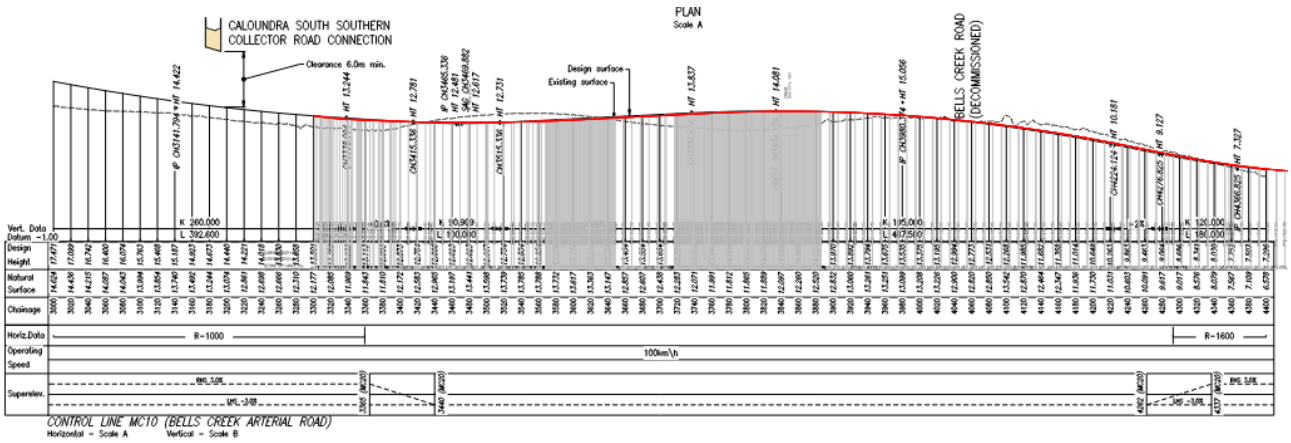
Figure 3-2 Proposed Retaining Wall Interface Between Drainage Corridor and Road 03



3.5 Interface of Proposed Design with Bells Creek Arterial Corridor

The levels of the Bells Creek Arterial corridor included within the engineering design have been sourced from the "issue for construction" design model information produced by KBR as part of the recent construction works. The levels within this model have been verified against recent aerial drone survey data of the Bells Creek Arterial corridor as well as against ultimate roadway design long sections provided by the Department of Transport and Main Roads. Figure 3-3 below shows the ultimate DTMR long section (Black) overlayed with the levels of the Bells Creek Arterial Corridor from the Stantec engineering design model (Red), confirming an accurate representation of the levels for this corridor within the engineering design model.

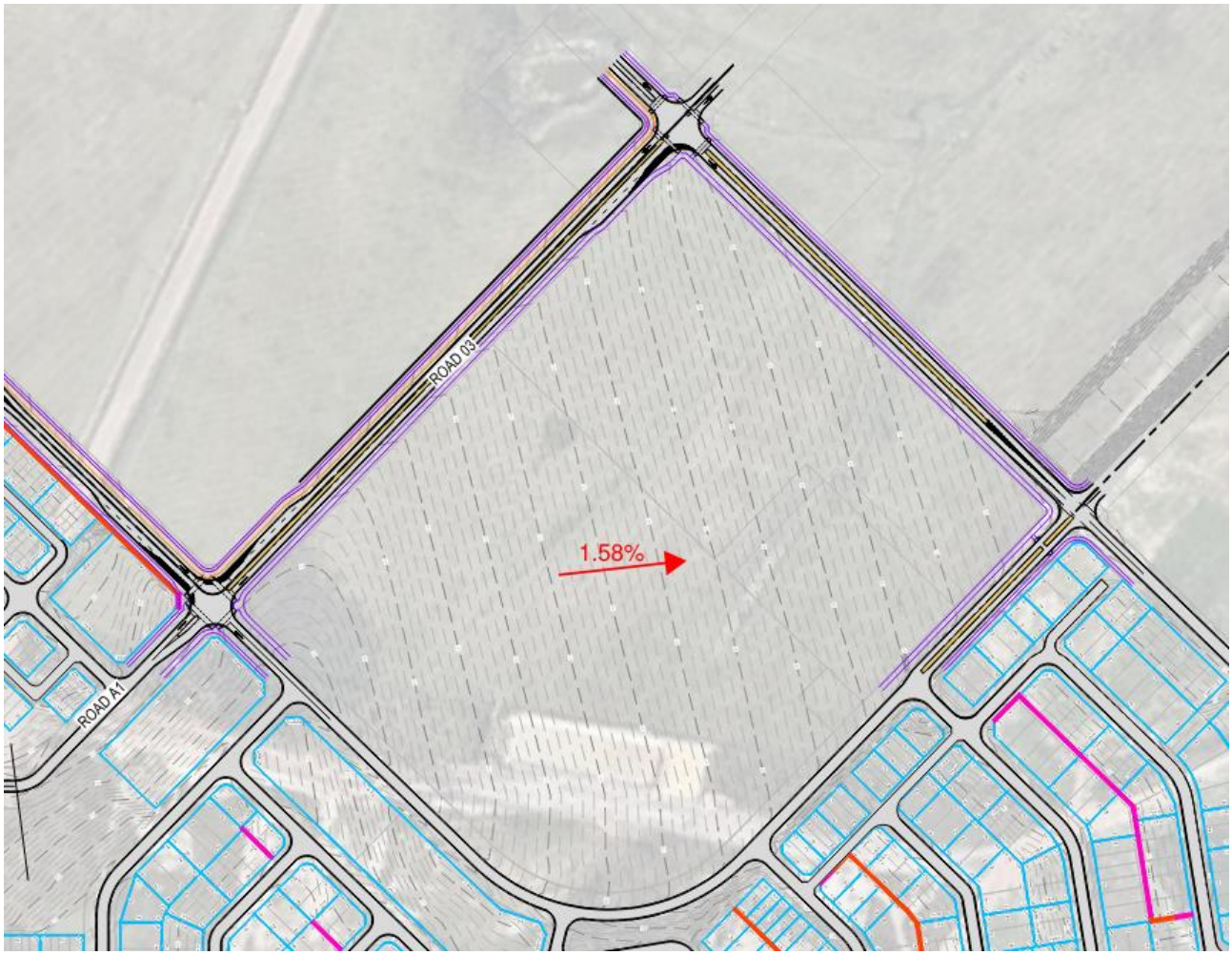
Figure 3-3 Proposed Retaining Wall Interface Between Drainage Corridor and Road 03



3.6 Proposed School Site Profile

The proposed neighbourhood sports park and State Primary School sites has been designed with a consistent profile which generally grades from west to east across the site. There is an overall height difference of 7m across the extent of the sports park and school site resulting in an average gradient of 1.58% across the site. This gradient is considered to be a flat and developable profile for the proposed uses. There is no requirement for retaining walls or flattening at this location. The detailed design and levels of each site is able to be determined by as part of detailed engineering design of the end uses of each site. The layout of the proposed school site is shown in **Figure 3-4.**

Figure 3-4 Proposed Neighbourhood Sports Park and School Site Gradient



4 Road and Movement Network

Access to the development will be primarily provided by the roundabout intersection with Bells Creek Arterial located to the south of the development site.

The road network within the proposed development has been designed in conjunction with modelling performed by PWC in order to ensure that appropriate provision for vehicular traffic volumes are provided throughout the site. In addition to vehicle capacity, the road network has been designed to consider the following elements:

- Contraflow cycle movements;
- Service vehicle access provisions;
- Intersection geometry requirements; and
- Public Transport Access.

4.1 Road Hierarchy Concept Plan

A road hierarchy concept plan has been put together which demonstrates the appropriate road cross section based on the environmental capacity the road is exposed to as well as achieving effective cross sectional widths which are equal to or greater than the required road reserve widths within the Local Government Infrastructure Agreement. The Economic Development Queensland (EDQ) *Street and movement network PDA guideline no.06 (2019)* and the Institute of Public Works Engineering Australia (IPWEA) *Street Design Manual: Walkable Neighbourhoods* are used as reference to determine an appropriate road classification based on traffic volumes estimated for the Aura development.

The proposed road hierarchy is outlined in **Figure 4-1** for reference.

Figure 4-1 Proposed Road Hierarchy

The typical road cross sections corresponding with each of the street types nominated above are included within **Appendix A** of this report.

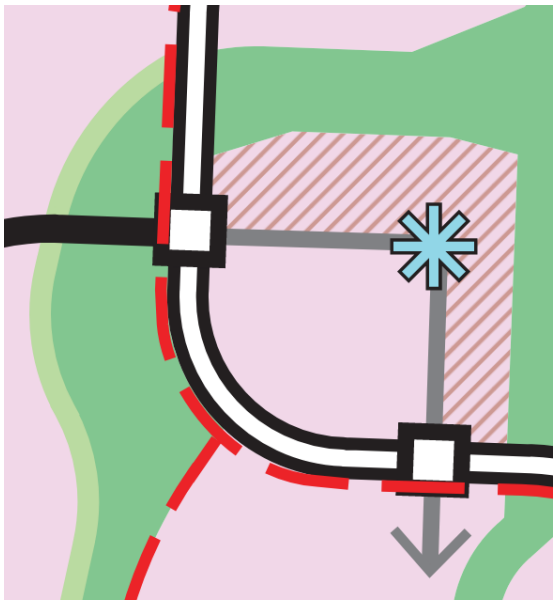
4.2 Sub-Arterial Roadway Design and Staging

4.2.1 Design Criteria

The proposed sub-arterial roadway (Aura Boulevard) access from Bells Creek Arterial is to be designed and delivered in accordance with the provisions of the Local Government Infrastructure Agreement and Sunshine Coast Council design standards.

Accordingly, curve radii for Aura Boulevard have been designed in accordance with a speed environment of design 70 km/h, to be sign posted at 60 km/h. Within the wider masterplan, the area of roadway directly adjacent to the proposed mixed-use precinct is noted as containing the tightest roadway geometry. This area confirmed to be compliant with the required design speed environment with the application of superelevation to the roadway corridor. Alternatively, an adversely cross-falling road profile can be retained with a reduced speed environment of 60 km/h design speed which would be consistent with the surrounding urban environment, levels of activity adjacent to this section of roadway, and is supported by the signalised intersection configuration in this area.

Figure 4-2 Roadway Geometry Surrounding Proposed Mixed-Use Site

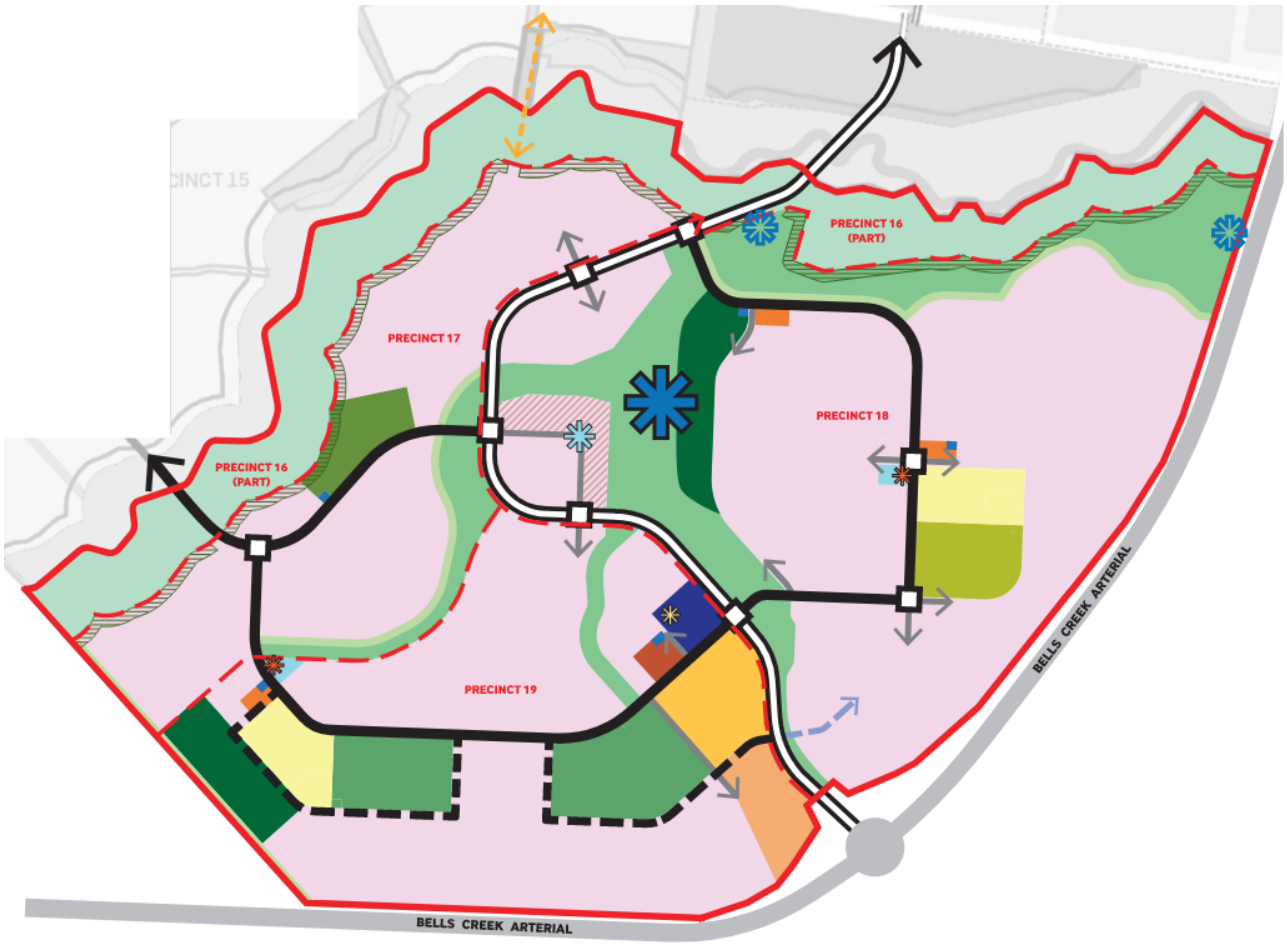


In accordance with the provisions of the Sunshine Coast Council Planning Scheme Policy intersections have been provided within a minimum 300 meter spacing throughout the sub-arterial roadway corridor.

The configuration of intersections throughout the corridor have been proposed in order to provide suitable levels of access to each of the areas within the development. It is not recommended to remove any of the proposed intersections within the proposed context plan given the anticipated catchments reporting to each location expected to be in excess of 300 allotments and requiring a neighbourhood connector hierarchy of roadway.

Additionally, given the ultimate traffic volumes, required intersection configurations, interactions with bus-jump lanes and future 6-lane roadway cross-sections it is not recommended that intersections within this corridor be established as priority controlled unsignalized intersections.

Figure 4-3 **Overall Alignment and Proposed Intersection Locations for Sub-Arterial Roadway**



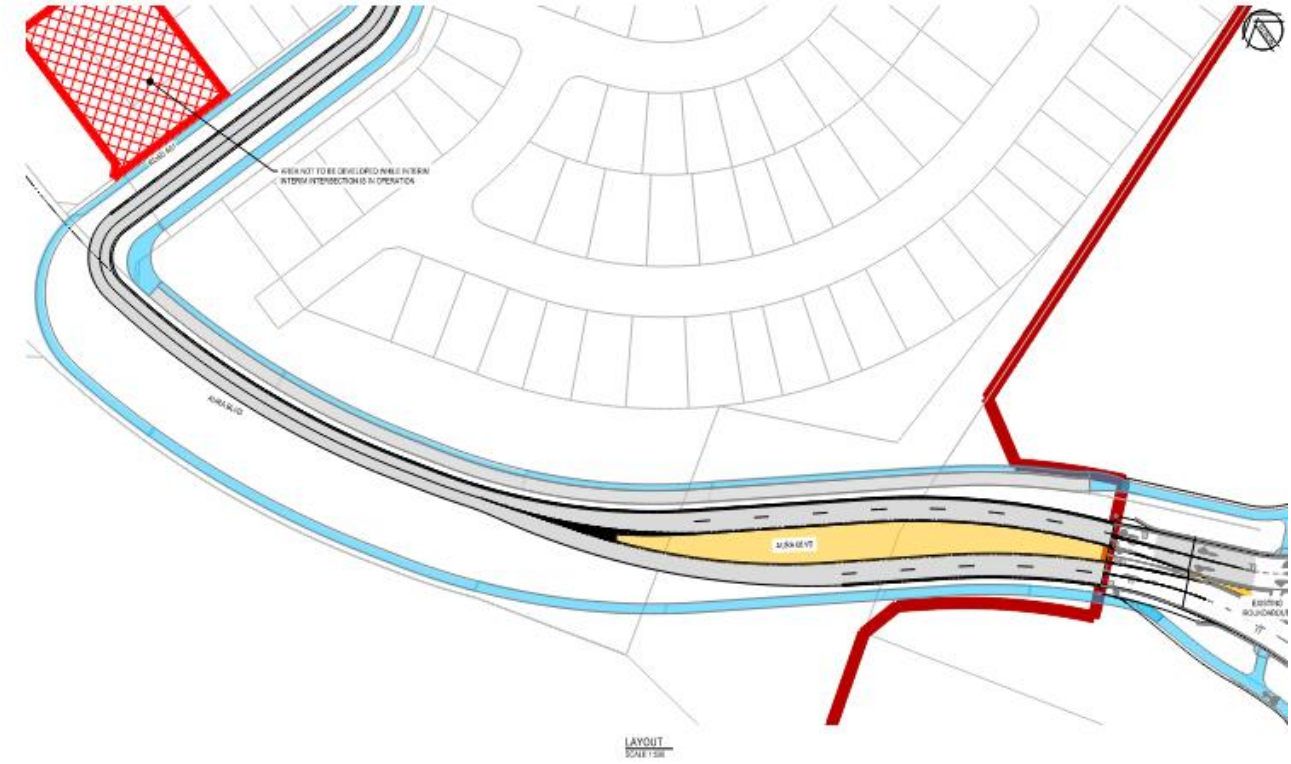
4.2.2 Roadway Construction Staging - Stage 1

In accordance with the provisions of the Local Government Infrastructure Agreement, the sub-arterial roadway access from Bells Creek Arterial to the proposed development site is able to be delivered as a staged construction.

Additionally, a staged delivery of access to the development site is proposed, with the proposed intersection access between the subdivision and the sub-arterial roadway to transition as the site is developed.

In order to provide access to the initial development stages, construction of the proposed sub-arterial roadway between Bells Creek Arterial and Road A01 to a “Phase 1” standard is proposed. A roadway connection with Road A01 is to be constructed in order to provide access to the development works. Access to allotments directly adjacent to the proposed intersection location is not able to be safely accommodated while the intersection is in operation. Accordingly, development of the identified area shall not be completed until following the extinguishing of this interim intersection arrangement.

Figure 4-4 Stage 1 Development Access Arrangement



4.2.3 Stage 2 – Ultimate Sub-Arterial Road Construction

In accordance with the provisions of the Local Government Infrastructure agreement, the sub-arterial roadway between Bells Creek Arterial and Road 03 shall be duplicated to its ultimate form before traffic volumes exceed 9,000 vehicles per day per land on the existing roadway or as agreed between the parties. A channelised left-turn lane is proposed to be provided to access Precinct 19 as part of this stage. This turning lane is proposed to be absorbed within the ultimate bus-lane to be provided in the future by DTMR. The form of the proposed roadway is shown in Figure 4-3 below.

Figure 4-5 Stage 3 Development Access Arrangement

4.2.4 Stage 3 – Future DTMR Upgrade

In order to demonstrate that the allotment configuration has considered the potential impacts of future TMR upgrades to the Bells Creek Arterial roadway intersection, the below functional layout has been developed which connects the proposed sub-arterial roadway with the ultimate overpass alignment as derived from preliminary design data provided by KBR. The upgrade roadway configuration includes the ability for an additional lane to be added to full length the roadway within the existing median to accommodate public transport or increased traffic volumes in this area.

Figure 4-6 Stage 4 Development Access Arrangement

4.3 Commercial Vehicle Access

4.3.1 Design Vehicle

The design vehicles for the proposed development have been determined based on proposed uses utilising the internal road. In accordance with *AS2890.2: Off-street Commercial Vehicle Facilities*, the following service vehicle requirements are specified for the proposed development:

- Trunk and Neighbourhood connectors: Articulated Vehicle (AV) and Refuse Collection Vehicle (RCV)
- Internal roads: Heavy Rigid Vehicle (HRV) and Refuse Collection Vehicle (RCV)

On the basis of the above, the largest service vehicle required to be accommodated by the proposed development is an AV with an HRV for servicing within the PDA.

4.3.2 Servicing Arrangements

Stantec has undertaken a swept path assessment to demonstrate the suitability of the internal road layout and access roundabouts to safely accommodate a side loading collection vehicle (Garbage and/or recycle truck) and a front loading collection vehicle as per Table SC6.18D of Sunshine Coast Planning Scheme 2014 Schedule 6 Section 6.18. The design vehicle specifications adopted have been included in **Table 4-1** below.

