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Yarrabilba Precinct 9 ROL1 Precinct Network Plan – Water and Wastewater Infrastructure

PREPARED FOR Stockland | May 2026

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PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV-2026-YAR-4495

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Quality statement

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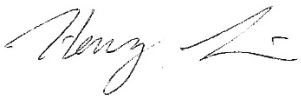
Henry Lin  26/05/2026

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1 Introduction

This report outlines the requirements for the water and sewerage network for Precinct 9 ROL1 located in the Yarrabilba development.

In accordance with the Yarrabilba Precincts 8 and 9 Context Planning Area Strategy (Precinct 8 & 9 CPAS) endorsed by Economic Development Queensland (EDQ), Precinct 9 ROL1 development is located to the north of approved Precinct 8 residential and to the west of Precinct 6 residential developments (refer to Figure 1). This ROL comprises of 36.9 ha of residential (1,158 residential lots), one state primary school, one neighbourhood centre and various sizes of open space and parklands and eight stormwater quality basins (refer to Appendix A).

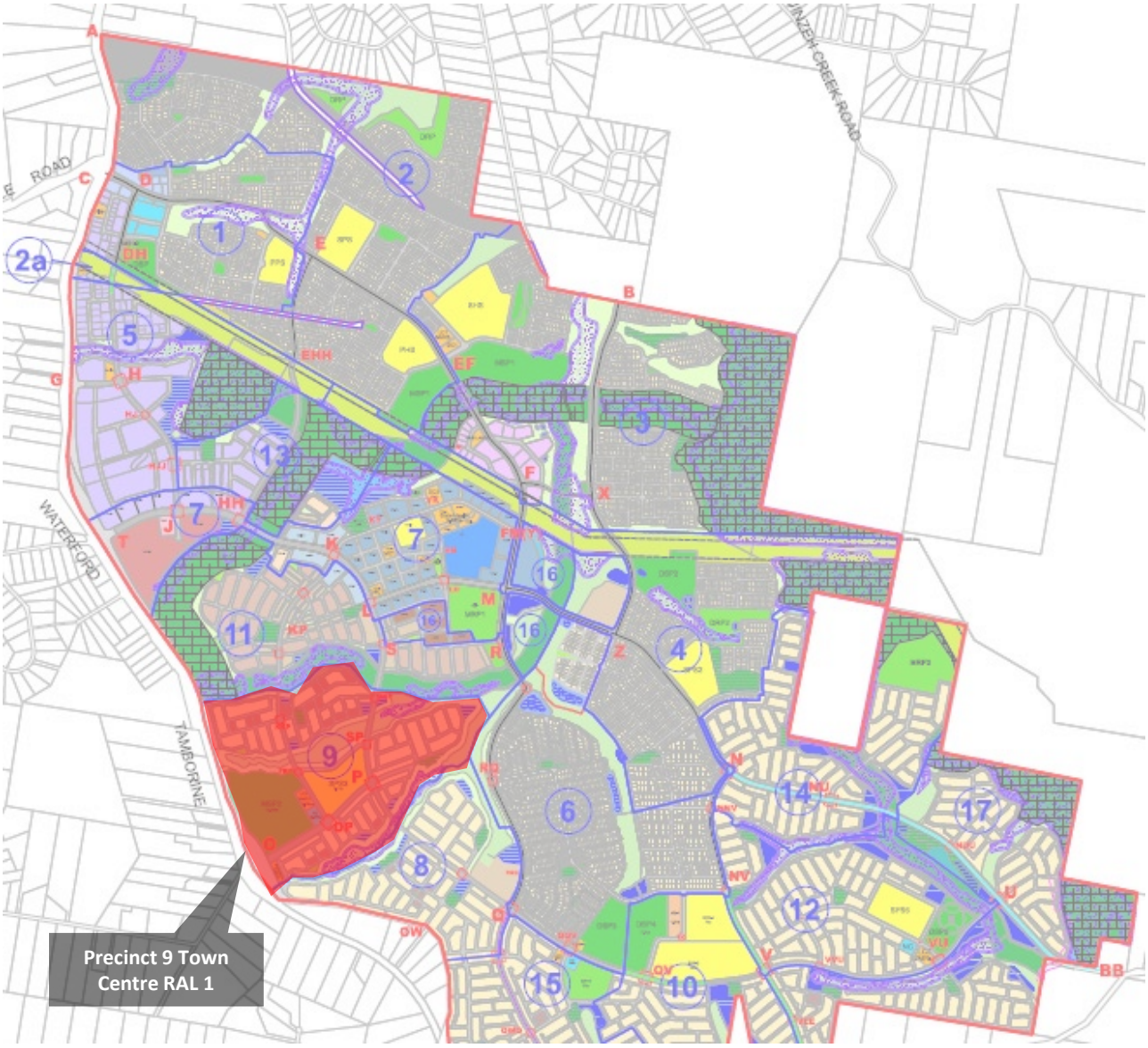


Figure 1: Locality of Precinct 9 ROL1 Development

1.1 Previous Assessments

An infrastructure master plan (IMP) report entitled *Yarrabilba Water Supply and Sewerage – Infrastructure Master Plan 2017* was submitted to EDQ and endorsed by EDQ in August 2017 outlining the water supply and sewerage requirements for the entire Yarrabilba development area (it is noted that a 2023 IMP revision report will be also submitted to EDQ in September 2023). These works were based on an earlier proposed land use master plan with a total Yarrabilba equivalent persons (EP) of 46,869 EP and 47,647 EP for water and sewerage respectively. EDQ and Logan City Council (LCC) also instructed that an additional 1,486

future detached residential dwellings or 4,162 EP external to Yarrabilba are also in the priority development area (PDA) and are to be considered in the water and sewerage infrastructure plan.

Following the IMP, Precinct Network Plan (PNP) reports were prepared for the Precincts 1 to 8. A PNP is a detailed planning document that identifies all trunk infrastructure to service the proposed Precinct both internal and external to the site. These PNP reports include both interim and ultimate solutions in accordance with the revised regional strategy agreed by both EDQ and LCC.

For the water infrastructure, the PNP includes details of all the water infrastructure required to deliver peak demand, fire flow and pressure management (as required), including layout plans, pipe sizes, and details of pressure reduction areas and equipment.

For the sewerage infrastructure, the PNP includes details of all the sewerage infrastructure required, including layout plans, pipe sizes, conceptual design of the new pump station, vertical alignment of controlling sewer, and conceptual design of interim servicing infrastructure required to address development staging and odour/corrosion control.

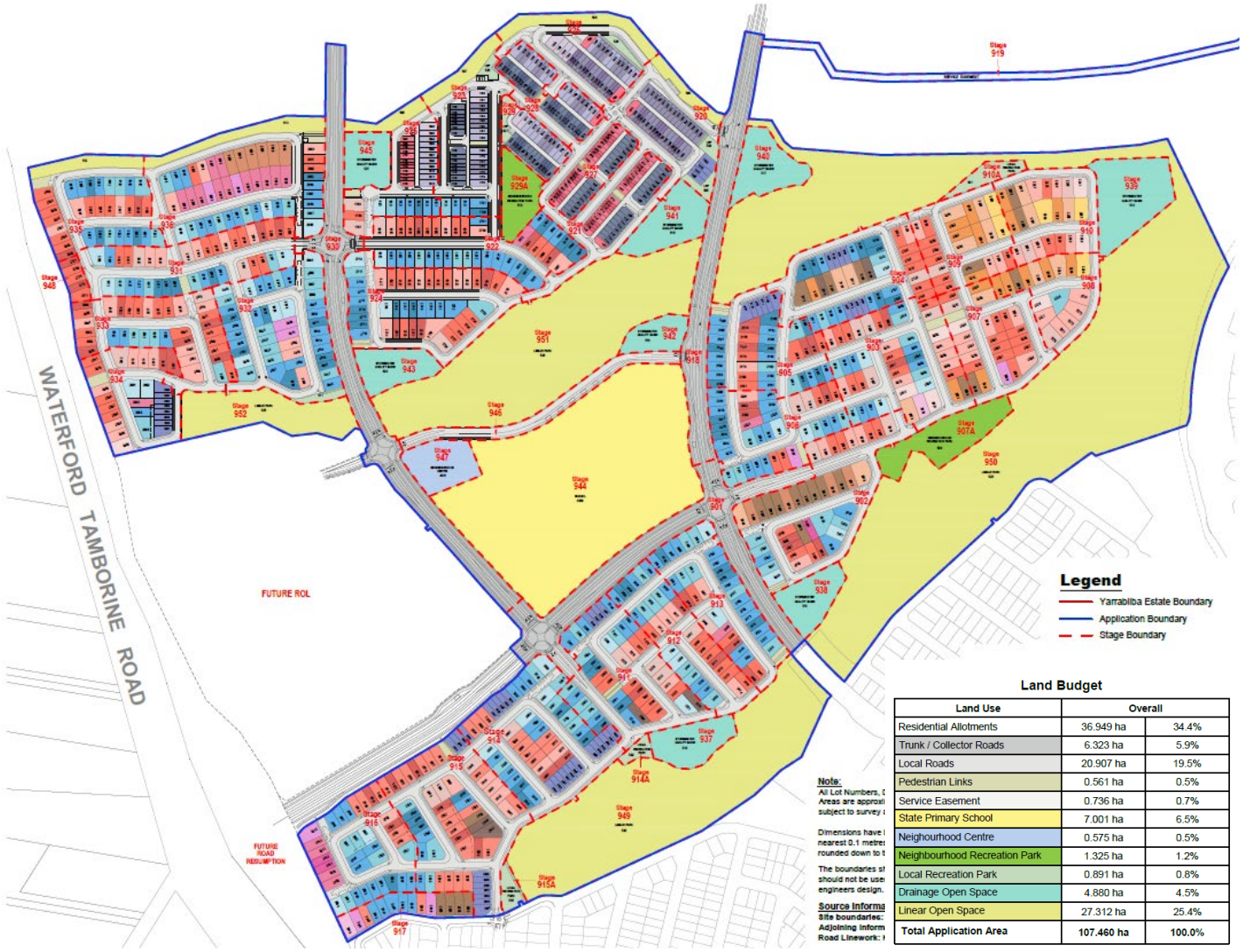
Eight PNP reports were prepared for the Precincts 1 to 8. This PNP report is proposed for the Precinct 9 ROL1 development.

1.2 Precinct 9 ROL1

There are 1,158 residential lots, one state primary school, one neighbourhood centre and various sizes of open space and parklands and eight stormwater quality basins (refer to Figure 2).

1.3 Development Timeline

Stockland advises that the Precinct 9 ROL1 development is likely to start in 2027, and this study assumes that the entire Precinct 9 ROL1 development would be completed throughout 2028/2029.



Land Budget

Land Use	Overall	
Residential Allotments	36.949 ha	34.4%
Trunk / Collector Roads	6.323 ha	5.9%
Local Roads	20.907 ha	19.5%
Pedestrian Links	0.561 ha	0.5%
Service Easement	0.736 ha	0.7%
State Primary School	7.001 ha	6.5%
Neighourhood Centre	0.575 ha	0.5%
Neighbourhood Recreation Park	1.325 ha	1.2%
Local Recreation Park	0.891 ha	0.8%
Drainage Open Space	4.880 ha	4.5%
Linear Open Space	27.312 ha	25.4%
Total Application Area	**107.460 ha**	**100.0%**

Yield Breakdown

Allotment Typology	Typical Area	Overall	
16.5m Deep Product			
16.5m x 4.6m Laneway Terrace	76m²	28	2%
16.5m x 6.6m Laneway Terrace	109m²	33	3%
Subtotal		**61**	**5%**
21m Deep Product			
21m x 4.6m Laneway Terrace	97m²	25	2%
21m x 6.6m Laneway Terrace	139m²	63	5%
Subtotal		**88**	**8%**
25m Deep Product			
25m x 4.6m Laneway Terrace	115m²	15	1%
25m x 6.6m Laneway Terrace	165m²	53	5%
25m x 7.5m Laneway Terrace	188m²	38	3%
25m x 7.5m Front Loaded Terrace	188m²	59	5%
25m x 8.0m Laneway Terrace (with optional Fonzie)	200m²	10	1%
25m x 10.5m	263m²	64	6%
25m x 12.5m	313m²	182	16%
25m x 14m	350m²	92	8%
25m x 16m	400m²	38	3%
Subtotal		**551**	**48%**
28m Deep Product			
28m x 10.5m	280m²	48	4%
28m x 12.5m	350m²	173	15%
28m x 14m	392m²	87	8%
28m x 16m	448m²	32	3%
28m x 18m	504m²	8	1%
Subtotal		**348**	**30%**
30m Deep Product			
30m x 10.5m	315m²	3	0%
30m x 12.5m	375m²	20	2%
30m x 14m	420m²	9	1%
30m x 16m	480m²	2	0%
Subtotal		**34**	**3%**
32m Deep Product			
32m x 10.5m	336m²	6	1%
32m x 12.5m	400m²	23	2%
32m x 14m	448m²	27	2%
32m x 16m	512m²	15	1%
32m x 18m	576m²	5	0%
Subtotal		**76**	**7%**
Total Residential Allotments		**1158**	**100%**

Figure 2: Precinct 9 ROL1 Development Contents

2 Desired Standards of Service

The Desired Standards of Service (DSOS) adopted for this assessment are in accordance with the 2018 DSOS review report provided by LCC. The DSOS is provided in Appendix B and the key criteria are provided in the following sub-sections.

2.1 Water DSOS

An average day potable water demand (AD) of 165 L/EP/day plus an unaccounted for water (UFW) allowance of 25 L/EP/day was adopted. Adopted water supply peaking factors are summarised in Table 2-1.

Table 2-1: Potable Water Demand Peaking Factors

Peaking Factors	Residential Detached	Residential Attached	Commercial Education	Industry
Maximum Day (MD) / AD	1.7	1.6	1.3	1.3
Maximum Hour (MH) / AD	3.1	2.6	2.0	1.7
Mean Day Maximum Month (MDMM) / AD	1.3	1.3	1.2	1.2

The key water infrastructure sizing criteria applied to this study are outlined in Table 2-2.

Table 2-2: Potable Water Demand Peaking Factors

Parameter	Description
Minimum service pressure	22 m at the property boundary
Maximum service pressure	55 m
Fire flow demands	Residential: 15 L/s Non-Residential: 30 L/s
Residual pressure during fire flow event	12 m at the fire flow location
Background demand during fire	2/3 MH demand
Maximum allowable pipe headloss	5 m/km for diameter <= 150 mm 3 m/km for diameter > 150 mm

2.2 Sewerage DSOS

An average dry weather flow (ADWF) of 165 L/EP/day is adopted for this study in accordance with the 2014 LCC DSOS. As 'Reduced Infiltration Gravity Sewers' (RIGS) are utilised in the Yarrabilba development, the peak weather flow (PWWF) was calculated based on 1,000 L/EP/day. It is noted that gravity mains are designed to transfer PWWF of 1,000 L/EP/day with a depth of flow of 75% pipe depth and to meet self-cleansing velocities.