Table 4-1 Waste Vehicle Specifications as per Table SC6.18d of Sunshine Coast Planning Scheme 2014

	Side loading collection vehicle		Front loading collection vehicle
			
	Garbage truck	Recycling truck	Front loading collection vehicle
Length overall	8.70m	9.90m	9.90m
Front overhang	1.42m	0.85m	1.42m
Wheelbase	5.00m	5.30m	5.84m
Rear overhang	2.30m	2.65m	2.64m
Turning circle (curb to curb)	16.40m	18.70m	22.10m
Turning circle (wall to wall)	N/A	N/A	23.66m
Front of vehicle to collection arm	18.14m	19.20m	N/A
Maximum reach of side arm	2.70m	3.30m	N/A
Travel height	2.00m	1.70M	3.64
Clearance height for loading	4.00M	3.80M	6.10m

The swept paths can be found at **Appendix A** in sketches 1021 to 1023.

The swept path assessment undertaken on the internal layout indicates that the streets generally allow safe access for a side loading collection vehicle and a front-loading collection vehicle, as illustrated on drawings included within **Appendix A**. Slow points within access streets have been tested for design vehicle compliance and are demonstrated to be serviceable.

4.4 Active Transport Access

Active transport facilities will be provided in line with the road cross sections and the available road reserve. Contraflow bicycle tracks will be provided at on Sub-Arterial and Trunk Connector street types. Shared paths for cyclists and pedestrians will also be provided on Neighbourhood Connectors.

For Neighbourhood Access Streets, a shared pathway for both pedestrians and cyclists will be implemented. Further, for all road hierarchies, footpaths will be provided on either one or both sides of the road, dependant on the road type and space allowance. Additionally, it is noted that the access roads are of low speed (40km/h) environment, therefore these roads are categorised as bicycle friendly.

Active transport connection to the broader network within the PDA will be provided via the sub-arterial roads.

Further, Bells Creek Arterial Road has been identified by TMR as a Future Principal Route within the South East Queensland Principal Cycle Network. It is expected that seamless active transport connection to this arterial road will be provided from the development via the Sub-arterial Road 1 and through the development via the trunk and neighbourhood connectors.

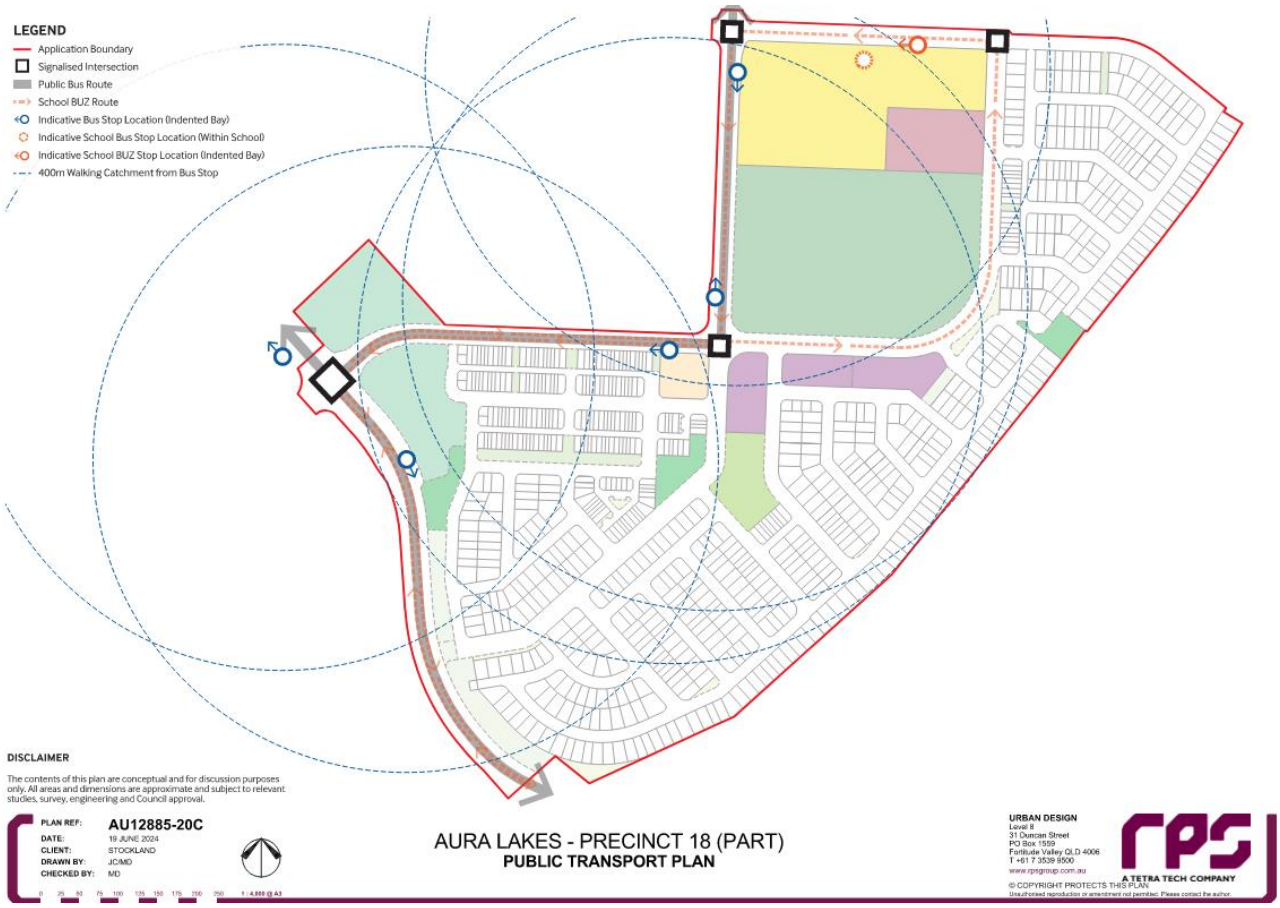
4.5 Public Transport Access

The Caloundra South Priority Development Area Infrastructure agreement indicates that a priority bus and a rail corridor to be completed in the future. At this stage, details regarding the operation of these services (e.g. routes, number of services, frequencies, location of bus stops) are unknown albeit it is expected that further collector services will be provided to satisfy the demand for public transport generated by the precincts and ensure 400m walkable catchments.

It is also anticipated that these services will link to the existing public transport network to ensure connectivity to the greater South East Queensland area.

Figure 4-5 below shows the proposed bus stop locations shown in red which comply with a servicing radius of 400m along trunk connector and sub-arterial roadways.

Figure 4-7 Public Transport Network



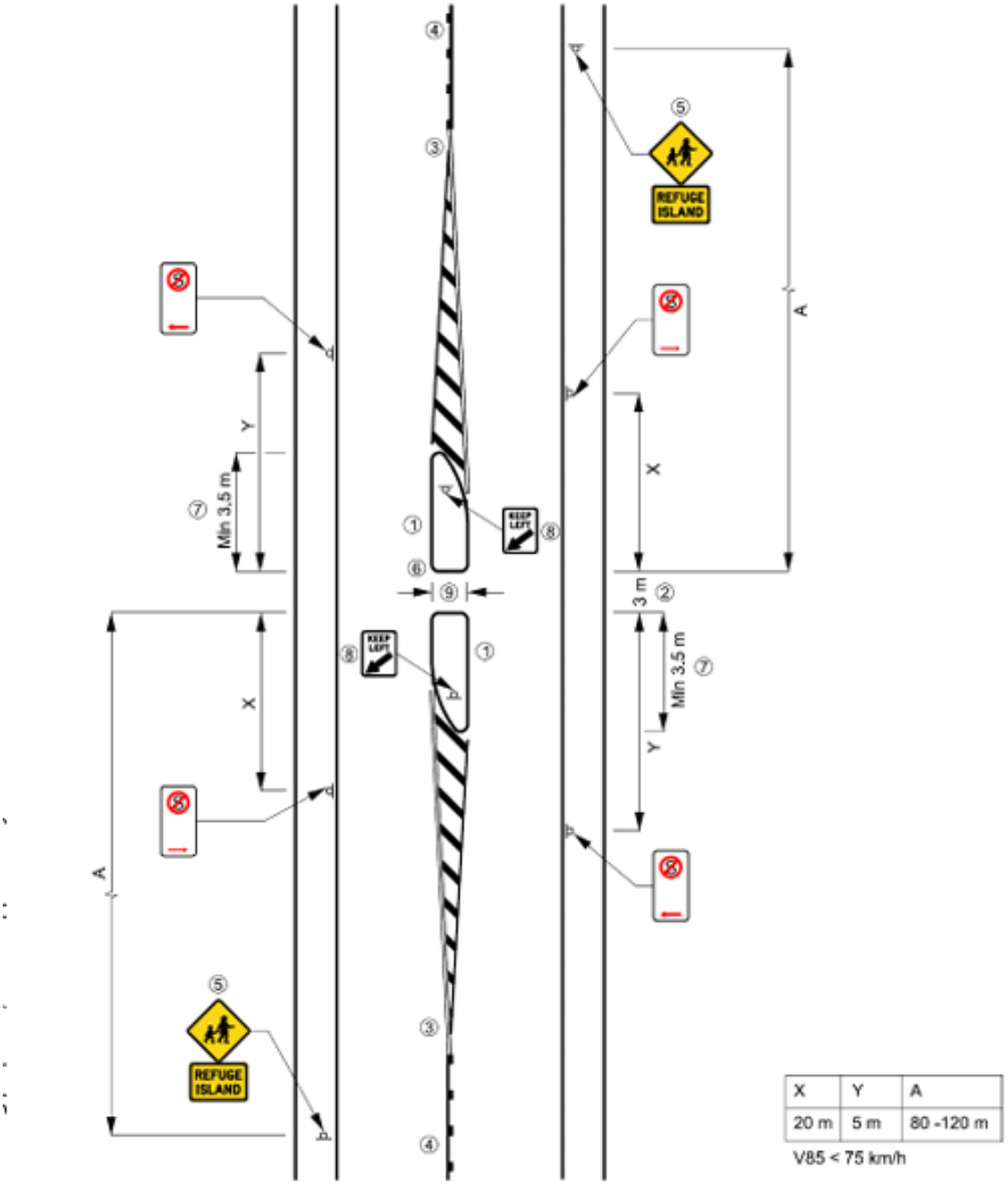
An on-street indented bus stop location has also been included on the northern frontage of the proposed school site location as requested by further information request material.

4.6 Proposed Pedestrian Refuge Island Crossing

A pedestrian refuge island is proposed to be installed as part of an informal pedestrian crossing on trunk connector road C2. The details of this crossing will be subject to further engineering design, however, the geometry of the pedestrian refuge allowed within the current plans has been verified to reflect the elements outlined in Section 8.2 of Austroads Guide to Road Design Part 4: Intersections and Crossings.

Figure 4-6 below includes the provided example of a pedestrian refuge as per Austroads Guide to Road Design Part 4.

Figure 4-8 **Example pedestrian refuge as per Figure 8.1 Austroads Guide to Road Design Part 4**



The design of the pedestrian refuge will comply with the following design elements (as per Austroads Guide to Road Design Part 4)

- Adequate signage is to be installed around the crossing at set distances from the refuge island (as shown in **Figure 4-6**)
- 3.5m long (minimum) medians are to be installed on either side of the refuge
- Minimum width of the refuge is 2m however 3m is desirable in high pedestrian locations. Minimum 2.4m where practical at unsignalised pedestrian crossings.
- Minimum 1.8m refuge depth, desirable 2m
- Minimum 8m refuge length
- Preferrable mountable kerbs with approach tapers
- Minimum 4.5m roadway width in absence of a cycle lane

4.7 Proposed Active Transport Connection to Future Bells Creek Arterial Corridor

Provision within the layout of the site has been made to accommodate a future active transport connection to the proposed pathway within the Bells Creek Arterial corridor. A proposed break within the acoustic barriers is shown on the engineering drawings to accommodate a pathway connection. The details of the break are to be determined via acoustic modelling and detailed engineering design.

Figure 4-9 Proposed acoustic fence break to accommodate pathway connection

5 Water & Sewer Assessment

5.1 Development Population

The following table shows the Equivalent Population (EP) derived for the proposed development for water and sewerage services. The EP is calculated in accordance with the Caloundra South Infrastructure Agreement (Water and Wastewater Infrastructure), Ref 40769743v9.

Table 5-1 Estimated Development EP Demand

Land Use	Yield	Rate	Total Equivalent Persons
Detached Dwellings	511 dwellings	2.7 EP / dwelling	1380 EP
Attached Dwellings* *also for multiple dwellings & detached lots under 200m^2	238 dwellings	1.8 EP / dwelling	429 EP
Medium Density Dwellings	165 dwellings	1.8 EP / dwelling	297 EP
Childcare	150 students and staff	0.15 EP / student	23 EP
Primary School	1,500 students and staff	0.1 EP / person	150 EP
Local Recreation Park	4 lots	0 EP / lot	0 EP
Neighbourhood Recreation Park	1 lots	0.33 EP / lot	1 EP
Neighbourhood Sports Park	1 lot	2.7 EP / lot	2.7 EP
TOTAL			**2283 EP**

The above proposed network loads within this precinct are consistent and within the allowances included within the Water and Wastewater master plans for the development site.

5.2 Water

The overall site strategy for water reticulation servicing for Aura has been prepared by Parsons Brinckerhoff in the *Caloundra South Water and Wastewater Infrastructure Plan*. This strategy has been recently updated in the *Aura and Aura South Water and Wastewater Infrastructure Master Plan* prepared by Calibre Professional Services.

Trunk water servicing within the proposed development site is detailed in the *Aura Lakes – Precincts 17 to 19 Preliminary Precinct Network Plan* prepared by Cardno.

A staged approach to servicing has been adopted based upon the anticipated development phasing. The water supply for this development application is to be connected to the Aura Town Centre. A proposed water pipeline is to be provided across the Bells Creek South corridor via tunnel bore. It is proposed that this connection be generally in accordance with the requirements of the water supply mater plan, however, the alignment is to be off-set from the ultimate bridge alignment in order for this supply to remain uninterrupted at such time in the future that this connection is completed.

The wider sewerage network to service the Precinct 17-19 development including proposed sewerage pump station is shown in **Figure 5-1** below:

Figure 5-1 **Proposed Water Reticulation Network**

The proposed internal water network is shown indicatively on the engineering conceptual drawings included within **Appendix A**.

All water 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.

5.3 Sewerage

The overall site strategy for sewerage servicing for Aura has been prepared by Parsons Brinckerhoff in the *Caloundra South Water and Wastewater Infrastructure Plan*. This strategy has been recently updated in the *Aura and Aura South Water and Wastewater Infrastructure Master Plan* prepared by Calibre Professional Services.

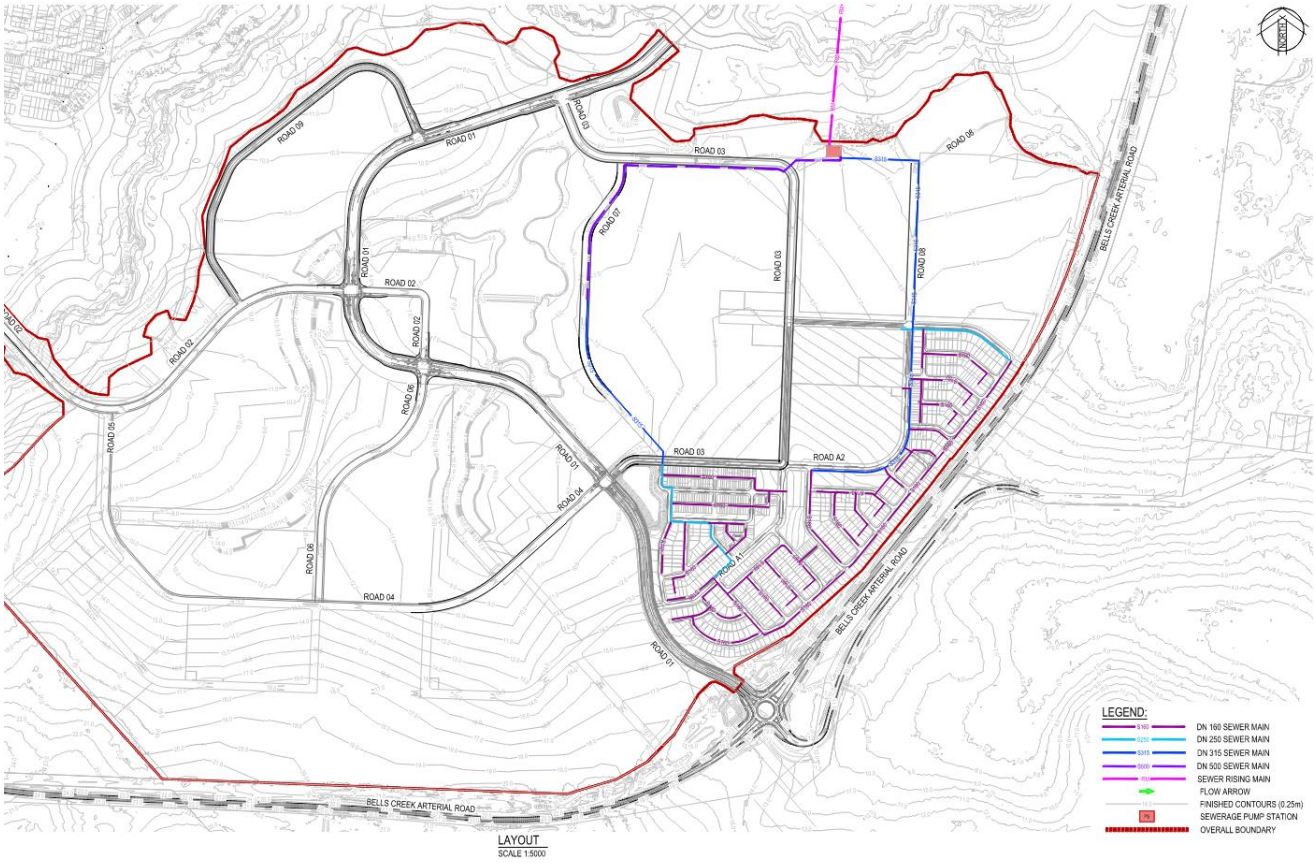
Trunk sewerage servicing within the proposed development site is detailed in the *Aura Lakes – Precincts 17 to 19 Preliminary Precinct Network Plan* prepared by Cardno.

A staged approach to servicing has been adopted based upon the anticipated development phasing.

The development is proposed to be serviced via a sewerage pump station located on the northern boundary of the site adjacent to Bells Creek South. The pump station and associated infrastructure will be designed to be staged in consultation with Unitywater. The initial operation of the pump station will see flows from the precinct conveyed to existing pump station SPSB located within the Aura Town Centre. Upgrades to the pump station and associated trunk network will be required in the future in order to service the ultimate development loads. At such time that capacity triggers are reached, the outfall from the new pump station will need to be reconfigured to convey flows directly to SPS001 in the north eastern area of the Aura Town Centre.

The wider sewerage network to service the Precinct 17-19 development including proposed sewerage pump station is shown in **Figure 5-2** below:

Figure 5-2 Proposed Sewerage Network



The proposed internal sewer network is shown indicatively on the engineering conceptual drawings included within **Appendix A**.

All sewer 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 Stormwater Assessment

6.1 Flooding Assessment

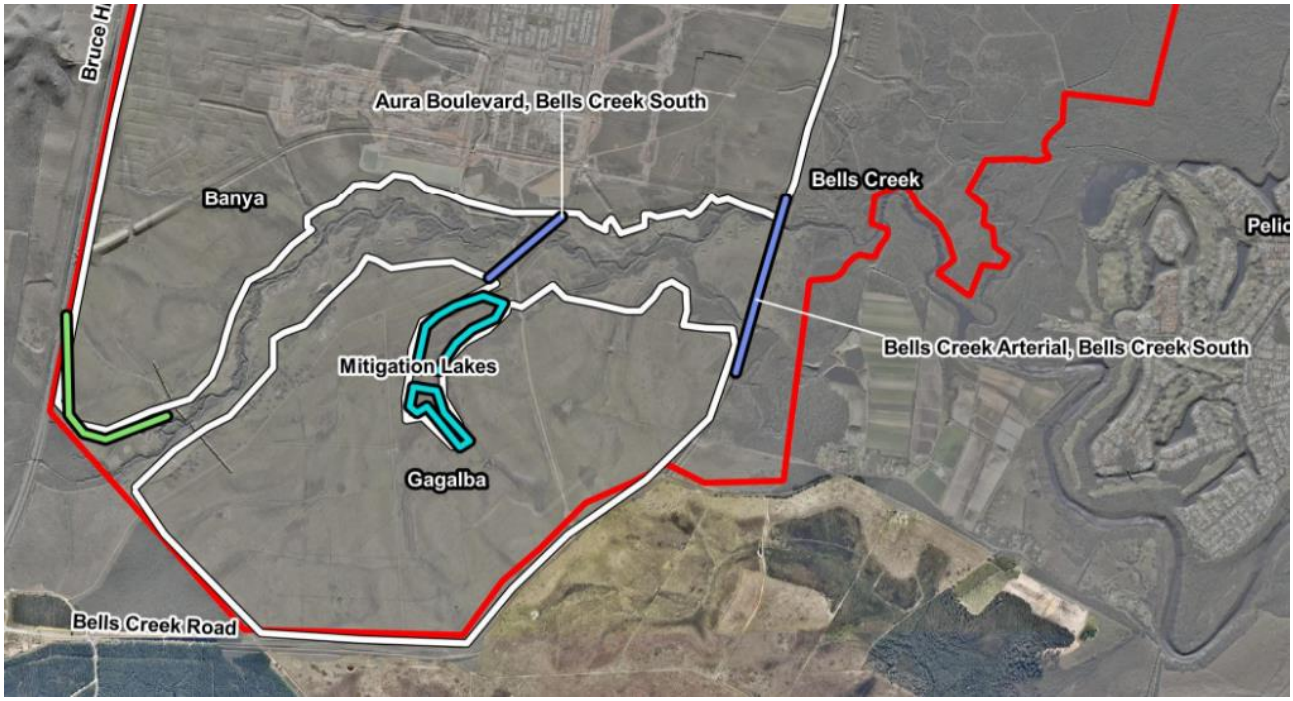
Modelling of the Aura Lakes Precinct by BMT have shown that the development footprint for the site detailed in this memorandum is outside of the flood extent for the 1% AEP 2100 RCP8.5 climate change scenario. As such, the proposed development does not interact with the anticipated flooding extents included within the results of the approved regional flood model. The full details of this assessment are included under separate cover in correspondence from BMT dated 7 December 2021.

The overall Aura Precinct 17-19 area will ultimately contain three flood mitigation devices in accordance with the BMT Flood Risk Management Strategy as shown in Figure 6-1 below.

The crossing of Bells Creek South by Bells Creek Arterial is completed on site.

The Aura Boulevard crossing of Bells Creek South and the provision of the ultimate form of the mitigation lakes within Gagalba are to be detailed and constructed under cover of future applications.

Figure 6-1 Proposed Retaining Wall Interface Between Drainage Corridor and Road 03



Further to discussions with all parties during the information request period, it is acknowledged that development within the Precinct 17-19 area will result in increased run-off and changed stormwater outflow conditions as works progress. In order to demonstrate compliance with the downstream waterway conditions, immunity to allotments within the surrounding developments and determine the proposed timing for the provision of further stormwater mitigation devices it will be necessary for Stockland to complete a revision to the existing flood risk management strategy. However, at this time a sufficient level of detail for development areas which interact with major flow paths, the central mitigation lakes and the Bells Creek South corridor are not developed to a level which would allow for a meaningful revision of this document. Accordingly, this analysis shall be completed and approved by Economic Development Queensland prior to the plan sealing of the first development allotments within the development in order to allow for the details of the major stormwater management facilities to be appropriately detailed and assessed.

6.2 Stormwater Quality

The stormwater quality management strategy for the development contained within this application has been developed in a standalone manner to that of future development areas within Precinct 17-19 and as such is considered to be a conservative outcome for the initial development areas.

The water quality strategy has been developed by Bligh Tanner and includes the following treatment devices:

- Rainwater tanks utilised within the development;
- End of line sediment forebays;
- End of line bioretention basins and
- End of line wetlands.

The proposed development application described in this package is divided broadly into 2 major stormwater drainage catchments. Catchment A is fully contained within the footprint of this development stage and discharges generally to the sediment basins and wetland located at the intersection of the proposed sub-arterial roadway and Road 03 at the north eastern boundary of the site. The proposed development will fully develop this catchment and as such at the time where a sufficient percentage of the contributing catchment has been urbanised, stormwater quality treatment devices are proposed to be constructed in this area. The general format of the proposed treatment system is for a sedimentation basin and wetland system to be located immediately downstream of the stormwater pipework outlet, positioned to the south of Road 03 on the north-eastern site boundary. This will be supplemented by Bio-retention basins to be located downstream of Road 03 to complete the proposed treatment train. Stormwater outflows from this system will discharge via a grassed overflow channel to the north through future open space corridors.

Catchments B forms a portion of larger stormwater drainage catchments which discharge towards the northern boundary of the overall development and into Bells Creek South. Ultimately, catchment B will be provided stormwater quality treatment by WSUD devices located at the end of line prior to discharge into the receiving waterway. However, the scope of this development application will not result in a significant enough proportion of the overall catchment (including future catchments C and D) being developed and as such stormwater flows will be captured and treated via HES basins prior to discharge as an interim measure.

The proposed arrangement is intended to sit within a wider stormwater management system in the future which supports the operation of potential future lake areas which may result in further efficiencies to the treatment system. At this time the benefits of this have not been considered as part of the proposed strategy for the initial stages of development.

The proposed stormwater treatment devices are proposed to discharge into downstream stormwater channels which will align with future open space and drainage corridors to be defined through future applications. As an interim measure all flows will discharge into existing stormwater flow paths through the development lands.

Stormwater Quality Management devices included within the preliminary engineering drawings have been sized in accordance with the requirements of the stormwater quality management plan to cater for the contributing upstream catchments as per the below table:

Table 6-1 Preliminary Stormwater Quality Device Sizing

Catchment	Catchment Area	Sediment Basin Area (0.4% of Catchment Area)	Wetland Area (1.2% of Catchment Area)	Bioretention Basin Area (2.6% of Catchment Area)
Catchment A	284,525m^2	1138m^2	3414m^2	7398m^2

Table 6-2 Preliminary Stormwater Quality Device Sizing

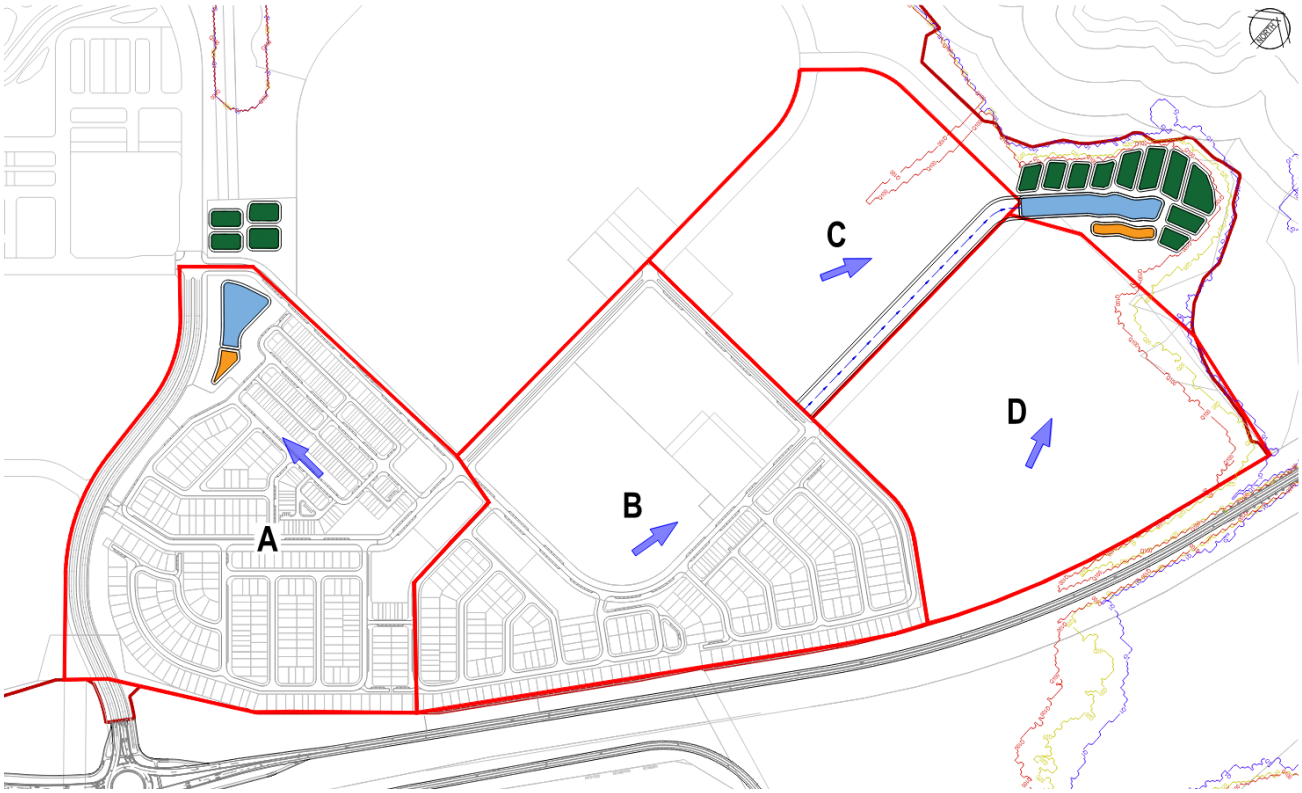
Catchment	Catchment Area	Sediment Basin Area (0.4% of Catchment Area)	Wetland Area (1.2% of Catchment Area)	Bioretention Basin Area (3.0% of Catchment Area)
Catchment B	370,485m^2	1482m^2	4446m^2	11115m^2
Catchment C (Future)	150,925m^2	604m^2	1811m^2	4528m^2
Catchment D (Future)	228,138m^2	913m^2	2738m^2	6844m^2
Total	**749,548m^2**	**2,998m^2**	**8,995m^2**	**22,486m^2**

It is confirmed that the reserves detailed within the proposal documentation are sufficient to accommodate the above treatment devices.

Detailed information regarding the WSUD is provided under separate cover of reporting prepared by Bligh Tanner dated 19 June 2024.

The proposed stormwater plan is shown in **Figure 6-1** below and included within **Appendix A**.

Figure 6-2 Proposed Stormwater Plan



6.2.1 Catchment B Stormwater Outfall

Catchment B is greater than 30 hectares. In accordance with the provisions of the Local Government Infrastructure Agreement it is required to be discharged into an open channel which is reflected in the engineering design documentation. Investigation into the incorporation of this channel into future piped drainage solutions or as an open channel within the future development catchments C and D are to be investigated under cover of future applications.

It is noted that Catchment B discharges towards a future WSUD basin which will ultimately cater for flow from catchments C and D also as part of an end of line treatment system. Investigation is to be completed into the staged delivery of the WSUD basin in order to allow for early establishment for the purposes of treating outflows from Catchment B as a 'partly' constructed WSUD basin. Other cells of the WSUD basin can be constructed at a later stage when Catchments C and D are developed.

7 Electrical & Telecommunications Assessment

The Aura Town Centre is serviced by NBN, Low Voltage Power and High Voltage power services within the road reserve corridors. The proposed trunk electrical and telecommunications network within the Aura Town Centre is ultimately proposed to be extended across the future bridge corridor (Aura Boulevard Extension) in conjunction with connections extended from Precinct 15 development lands in order to service the ultimate Precinct 17-19 development.

In order to supply the initial stages of this development, an interim overhead power supply will be provided from the Aura Town Centre. This service will be progressively replaced in time as the development of in-ground services are completed within the road reserve corridors.

8 Conclusion

Based upon the assessment within the above memo, the proposed infrastructure detailed within the reporting to support this ROL application is adequate to service the proposed development.

Appendices

Appendix A: Precinct 18 First Development Application Stantec Engineering Sketches

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SCHEDULE OF DRAWINGS		
DRAWING No.	REV.	DESCRIPTION
304701171-100-CD-SK1000	5	COVER SHEET & SCHEDULE OF DRAWINGS
304701171-100-CD-SK1010	5	BULK EARTHWORKS PLAN
304701171-100-CD-SK1011	6	LOT GRADING PLAN & RETAINING WALL
304701171-100-CD-SK1012	4	ACOUSTIC WALLS
304701171-100-CD-SK1020	4	FUNCTIONAL LAYOUT KEY PLAN
304701171-100-CD-SK1021	4	SWEPT PATH ANALYSIS SHEET 1
304701171-100-CD-SK1022	4	SWEPT PATH ANALYSIS SHEET 2
304701171-100-CD-SK1023	4	SWEPT PATH ANALYSIS SHEET 3
304701171-100-CD-SK1051	4	PLANS FOR THE STAGES OF DELIVERING AURA BOULEVARD SHEET 1
304701171-100-CD-SK1055	4	PLANS FOR THE STAGES OF DELIVERING AURA BOULEVARD SHEET 2
304701171-100-CD-SK1056	4	PLANS FOR THE STAGES OF DELIVERING AURA BOULEVARD SHEET 3
304701171-100-CD-SK1110	4	ROAD HIERARCHY PLAN
304701171-100-CD-SK1115	4	PATHWAY HIERARCHY PLAN
304701171-100-CD-SK1131	4	TYPICAL SECTIONS SHEET 1
304701171-100-CD-SK1132	4	TYPICAL SECTIONS SHEET 2
304701171-100-CD-SK1135	5	RETAINING WALL CROSS SECTIONS SHEET 1
304701171-100-CD-SK1136	5	RETAINING WALL CROSS SECTIONS SHEET 2
304701171-100-CD-SK1300	5	STORMWATER PLAN
304701171-100-CD-SK1400	6	SEWER PLAN
304701171-100-CD-SK1401	3	SEWER PLAN OVERVIEW
304701171-100-CD-SK1500	5	WATER PLAN
304701171-100-CD-SK1501	3	WATER PLAN OVERVIEW

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Project Number: 304701171-100

EARTHWORKS VOLUMES
DATE: 20/05/2024
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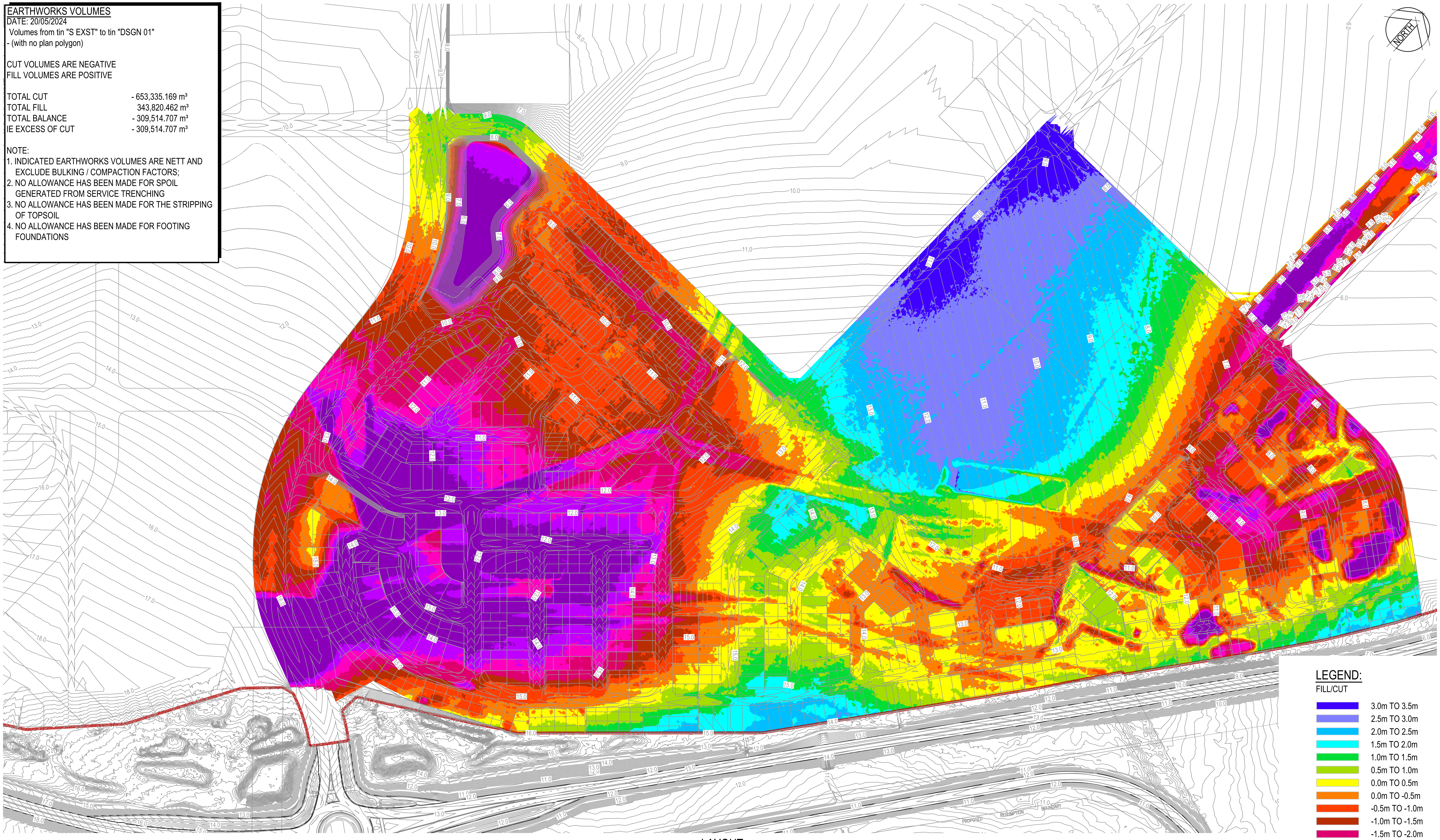
- (with no plan polygon)

CUT VOLUMES ARE NEGATIVE
FILL VOLUMES ARE POSITIVE

TOTAL CUT	- 653,335.169 m³
TOTAL FILL	343,820.462 m³
TOTAL BALANCE	- 309,514.707 m³
IE EXCESS OF CUT	- 309,514.707 m³

NOTE:
1. INDICATED EARTHWORKS VOLUMES ARE NETT AND EXCLUDE BULKING / COMPACTION FACTORS;
2. NO ALLOWANCE HAS BEEN MADE FOR SPOIL GENERATED FROM SERVICE TRENCHING
3. NO ALLOWANCE HAS BEEN MADE FOR THE STRIPPING OF TOPSOIL
4. NO ALLOWANCE HAS BEEN MADE FOR FOOTING FOUNDATIONS



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6	CHANNEL EARTHWORK ADDED	SS		09/06/2024
5	QTY UPDATED	SS		28/05/2024
4	DA RESUBMISSION	SS		20/05/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	01/11/2023

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		SS	SS		01/11/2023

Title
BULK EARTHWORKS PLAN

Project No. 304701171-100
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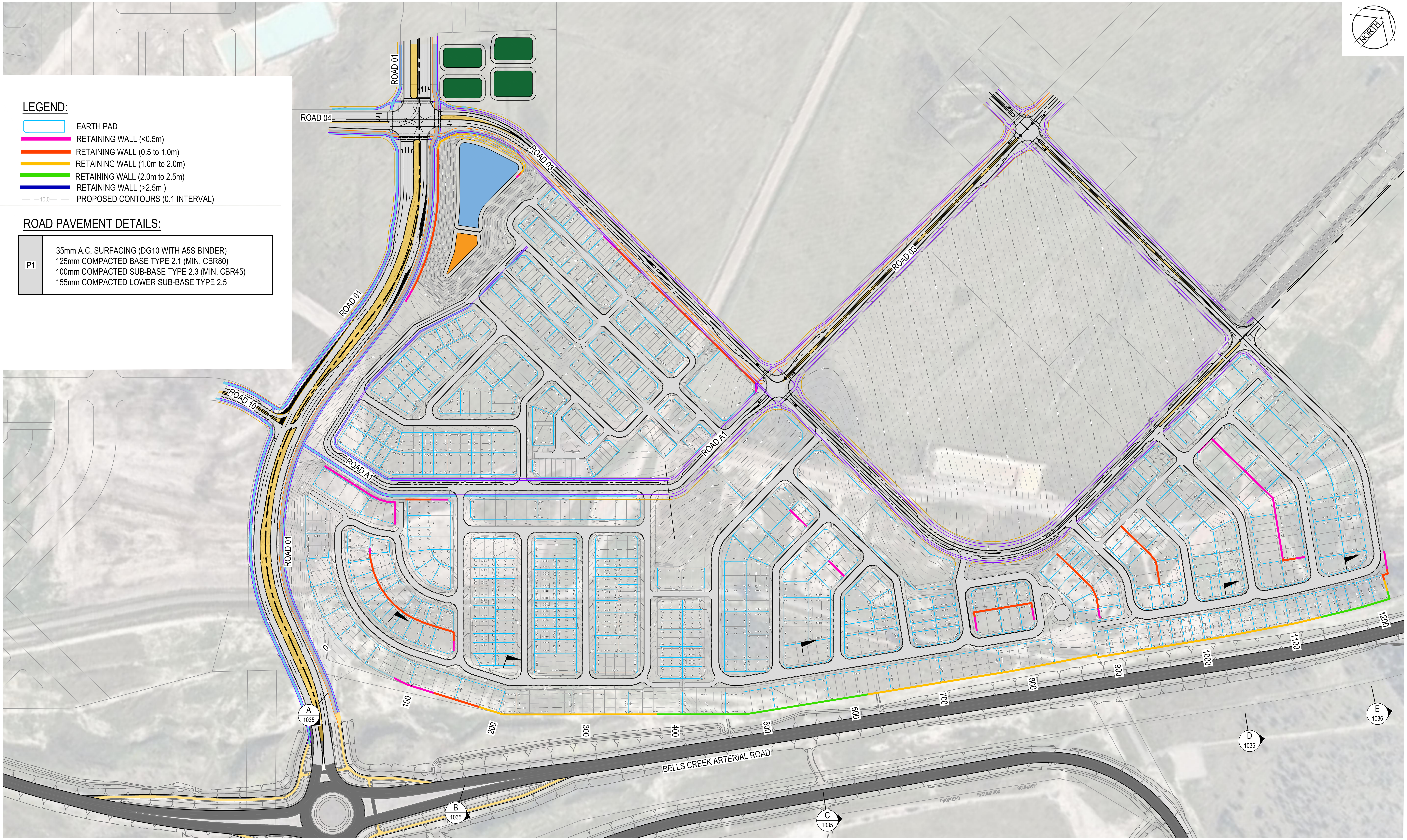