3 Population Development

3.1 Approach

Expected population growth and EP were assessed based on the proposed subdivision layouts (provided by Stockland) and the occupancy rates/densities agreed with LCC.

The residential populations for Precincts 1 to 6 and 8 were calculated using the following methodology:

- A lot count was performed for areas where the subdivision layout was complete and where the future layout was sufficiently detailed.
- Terrace houses, town houses and senior living apartments were regarded as attached residential dwellings in the developed Precincts 1 to 3.
- Where the future layout was not available 11.2 % of the total number of residential lots was assumed to be attached residential dwellings

The projected yield for each village of future precincts (Precincts 9 to 17) of the Yarrabilba development was provided by Stockland. The map of future precincts outlines the extent of future commercial, industrial, open space and varying densities of residential development within the Yarrabilba PDA. The projected number of dwellings for each of future precincts was provided by Stockland (refer to YAR_CA_LL_241118.xlsx). The development staging plan provided by Stockland is also included in Appendix C. These documents form the basis of long-term population projection assessment.

3.2 Planning Densities and Occupancy Rates

The following planning density and occupancy rates were used for estimating the EP for Precincts 1 to 6:

- Residential occupancy rates:
  - Detached dwelling: 2.8 EP/dwelling
  - Attached dwelling: 1.78 EP/dwelling.
- Planning densities for non-residential development without the gross floor area (GFA) information:
  - Commercial and Industrial: 30 EP/ha (water) and 37 EP/ha (sewerage)
  - Education state and private primary schools: 166 EP, as per the Precinct 2 Yarrabilba State School population (138 EP) plus 20% planning allowance.
  - Education state and private high schools: 187 EP, as per the Precinct 3 Yarrabilba State Secondary College population (156 EP) plus 20% planning allowance.
  - Toilet block: 1.1 EP/toilet.
- Non-residential conversion rates for the non-residential development with the GFA information (refer to Table 3-1):

Table 3-1: LCC Non-residential EP Conversion Rates

Non-residential Development Type	Water EP per ha GFA	Sewerage EP per ha GFA
Commercial	55.9	50.31
Office	55.9	50.31
Warehouse Distribution	55.9	50.31
Education	105.3	84.24
Health	226.5	203.85
Industry Heavy	56.6	45.28
Industry Medium	47.25	37.8
Industry Light	37.8	30.24

Non-residential Development Type	Water EP per ha GFA	Sewerage EP per ha GFA
Retail Services	97.6	87.84
Showroom Bulk Goods	110.8	99.72
Accommodation	233.9	210.51

3.3 Population Summary

Precinct 9 ROL1 comprises of 1,158 residential lots, one state primary school, one neighbourhood centre and various sizes of open space and parklands and eight stormwater quality basins (refer to Figure 2). A total of 3,425.3 EP for water and 3,429.3 sewerage EP was estimated for Precinct 9 ROL1 in accordance with the planning densities documented above.

A summary of the EP in both earlier Precincts and Precinct 9 ROL1 is provided in Table 3-2 and Table 3-3. The development applications of Precinct 6 ROL3 and Precinct 7 Town Centre RAL1 are also included and assumed to be developed before 2030.

Table 3-2: Estimated 2030 Water EP for Precincts 1 to 8 and Precinct 9 ROL1

Precinct / Village	Residential Detached	Residential Attached	Commercial Employment/Retail/ Community	Education	Total EP	Estimated 2030 EP*
1	1,658	110	375	101	2,244	2,244
2	5,432	320	0	392	6,144	6,144
3A	605	255	44	214	1,118	1,118
3B	1,249	59	0	0	1,308	1,308
3C	610	0	0	0	610	610
3D	0	0	317	0	317	317
4A	430	35	0	0	465	465
4B	405	33	0	133	571	571
4C	303	24	0	0	328	328
4E/6A	1,725	139	0	0	1,864	1,864
4D	1,021	82	0	0	1,104	1,104
5A MIBA North	0	0	393	0	393	393
6 ROL1	1,492	52	0	0	1,544	1,544
6 ROL2	1,159	100	0	0	1,259	1,259
4G (previously 5F)	325	0	0	0	325	325
6 ROL3	201.6	10.7	0	0	212.3	212.3
8 ROL1	2,337	59	0	0	2,397	2,397
5 MIBA South ROL1	0	0	438	0	438	438
4H (previously 5H)	392	0	9.1	0	401	401
7 Town Centre RAL1	0	414	1,096	206	1,744	1,744
9 ROL1	**3,242.4**	**0**	**17.3**	**165.6**	**3,425.3**	**3,425.3**
Total	**22,588**	**1,720**	**2,690**	**1,212**	**28,210**	**28,210**

*: Based on development approvals up to and including 2030.

Table 3-3: Estimated 2030 Sewerage EP for Precincts 1 to 8 and Precinct 9 ROL1

Precinct / Village	Residential Detached	Residential Attached	Commercial Employment/Retail/ Community	Education	Total EP	Estimated 2030 EP*
1	1,658	110	460	101	2,329	2,329
2	5,432	320	0	392	6,144	6,144
3A	605	255	55	214	1,129	1,129
3B	1,249	59	0	0	1,308	1,308
3C	610	0	0	0	610	610
3D	0	0	390	0	390	390
4A	430	35	0	0	465	465
4B	405	33	0	133	571	571
4C	303	24	0	0	328	328
4E/6A	1,725	139	0	0	1,864	1,864
4D	1,021	82	0	0	1,104	1,104
5A MIBA North	0	0	484	0	484	484
6 ROL 1	1,492	52	0	0	1,544	1,544
6 ROL 2	1,159	100	0	0	1,259	1,259
4G (previously 5F)	325	0	0	0	325	325
6 ROL3	201.6	10.7	0	0	212.3	212.3
8 ROL1	2,337	59	0	0	2,397	2,397
5 MIBA South ROL1	0	0	540	0	540	540
4H (previously 5H)	392	0	11.2	0	403.2	403
7 Town Centre RAL1	0	414	987	165	1.593	1.593
9 ROL1	**3,242.4**	**0**	**21.3**	**165.6**	**3,429.3**	**3,429.3**
Total	**22,588**	**1,720**	**2,948**	**1,171**	**28,426**	**28,426**

*: Based on development approvals up to and including 2030.

4 Water Supply Network Assessment

Water supply to the Yarrabilba development Precinct 9 ROL1 is provided from the Travis Road reservoirs. In the interim, supply to Travis Road reservoirs is provided from the South Maclean pumping station with the long-term plan for supply being provided through a new connection to the Southern Regional Water Pipeline (SRWP) at Chambers Flat.

4.1 Water Demand

The ultimate maximum day (MD) and mean day maximum month (MDMM) demands for Precincts 1 to 6 and Precinct 8 ROL1 were calculated in accordance with the LCC DSOS stated in Section 2.1, and are summarised in Table 4-1. The sources of modelled population are:

- Precincts 1, 2 and 3A and 3B: Directly extracted from LCC water reticulation model, which includes the 2021 LCC infrastructure demand model (IDM) outcomes.
- Precincts 3C, 4, 5A MIBA North, 6, 8 ROL1, MIBA South ROL1, Town Centre RAL1 and 9 ROL1: Updated population (refer to Table 3-1) based on the development yields and layout provided by Stockland.

Table 4-1: Yarrabilba Precincts 1 to 8 and 9 ROL1 Demand Summary

Category	MD (ML/d)	MDMM (ML/d)
Detached residential	6.7	5.1
Attached residential	0.5	0.4
Commercial / education	0.6	0.6
Industry	0.2	0.2
Open space	0.0	0.0
Leakage/loss allowance	0.7	0.7
Total (ML/d)	8.8	7.0

In addition, fire flow was also considered at a requirement of 15 L/s for residential properties and 30 L/s for non-residential properties at a background demand of 2/3 peak hour.

4.2 Storage and Bulk Supply Assessment

The required reservoir volume to serve the Yarrabilba Precincts 1 to 8 and 9 ROL1 plus 2026 Logan Village population (extracted from the LCC water reticulation model) was estimated as 6.9 ML. The existing Travis Road reservoir capacity is 9 ML. Hence there will be sufficient storage for Yarrabilba development until the end of Precinct 9 ROL1 development.

LCC advised the timing of two sub-regional trunk mains for construction are as below:

- **600 mm diameter trunk main between the Seqwater SRWP and Travis Road reservoirs:** LCC advised that this trunk main will be delivered by the end of 2026.
- **600 mm diameter trunk main from the Travis Road Reservoir outlet on Camp Cable Road to the development:** LCC advised the schedule of this trunk main has been postponed and is constantly reviewed and monitored based on the real/operational demands growth from Logan Village and Yarrabilba. LCC will use their hydraulic network model with the operation scenario and interim solution to assist this study to access the need of this augmentation for the Precincts 1 to 8 and 9 ROL1 development (refer to Section 4.4).

4.3 Proposed Precinct Water Supply Layout

The preliminary elevations of the Precinct 9 ROL1 lots range from 35 m AHD to 70 m AHD. By comparing with the top water level (TWL) of 110 m AHD at the Travis Road reservoirs to the proposed Precinct 9 elevations, it is proposed that two district management areas (DMAs) are required to comply with the current LCC DMA planning criteria (refer to Appendix G):

- Precinct 9 ROL1 initial stages (stages 901 to 911, southeastern portions, refer to Figure 2) will be served by the first Precinct 9 district management area (DMA), with a PRV teed off the DN300 mm trunk water main on Jimbillunga Drive. The first DMA include the lots with elevations between 35 m to 56 m.
- Precinct 9 ROL1 later stages (stages 914 to 948, northern and southwestern portions, refer to Figure 2) will be served by a second Precinct 9 DMA device teed of the future DN250 water trunk main on Jimbillunga Drive (refer to the Figure 4.3 Ultimate Yarrabilba Water Network in the IMP report). The second DMA will serve the lots with elevations between 42 m to 70 m.

The proposed Precinct 9 ROL1 reticulation mains shown in Figure 3. Stockland will provide the functional service layout drawings which indicates the compliance with the Figure 3 in the future. It is noted that more cross connection pipes along with the DMA boundary valves between the Precinct 9 reticulation mains and DN250 /300 mm trunk water mains will be included by the future water reticulation detailed design. These cross connection pipes (not shown in Figure 3 yet) will increase the service contingency and provide LCC more water network operation flexibilities. EDQ and LCC can review the number and locations of cross connection pipes/valves when the drawings for construction are submitted in the future.

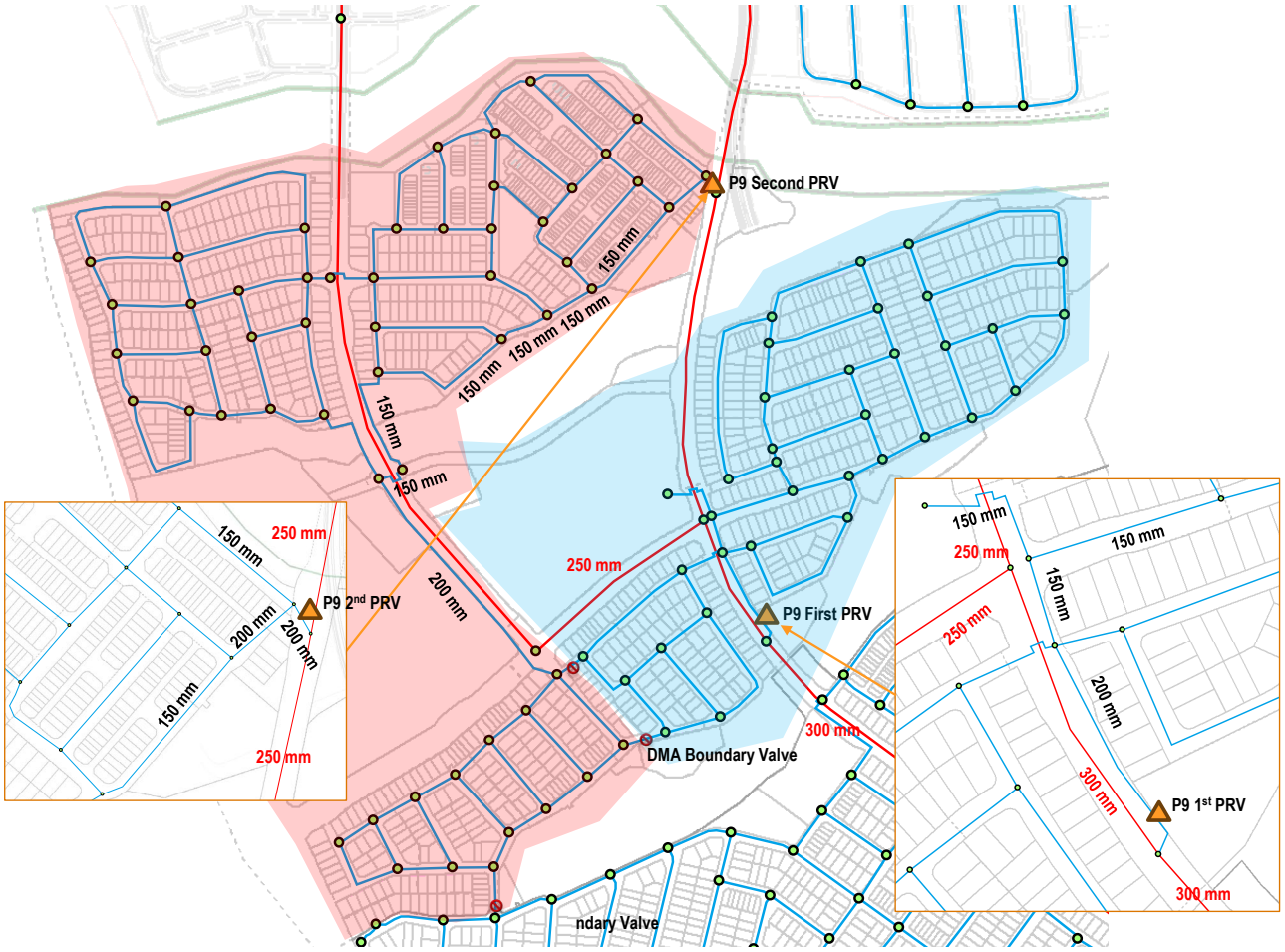


Figure 3: Proposed Precinct 9 RPL1 Water Reticulation Mains

The hydraulic performance of the network including Yarrabilba DMAs was assessed against the LCC DSOS with the forecast population in the ultimate planning horizon. Performance under the maximum hour (MH)

demand scenario and the fire flow scenario were assessed, and the assessment outcomes are provided in Appendix D.