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5	DA RESUBMISSION	SS		20/05/2024
4	REMOVE ACOUSTIC WALLS	SS		15/05/2024
3	ACOUSTIC WALL ADDED	SS		09/05/2024
2	ISSUE FOR APPROVAL	SS		11/04/2024
1	ISSUE FOR APPROVAL	SS	-	28/03/2023
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LOT GRADING PLAN & RETAINING WALL

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Revision 7

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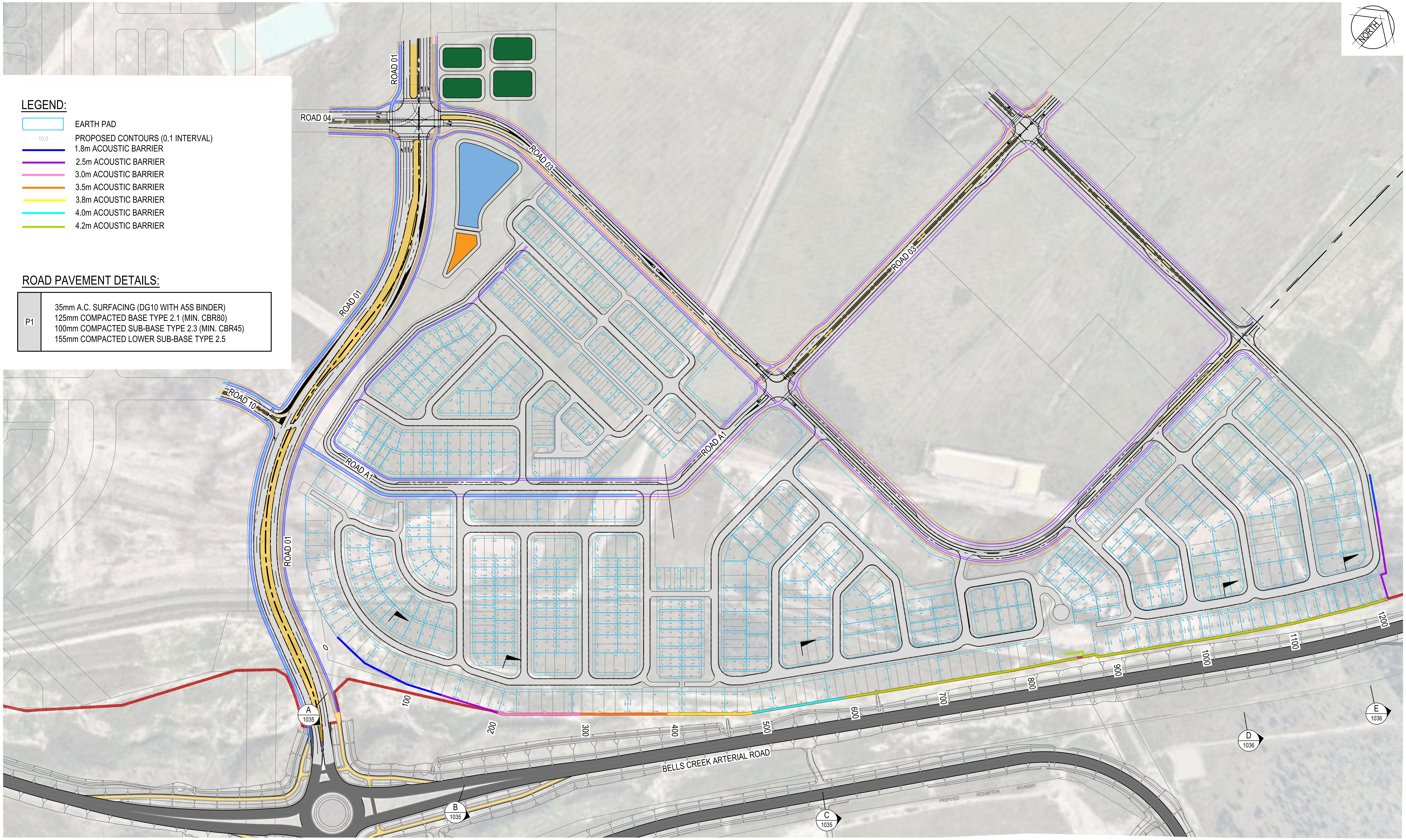

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3	DA RESUBMISSION	SS		20/05/2024
2	WALL HEIGHTS AMENDED	SS		16/05/2024
1	ISSUE FOR APPROVAL	SS		15/04/2023

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			SS	SS		28/03/2023

Title

ACOUSTIC WALL

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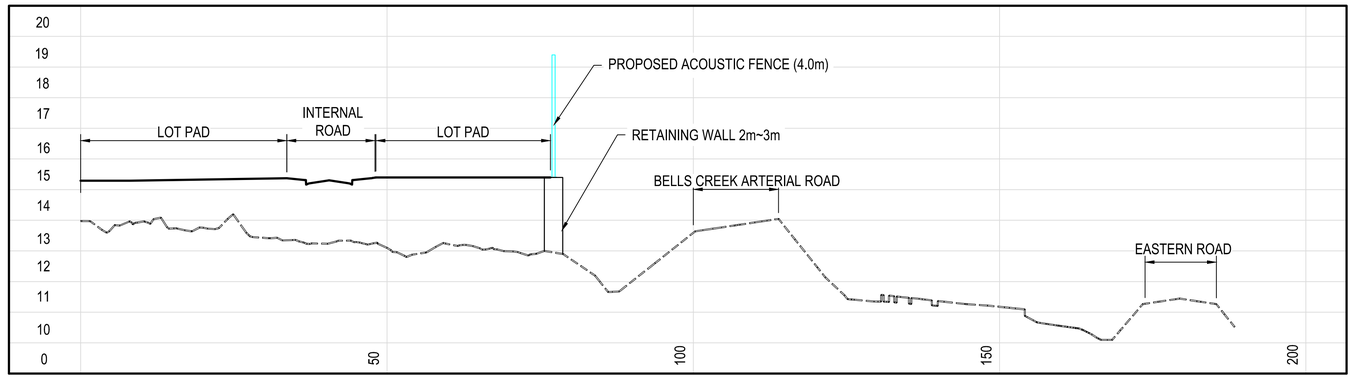

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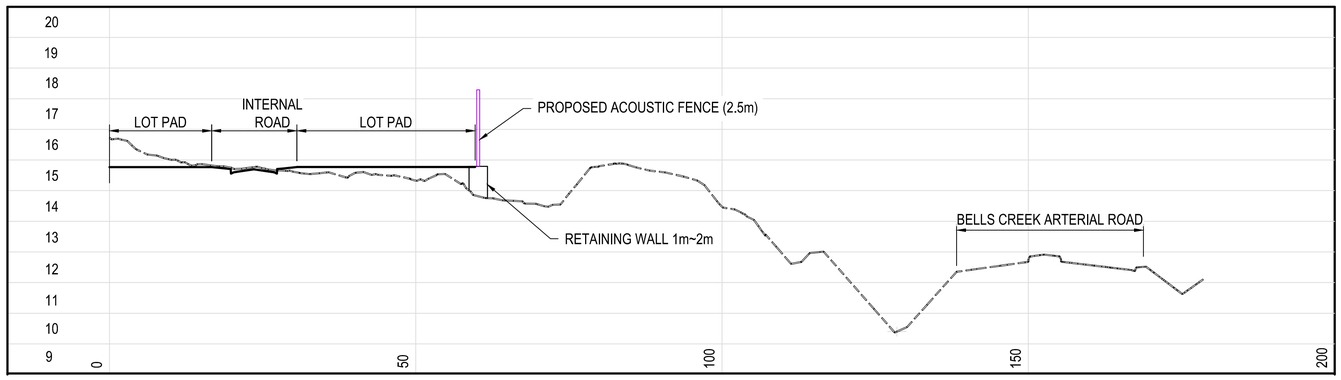

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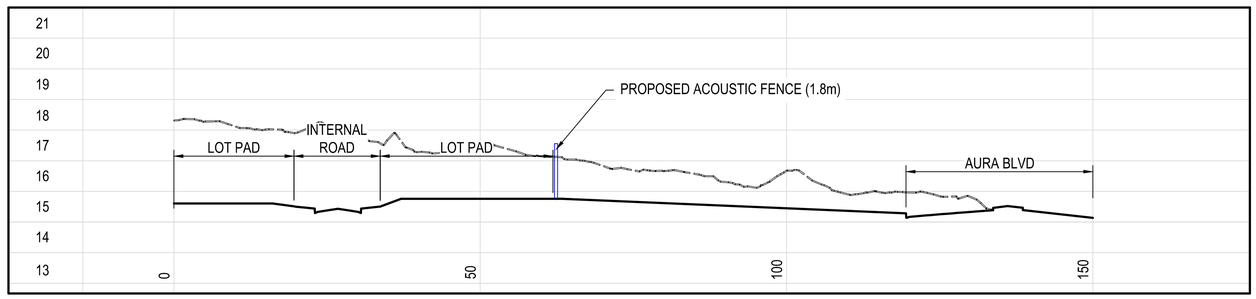

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			SS	SS		19/04/2024

Title
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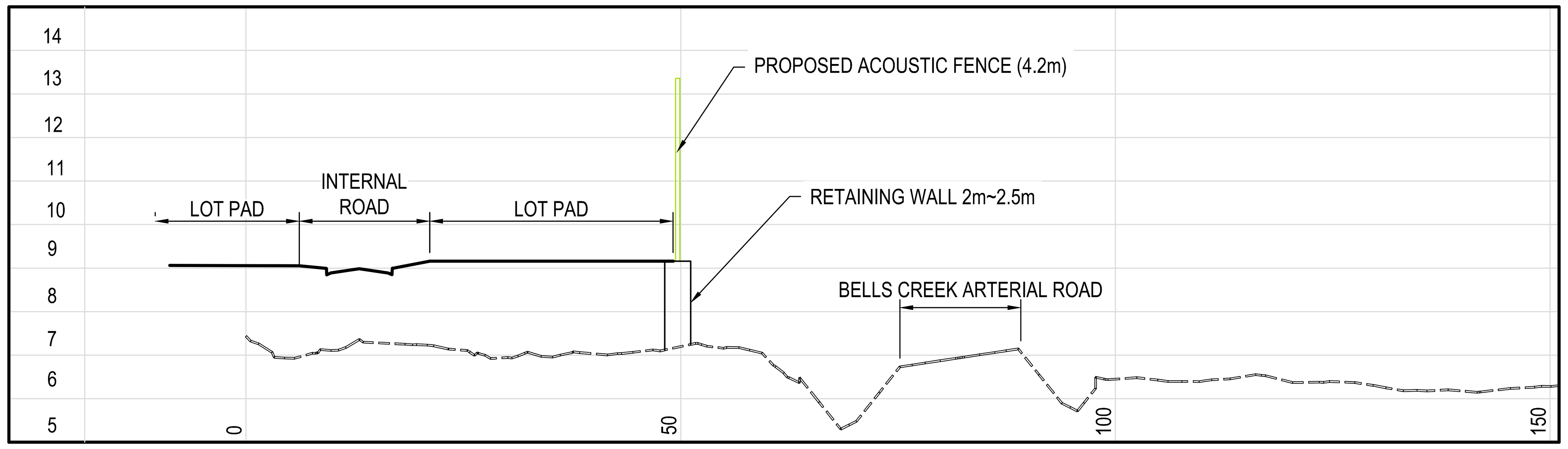

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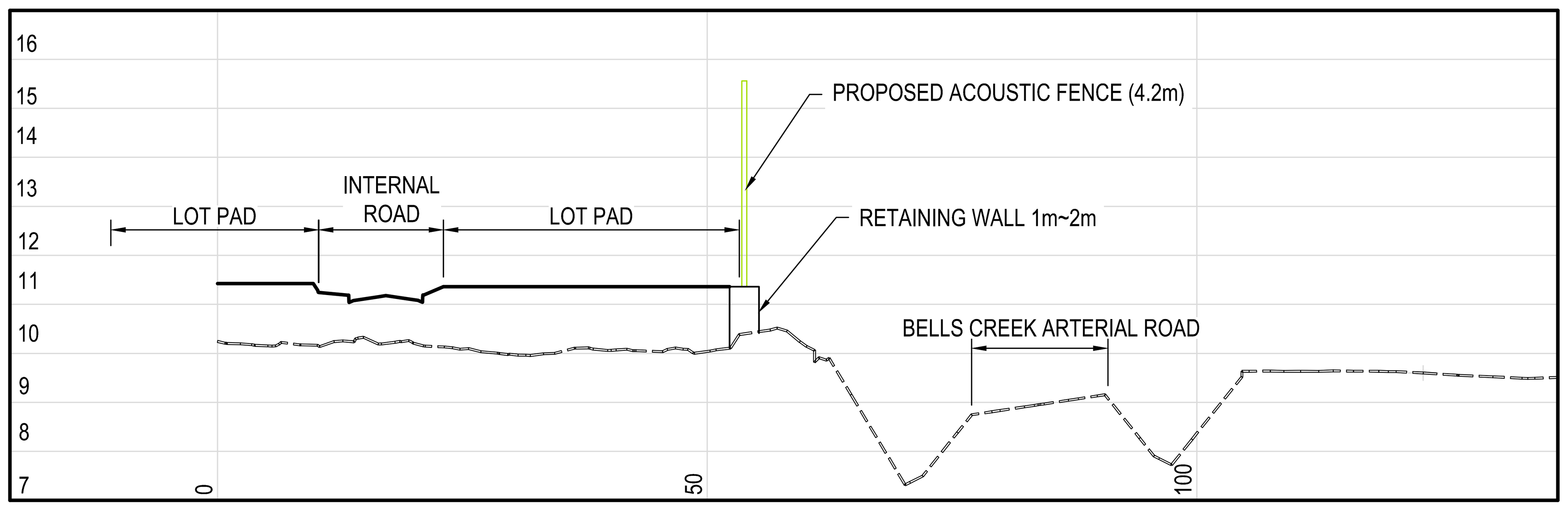

SECTION D
H 1:1000; V1:200 SK1011

Notes

0 20 40 60 80 100m
SCALE: 1:1000 @A1

0 5 10 15 20m
SCALE: 1:200 @A1

5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	DA RESUBMISSION	SS		20/05/2024
3	FENCE MODIFICATION	SS		09/05/2024
2	ISSUE FOR APPROVAL	SS		23/04/2024
1	ISSUE FOR APPROVAL	SS		19/04/2024
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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Notes

File Name:
304701171-100-CD-SK1011

Stantec

Stantec Australia Pty Ltd | ABN 17 007 820 322
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Web: www.stantec.com/au

Client/Project Logo
AURA
Stockland

Client/Project
STOCKLAND DEVELOPMENT PTY LTD

AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		19/04/2024

Title
RETAINING WALL CROSS SECTIONS
SHEET 2

Project No.
304701171-100

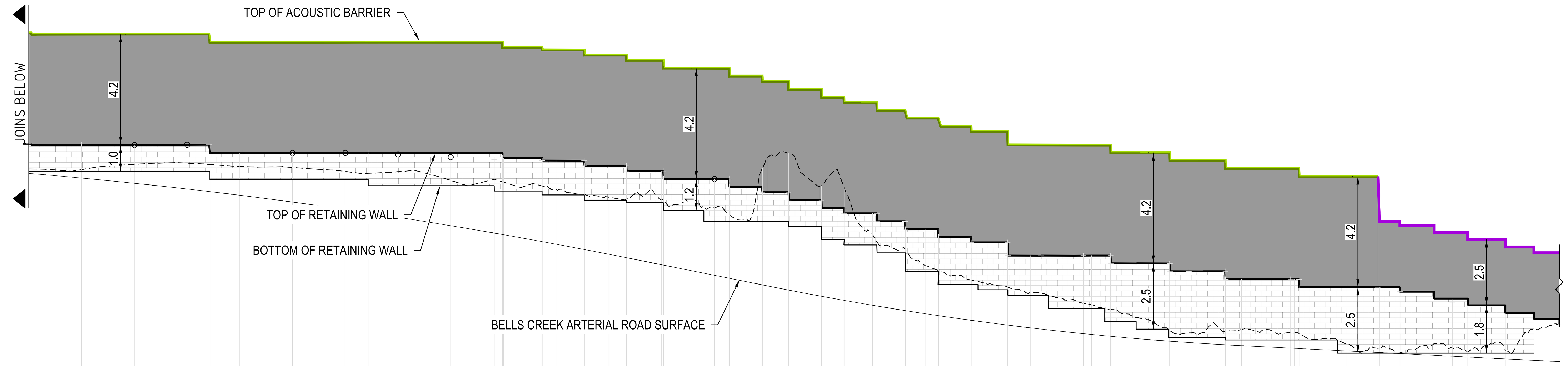
Scale
AS SHOWN A1

Revision
5

Drawing No.
304701171-100-CD-SK1136

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

C



LEGEND:

- 1.8m ACOUSTIC BARRIER
- 2.5m ACOUSTIC BARRIER
- 3.0m ACOUSTIC BARRIER
- 3.5m ACOUSTIC BARRIER
- 3.8m ACOUSTIC BARRIER
- 4.0m ACOUSTIC BARRIER
- 4.2m ACOUSTIC BARRIER

DATUM RL 2.0

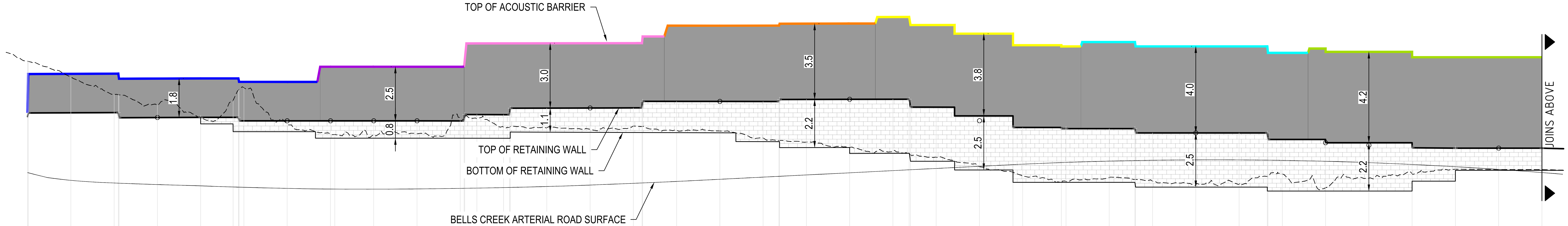
CONTROL LINE CHAINAGE WALL CENTRELINE	DESIGN LEVELS TOP OF RETAINING WALL	EXISTING SURFACE LEVEL
700.000	14.300	13.342
720.000	14.249	13.319
740.000	14.253	13.516
760.000	14.258	13.769
768.364	14.260	13.636
768.664	13.943	13.632
780.000	13.949	13.647
780.864	13.950	13.636
800.000	13.949	13.844
820.000	13.949	12.984
828.700	13.949	12.990
840.000	13.892	13.116
860.000	13.789	13.389
876.537	13.704	12.930
879.692	13.760	12.859
880.000	13.760	12.853
894.643	13.757	12.696
894.743	13.660	12.693
900.000	13.659	12.563
910.643	13.657	12.367
910.743	13.460	12.366
920.000	13.459	12.265
926.643	13.459	12.201
926.743	13.260	12.211
940.000	13.259	12.178
940.643	13.259	12.160
940.743	12.960	12.148
960.000	12.960	11.863
965.643	12.960	11.598
965.743	12.659	11.592
978.143	12.660	13.345
978.243	12.460	13.367
980.000	12.460	13.757
988.143	12.458	13.935
988.243	12.160	13.932
1000.000	12.158	12.691
1000.643	12.158	12.707
1000.743	11.860	12.709
1009.143	11.859	12.662
1009.243	11.660	12.635
1020.000	11.659	10.862
1021.643	11.658	10.589
1021.743	11.359	10.573
1032.359	11.354	10.298
1032.490	11.054	10.278
1040.000	11.056	9.681
1044.859	11.056	9.496
1044.958	10.758	9.492
1057.359	10.755	9.133
1057.458	10.557	9.132
1060.000	10.557	9.088
1071.258	10.557	8.864
1071.358	10.057	8.860
1080.000	10.056	8.692
1083.858	10.056	8.627
1100.000	10.058	8.246
1103.046	10.060	8.193
1110.303	10.056	8.033
1110.403	9.760	8.034
1120.000	9.758	7.716
1132.703	9.757	7.219
1132.803	9.460	7.214
1140.000	9.459	7.126
1153.803	9.460	7.187
1153.903	9.157	7.189
1160.000	9.159	7.255
1178.613	9.159	7.153
1180.000	9.158	7.132
1181.745	9.156	7.103
1181.845	8.859	7.098
1200.000	8.859	6.708
1211.746	8.856	6.543
1212.356		6.583
1220.000	8.689	6.368
1239.909	8.288	6.554
1240.000	8.286	6.546
1245.752		6.435
1260.000		6.471
1270.865		7.262

CI-CTRL-RTWL

WALL LONGITUDINAL SECTION - SECTION 2

SCALE H = 1:1000; V = 1:100

B



DATUM RL 8.0

CONTROL LINE CHAINAGE WALL CENTRELINE	DESIGN LEVELS TOP OF RETAINING WALL	EXISTING SURFACE LEVEL
0.000	15.755	18.315
0.303	15.924	18.308
20.000	15.932	17.582
40.000	15.940	16.784
41.959	15.941	16.767
42.261	15.706	16.761
60.000	15.713	16.287
80.000	15.721	15.716
94.987	15.727	16.502
97.449	15.720	16.977
97.749	15.560	17.004
100.000	15.560	17.089
120.000	15.560	15.424
140.000	15.560	14.960
160.000	15.560	14.922
180.000	15.558	14.969
200.000	15.557	15.662
201.749	15.557	15.691
202.049	15.852	15.730
207.678	15.863	15.655
220.000	15.848	15.269
222.818	15.845	15.267
223.118	16.143	15.292
240.000	16.148	15.242
260.000	16.154	15.170
280.000	16.159	15.321
284.018	16.160	15.301
284.318	16.460	15.304
300.000	16.458	15.130
320.000	16.456	15.090
340.000	16.454	14.771
347.318	16.454	14.656
347.618	16.548	14.655
360.000	16.551	14.579
380.000	16.555	14.334
400.000	16.559	14.163
407.518	16.560	14.012
408.118	16.194	13.979
420.000	15.959	13.886
440.000	15.563	13.440
455.518	15.256	13.185
460.000	15.241	13.012
477.866	15.200	12.723
480.000	15.200	12.764
500.000	15.200	12.948
511.864	15.200	12.855
512.164	15.000	12.854
520.000	15.000	12.778
540.000	15.000	12.603
560.000	15.000	12.623
573.064	15.000	12.991
573.364	14.700	12.988
580.000	14.662	13.107
600.000	14.547	12.468
620.000	14.432	12.915
640.000	14.318	13.118
660.000	14.300	13.328
680.000	14.300	13.311
700.000	14.300	13.342

CI-CTRL-RTWL

WALL LONGITUDINAL SECTION - SECTION 1

SCALE H = 1:1000; V = 1:100

A

Notes

0 20 40 60 80 100m
SCALE: 1:1000 @A1

0 2 4 6 8 10m
SCALE: 1:100 @A1

Issued/Revision		By	Appd	YYYY.MM.DD
3	RE-ISSUED FOR APPROVAL	SS		20/06/2024
2	BCA INFORMATION ADDED	SS		06/06/2024
1	ISSUE FOR INFORMATION	SS		3/06/2024

Issue Status

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Notes

File Name: 304701171-100-CD-SK1011

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Client/Project

STOCKLAND DEVELOPMENT PTY LTD

AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		19/04/2024

Title

RETAINING WALL LONGITUDINAL SECTION

Project No. 304701171-100

Scale AS SHOWN A1

Revision 3

Drawing No. 304701171-100-CD-SK1137

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

Plotted: 02/07/2024 11:47:31 PM By: SHI, SHANYAO
\\AU2035-PPFSS01\SHARED_PROJECTS\304701171\100_MASTERPLANNING\DRAWINGS

Notes

0 20 40 60 80 100m
SCALE 1:1000 @A1

0 50 100 150 200m
SCALE 1:2000 @A1

Issued/Revision		By	Appd	YYYY.MM.DD
5	INTERSECTION MODIFIED	SS		02/07/2024
4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	20/09/2023

Issue Status

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Notes

File Name: 304701171-100-CD-SK1020

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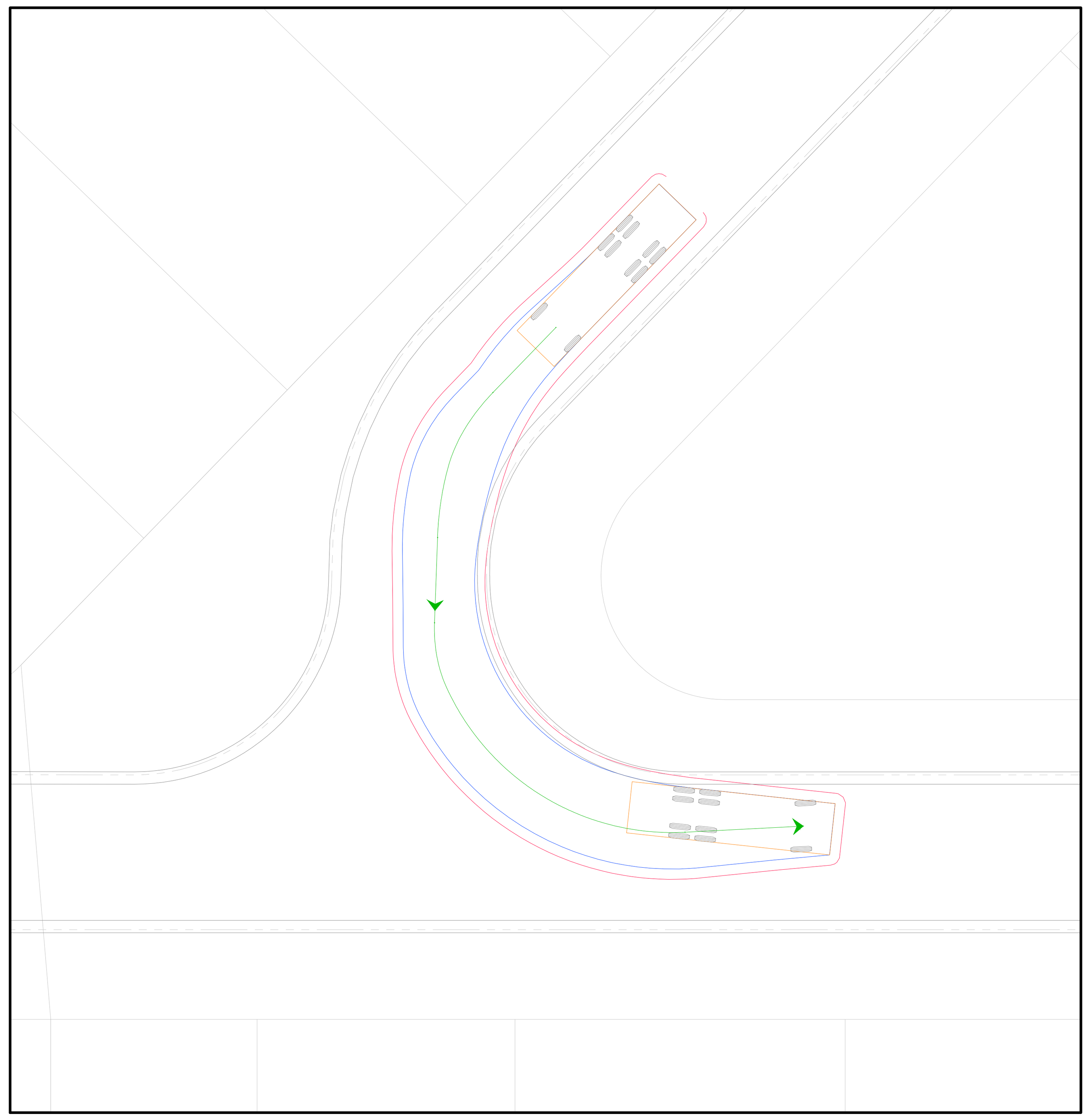
AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	SS		20/09/2023

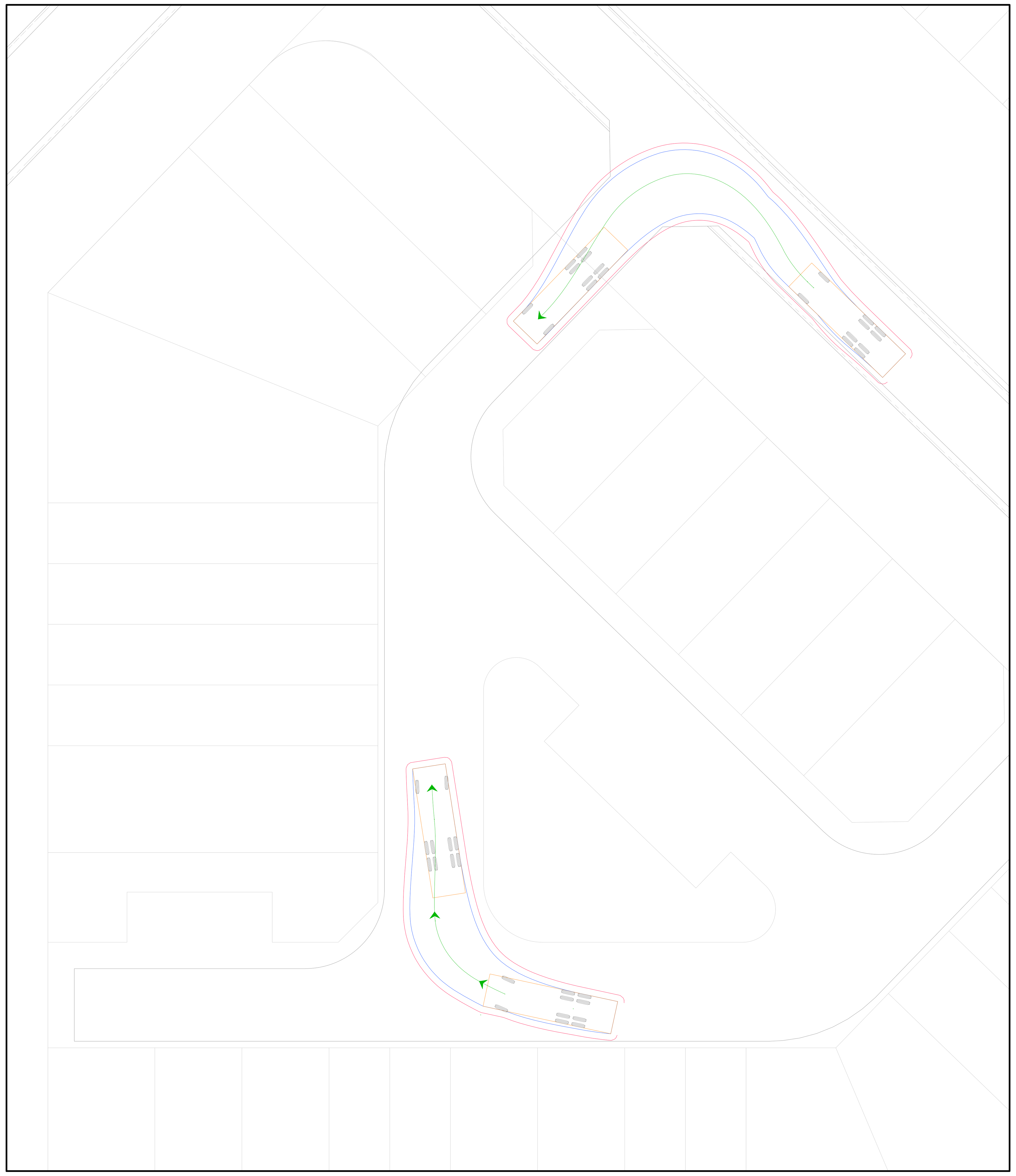
Title
FUNCTIONAL LAYOUT

Project No. 304701171-100
Scale AS SHOWN A1
Revision 5
Drawing No. 304701171-100-CD-SK1020

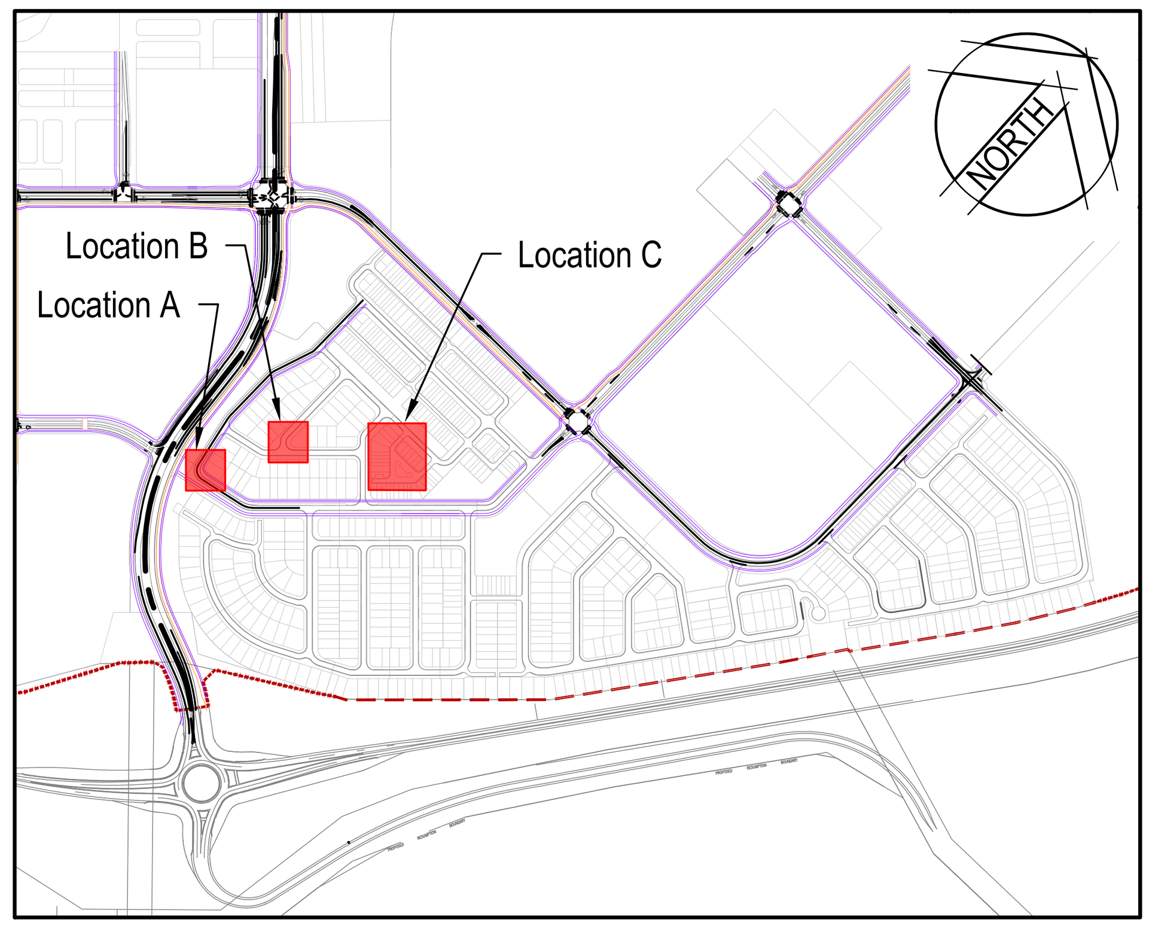
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



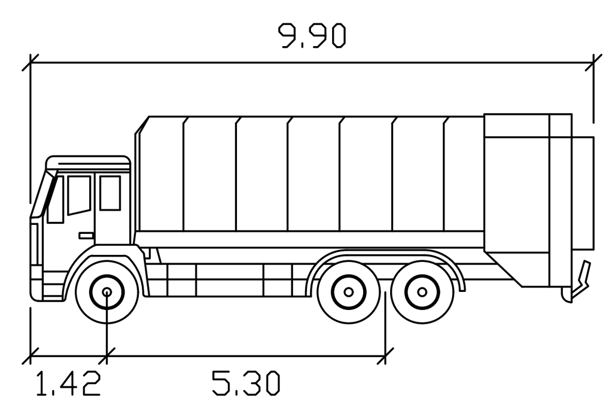
Location B



Location C

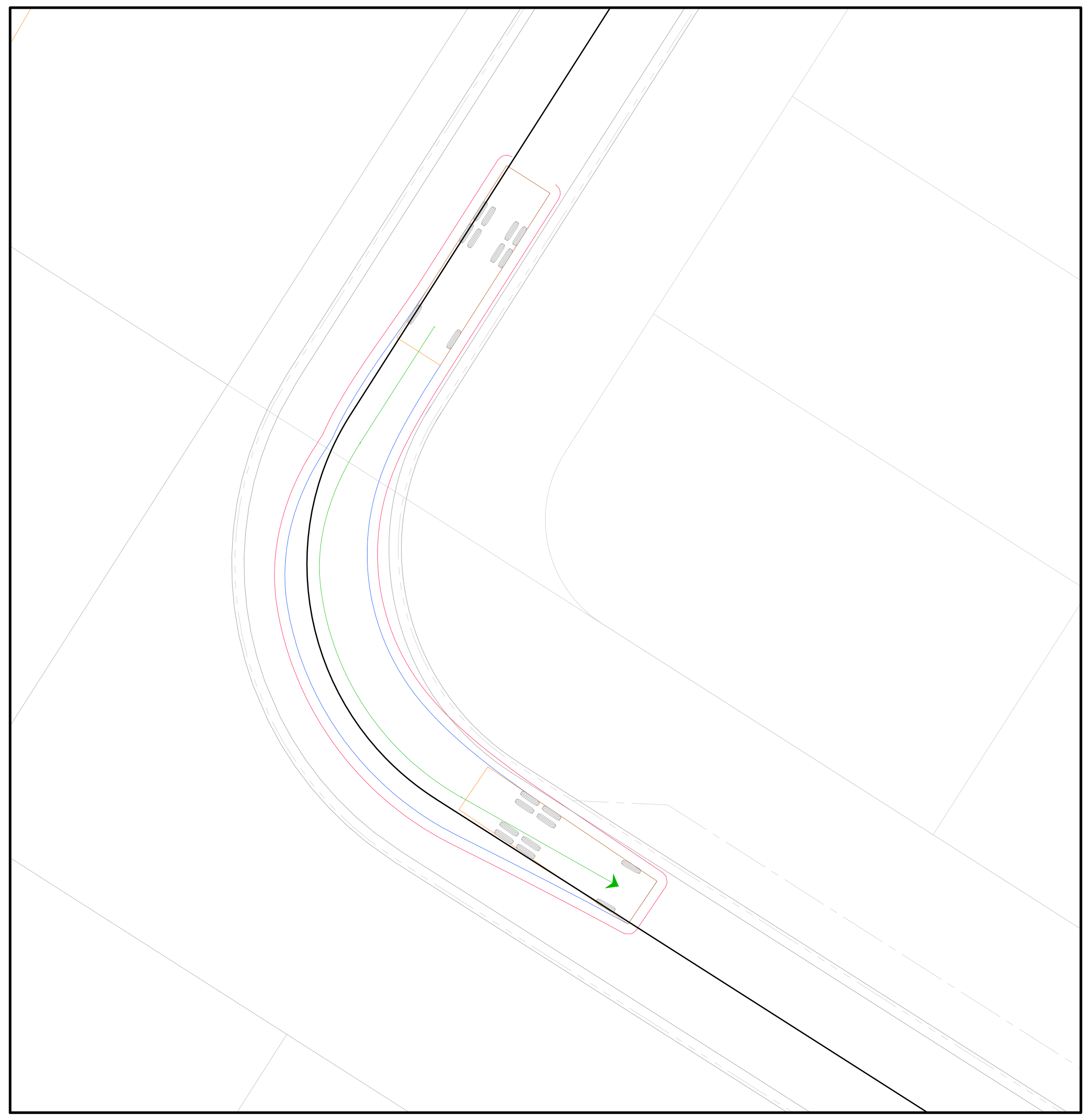


KEY PLAN
SCALE N.T.S



Sunshine Coast Recycle RCV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 39.4



Location A

Notes

0 5 10 15 20 25m
SCALE 1:250 @A1

		By	Appd	YYYY.MM.DD
4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	20/09/2023