It is noted that the DN250/300 mm trunk water mains on Jimbillunga Drive to the north of first Precinct 9 DMA intake will not be installed before the second Precinct DMA intake. Before the DN250 water trunk main is connected to DN300 mm trunk main on Town Centre East-West Road, the initial stages of Precinct 9 lots will be temporarily served by the Precinct 8 DMA through the following two interim operational arrangements:

- DMA boundary valves between the Precinct 8 reticulation mains and the DN300 mm trunk water mains on Jimbillunga Drive are open.
- DMA boundary valves between the two Precinct 9 DMAs are also open.

This study has updated the background future Yarrabilba population as 28,566 EP (the rest of Stockland Precincts 10 to 17 plus four external lots in the Yarrabilba PDA) based on the projected yield of each village of future precincts (Precincts 10 to 17) of the Yarrabilba development provided by Stockland. The Ultimate DMA, network size and layout required for servicing early precincts were approved in the 2022 endorsed PNP report assessment and therefore have not been reviewed in this report.

4.4 Interim Solution Assessment

Before the 600 mm diameter Travis Road Reservoir outlet trunk main is constructed, LCC advised that the interim operation scenarios will be checked through the LCC current InfoWorks WS Pro hydraulic model with the preferred operational settings and interim solution (a boost pump station downstream the Travis Road reservoir).

5 Sewerage Network Assessment

5.1 Overview of Sewerage System

Sewage from Precinct 1 and western portion of Precinct 2 are served by the existing pumping station SPS-084. Sewage from the eastern portion of Precinct 2 and western part of Precinct 3A are collected by the existing gravity sewers servicing Precincts 1 and 2 which deliver sewage to pumping station SPS 087. Pumping station SPS 087 transfers flow through the existing 200 mm diameter rising main to pumping station SPS 084. This pumping station transfers sewage via a 300/375 mm diameter rising main to LCC's Logan Village pumping station (SPS 081) and then to Chambers Flat and ultimately to the Loganholme sewerage treatment plant (STP).

Sewage from the eastern part of Precinct 3A, Precincts 3B, 3C, 3D, all stages of Precinct 4, Precinct 6, Precinct 5A MIBA North, Precinct 8 ROL1 and Precinct 5 MIBA South ROL1 will gravitate to the interim pumping station, SPS 153, located in the Precinct 3D area to the west of Yarrabilba Drive. The interim pumping station will be replaced in future by an ultimate regional pumping station PS 3, which is proposed to service approximately 50,000 EP. The interim pumping station SPS 153 transfers flows to SPS 084 and then to LCC's wastewater network at Logan Village.

The combined design flow for Precinct 9 ROL1 lots are as follows:

- ADWF of 6.2 L/s; and
- PWWF of 37.5 L/s.

Sewage from Precinct 9 ROL1 lots will be collected by the local DN150 reticulation network before being transferred by either the DN300/DN375 and DN675 trunk sewers or the DN225/DN300/DN375 and DN675 trunk sewers to the pumping station SPS 153 (interim) or PS 3 (ultimate). The preliminary sewerage reticulation layout is provided in Appendix F. The revised trunk sewerage infrastructure plan will be provided in the updated Yarrabilba infrastructure master plan report (IMP report) by the end of 2025. As the previous Yarrabilba precinct applications, the detailed longitudinal sections will be sent to LCC for further approvals before the construction phase.

5.2 Sewerage Interim Solution Assessment

In Section 5.1 of the 2018 endorsed PNP report, it was agreed with LCC that pumping station SPS 084 along with the 2 ML storage and the downstream Logan Village/Chamber Flats trunk infrastructure can service a capacity of 12,729 EP from the Yarrabilba development. This capacity cap was revised by the 2021 LCC study 'Chambers Flat Road 2 SPS Strategy Review - IP0011'. LCC recently advised that the spare capacity for the Yarrabilba development between SPS 084 and the Chambers Flat 2 pumping station is between 20,420 EP and 25,000 EP assuming that a 2 EY (twice in one year) event containment standard is adopted. This revised capacity cap will be lower than the total sewerage EP of 28,426 EP from the Yarrabilba Precincts 1 to 8 and Precinct 9 ROL1 development and an interim solution proposed by LCC will be required before the ultimate PS3 and new WWTP is online. A summary of the recent LCC capacity assessment is provided in Appendix E.

LCC latest assessment shows the SPS 153 'static' capacity is 6,869 EP, which equates to 79.5 L/s at 1,000 L/EP/day PWWF loading. The population contributing to SPS 153 has been higher than 6,869 EP after the MIBA North approval. As LCC adopts the dynamic containment standard for the SPS 153 catchment, and LCC is reviewing and monitoring the SPS 153 dynamic capacity since 2023. EDQ, LCC and Stockland agreed the following actions/approaches are to be used for the recent development applications, which include Precinct 7 Town Centre RAL1 and this application:

- Stockland is to provide the latest development rollout schedule to LCC.
- LCC is to revise the dynamic capacity of pumping station SP 153:
    - Stockland is to undertake the field investigation to remove the possible sources of fast response components of rainfall induced inflow and infiltration (RDII) in the network.
    - LCC is to install the flow gauges in the Yarrabilba gravity sewer network and to calibrate the fully developed pumping station SPS 084 catchment.

    - LCC is to re-assess the dynamic capacity of pumping station SP 153 by applying the modelling parameters obtained from the pumping station SPS 084 catchment.

- LCC is to undertake the relevant option assessment between advancing the scheduled ultimate sub-regional sewerage infrastructure and local interim solutions (wet weather storage near SPS 153, larger SPS 153 pumps, or constructing and utilising the ultimate Yarrabilba PS3 rising main). The interim solutions will be at LCC's costs in accordance with the endorsed infrastructure agreement. LCC also advised "if SPS153 capacity is exceeded before 2031, a pump upgrade is probably the best option that can be employed in the interim".
- LCC has secured the funds in 2025 and been on schedule (before 2031) to deliver the pumping station PS3, PS3 trunk rising main and regional sewerage treatment plant in Chambers Flat.

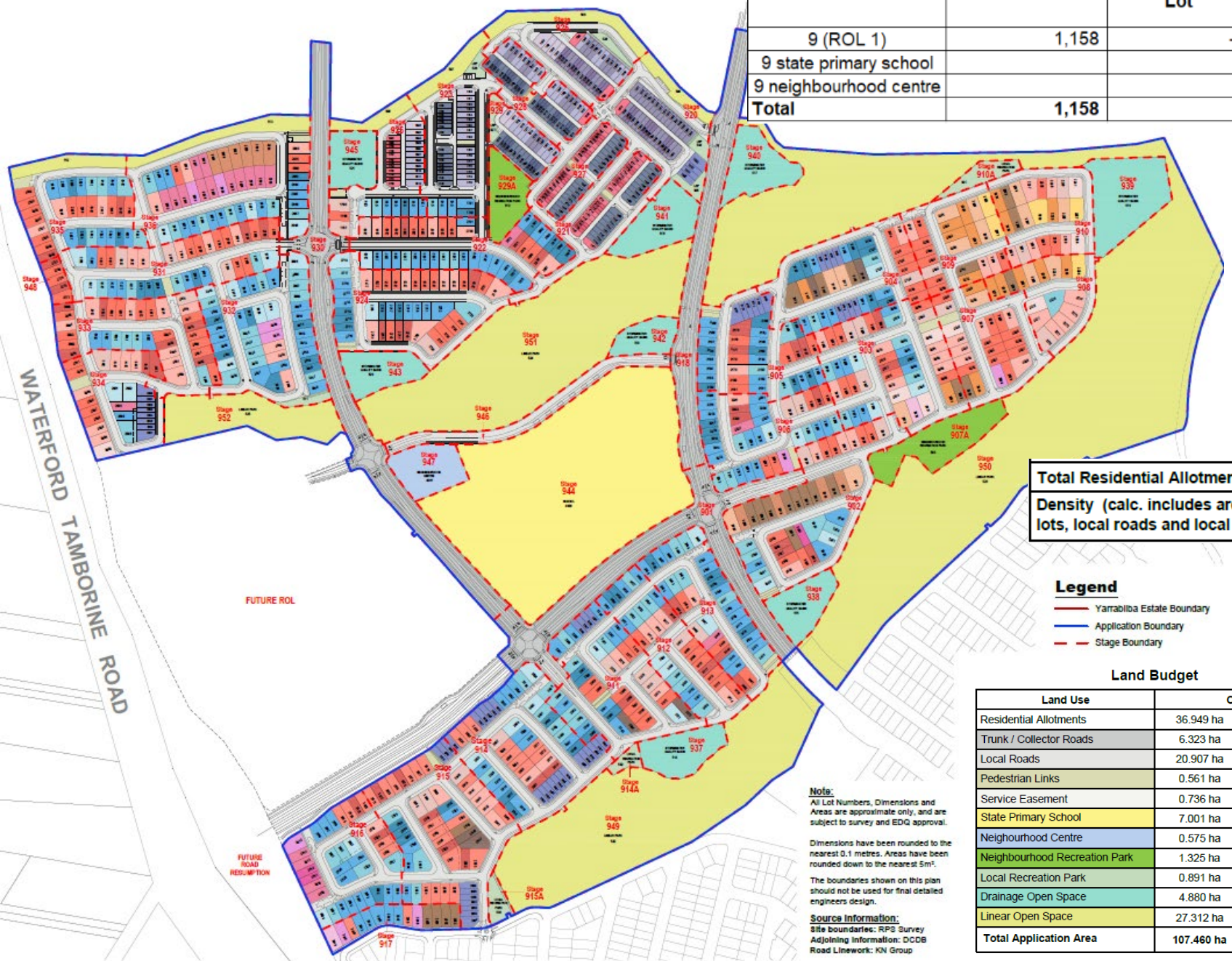
6 Conclusions

The following conclusions are drawn from the assessment of the water supply and sewerage network requirements for Precinct 9 ROL1:

1. 3,425.3 water EP and 3,429.3 sewerage EP were estimated for Precinct 9 ROL1 development.
2. The estimated population of Precincts 1 to 8 and Precinct 9 ROL1 is 28,210 EP for water and 28,426 EP for sewerage.
3. A total of 6.9 ML of storage capacity is required to supply Precincts 1 to 8 ROL1 and Precinct 9 ROL1 plus the forecast Logan Village demand in the 2026 planning horizon. The existing Travis Road reservoir capacity is 9 ML. Hence there will be sufficient storage for Yarrabilba development until the end of Precinct 9 ROL1 development.
4. The proposed water network layout, as outlined in Figure 3, can service the ultimate demands of Precincts 1 to 8 and Precinct 9 ROL1 with the DMA arrangement proposed by this report.
5. The water interim operation scenarios (before the 600 mm diameter Travis Road Reservoir outlet trunk main is constructed) of the recent development applications (Precinct 5 MIBA South ROL1 and Precinct 7 Town Centre RAL1) will be checked through the LCC current InfoWorks WS Pro hydraulic model with the preferred operational settings and interim solution (an interim boost pump station downstream the Travis Road reservoir).
6. The design sewage flows for the Precinct 9 ROL1 lots are ADWF of 6.2 L/s and PWWF of 37.5 L/s respectively.
7. Sewage from Precinct 9 ROL1 lots will be collected by the local DN150 reticulation network before being transferred by the DN225/DN300/DN375 trunk and DN675 sewers to the pumping station SPS 153 (interim) or PS 3 (ultimate).
8. Agreed actions provided in Section 5.2 are to be undertaken before the external trunk sewerage infrastructure are constructed.

Appendix A Precinct 9 ROL1 Layout Plan and Population Development

	Detached Res Lot	Attached Res Lot	Detached Res EP	Attached Res EP	Total Res EP	EDU EP	COM EP	Total EP
9 (ROL 1)	1,158	—	3,242.4	0.00	3,242.4			
9 state primary school						165.6		
9 neighbourhood centre							17.3	
Total	**1,158**	**0**	**3,242**	**0**	**3,242.4**	**165.6**	**17.3**	**3,425.3**



Total Residential Allotments	**1158**	**100%**
Density (calc. includes area of residential lots, local roads and local parks)	**19.1 dw/ha**	

Legend

- Yarrabilba Estate Boundary
- Application Boundary
- Stage Boundary

Land Budget

Land Use	Overall	
Residential Allotments	36.949 ha	34.4%
Trunk / Collector Roads	6.323 ha	5.9%
Local Roads	20.907 ha	19.5%
Pedestrian Links	0.561 ha	0.5%
Service Easement	0.736 ha	0.7%
State Primary School	7.001 ha	6.5%
Neighourhood Centre	0.575 ha	0.5%
Neighbourhood Recreation Park	1.325 ha	1.2%
Local Recreation Park	0.891 ha	0.8%
Drainage Open Space	4.880 ha	4.5%
Linear Open Space	27.312 ha	25.4%
Total Application Area	**107.460 ha**	**100.0%**

Note:
All Lot Numbers, Dimensions and Areas are approximate only, and are subject to survey and EDQ approval.

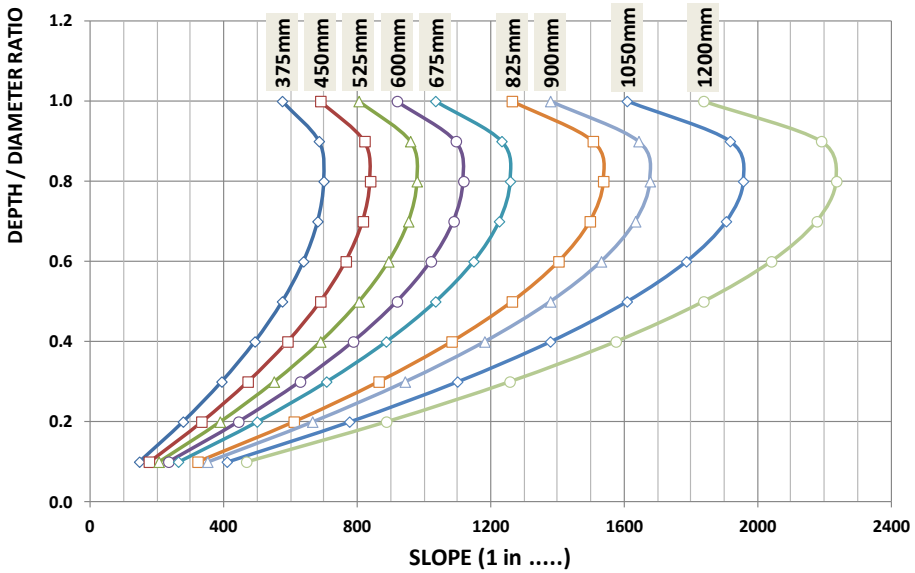
Dimensions have been rounded to the nearest 0.1 metres. Areas have been rounded down to the nearest 5m².

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

Source Information:
Site boundaries: RPS Survey
Adjoining Information: DCDB
Road Linework: KN Group

Appendix B LCC DSOS

WASTEWATER NETWORK DSS		
Parameter	**Criteria**	
Sewage load		
ADWF	165 L/EP/day	
PDWF	Use actual flow data; or *d x 165 L/EP/d or;* *d x 0.00191 x EP L/s* *Where:* $d = 0.01(\log A)^4 - 0.19(\log A)^3 + 1.4(\log A)^2 - 4.66\log A + 7.57$ *d = dry weather peaking factor* *A = gross plan area of development catchment, in hectares* *Refer to WSAA Sewerage Code of Australia; Part 1 Planning and Design*	
Overflow Frequency Standard for assessment of existing networks and planning and design of augmentations for existing networks This standard is only to be used by Council and their consultants	Master Planning; • Manholes: Maximum of 1 overflow per year • Sewer designated outlet: Maximum of 2 overflows per year Detailed Planning: • Acceptable network overflow frequency standard to be determined using a risk or effects based approach. The standard is to be determined in consultation with Council.	
PWWF For planning and design of wastewater networks servicing greenfield development This standard is to be used by developers, Council and their consultants	Residential	1000 L/EP/d (6.1xADWF)
	Non-residential	840 L/EP/d (5xADWF)
	High density residential (minimum 3 storey development)	PDWF+0.2 L/s/Ha
	Common Effluent Drainage	660 L/EP/d (4xADWF)
Gravity sewer design		
Flow equation	Colebrook White to be used for all applications – design and modelling	
Pipe roughness general	Colebrook White k = 1.5mm	
Maximum velocity @ PWWF	3 m/s	
Depth of flow @ PWWF - Existing	Up to 1m below MH surface level and no spillage through overflow structures	
Depth of flow @ PWWF - Proposed/ new sewers	75% of pipe depth	
Depth of flow @ PDWF – Existing and new sewers	Maximum 60% of pipe depth	
Minimum shear stress	Minimum grades are to be based on achieving self-cleansing shear stress of 1.6 Pa at 75% of PDWF. Self-cleansing shear stress should be met within 5 years of constructing a pipeline in a greenfield area. The designer must consider the operational implications of not meeting self-cleansing shear over any timeframe.	

Slime Stripping shear stress		It is desirable where gradients permit to achieve slime stripping. A wall shear of 3.35Pa is required to achieve slime stripping. Slime stripping shear should be achieved at PWWF. Where gravity mains are constructed in greenfield areas, the operational implications of not meeting slime stripping shear in the early years of growth are to be considered.
Minimum grades for self cleansing	**Diameter (mm)**	**Grades (mm, 1 in X)**
	150	180 (80 in last section between last manholes or to an end)
	225	300
	300	400
	375 - 1200	Minimum Grades are to be based on achieving Self Cleansing Shear Stress of 1.6 Pa at 75% PDWF, refer formula and figure below. $$S_{min} = \frac{\tau}{\rho . g . R_p}$$ Where: S_{min} = Minimum Grade τ = Self Cleansing Shear Stress = 1.6 Pa τ = Slime Stripping Shear Stress = 3.85 Pa $\boldsymbol{\rho}$ = Density of Water = 1000 kg/m^3 g = Gravitational constant = 9.8 m^2/s R_p = Hydraulic Radius Partial Full Pipe (m) = Wetted Perimeter / Cross sectional flow area  Note: Depth/Diameter ratio is based on flow conditions at PDWF

Gravity sewer design	
Flow criticality	If the gradient of a pipeline creates super critical flow conditions consideration must be given to appropriate manhole design to ensure flow disturbances do not occur. Flow criticality is determined by the Froude number: Fr<1.0 sub critical Fr= 1.0 critical Fr>1.0 super critical Where $Fr = \frac{v}{\sqrt{g\ D}}$ v=velocity m/s g=gravity m^2/s D=hydraulic depth (m)
Sewerage pump stations	
Wet well operating requirements	V (kL) $\frac{0.9 \times \text{pump rate (L/s)}}{N}$ Where N is the acceptable number of starts per hour Pump Rate (L/s) = capacity of the largest duty pump N = 12 for motors <= 15 kW N = 8 for motors 15kW - 200 kW N = 5 for motors > 200 kW Control levels shall be based on Table 5.1 of WSA04-2005. The minimum depth between duty start and duty off is 100mm and ideally should be 300mm or greater.
Emergency storage	Emergency storage volume requirement to be based on containment of 2 hours of PDWF. Where actual measured flow data is available, then volume should be based on containing 2 hrs measured PDWF provided it takes into account any future growth. Except where otherwise specified to meet the requirements of the overflow risk assessment If there is an overflow pipe - storage in the system is measured between the high level alarm and overflow pipe invert level. If there is no overflow pipe - storage is measured between the high level alarm and 300mm below the lowest upstream manhole or top of wet well.
Pump capacity Guidance Note: As pump stations (PS) are typically categorised as trunk infrastructure this standard shall also apply to pump stations in RIGS networks.	If PWWF <20L/s, then 2 pumps (duty/standby arrangement) shall be provided, with each pump being capable of delivering PWWF. If PWWF >20L/s and <200L/s, then 2 pumps (duty/duty assist arrangement) shall be provided, with each pump being sized such that the two pumps running in parallel are capable of delivering PWWF. The minimum single pump capacity shall be not less than the calculated PDWF, where PDWF is a minimum of 2.5xADWF. If calculated PDWF has a peaking factor <2.5xADWF then 2.5 shall be used. All pump stations with a capacity greater than 200 L/s are to be designed on a case by case basis in consultation with Logan City Council. Pump stations that discharge directly to a WWTP are to be designed to minimise flow variability in wet and dry weather conditions.
NPSH	***Refer Clause 6.4 of WSA04-2005***

Rising mains	
Flow equation	Colebrook White to be used for all applications
Friction mains	For preliminary design a Colebrook White Roughness (k) of 0.6 mm is to be used. For detailed design, roughness shall be based on velocity and pipe roughness at end of pump design life. However, pumps should be able to operate (not necessarily meet design flow) for Colebrook White roughness's between manufacturers specified roughness for new pipes and 0.6 mm
Minimum velocity	Minimum Velocity to be based on: • achieving an absolute minimum self cleansing shear stress of 1.6 Pa at single pump flow • achieving slime stripping shear stress of 3.85 Pa at the greater of PWWF or maximum pump station pumping capacity • If slime stripping shear cannot be met with single pump flow a regular flushing regime is required to prevent slime build up. The wall shear is to be calculated using the following equation: **$\tau = \rho.g .(D/4) \times (HL/L)$** Where: τ = Wall Shear Stress (minimum of 1.6 Pa required for self cleansing) HL =Frictional loss over main length of L based on Colebrook White (m) L =Length of main (m) ρ = Density of Water = 1000 kg/m³ g =Gravitational constant = 9.8 m²/s D =Internal Diameter of Pipe (m)
Maximum velocity	3.0 m/s proposed systems Manufacturer's specifications for new systems
Max detention time	Maximum time of detention in pressure main and SPS wet well is 6 hours [2 hours in wet well and 4 hours in rising main] (based on daily average flows) to minimise potential for odour / hydrogen sulphide generation. Where high retention times are likely to occur, odour / sulphide control measures will be required to the satisfaction of Logan City Council. ***(Refer WSA 07-2007-1.1 section 3.15)***
Reduced infiltration gravity sewers (RIGS) & NuSewers	
NuSewer	Are not permitted without Logan City Council approval
RIGS Design	Refer to ***SEQ WS&S D&C Code Section 6.7.2 Design Parameters***
Low pressure sewers / vacuum pumps	
Low pressure sewers / vacuum pumps	Are not preferred and will only be allowed subject to approval from Logan City Council.
Private pump stations and rising mains	
Private pump stations and rising mains	Private pump stations and rising mains are permitted for single users only and no connection or sharing will be permitted without approval from Logan City Council.
Common effluent drainage	
Common effluent drainage (CED)	Not permitted without approval from Logan City Council.

Water Network Desired Standards of Service (DSS)					
Parameter	**Criteria**				
Water demand					
Average Day Demand (ADD)	On demand areas - 190 L/EP/d. Based on 165 L/EP/d residential consumption + allowance for leakage/losses (25 L/EP/d).				
	Constant flow areas -190 L/EP/d. Based on 165 L/EP/d residential consumption + allowance for leakage/losses (25 L/EP/d).				
Peaking factors	**Category**	**MDMM/AD**	**MD/AD**	**PH/AD**	
Guidance Note: Peaking factors are to be applied to the residential component of demand, i.e. 165 L/EP/d. Leakage /loss levels will remain constant throughout all demand categories and should only be appended after any peaking escalation has occurred.	Residential detached	1.3	1.7	3.1	
	Residential attached	1.3	1.6	2.6	
	Rural residential / Constant flow	1	1	1.5	
	Commercial	1.2	1.3	2.0	
	Industry	1.2	1.3	1.7	
	Parks / Open space	1.2	1.3	1.7	
System planning					
Bulk supply and reticulation	3 days of MDMM. Reservoirs to have a net positive inflow and capable of continuous operation and not fall below the emergency level. 3 days of MD. Reservoirs should not fall below the emergency level. 5 days of AD. Reservoirs should fill from empty to full.				
Service pressures					
Minimum operating pressure at PH	On demand areas – 22m at the property boundary based on reservoir at minimum operating level (MOL). MOL defined as 15% of storage height or top of emergency storage.				
	Constant flow areas – 10m at the property boundary based on reservoir at minimum operating level (MOL) MOL defined as 15% of storage height or top of emergency storage.				
Maximum operating pressure	80 m at the property boundary based on the reservoir at TWL				
Target maximum operating pressure	55 m at the property boundary based on the reservoir level at TWL				
Fire fighting					
System pressure	On demand areas	12 m minimum at property boundary			
	Constant flow areas	no fire service provided			
Fire flow	Constant flow areas	no fire service provided			
	Rural Residential	7.5 L/s for 2 hrs			
	Rural Commercial / Industrial	15 L/s for 2 hrs			
	Residential	15 L/s for 2 hrs			
	Commercial & Industrial	30 L/s for 4 hrs			
	Special risk / hazard	to be advised by Logan City Council (LCC)			
Background demand	2/3 PH (as per DEWS requirements)				
Reservoir level	Minimum Operating Level (MOL)				

<table>
<tr><td colspan="3">Water quality</td></tr>
<tr><td colspan="2">Drinking water quality</td><td>Drinking water to comply with the NHMRC Australian Drinking Water Guidelines</td></tr>
<tr><td colspan="3">Reservoir storage</td></tr>
<tr><td colspan="2">Ground level storage capacity</td><td>3 (MD - MDMM) + (Emergency storage)

Emergency Storage = 4 hr MDMM demand in zone or 0.5 ML whichever is greater.</td></tr>
<tr><td colspan="2">Elevated storage capacity

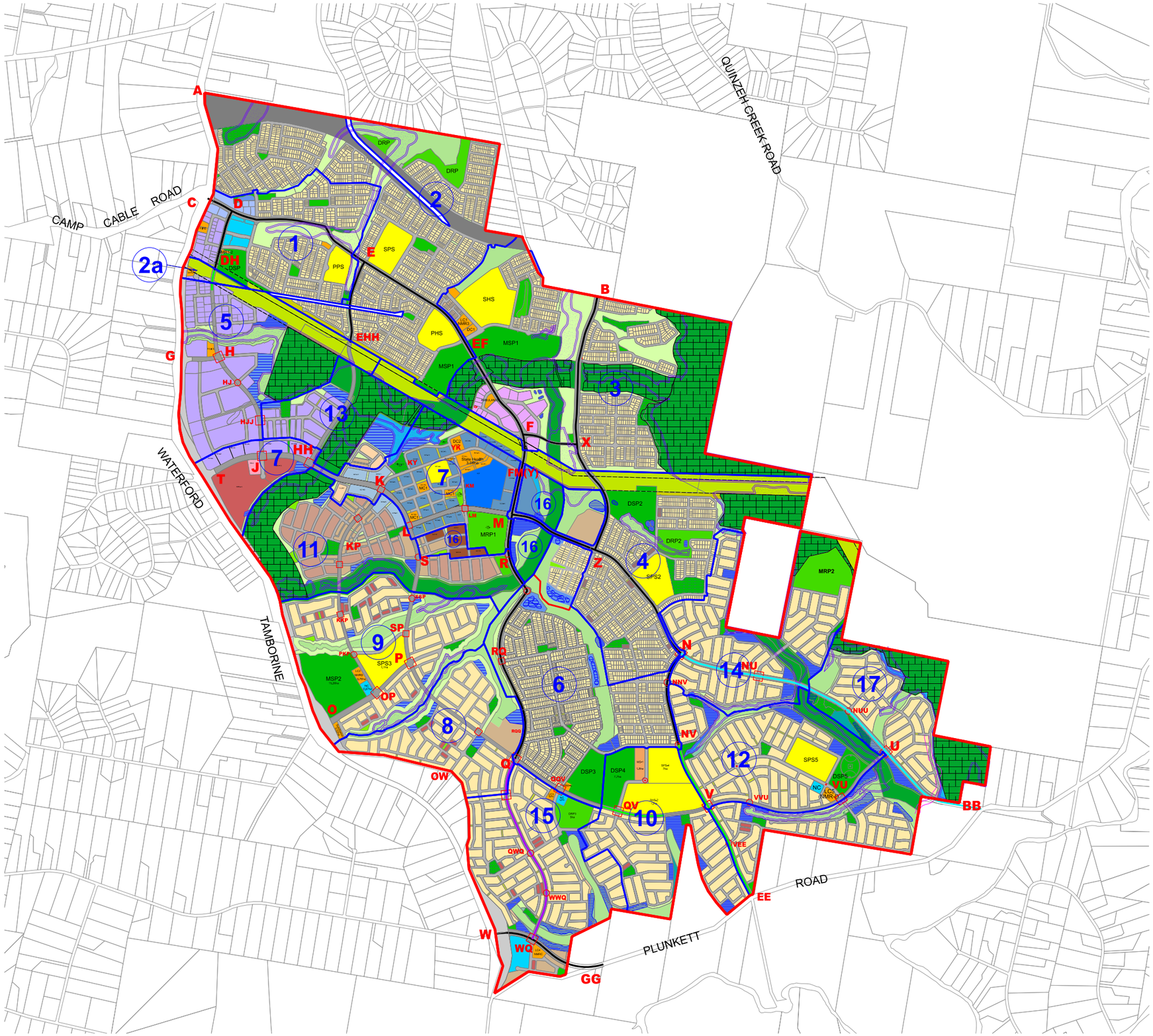
Guidance Note:
In-line pressure booster pumping without high-level storage shall be considered where satisfactory pressures can be provided by gravity flow during low demand periods or booster failure can be mitigated to an acceptable level (risk assessment required) and where there is no other feasible means of providing adequate pressure.</td><td>6 (PH - 1/12 MDMM) + minimum firefighting reserve.
Fire Fighting reserve =
> 4800EP:
• rural residential 0.11 ML
• industry 0.54 ML
• otherwise 0.22 ML
< 4800 EP:
• rural residential 0.05 ML
• industry 0.43 ML
• otherwise 0.11 ML</td></tr>
<tr><td colspan="3">Pumping capacity</td></tr>
<tr><td colspan="2">Pump supplying a ground level reservoir</td><td>MDMM over 20 hrs</td></tr>
<tr><td colspan="2">Pump supplying an elevated reservoir</td><td>(6PH – operating volume) / (6 x 3600)