Issued/Revision

Issue Status

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Notes

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304701171-100-CD-SK1020

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PRELIMINARY DESIGN
STAGE 1

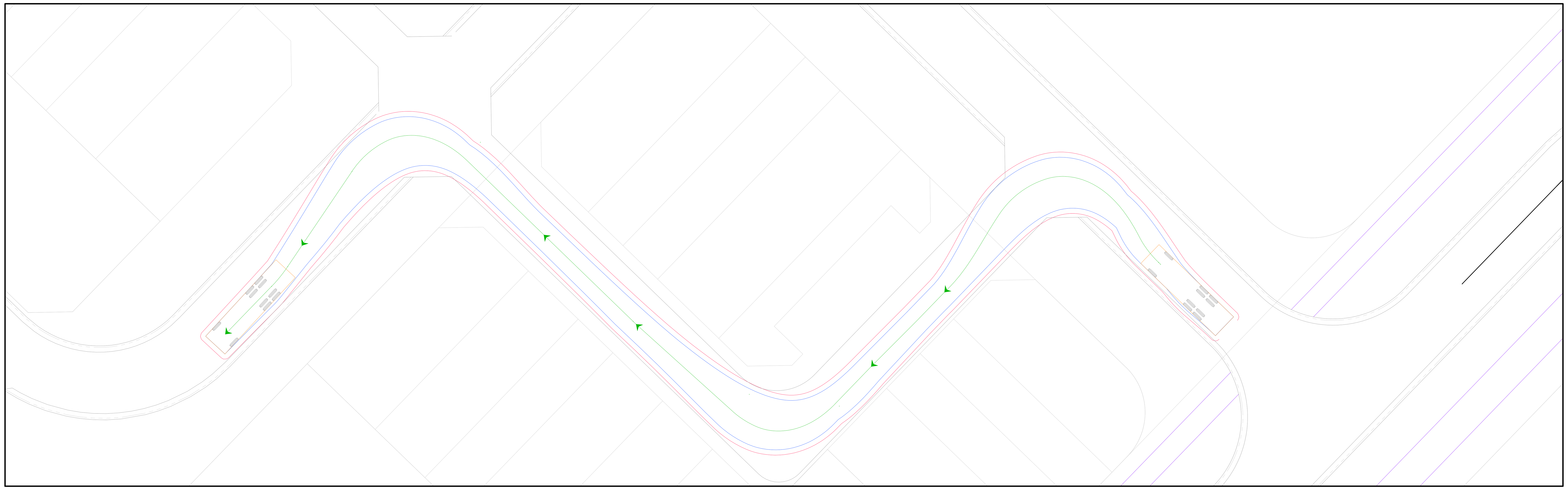
Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	SS		20/09/2023

Title
SWEPT PATH ANALYSIS
SHEET 1

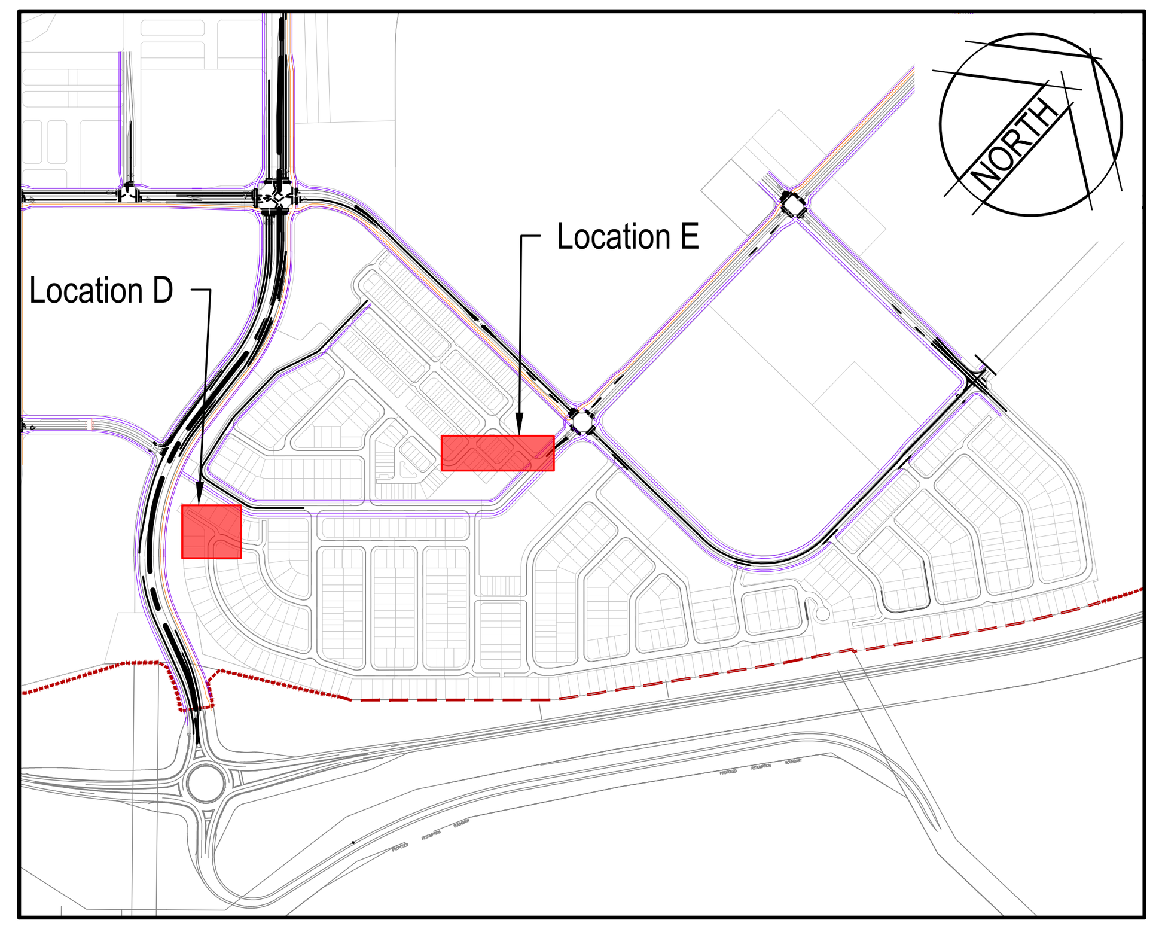
Project No. 304701171-100
Scale AS SHOWN A1
Revision 4
Drawing No. 304701171-100-CD-SK1021

Plotted: 21/06/2024 2:36:14 PM By: SHI, SHANYAO
\\AU2035-PPFSS01\SHARED_PROJECTS\304701171\100_MASTERPLANNING\DRAWINGS

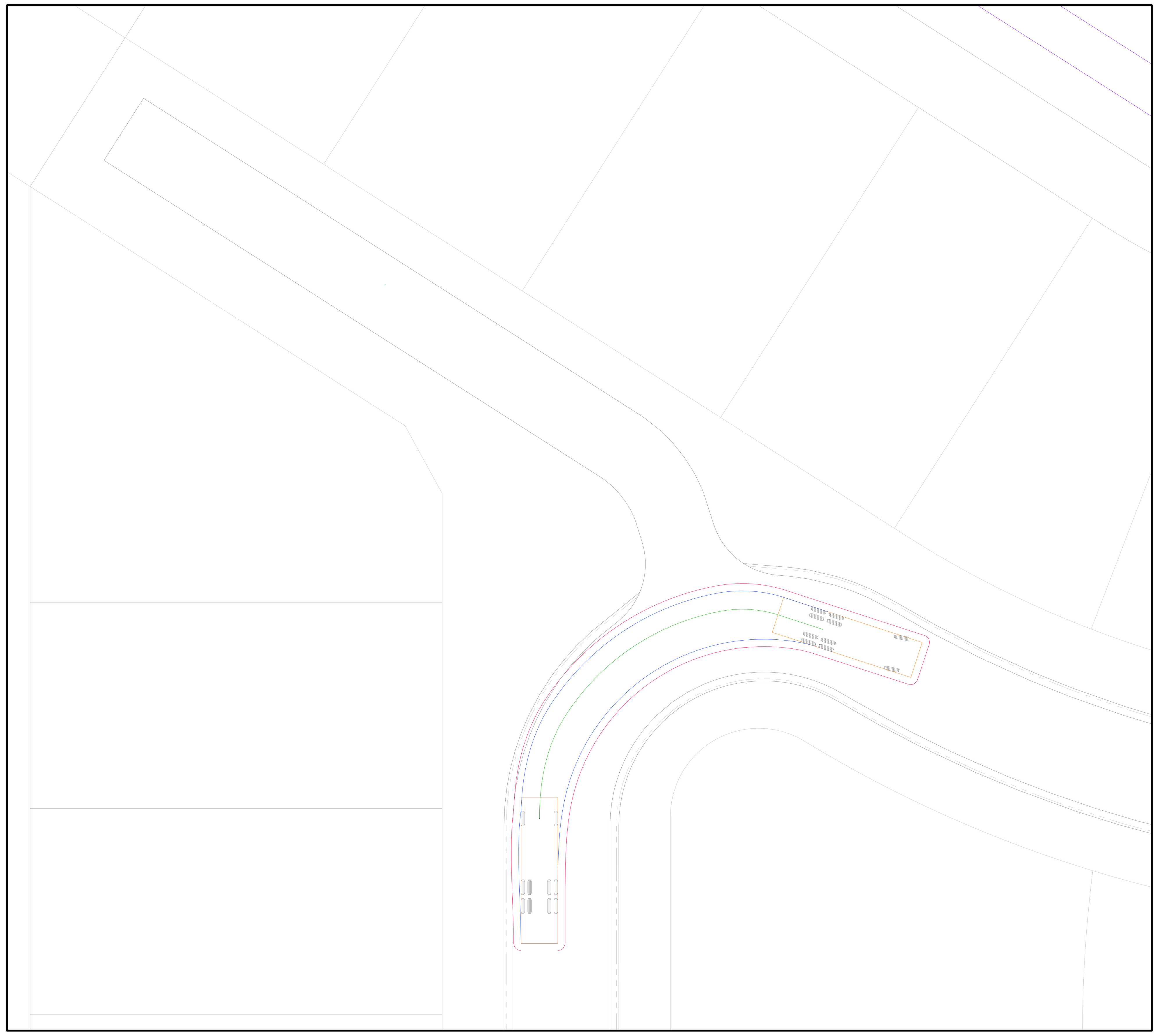
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



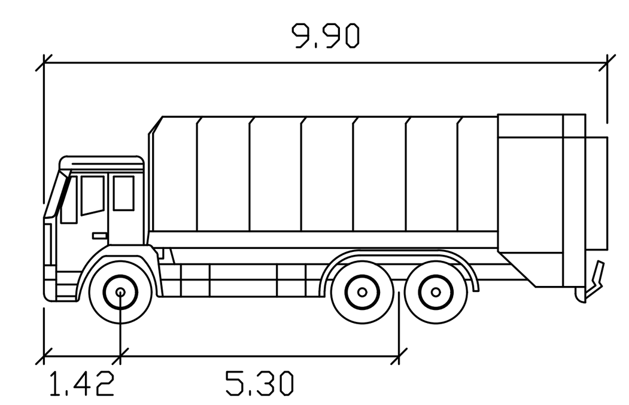
Location E



KEY PLAN
SCALE N.T.S



Location D



Sunshine Coast Recycle RCV

meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 39.4

Notes

0 5 10 15 20 25m
SCALE 1:250 @A1

Issued/Revision		By	Appd	YYYY.MM.DD
4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	20/09/2023

Issue Status

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Notes

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304701171-100-CD-SK1020

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Client/Project

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PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	SS		20/09/2023

Title

SWEPT PATH ANALYSIS
SHEET 2

Project No.
304701171-100

Scale
AS SHOWN A1

Revision
4

Drawing No.
304701171-100-CD-SK1022

Plotted: 21/06/2024 2:36:17 PM By: SHI, SHANYAO
\\AU2035-PPFSS01\SHARED_PROJECTS\304701171\100_MASTERPLANNING\DRAWINGS

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

Notes

0 5 10 15 20 25m
SCALE 1:250 @A1

	Issued/Revision	By	Appd	YYYY.MM.DD
4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	20/09/2023

Issue Status

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Notes

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PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	SS		20/09/2023

Title
SWEPT PATH ANALYSIS
SHEET 3

Project No. 304701171-100
Scale AS SHOWN A1
Revision 4
Drawing No. 304701171-100-CD-SK1023

Plotted: 21/06/2024 2:36:20 PM By: SHI, SHANYAO
\\AU2035-PPFSS01\SHARED_PROJECTS\304701171\100_MASTERPLANNING\DRAWINGS

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT
SCALE 1:500

Notes

0 100 200 300 400 500m
SCALE 1:5000 @A1

5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	RE-ISSUE FOR APPROVAL	SS		09/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	01/11/2023
Issued/Revision		By	Appd	YYYY.MM.DD

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Notes

File Name:
304701171-100-CD-SK1050

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Stockland

Client/Project
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AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		01/11/2023

Title
PLANS FOR THE STAGES
OF DELIVERING AURA BOULEVARD
SHEET 1

Project No.
304701171-100

Scale
AS SHOWN A1

Revision
5

Drawing No.
304701171-100-CD-SK1051

Plotted: 20/06/2024 4:55:23 PM By: ALVES DE ANDRADE, RENATA
U:\304701171\100_MASTERPLANNING\DRAWINGS

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT
SCALE 1:1000

Notes

0 5 10 15 20 25m
SCALE 1:250 @A1

	Issued/Revision	By	Appd	YYYY.MM.DD
5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	INTERSECTION UPDATED	SS		09/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	25/03/2024

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Notes

File Name:
304701171-100-CD-SK1050

Stantec

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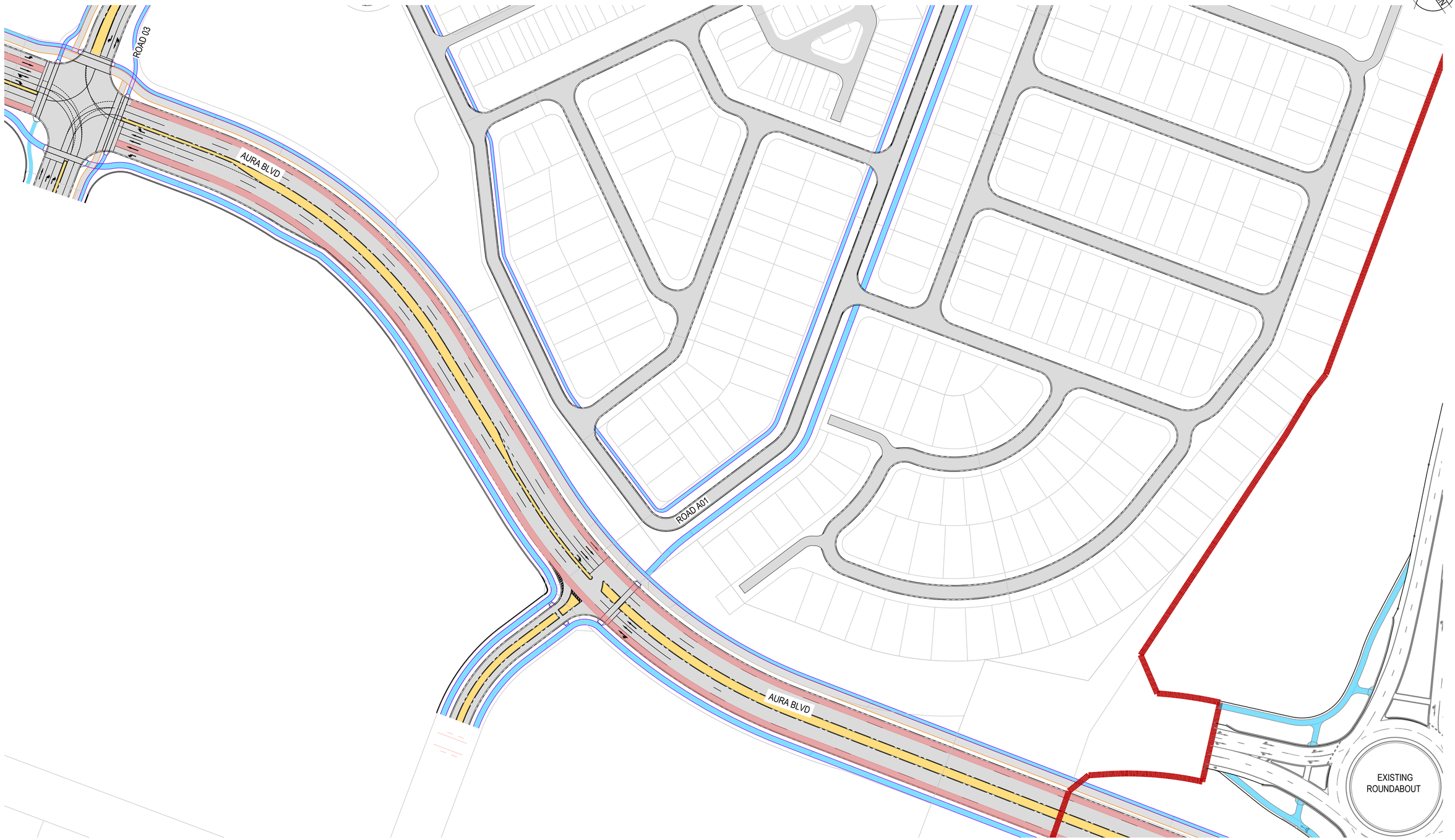
PRELIMINARY DESIGN
STAGE 2

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	JP		25/03/2024

Title
PLANS FOR THE STAGES
OF DELIVERING AURA BOULEVARD
SHEET 2

Project No. 304701171-100
Scale AS SHOWN A1
Revision 5
Drawing No. 304701171-100-CD-SK1055

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



LAYOUT
SCALE 1:1000

Notes

0 5 10 15 20 25m
SCALE 1:250 @A1

5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	INTERSECTION UPDATED	SS		09/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	25/03/2024
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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Notes

File Name: 304701171-100-CD-SK1050

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PRELIMINARY DESIGN
STAGE 3

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	JP		25/03/2024

Title
PLANS FOR THE STAGES
OF DELIVERING AURA BOULEVARD
SHEET 3

Project No. 304701171-100
Scale AS SHOWN A1
Revision 5
Drawing No. 304701171-100-CD-SK1056

Plotted: 20/06/2024 4:56:18 PM By: ALVES DE ANDRADE, RENATA
S:\304701171\100 MASTERPLANNING\DRAWINGS

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT
SCALE 1:2000

Notes

0 50 100 150 200m
SCALE 1:2000 @A1

4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	01/11/2023
Issued/Revision		By	Appd	YYYY.MM.DD

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Notes

File Name:
304701171-100-CD-SK1110

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STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		01/11/2023

Title
ROAD HIERARCHY PLAN

Project No. 304701171-100
Scale AS SHOWN A1
Revision 4
Drawing No. 304701171-100-CD-SK1110

Plotted: 20/06/2024 5:16:32 PM By: ALVES DE ANDRADE, RENATA
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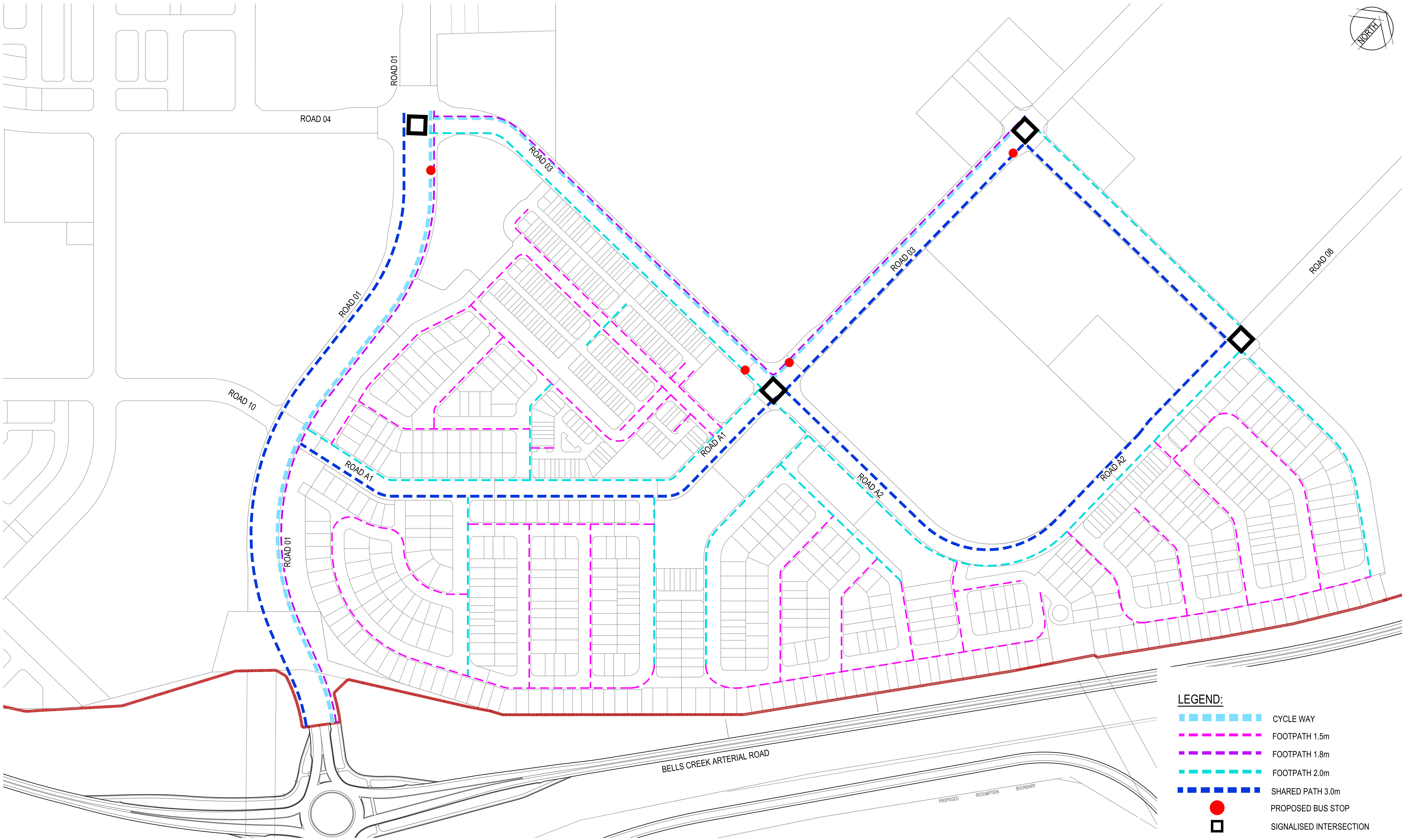
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