Operating volume =
Elevated reservoir capacity - fire fighting reserve</td></tr>
<tr><td colspan="2">Standby pump capacity</td><td>To match duty, except where more than one duty pump or as determined by risk assessment.</td></tr>
<tr><td colspan="2">Reticulation booster pumps/pumped system</td><td>PH + fire flow</td></tr>
<tr><td colspan="3">Pipeline assessment & design</td></tr>
<tr><td>Main capacity</td><td colspan="2">Raw water mains & trunk feeding ground level reservoir:
MDMM for a gravity supply and MDMM over 20hrs for a pumped supply
Trunk Mains feeding elevated reservoir: capacity of pumps:
Reticulation Mains: PH + fire flow.</td></tr>
<tr><td rowspan="2">Mains size
Guidance Note:
New CF areas are not permitted by LCC.</td><td colspan="2">Constant flow areas - where mains terminate in short runs such as cu- de-sacs minimum sizes that may be acceptable are:
DN 63 up to 150 m from main
DN 80 up to 350 m from main</td></tr>
<tr><td colspan="2">On demand areas - minimum reticulation main 100mm in residential areas and 150mm in commercial and industrial areas.</td></tr>
<tr><td rowspan="2">Friction default value</td><td>Existing Infrastructure</td><td>Future Infrastructure</td></tr>
<tr><td>Colebrook White k values (mm)

<table>
<tr><th rowspan="2">Pipe Material</th><th colspan="3">Pipeline Age (years)</th></tr>
<tr><th>< 10</th><th>10 to 25</th><th>> 25</th></tr>
<tr><td>Asbestos Cement</td><td>0.15</td><td>0.3</td><td>0.3</td></tr>
<tr><td>Plastic (UPVC, MDPE, Hobas, etc)</td><td>0.06</td><td>0.06</td><td>0.15</td></tr>
<tr><td>MSCL/DICL</td><td>0.3</td><td>0.3</td><td>0.6</td></tr>
<tr><td>CICL</td><td>0.3</td><td>0.3</td><td>0.6</td></tr>
</table>
</td><td>The design shall be conducted to achieve less than the following head losses:
a) 5 m head/km for ≤DN 150 (CIOD) or ≤DN 180 (ISO).
b) 3 m head/km for ≥DN 200 (CIOD) or ≥DN 250 (ISO).
c) Head loss shall be calculated using computer models or hydraulic formulas.</td></tr>
<tr><td>Maximum velocity</td><td colspan="2">2.5 m/s
At peak hour for trunk mains and at peak hour including fire flow for reticulation.</td></tr>
</table>

Standpipe and Hydrant Filling Points	
Hydraulic model	**Planning Scenario** All designated and planned standpipes and hydrant filling points are to be modelled at either anticipated flowrates or recorded flows from SCADA or field test (hourly patterns).
	Operational Scenario Operational scenario to be modelled at 15 min time steps to highlight actual likely impacts on network.
Augmentation – In general significant network augmentations would not be considered prudent to support new hydrant filing points. Alternate strategies such as relocation or management of hydrant filing point flows (while maintaining suitable service levels) should be considered to maintain DSS. Suitable service levels should be agreed with Council's Water Business & Customer Management team.	

Appendix C Yarrabilba Development Rollout Plan



YARRABILBA

LEGEND

- YARRABILBA PROJECT SITE (WITHIN GREATER YARRABILBA STRUCTURE PLAN AREA)
- PROPOSED PRECINCT BOUNDARY
- RESIDENTIAL - STANDARD
- RESIDENTIAL - URBAN
- RESIDENTIAL - URBAN DETACHED
- RESIDENTIAL - URBAN SEMI-DETACHED
- RESIDENTIAL - TERRACES
- MAJOR ACTIVITY CENTRE - CORE
- MIXED USE - TOWN CENTRE CORE
- MIXED USE - TOWN CENTRE FRAME
- COMMERCIAL MIXED USE
- COMMUNITY
- LOCAL RETAIL
- EDUCATION
- MIXED INDUSTRY AND BUSINESS
- MIXED BUSINESS / INFRASTRUCTURE
- OPEN SPACE - EPBC FAUNA CORRIDOR & ENVIROMENTAL PROTECTION
- OPEN SPACE - REMNANT VEGETATION OF CONCERN
- OPEN SPACE - CONSERVATION
- OPEN SPACE - DISTRICT AND MAJOR
- OPEN SPACE - LINEAR
- OPEN SPACE - NEIGHBOURHOOD PARK
- OPEN SPACE - LOCAL PARK
- OPEN SPACE - LAND UNDER Q100
- KOALA PROTECTION / WETLAND / BUSHFIRE AND ASSOCIATED BUFFERS
- ELECTRICITY EASEMENT AND BUFFER
- SOUTHERN INFRASTRUCTURE CORRIDOR
- MAJOR ROAD
- WATERFORD TAMBORINE ROAD WIDENING
- VILLAGE ROAD
- STORMWATER TREATMENT

- PRIMARY MOVEMENT NETWORK AS DESIGNED / APPROVED
- PRIMARY MOVEMENT NETWORK 40m
- PRIMARY MOVEMENT NETWORK 35m/33.5m
- PRIMARY MOVEMENT NETWORK 26.5m
- PRIMARY MOVEMENT NETWORK 25.6m
- KOALA HABITIAT TO BE PROTECTED AND MANAGED (PLUS 10m BUFFER)
- EPBC OFFSET LAND - 195ha

THE CONTENTS OF THIS PLAN ARE CONCEPTUAL ONLY, FOR DISCUSSION PURPOSES. ALL AREAS AND DIMENSIONS ARE APPROXIMATE ONLY SUBJECT TO RELEVANT STUDIES, SURVEY, ENGINEERING AND DEVELOPMENT APPROVALS. THIS IS NOT A MASTERPLAN.

Yarrabilba Masterplan
Land Use Commercial Assessment

DRAFT ONLY

0 300 600 900 1200 1500m

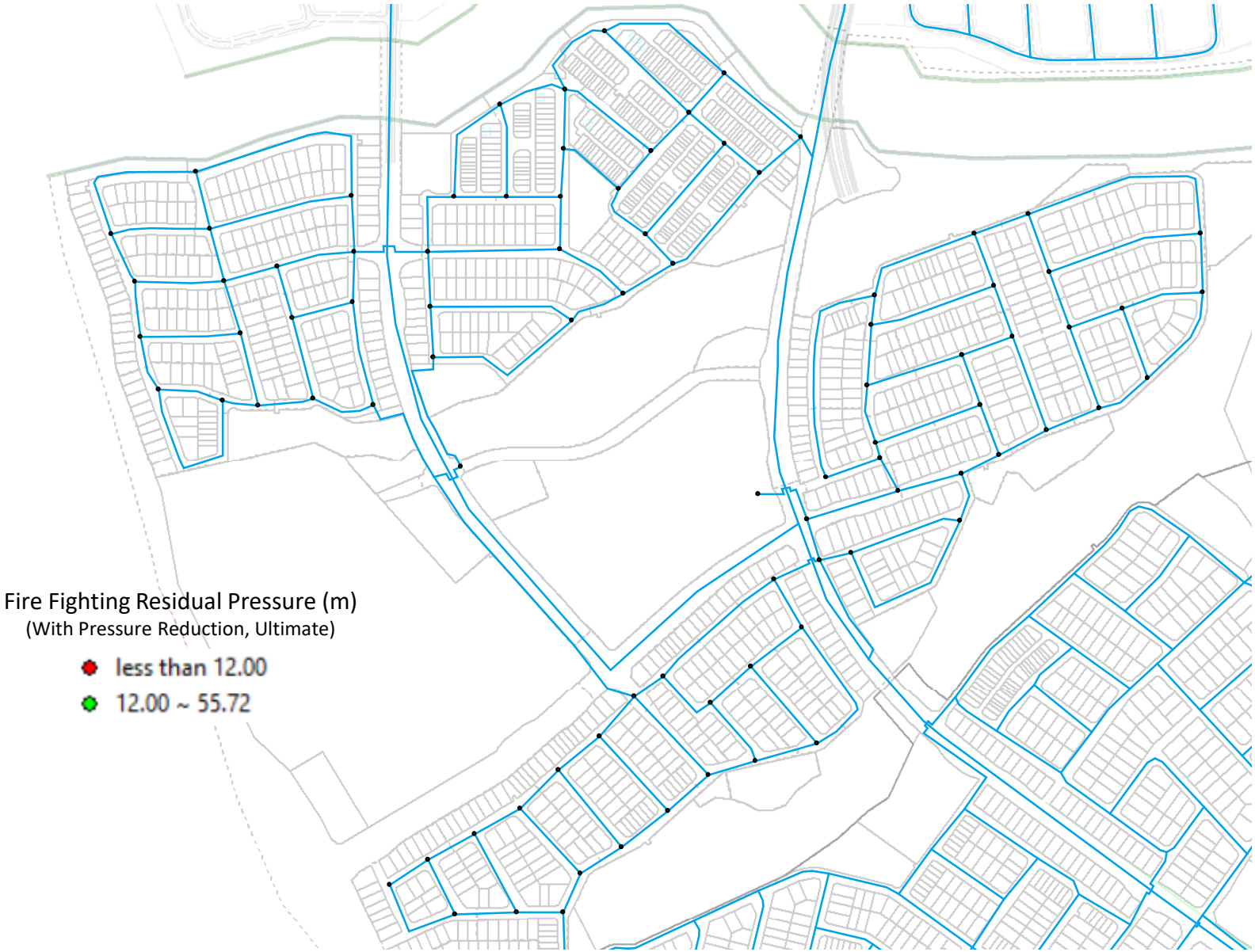
Scale 1:30,000 at A3

North

File No. F1.1 Dgn No. YAR-LUCA_241118 Date 18 NOV 2024

Appendix D Water Reticulation Hydraulic Performance Assessment Outcomes


Maximum Hour Pressure (m)
(With Pressure Reduction, Ultimate)
less than 12.00
12.00 ~ 22.00
22.00 ~ 55.00
55.00 ~ 80.00
80.00 ~ 128.86


Fire Fighting Residual Pressure (m)
(With Pressure Reduction, Ultimate)
less than 12.00
12.00 ~ 55.72

Appendix E LCC Yarrabilba Sewerage Spare Capacity Assessment Summary

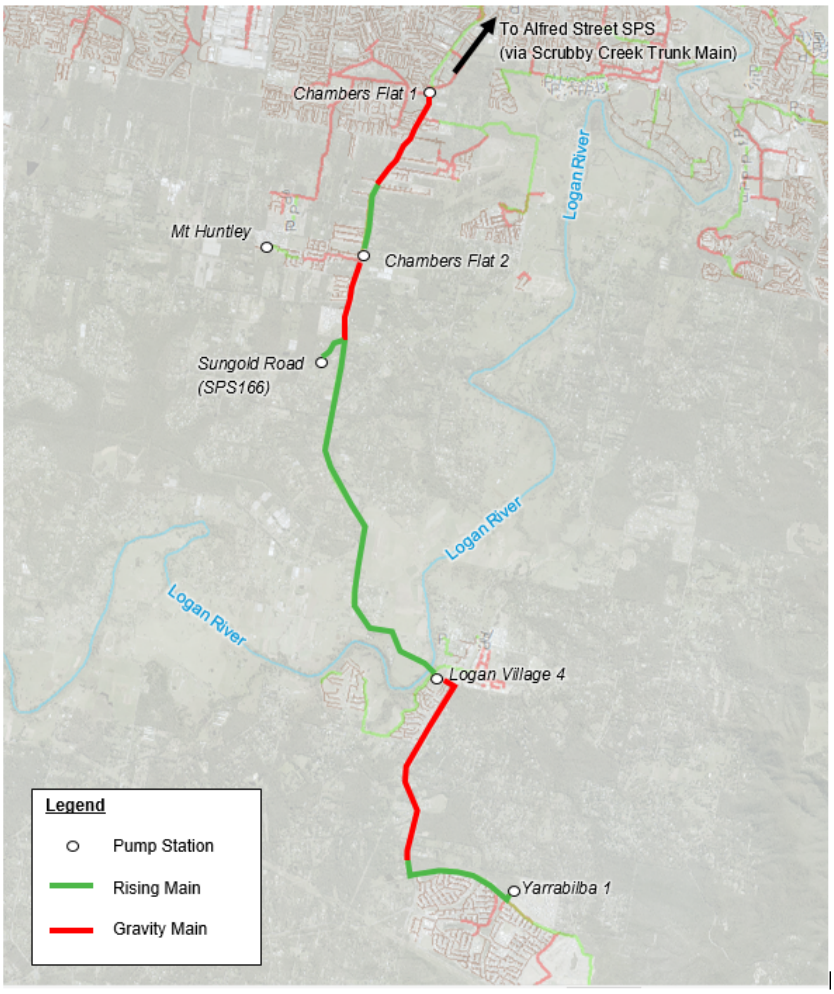
Lin, Henry

Subject: FW: Spare capacity for the Yarrabilba Development

From: Pollard, Matt <Matt.Pollard@wsp.com>
Sent: Wednesday, March 30, 2022 11:45 AM
To: Lin, Henry <Henry.Lin@stantec.com>; Pollard, Matt <MattPollard@logan.qld.gov.au>
Cc: WaterDA <WaterDA@logan.qld.gov.au>; DanielO'Brien@logan.qld.gov.au; Seymour, Michael <MichaelSeymour@logan.qld.gov.au>
Subject: RE: Spare capacity for the Yarrabilba Development

Hi Henry

A recent planning task undertaken by Logan Water (Chambers Flat Road 2 SPS Strategy Review - IP0011) has analysed the capacity of the existing system between Yarrabilba 1 and the Chambers Flat 2 SPS in detail. A map of this system is shown below:



The Task involved running the Loganholme calibrated model for this system for the 1EY and 2EY design storms. The model was calibrated based on flow data collected in 2019, which included 3 flow gauges within Yarrabilba. Conservative assumptions have been made for the wet weather response for future development / development not captured during the flow survey period.

For these runs, the adopted setting for the Yarrabilba 1 pump station was to limit pumped flows to 70 L/s at all times to minimise overflows in the downstream network and utilise the 2 ML storage. The outcomes for this assessment for different populations at Yarrabilba is shown in the following table.

		Option 2				
SPS		Yarrabilba (SPS084)			Logan Village 4 (SPS081)	Chambers Flat 2 (SPS082)
Yarrabilba Population	Event	Emergency Storage (% full)	Wet Weather Storage (% full)	Overflow Volume (m^3)	Overflow Volume (m^3)	Overflow Volume (m^3)
25,000 EP	2 EY	100%	100%	173	0	0
	1 EY	100%	100%	2,553	0	0
20,420 EP	2 EY	76%	76%	0	0	0
	1 EY	100%	100%	375	0	0
15,500 EP	2 EY	50%	0%	0	0	0
	1 EY	95%	95%	0	0	0

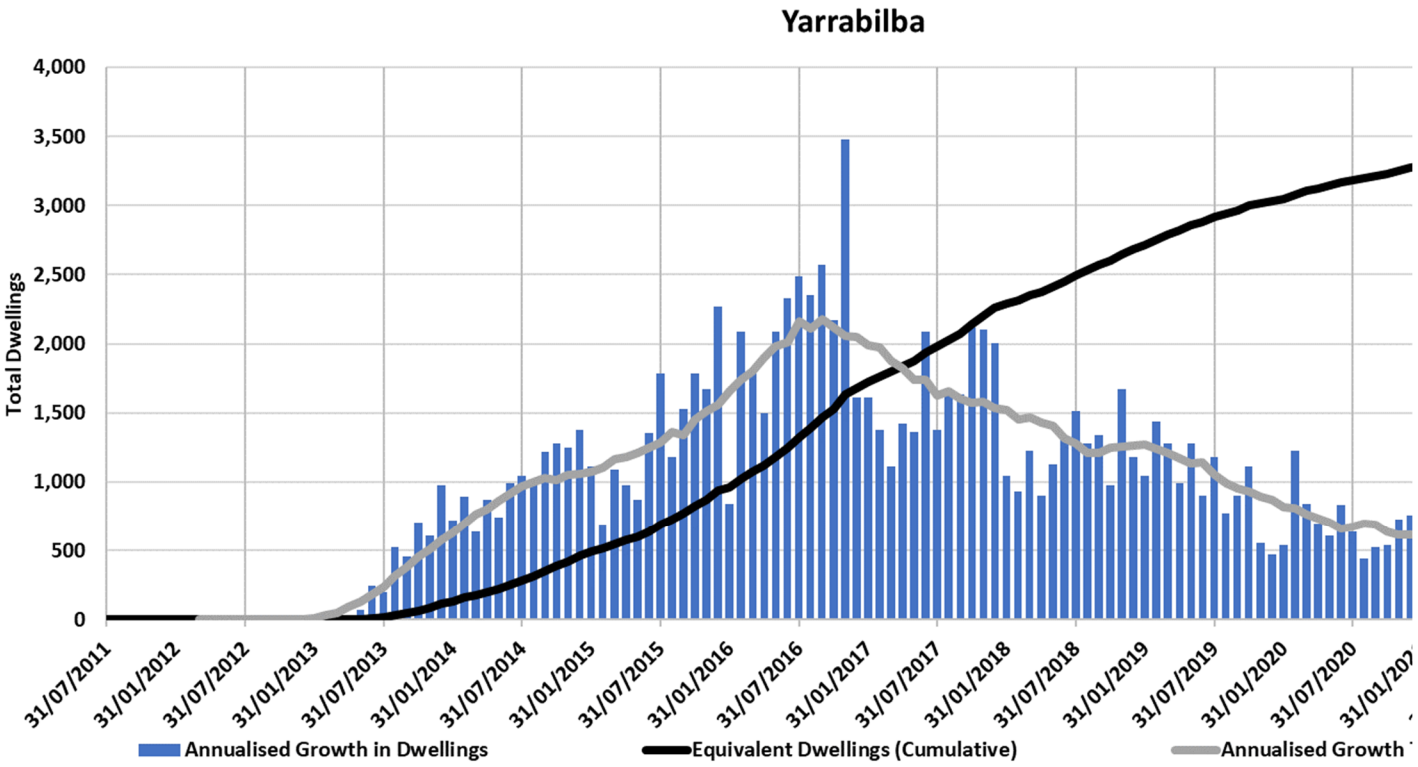
Logan Water stakeholders have agreed that for the Yarrabilba storage, the appropriate containment standard is the 2EY event and therefore the Yarrabilba population that the existing system can cater for is somewhere between 20,420 EP and 25,000 EP.

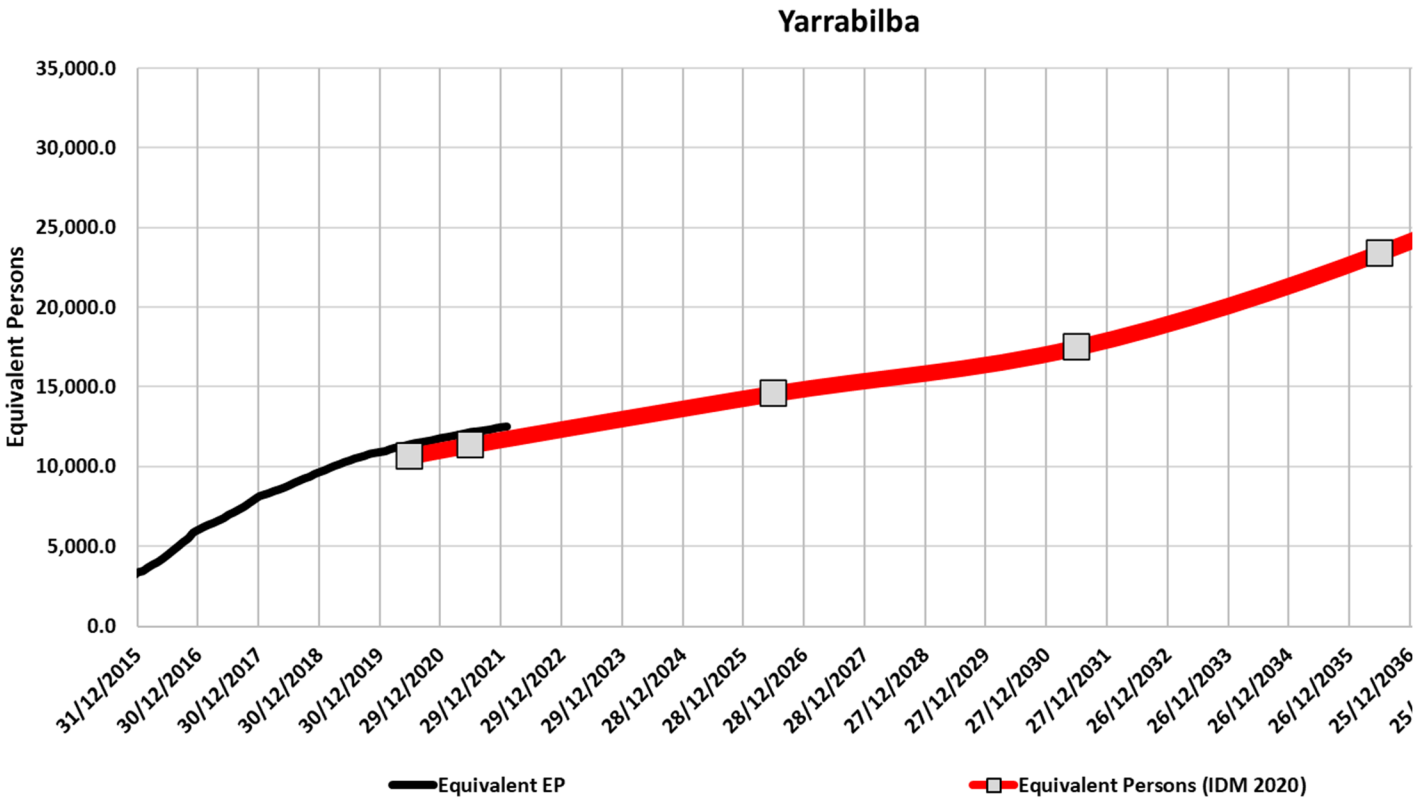
To achieve the performance outlined in the above table, works will be undertaken to upgrade the Chambers Flat 2 SPS. These works are included in the Subregional Infrastructure Program (SRIP).

Based on current growth rates, we expect that the existing system will have sufficient capacity to cater for Yarrabilba until sometime between 2033 and 2037 (refer graph below). If the recent increase in the rate of lot sales is sustained and converts to occupied dwellings that date may come forward.

I note that as at the start of February 2022, we are still not seeing the increased lot sales translate into occupied dwellings. The charts below are taken from residential Bin data extracted from Councils data base on the 9th of February.

That aside, should the growth rates increase and be sustained, Council has already progressed planning for the Yarrabilba 3 regional / transfer pump station and the Chambers Flat WWTP so that the long term servicing solution can be brought forward if required.


Yarrabilba
Total Dwellings
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
31/07/2011
31/01/2012
31/07/2012
31/01/2013
31/07/2013
31/01/2014
31/07/2014
31/01/2015
31/07/2015
31/01/2016
31/07/2016
31/01/2017
31/07/2017
31/01/2018
31/07/2018
31/01/2019
31/07/2019
31/01/2020
31/07/2020
Annualised Growth in Dwellings
Equivalent Dwellings (Cumulative)
Annualised Growth


Yarrabilba
Equivalent Persons
35,000.0
30,000.0
25,000.0
20,000.0
15,000.0
10,000.0
5,000.0
0.0
31/12/2015
30/12/2016
30/12/2017
30/12/2018
30/12/2019
29/12/2020
29/12/2021
29/12/2022
29/12/2023
28/12/2024
28/12/2025
28/12/2026
28/12/2027
27/12/2028
27/12/2029
27/12/2030
27/12/2031
26/12/2032
26/12/2033
26/12/2034
26/12/2035
25/12/2036
Equivalent EP
Equivalent Persons (IDM 2020)

Regards

Matthew Pollard
Principal Planning Engineer | Water Infrastructure Solutions

RELIABLE · SUSTAINABLE · COMMITTED
Mattpollard@logan.qld.gov.au | 07 3412 0000 | 0420 755 900| Teams Call / Chat
Connect with us: Website | Facebook | Twitter | LinkedIn

Logan City Council acknowledges the Traditional Custodians of the lands and waterways across the City of Logan. We pay our respects to Elders past, present and emerging.

Appendix F Preliminary Sewerage Reticulation Plan

NORTH

YARRABILBA

PRECINCT 9 - ROL1
FUNCTIONAL PLANS

PLAN
SCALE 1:5000

DRAWING INDEX

DRAWING NO.	DRAWING TITLE
24-153-SK101	GENERAL - LOCALITY PLAN, DRAWING INDEX AND NOTES
24-153-SK102	FUNCTIONAL LAYOUT - STAGING PLAN - SHEET 1
24-153-SK103	FUNCTIONAL LAYOUT - STAGING PLAN - SHEET 2
24-153-SK104	FUNCTIONAL LAYOUT - STAGING PLAN - SHEET 3
24-153-SK105	FUNCTIONAL LAYOUT - STAGING PLAN - SHEET 4
24-153-SK106	FUNCTIONAL LAYOUT - STAGING PLAN - SHEET 5
24-153-SK107	FUNCTIONAL LAYOUT - ROADWORKS PLAN - SHEET 1
24-153-SK108	FUNCTIONAL LAYOUT - ROADWORKS PLAN - SHEET 2
24-153-SK109	FUNCTIONAL LAYOUT - ROADWORKS PLAN - SHEET 3
24-153-SK110	FUNCTIONAL LAYOUT - ROADWORKS PLAN - SHEET 4
24-153-SK111	FUNCTIONAL LAYOUT - ROADWORKS PLAN - SHEET 5
24-153-SK112	FUNCTIONAL LAYOUT - TYPICAL CROSS SECTIONS
24-153-SK113	FUNCTIONAL LAYOUT - SERVICES PLAN - SHEET 1
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24-153-SK115	FUNCTIONAL LAYOUT - SERVICES PLAN - SHEET 3
24-153-SK116	FUNCTIONAL LAYOUT - SERVICES PLAN - SHEET 4
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24-153-SK118	FUNCTIONAL LAYOUT - STORMWATER PLAN - SHEET 1
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24-153-SK122	FUNCTIONAL LAYOUT - STORMWATER PLAN - SHEET 5
24-153-SK123	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 1
24-153-SK124	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 2
24-153-SK125	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 3
24-153-SK126	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 4
24-153-SK127	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 5
24-153-SK128	FUNCTIONAL LAYOUT - SEWER RETICULATION PLAN - SHEET 6
24-153-SK129	FUNCTIONAL LAYOUT - WATER RETICULATION PLAN - SHEET 1
24-153-SK130	FUNCTIONAL LAYOUT - WATER RETICULATION PLAN - SHEET 2
24-153-SK131	FUNCTIONAL LAYOUT - WATER RETICULATION PLAN - SHEET 3
24-153-SK132	FUNCTIONAL LAYOUT - WATER RETICULATION PLAN - SHEET 4
24-153-SK133	FUNCTIONAL LAYOUT - WATER RETICULATION PLAN - SHEET 5
24-153-SK134	FUNCTIONAL LAYOUT - EARTHWORKS CONTOUR PLAN - SHEET 1
24-153-SK135	FUNCTIONAL LAYOUT - EARTHWORKS CONTOUR PLAN - SHEET 2
24-153-SK136	FUNCTIONAL LAYOUT - EARTHWORKS CONTOUR PLAN - SHEET 3
24-153-SK137	FUNCTIONAL LAYOUT - EARTHWORKS CONTOUR PLAN - SHEET 4
24-153-SK138	FUNCTIONAL LAYOUT - EARTHWORKS CONTOUR PLAN - SHEET 5
24-153-SK139	FUNCTIONAL LAYOUT - RETAINING WALLS PLAN - SHEET 1
24-153-SK140	FUNCTIONAL LAYOUT - RETAINING WALLS PLAN - SHEET 2
24-153-SK141	FUNCTIONAL LAYOUT - RETAINING WALLS PLAN - SHEET 3
24-153-SK142	FUNCTIONAL LAYOUT - RETAINING WALLS PLAN - SHEET 4
24-153-SK143	FUNCTIONAL LAYOUT - RETAINING WALLS PLAN - SHEET 5

DRAFT

REVISIONS

No	Description	DR	DES	CHK	Date
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Project
YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client
Stockland

Approved - RPEQ 12805

100 50 0 100 200m
1 : 5000 (A1 UNREDUCED)

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Drawing Title
GENERAL
LOCALITY PLAN,
DRAWING INDEX AND NOTES

Application No.

A1 | Drawing No 25-153-SK101 | Revision

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SHEET 5

SHEET 2

SHEET 4

SHEET 1

NORTH

4001
P09S947
NEIGHBOURHOOD CENTRE

4000
P09S944
SCHOOL

515
P09S938

P09S946
P09S930
P09S901
P09S902
P09S906
P09S913
P09S912
P09S911
P09S914

ROOSEVELT DR
MIBINBA DR
JIMBILLUNGA DR

EXISTING PRECINCT 8

LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- PROPOSED SEWER (S)
- PROPOSED TRUNK SEWER (TS)
- PROPOSED STORMWATER (SW)
- PROPOSED WATER (W)
- PROPOSED TRUNK WATER (TW)
- EXISTING SEWER (S)
- EXISTING TRUNK SEWER (TS)
- EXISTING STORMWATER (SW)
- EXISTING WATER (W)
- EXISTING TRUNK WATER (TW)

SEWER RETICULATION PLAN
SCALE 1:1000

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REVISIONS

No	Description	DR	DES	CHK	Date
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Project
YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client
Stockland

Approved - RPEQ 12805

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1 : 1000 (A1 UNREDUCED)

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Drawing Title
FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 1

Application No.