LAYOUT
SCALE 1:2000

Notes

0 50 100 150 200m
SCALE 1:2000 @A1

4	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	02/11/2023
Issued/Revision		By	Appd	YYYY.MM.DD

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Notes

File Name:
304701171-100-CD-SK1115

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PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	SS	SS		02/11/2023
			Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PATHWAY HIERARCHY PLAN

Project No. 304701171-100
Scale AS SHOWN A1
Revision 4
Drawing No. 304701171-100-CD-SK1115

Plotted: 20/06/2024 5:01:58 PM By: ALVES DE ANDRADE, RENATA
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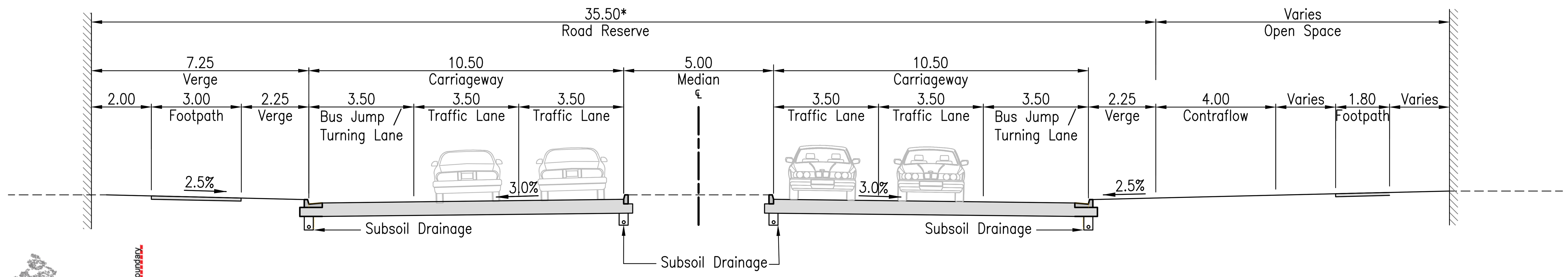
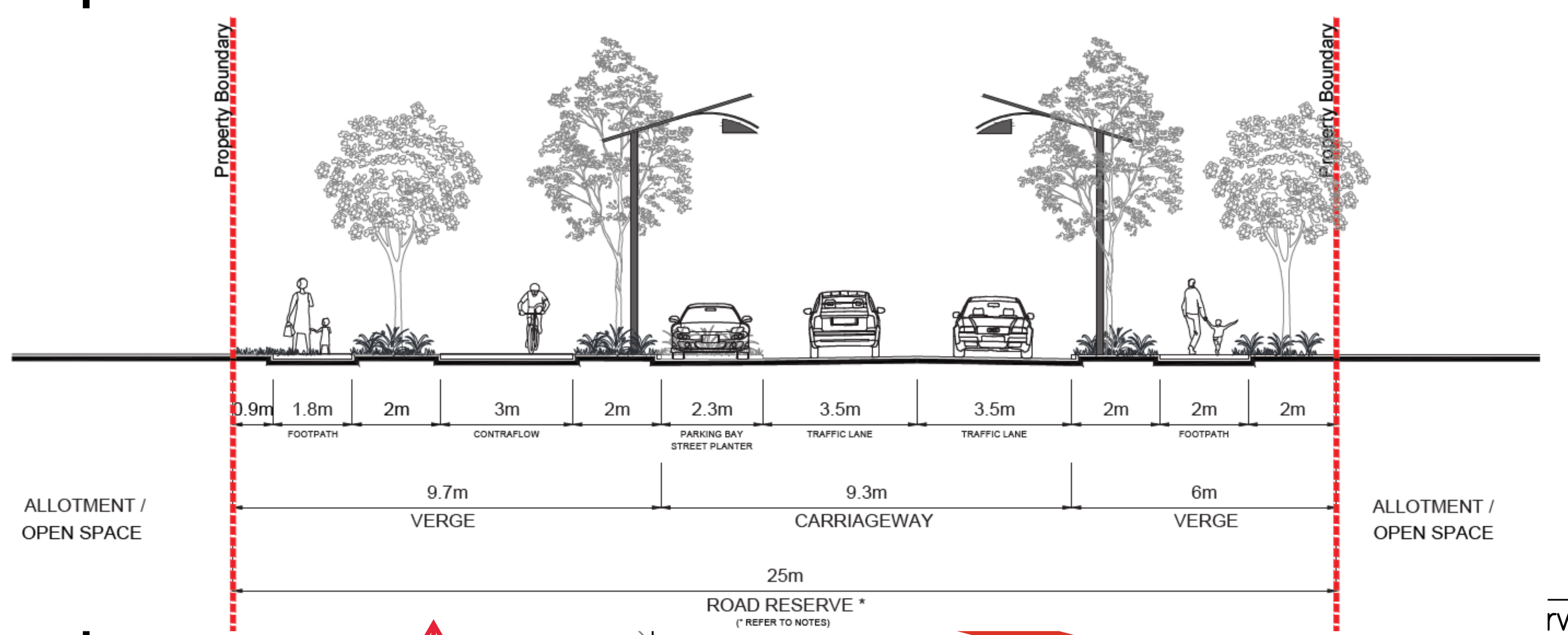
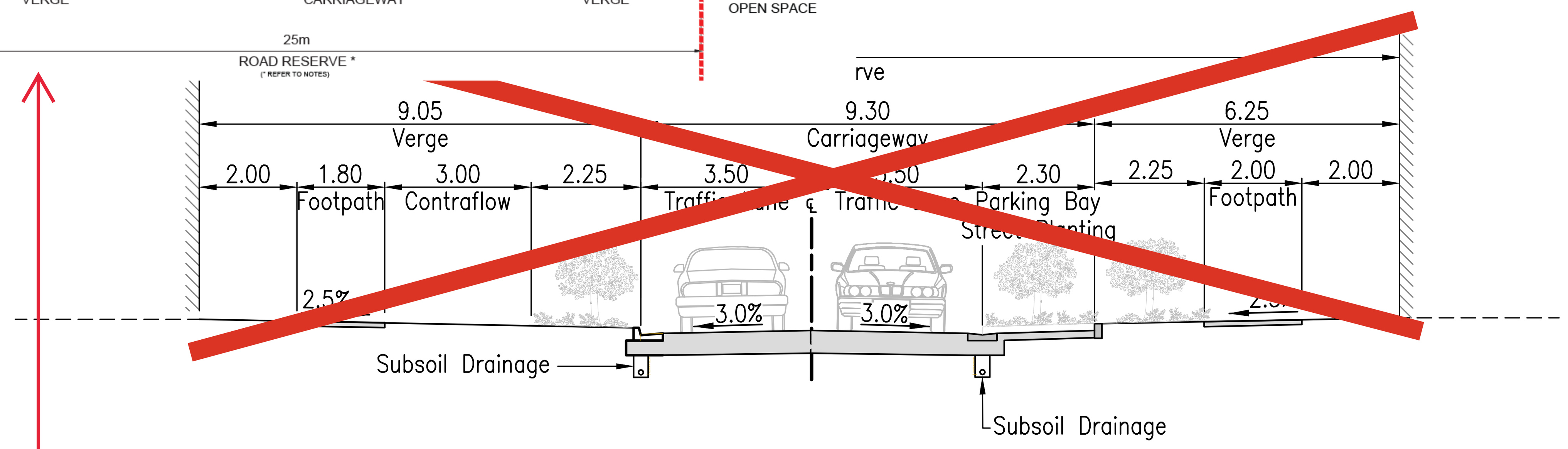
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



SUB-ARTERIAL 3A (35.5m)* *Additional allowances may be required at intersectionns in order to make provision for turning lanes or priority public transport lanes

SCALE 1:100

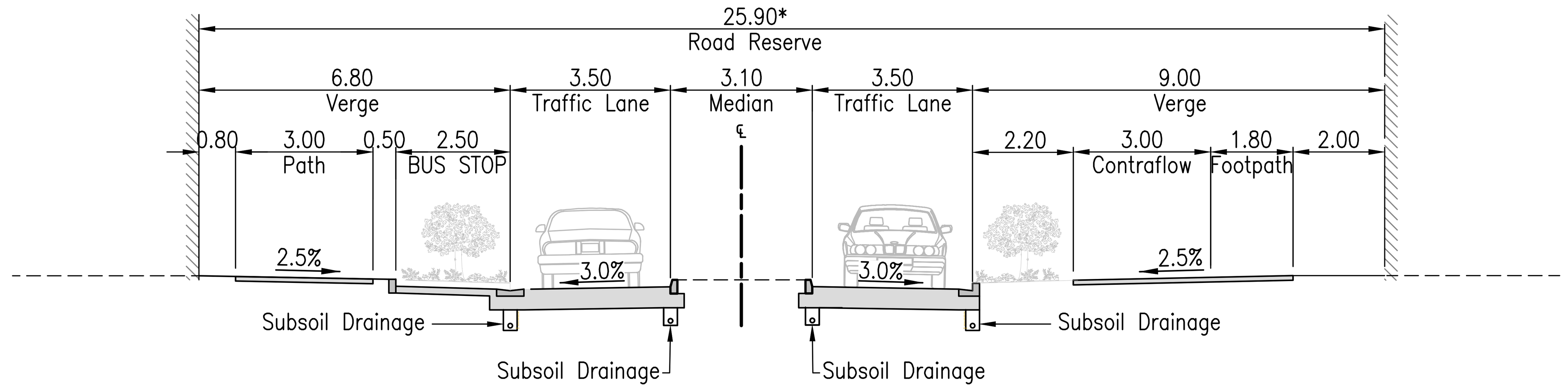




Cross section to be in accordance with the approved Plan of Development

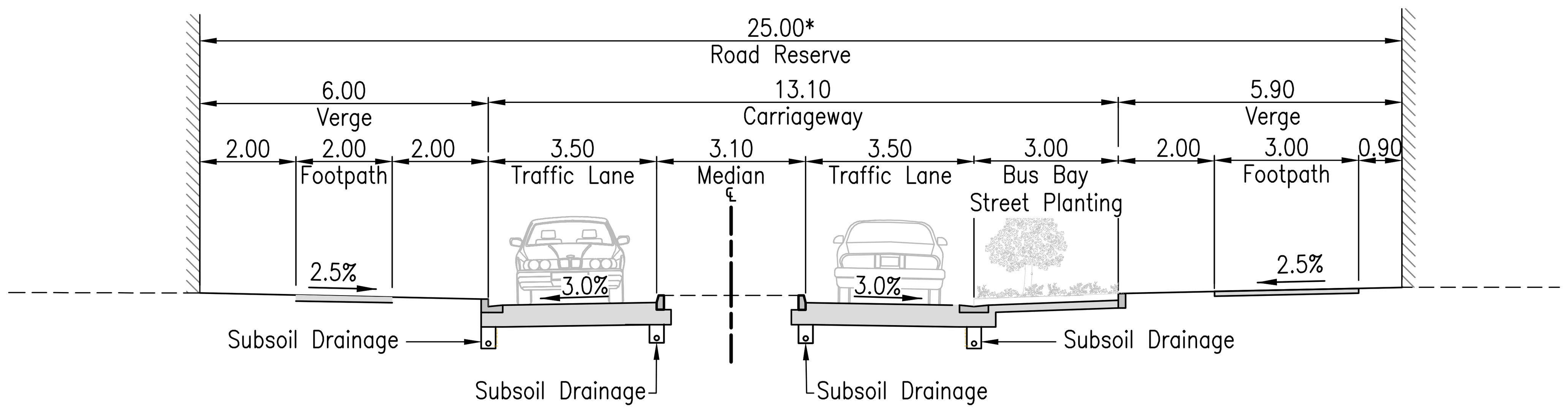
TRUNK CONNECTOR C2 ~~(24.60m)~~* ~~*Additional allowances may be required at intersectionns in order to make provision for turning lanes or priority public transport lanes~~

SCALE 1:100



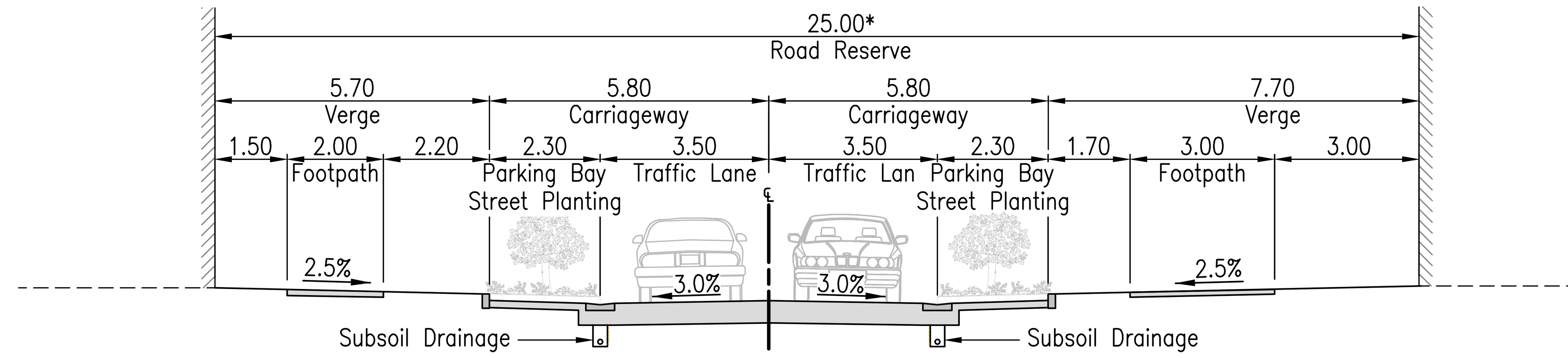
TRUCK CONNECTOR G (25.9m)* *Additional allowances may be required at intersectionns in order to make provision for turning lanes or priority public transport lanes

SCALE 1:100



NEIGHBOURHOOD CONNECTOR N2 (25m)* *Additional allowances may be required at intersectionns in order to make provision for turning lanes or priority public transport lanes

SCALE 1:100



NEIGHBOURHOOD CONNECTOR N1 (25m)* *Additional allowances may be required at intersectionns in order to make provision for turning lanes or priority public transport lanes

SCALE 1:100

Notes

SCALE 1:100 @A1

Rev	Description	By	Appd	YYYY.MM.DD
5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	CROSS SECTION N2 MODIFIED	SS		05/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	21/09/2023

Issued/Revision

Issue Status

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Notes

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PRELIMINARY DESIGN
STAGE 1

Authorised | RPEQ # | YYYY.MM.DD | JP Dwn. | SS Dsgn. | Chkd. | 20/09/2023 YYYY.MM.DD

Title

TYPICAL SECTIONS
SHEET 1

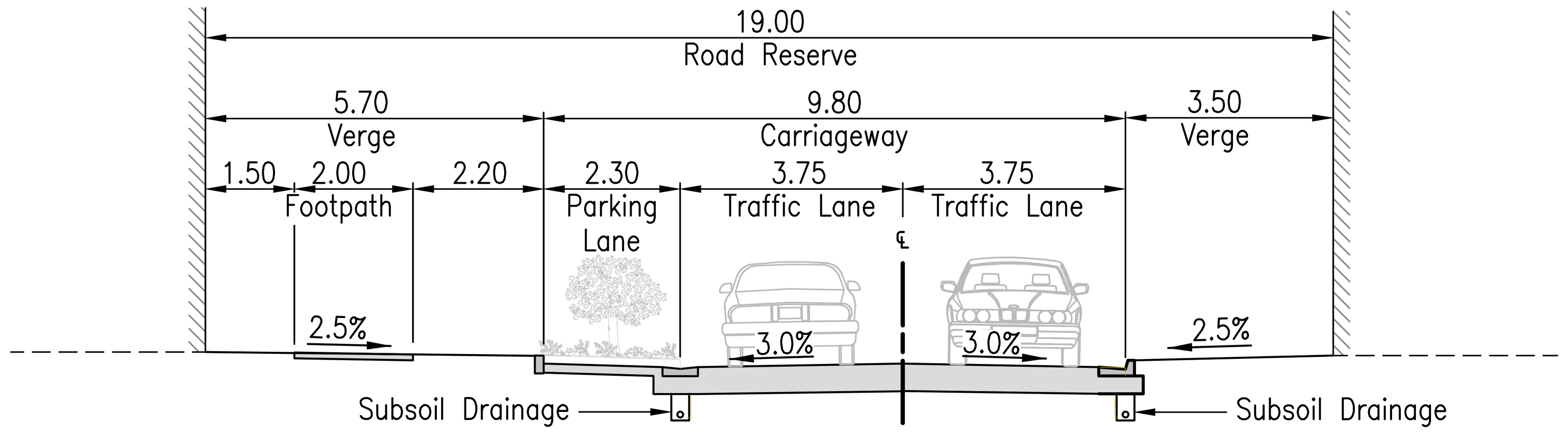
Project No. 304701171-100

Scale AS SHOWN A1

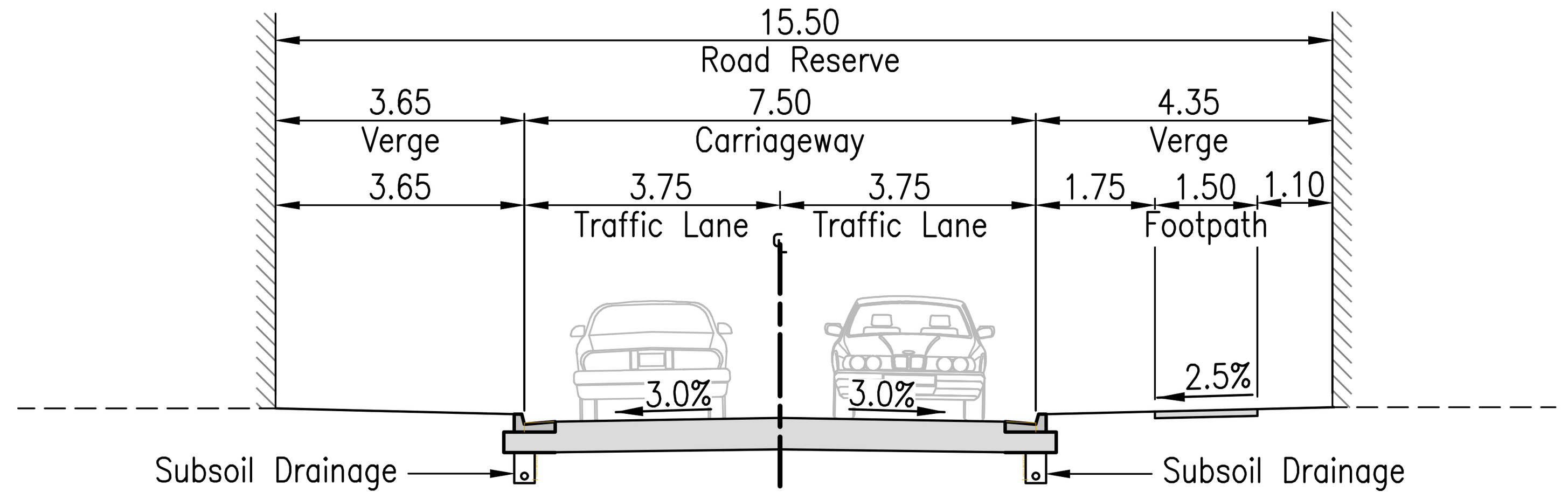
Revision 5

Drawing No. 304701171-100-CD-SK1131

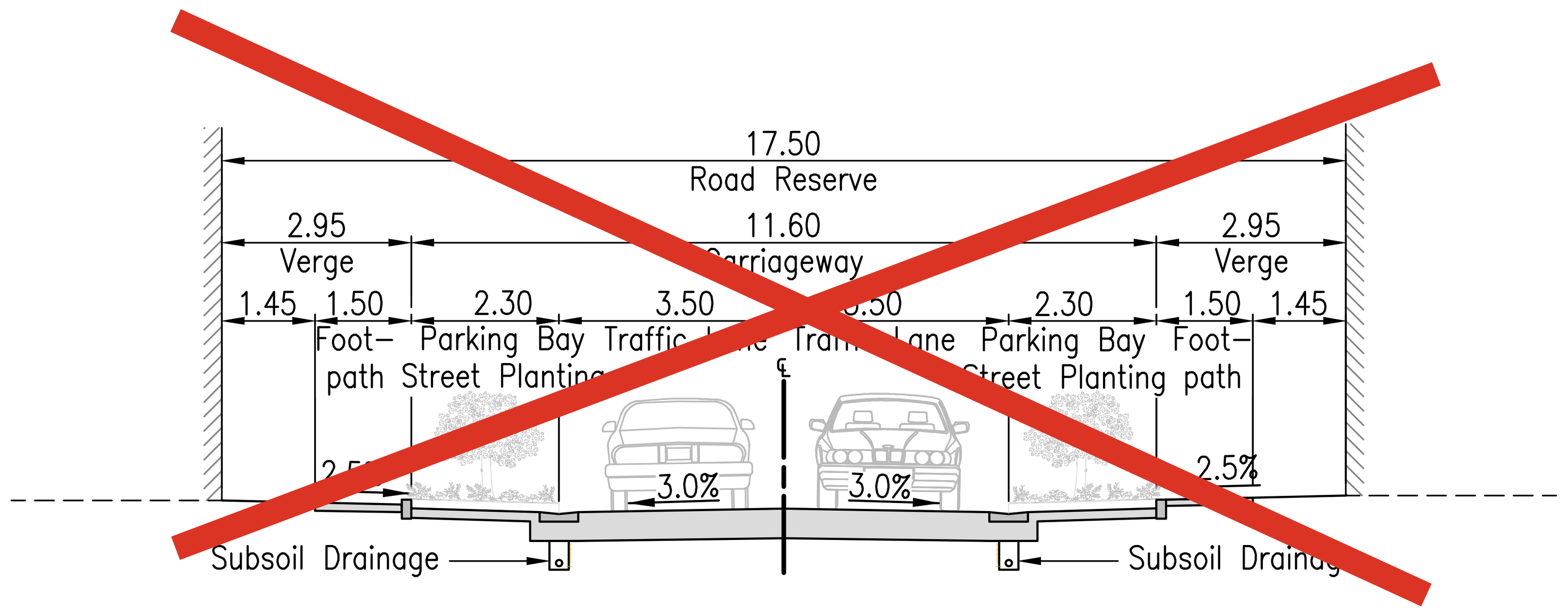
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD



NEIGHBOURHOOD CONNECTOR L (19.0m)
SCALE 1:100



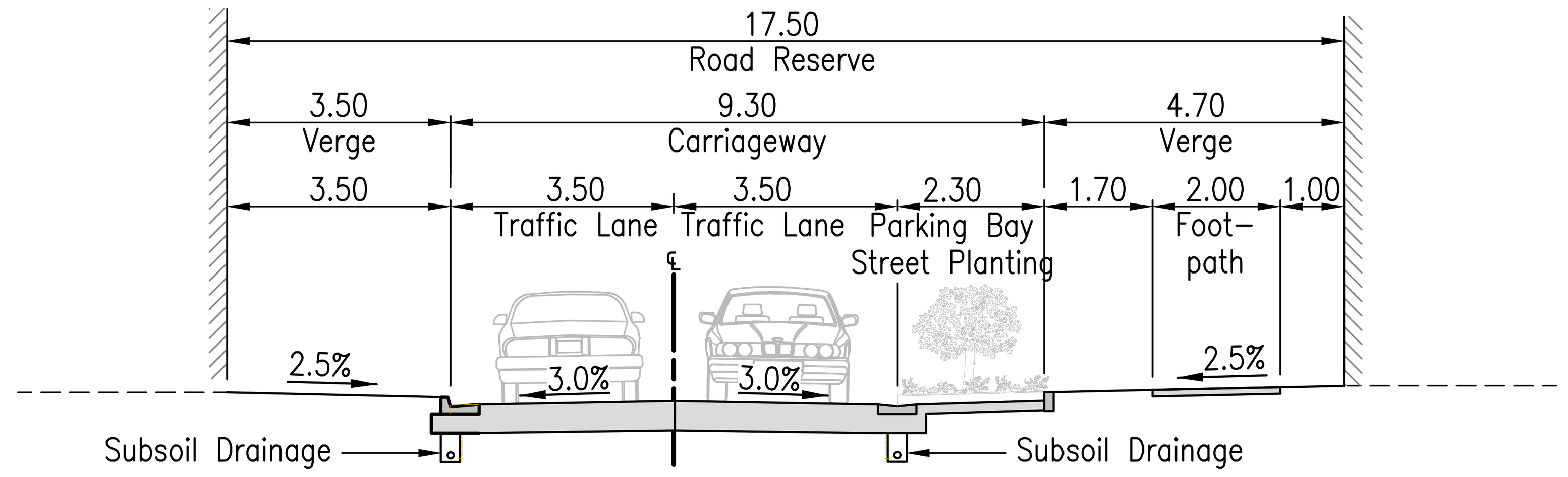
ACCESS STREET P (15.50m)
SCALE 1:100



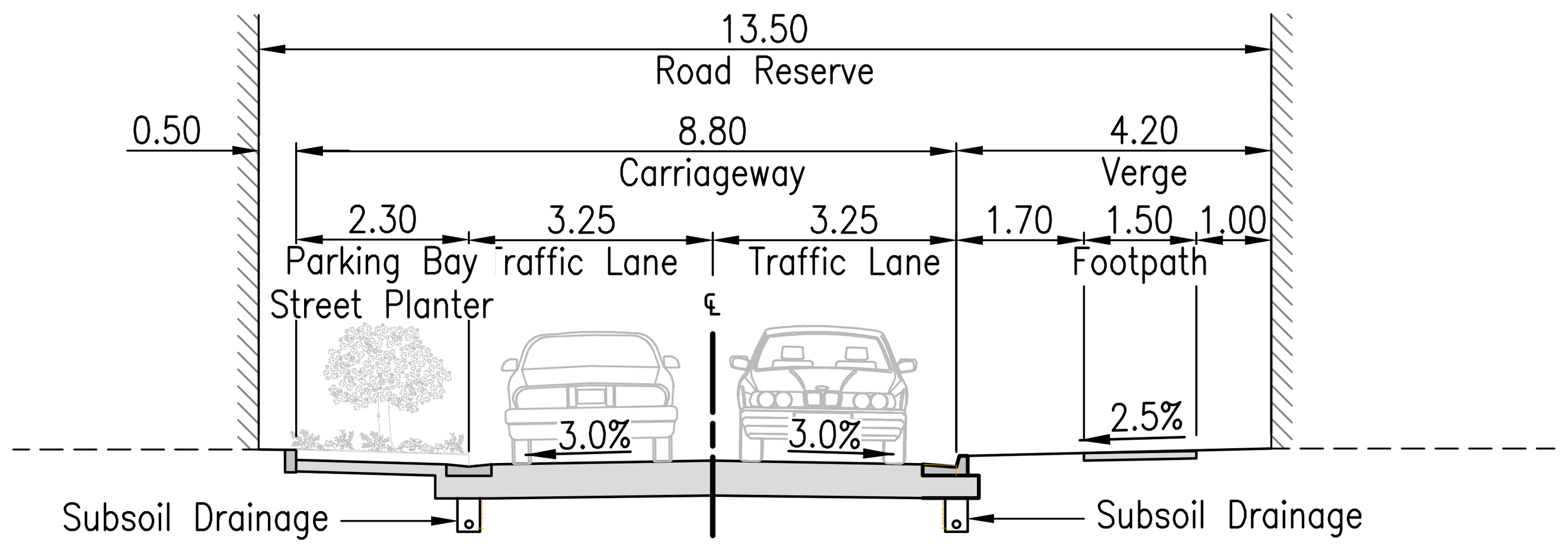
ACCESS STREET - URBAN A1 (17.5m)

Cross section to be in accordance with approved PoD

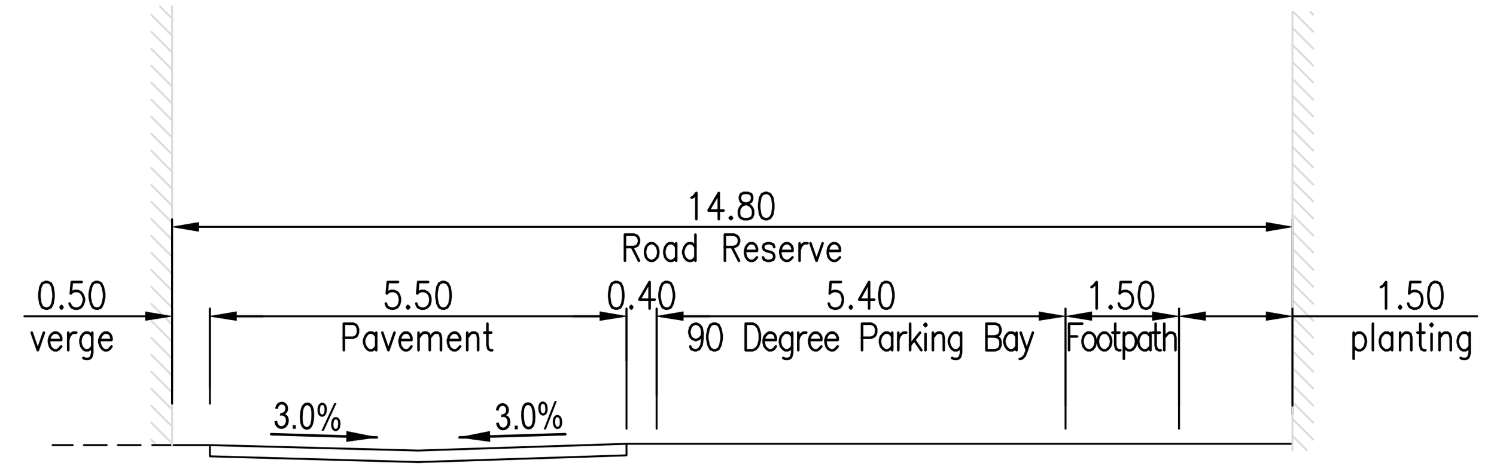
SCALE 1:100



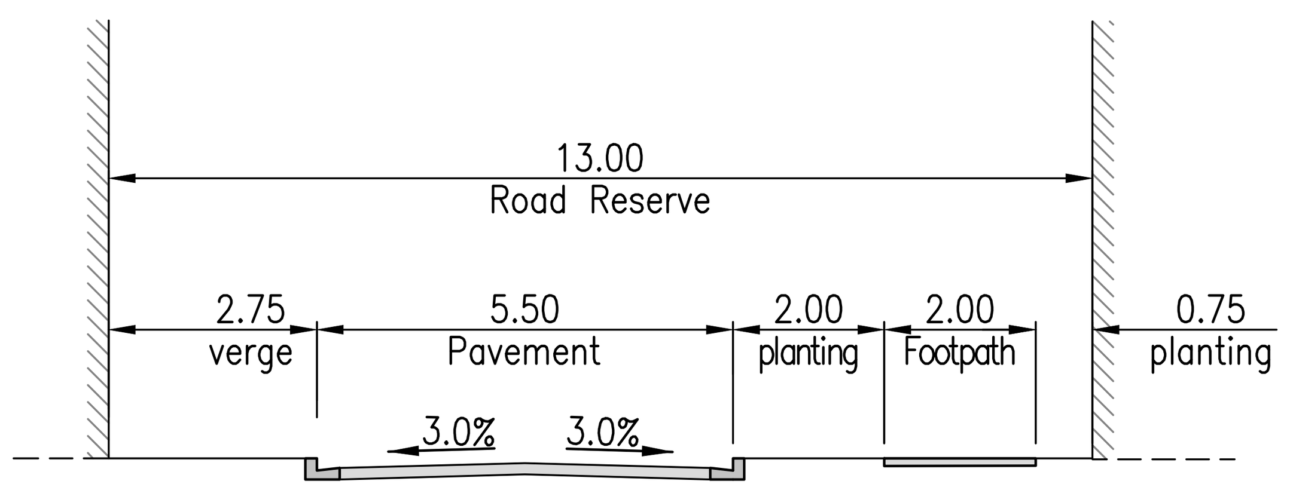
ACCESS STREET - URBAN A2 (17.5m)
SCALE 1:100



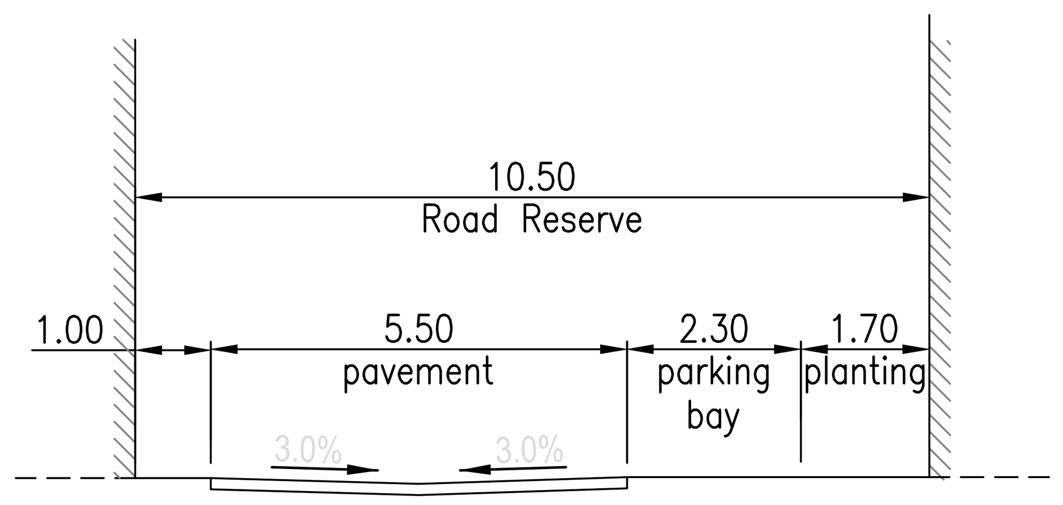
ACCESS STREET ESPLANADE (13.5m)
SCALE 1:100



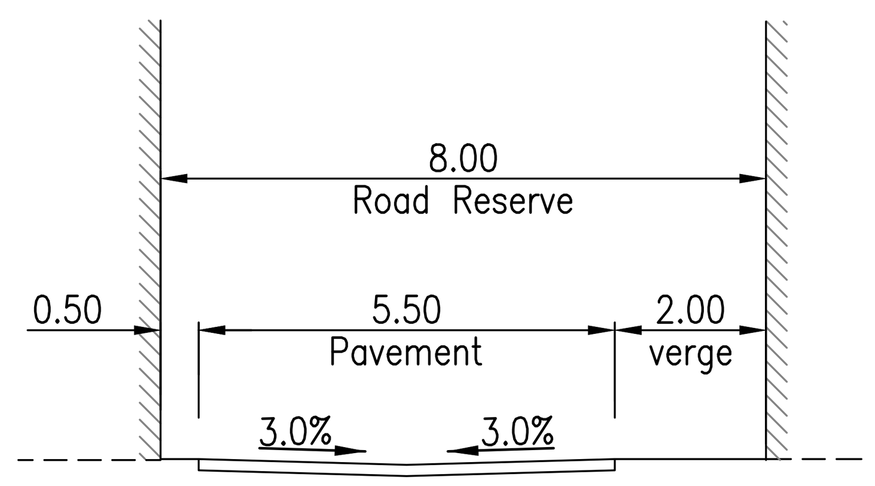
LANEWAY 14.8m
SCALE 1:100



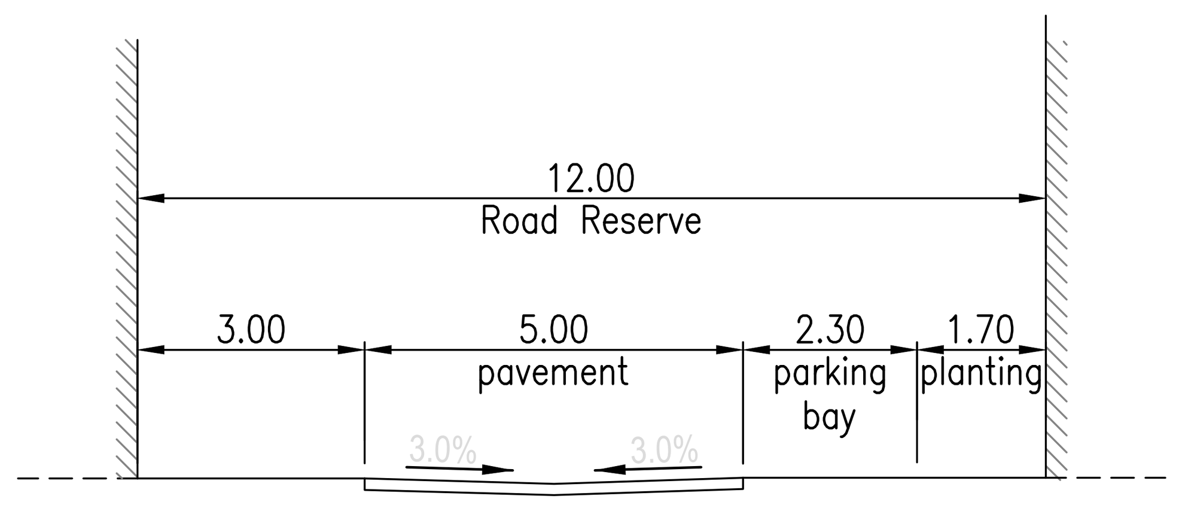
SHARED ACCESS 13m
SCALE 1:100



LANEWAY 10.5m
SCALE 1:100



LANEWAY 8m
SCALE 1:100



SHARED ACCESS 12.0m
SCALE 1:100

Notes

0 1 2 4 6 8 10m
SCALE 1:100 @A1

	RE-ISSUED FOR APPROVAL	SS		20/06/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	JP	-	21/09/2023
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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Notes

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Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			JP	SS		21/09/2023

Title
TYPICAL SECTIONS
SHEET 2

Project No. 304701171-100
Scale AS SHOWN A1
Revision 3
Drawing No. 304701171-100-CD-SK1132

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT
SCALE 1:2000

Notes

0 50 100 150 200m
SCALE 1:2000 @A1

		By	Appd	YYYY.MM.DD
6	RE-ISSUED FOR APPROVAL	SS		20/06/2024
5	CHANNEL BASIN AMENDED	SS		09/06/2024
4	DA RESUBMISSION	SS		20/05/2024
3	ISSUE FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	07/11/2023

Issued/Revision

Issue Status

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Notes

File Name:
304701171-100-CD-SK1300

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Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		07/11/2023

Title
STORMWATER PLAN

Project No.
304701171-100

Scale
AS SHOWN A1

Revision
6

Drawing No.
304701171-100-CD-SK1300

Plotted: 20/06/2024 5:05:40 PM By: ALVES DE ANDRADE, RENATA
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ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT

SCALE 1:5000

Notes

0 100 200 300 400 500m

SCALE 1:5000 @A1

	Issued/Revision	By	Appd	YYYY.MM.DD
3	RE-ISSUED FOR APPROVAL	SS		20/06/2024
2	ISSUE FOR APPROVAL	SS		11/04/2024
1	ISSUE FOR APPROVAL	SS	-	26/03/2024

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Notes

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Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		26/03/2024

Title

SEWER PLAN OVERVIEW

Project No. 304701171-100

Scale AS SHOWN A1

Revision 3

Drawing No. 304701171-100-CD-SK1401

Plotted: 20/06/2024 5:11:04 PM By: ALVES DE ANDRADE, RENATA
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ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT
SCALE 1:2000

Notes

0 50 100 150 200m
SCALE 1:2000 @A1

No.	Issued/Revision	By	Appd	YYYY.MM.DD
4	ISSUE FOR APPROVAL	SS		11/04/2024
3	WATER ALIGNMENTS AMENDED	SS	-	26/03/2024
2	SEWER ALIGNMENTS AMENDED	SS	-	20/03/2024
1	ISSUE FOR INFORMATION	SS	-	07/11/2023

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Notes

File Name:
304701171-100-CD-SK1500

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STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		07/11/2023

Title
WATER PLAN

Project No. 304701171-100
Scale AS SHOWN A1
Revision 4
Drawing No. 304701171-100-CD-SK1500

Plotted: 20/06/2024 5:12:18 PM By: ALVES DE ANDRADE, RENATA
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ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

LAYOUT

SCALE 1:5000

Notes

0 100 200 300 400 500m

SCALE 1:5000 @A1

3 RE-ISSUED FOR APPROVAL	SS		20/06/2024
2 ISSUE FOR APPROVAL	SS		11/04/2024
1 ISSUE FOR APPROVAL	SS	-	26/03/2024
Issued/Revision	By	Appd	YYYY.MM.DD

Issue Status

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Authorised	RPEQ #	YYYY.MM.DD	SS Dwn.	SS Dsgn.	Chkd.	26/03/2024 YYYY.MM.DD

Title

WATER PLAN
OVERVIEW

Project No. 304701171-100

Scale AS SHOWN A1

Revision 3

Drawing No. 304701171-100-CD-SK1501

ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

Stantec Australia

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We care about the communities we serve—because they're our communities too. This allows us to assess what's needed and connect our expertise, to appreciate nuances and envision what's never been considered, to bring together diverse perspectives so we can collaborate toward a shared success.

We're designers, engineers, scientists, and project managers, innovating together at the intersection of community, creativity, and client relationships. Balancing these priorities results in projects that advance the quality of life in communities across the globe.

Stantec trades on the TSX and the NYSE under the symbol STN. Visit us at **stantec.com** or find us on social media.

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