A1

Drawing No
25-153-SK123

Revision

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NORTH

FUTURE ENERGEX SITE

P09S916 P09S915 P09S914 P09S917 P09S912 P09S911

P09S914A LOCAL RECREATION PARK

514 P09S937 BIOBASIN

502

522 P09S949 LINEAR PARK OPEN SPACE

P09S915A LOCAL RECREATION PARK

503

EXISTING PRECINCT 8

2017

LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- S — PROPOSED SEWER
- TS — PROPOSED TRUNK SEWER
- SW — PROPOSED STORMWATER
- W — PROPOSED WATER
- TW — PROPOSED TRUNK WATER
- S — EXISTING SEWER
- TS — EXISTING TRUNK SEWER
- SW — EXISTING STORMWATER
- W — EXISTING WATER
- TW — EXISTING TRUNK WATER

SEWER RETICULATION PLAN

SCALE 1:1000

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REVISIONS

No	Description	DR	DES	CHK	Date
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Project: YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client: Stockland

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1 : 1000 (A1 UNREDUCED)

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Drawing Title: FUNCTIONAL LAYOUT SEWER RETICULATION PLAN SHEET 2

Application No.

A1 | Drawing No 25-153-SK124 | Revision

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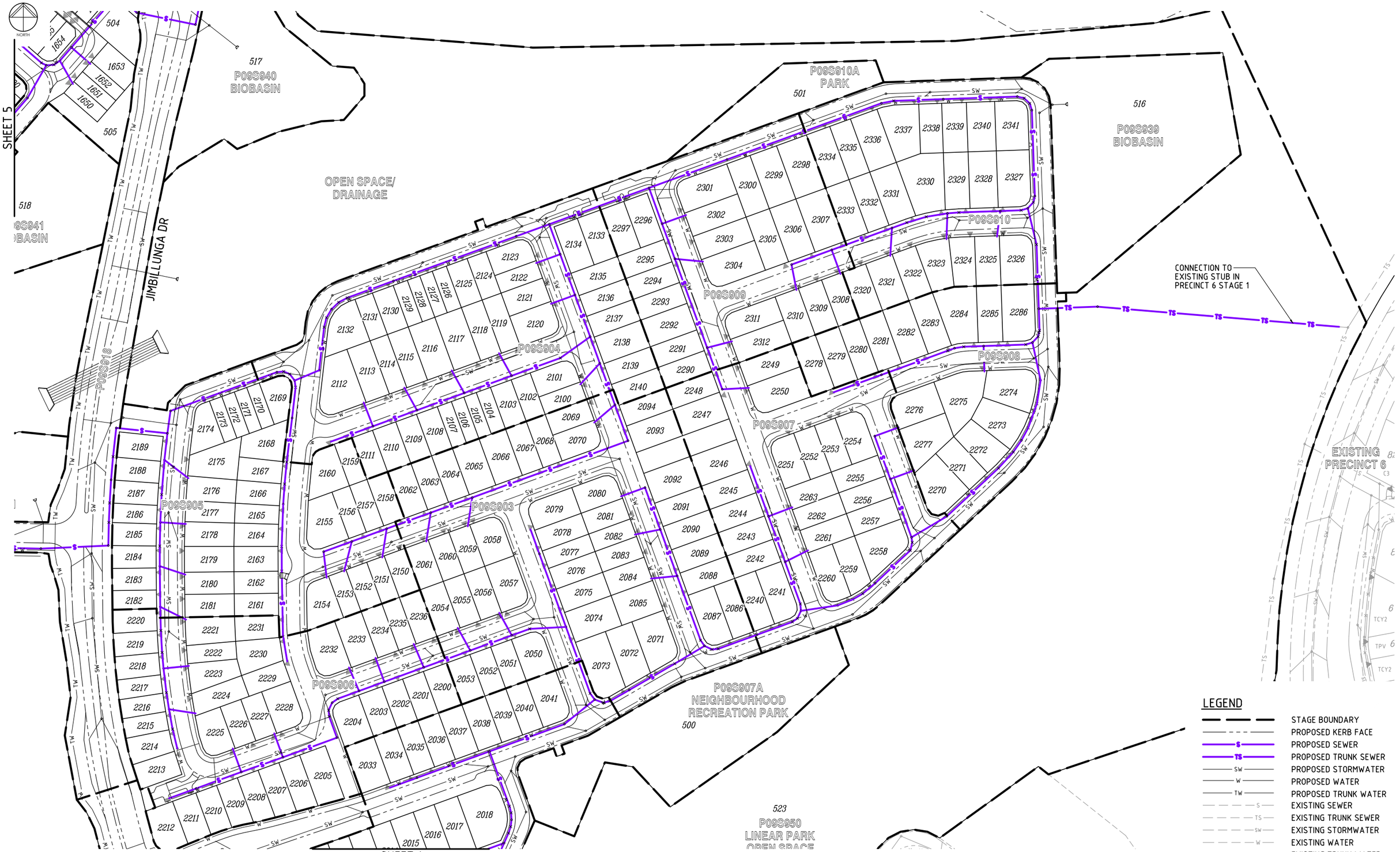

SEWER RETICULATION PLAN

SCALE 1:1000

LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- PROPOSED SEWER
- PROPOSED TRUNK SEWER
- PROPOSED STORMWATER
- PROPOSED WATER
- PROPOSED TRUNK WATER
- EXISTING SEWER
- EXISTING TRUNK SEWER
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING TRUNK WATER

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Project: YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client: Stockland

Approved - RPEQ 12805

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Drawing Title: FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 3

Application No.

A1 | Drawing No 25-153-SK125 | Revision

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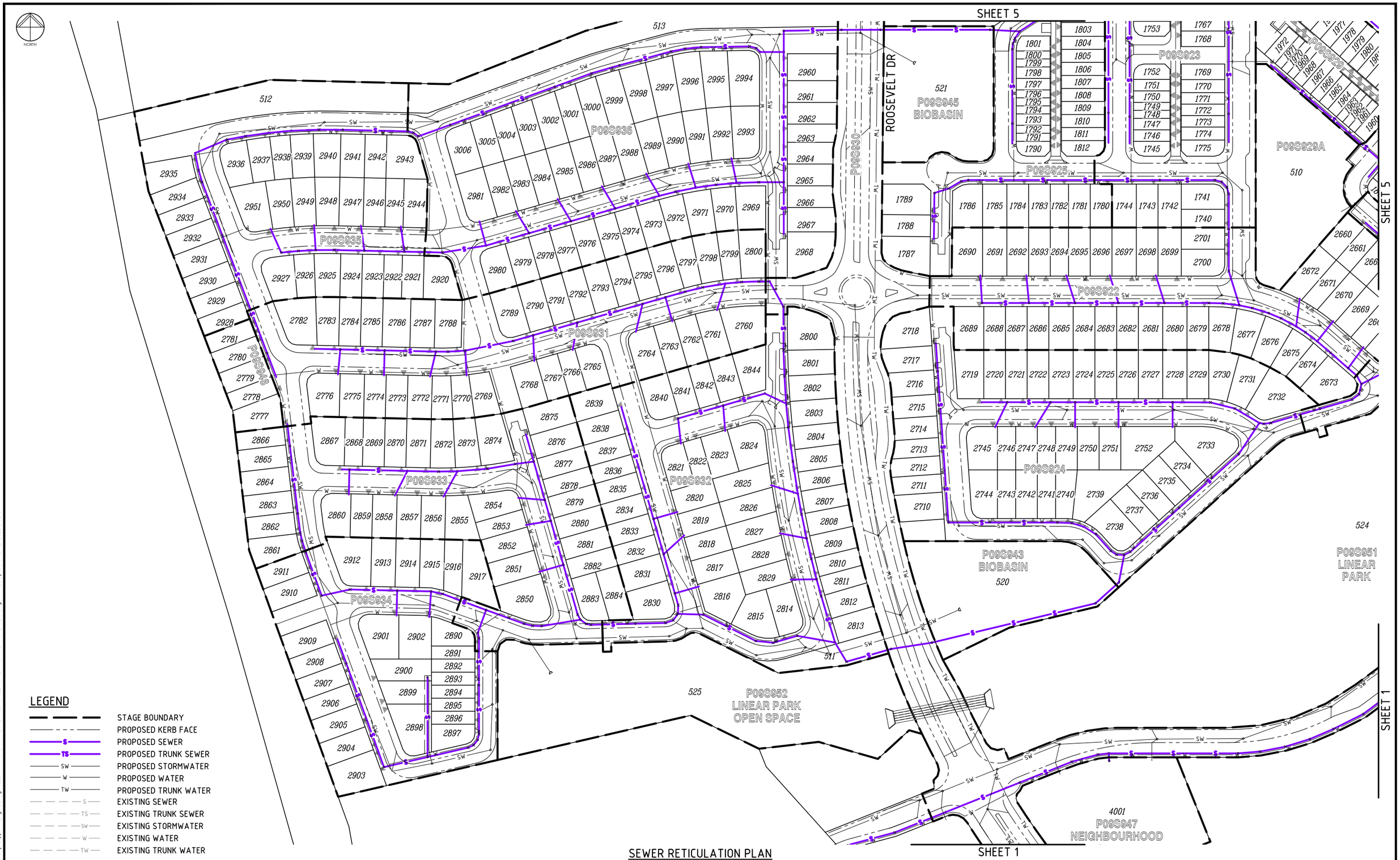

LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- S — PROPOSED SEWER
- TS — PROPOSED TRUNK SEWER
- SW — PROPOSED STORMWATER
- W — PROPOSED WATER
- TW — PROPOSED TRUNK WATER
- EXISTING SEWER
- EXISTING TRUNK SEWER
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING TRUNK WATER

SEWER RETICULATION PLAN

SCALE 1:1000

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REVISIONS

No	Description	DR	DES	CHK	Date
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Project: YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client: Stockland

Approved - RPEQ 12805

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Drawing Title
FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 4

Application No.

A1 | Drawing No 25-153-SK126 | Revision

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NORTH

LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- S — PROPOSED SEWER
- TS — PROPOSED TRUNK SEWER
- SW — PROPOSED STORMWATER
- W — PROPOSED WATER
- TW — PROPOSED TRUNK WATER
- EXISTING SEWER
- EXISTING TRUNK SEWER
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING TRUNK WATER

FUTURE PRECINCT 11

ROOSEVELT DR

JIMBILLUNGA DR

P09S930 P09S931 P09S932 P09S933 P09S934 P09S935 P09S936 P09S937 P09S938 P09S939 P09S940 P09S941 P09S942 P09S943 P09S944 P09S945 P09S905 P09S922 P09S923 P09S924 P09S925 P09S926 P09S927 P09S928 P09S929 P09S929A

BIOBASIN

SHEET 5

SHEET 6

SHEET 3

SEWER RETICULATION PLAN

SCALE 1:1000

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No	Description	DR	DES	CHK	Date
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Project: YARRABILBA

PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client: Stockland

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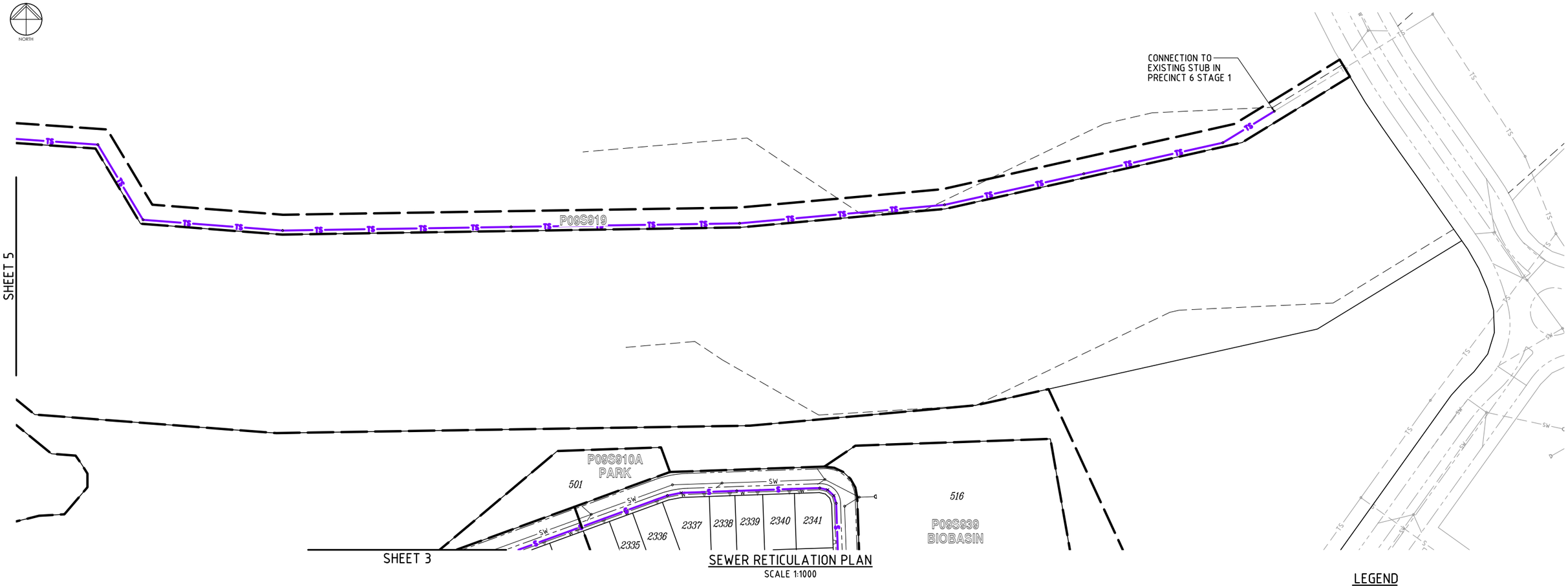
Drawing Title: FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 5

Application No.

A1

Drawing No: 25-153-SK127

Revision



LEGEND

- STAGE BOUNDARY
- PROPOSED KERB FACE
- PROPOSED SEWER
- PROPOSED TRUNK SEWER
- PROPOSED STORMWATER
- PROPOSED WATER
- PROPOSED TRUNK WATER
- EXISTING SEWER
- EXISTING TRUNK SEWER
- EXISTING STORMWATER
- EXISTING WATER
- EXISTING TRUNK WATER

DRAFT

REVISIONS

No	Description	DR	DES	CHK	Date
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Project
YARRABILBA
PRECINCT 9 - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS

Client
Stockland

Approved - RPEQ 12805

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Drawing Title
FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 6

Application No.

A1

Drawing No
25-153-SK128

Revision

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Appendix G EDQ and LCC Comments and Communications

From:	Edwards, Gavin
To:	Admin - Bushland Protection Systems; Lin, Henry; Daniel Wyrwich; Josh Strogusz
Cc:	Rachel Dunstan (Rachel.Dunstan@stockland.com.au); Mary Ramos-Casey; Morgan Jones; Hajos, Boti
Subject:	FW: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water
Date:	Wednesday, 1 April 2026 3:49:57 PM
Attachments:	image001.png image006.png image003.png

Hi Brett, Henry, Dan and Josh,

Please see below further comments we have received from Education and Logan Water.

Can you please review and I will set up a meeting next week to discuss.

Regards

Gavin Edwards
Technical Director - Planning
M 0417 074 988
E gavin.edwards@rpsconsulting.com

From: Gabrielle Shepherd <Gabrielle.Shepherd@edq.qld.gov.au>
Sent: Wednesday, 1 April 2026 12:49 PM
To: Edwards, Gavin <gavin.edwards@rpsconsulting.com>
Cc: Brandon Bouda <Brandon.Bouda@edq.qld.gov.au>; Jack Landsberg <Jack.Landsberg@edq.qld.gov.au>; Sunny Wong <Sunny.Wong@edq.qld.gov.au>
Subject: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water

Hi Gavin
Further to the meeting earlier today, the following comments have been provided by the above agencies:

DoE:

Officers have concerns with bushfire that we are seeking further internal comment on to inform the response. Within the common material, the entire lower order frontage (noting the other frontages are all sub-arterial roads) of the school land is subject to bushfire risk per the extract below:

Logan Water:

Water

- Logan have recently completed a draft ultimate water network and DMA plan for Yarrabilba (attached) to be adopted into Master Planning and tested against the latest Logan Growth Model
- An updated verified hydraulic model with Operational and Ultimate (old LGM) scenarios has also just been completed and will be shared with Stantec (via OneDrive) to be used as a basis for future planning/for information

- As indicated by EDQ detailed network layouts/sizing will be required in an updated PNP and should include proposed DMA boundaries and proposed boundary valve locations
- FYI
  - Proposed Trunk Mains, Logan has adopted a minimum Trunk Main diameter of DN250 with DN200 reserved for reticulation spine mains where non-residential or high demand exists and DN150 dual mains or looping is not possible or prudent. Please increase the western trunk main via Precincts 7 & 11.
  - It is recommended that greenfield water networks adopt a topographical elevation range of 25-30m for DMA pressure zones to maintain pressures within the target range (25-55m)
  - Logan no longer modulates pressure management and has adopted a dual pilot arrangement for PM control
  - All DMAs except for any formed with a booster pumps are fitted with a PRV to maintain a consistent pressure downstream as part of our network calming philosophy
- Logan's draft DMA plan for Precinct 9 anticipated two DMAs:
  - DMA242 capturing the higher areas along the west servicing lots 41-69mAHD (≈1089 lots, NC & School)
  - DMA246 capturing the lower areas to the east servicing lots 34-50mAHD (≈300 lots)
- The PNP DMA Plan proposes:
  - A slightly smaller density (1158 lots, NC & School)
  - A new DMA for the northern area 41-69mAHD
  - An extension of DMA241 (Precinct 8) servicing lot elevations 34-69m (implied)
  - No reticulation connection between the two areas
  - An acknowledgment target DSS max pressure would be exceeded in lower lying areas (<41mAHD)
- The new Precinct 9 DMA feed and implied boundary is acceptable in principle (generally aligns with the Logan DMA242 plan)
- The implied extension of DMA241
  - DMA241 is currently planned to service lot elevations 34-63m
  - The planned extension looks to service a topographic range of 35m, when assuming a safe minimum of 25m (to meet DSS) this exceeds the target max DSS target for a significant number of properties and generally an increase of 20m pressure in the Logan proposed DMA246 area. This is not considered an acceptable outcome for a greenfield area. This would also extend that topographic range of DMA241 increasing pressure in that DMA by ≈7m, pushing further significant areas outside of target DSS
- There is a solution that generally aligns to the proposed PNP approach and meets target DSS:
  - DMA241 could be extended to feed the Logan proposed DMA246 area without compromising the topographical range of that DMA, pressures would be ≈10m higher than the Logan plan but still within target DSS
  - The proposed new Precinct 9 DMA PRV reticulation and supply zone would need to be extended to supply an area and topography similar to the Logan proposed DMA242. In simple terms this would add ≈350m of DN200 (TBC). This would also provide pressure managed contingency between DMA242 (P9 HL) and DMA241

(P8+P9 LL). Internal reticulation sizing should consider this operation without requiring multiple BVs to be opened.

Sewer

An updated PNP is required to provide additional information on the proposed sewerage network, including:

- The overall network layout, clearly showing proposed pipe sizes and allocated demand nodes
- Long sections of the controlling sewers
- The full extent of the proposed network, extending to the existing sewer network

In addition, the report is to include hydraulic long sections for all major trunk sewers (≥225 mm). These profiles are to show the hydraulic grade line (HGL) at ultimate design loading for all trunk sewers located within, or forming part of, this PNP. All upstream loads are to be included in the assessment.

The long sections and HGL profiles are to incorporate all existing sewers and all sewers proposed under this approval up to the Yarrabilba 3 pump station, together with all upstream loads connecting to these sewers.

Kind regards

Gabrielle Shepherd
Principal Planner
Development Services – Established Growth Team
Economic Development Queensland
P (07)3452 7914
Level 17, 1 William Street, Brisbane Qld 4000
GPO Box 2202, Brisbane Qld 4001
edq.qld.gov.au

DELIVERING FOR QUEENSLAND | Queensland Government

From: Jeremy Thomas
To: Lin, Henry
Cc: WaterDA; Sheikh Uddin
Subject: RE: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water
Date: Thursday, 14 May 2026 10:17:32 AM
Attachments: image002.png
image003.png
image004.png
image005.png
image006.png
image007.png

Hi Henry

This appears to tick all the boxes/comments. I would just add a contingency connection with a BV for each of the DMAs, probably at one of the points where retic crosses the DN250s, but this could be picked up in Ops works.

Can you please send us your model so we can incorporate the updated network into our model/planning?

Thanks for your work on this.

Regards

Jeremy Thomas
Project Manager | Principal Planning Engineer | Water Infrastructure Solutions

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JeremyThomas@logan.qld.gov.au | 07 2899 7524 | 0406 803 497 | Teams Call / Chat
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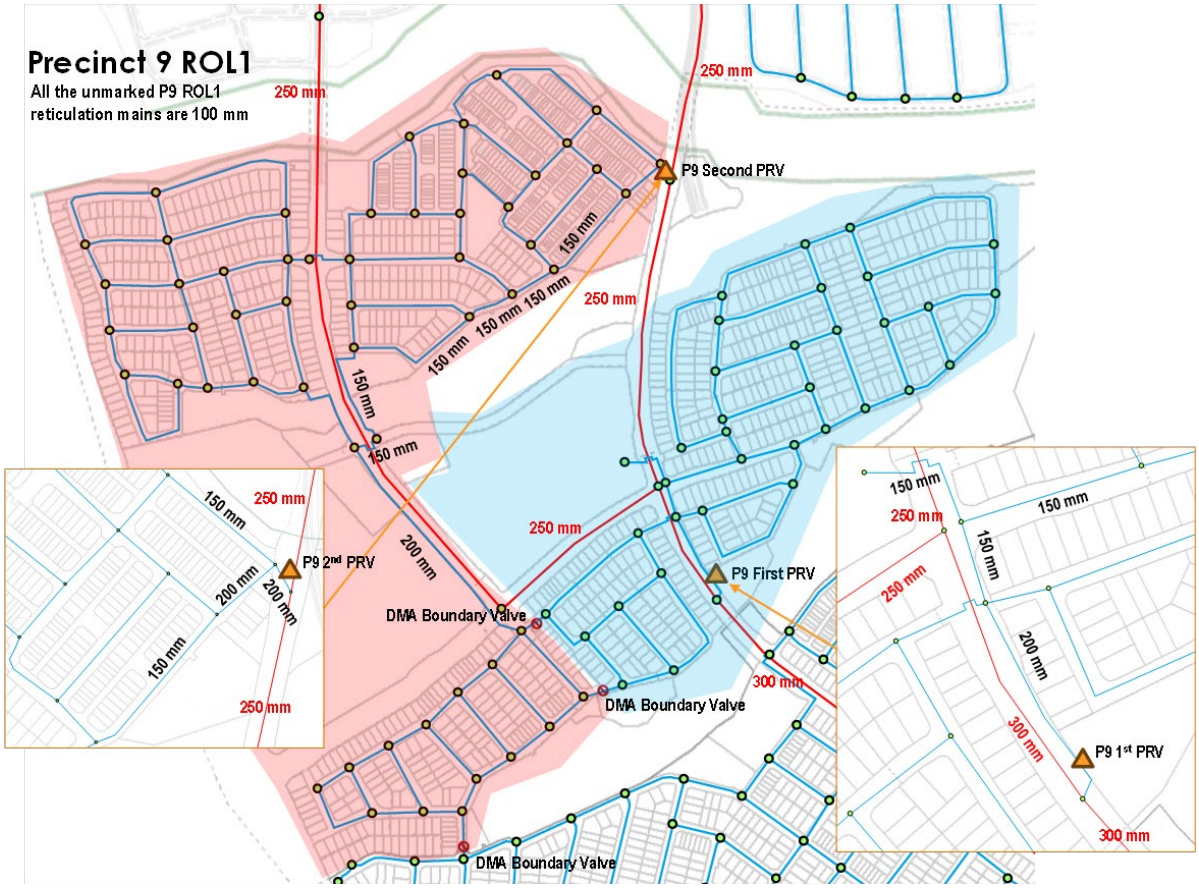
We pay our respects to Elders past, present and emerging.

From: Lin, Henry <Henry.Lin@stantec.com>
Sent: Wednesday, 13 May 2026 11:37 AM
To: Jeremy Thomas <JeremyThomas@logan.qld.gov.au>
Cc: WaterDA <WaterDA@logan.qld.gov.au>; Sheikh Uddin <SheikhUddin@logan.qld.gov.au>
Subject: RE: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water
Importance: High

Hi JT,

All your comments and suggestions are addressed and please see the draft Precinct 9 DMAs and water reticulation as the figure below:



Only two items to be communicated / confirmed with LCC:

1. The high pocket (stages 914 to 917) will be developed before the P9 second DMA. We will propose to open nearby boundary valves as the interim solution.
2. Education Queensland has not even started the planning of the school site yet. Therefore we do include the reticulation mains from both DMAs for now.
3. As Precinct 8 DMA (DMA241) is reduced, we will remove the connection reticulation mains to Precinct 9, as well as reduce some reticulation main sizes from 200 mm to 150 mm / 100 mm.

Please let us know if LCC has any further comments and I can be contacted by emails or MS TEAM chat.

Cheers,

Henry Lin
Principal Planning Engineer

Stantec

From: Jeremy Thomas <JeremyThomas@logan.qld.gov.au>
Sent: Friday, 8 May 2026 9:36 AM
To: Lin, Henry <Henry.Lin@stantec.com>
Cc: WaterDA <WaterDA@logan.qld.gov.au>; Sheikh Uddin <SheikhUddin@logan.qld.gov.au>
Subject: RE: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water

Hi Henry,

This is a much closer alignment to our current planning.

Comments:

- Precinct 9 PRV 1. This has been allocated as DMA246. Based on the elevations presented, 35-60m this is certainly an acceptable outcome in itself. We capped this at 50m to maximise PM potential, but the boundary could be optimised at our discretion later. However, it is not clear from the network presented how the school will be supplied (inc. a 30L/s fire flow)as there is no reticulation from that network zone adjacent to the parcel?
- Precinct 9 PRV 2. This has been allocated as DMA242. Based on the elevations presented, 42-70m (also within 1m of our assumptions) also an acceptable outcome.
- Stages15 to Stage 17 (60 to 70mAHD) as part of Precinct 8 (DMA241). Some concerns here:
  - Our planning has captured this area within the DMA242 topography
  - Adding to DMA241 (P8), assumed as servicing 34-63m (29m range) would increase the maximum service elevation by 7m to 36m,

while not excessive, 7m additional pressure management represents significant background leakage savings, reduced burst frequencies and extended asset life of the lifespan of the network assets.

- **We would therefore like to see the DMA242 reticulation extended to service this area.** Depending on other factors the size of this retic can be adapted:
  - Our planning has assumed a DN200 extension (parallel to the DN250 Trunk Mains. This was based on the following assumptions:
    - A DMA feed (DMA242) near stage 14 (and single flow path to the north servicing a large section of the DMA). Your plan has the DMA feed off a separate trunk main to the east.
    - A potential change in use for the assumed Major Park and Neighbourhood Centre, on the western side of the precinct (now future ROL)
    - Non-residential fire flow supply, single flow path to the school area, connection point unknown.
  - Based on your elevation range extending DMA246 and reducing the southern elevated portions to Stages15-17, potentially the retic extension could be reduced to a DN150, although there is less flexibility to potentially add the school or any other non-residential, Neighbourhood Centres in the future ROL/Major Park Parcel (though a single flow path).

For you design please also maintain a DN200 from trunk mains to the DMA/PRV and onto the first reticulation bifurcation (flow paths >1) excepting the DMA pipework (DN100). This is especially important where we have a long single flow path from DMA feed to bifurcation, E.g. P9 PRV1, noting the first bifurcation west to Stage 13 is also then a single flow path to that part of the DMA and should be a min DN150 (residential only) or again DN200 if there is a planned non-residential component downstream. Similarly, single flow paths in residential areas, particular those leading to elevated areas should be a minimum DN150. Otherwise, I note your network plan has significantly more flow paths than our assumptions so the scope of DN150 we had assumed could be significantly reduced.

Have a great weekend!

Regards

Jeremy Thomas
Project Manager | Principal Planning Engineer | Water Infrastructure Solutions

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Logan City Council acknowledges the Traditional Custodians of the lands and waterways across the City of Logan.
We pay our respects to Elders past, present and emerging.

From: Lin, Henry <Henry.Lin@stantec.com>
Sent: Thursday, 7 May 2026 10:42 AM
To: Jeremy Thomas <JeremyThomas@logan.qld.gov.au>
Cc: WaterDA <WaterDA@logan.qld.gov.au>
Subject: FW: DEV-2026-YAR-4495 - P9 Yarrabilba ROL - interim responses from DoE and Logan Water
Importance: High

Hi JT,

Not sure if you received our Yarrabilba Precinct 9 PNP report RFI response letter yet. Here is the letter which has the revised DMA boundary. We listened to your suggestion and now we have two DMA zones (high and low) for Precinct 9.

May we have 10 mins chat this week to confirm it? Stockland's team is doing the detailed design now and would like to know your decision.

Cheers,

Henry Lin
MEng (Environmental)
Pricipal Planning Engineer – Wate (QLD)

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