Yarrabilba Precinct 5 MIBA South ROL1 Precinct Network Plan – Water and Wastewater Infrastructure

PREPARED FOR Stockland | August 2025

We design with community in mind

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2025/1646

Date: 22 Sept 2025

Queensland Government

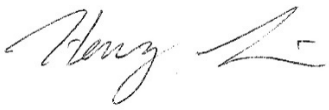
Stantec

Revision schedule

Rev No	Date	Description	Signature of Typed Name (documentation on file)			
			Prepared by	**Checked by**	**Reviewed by**	**Approved by**
00	12/06/2025	Draft for Stockland Review	H Lin	H Lin	-	-
02	13/06/2025	For EQD comments	H Lin	H Lin	P Hall	P Flint
03	11/08/2025	EQD comments addressed	H Lin	H Lin	P Hall	P Flint

Quality statement

Project manager	Project technical lead
Paul Flint	Henry Lin

PREPARED BY Henry Lin		08/08/2025
CHECKED BY Phil Hall (RPEQ 23017)		011/08/ 2025
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APPROVED FOR ISSUE BY Paul Flint		11/08/2025

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1 Introduction

This report outlines the requirements for the water and sewerage network for Precinct 5 Mixed Industry Business Area (MIBA) South ROL1 located in the Yarrabilba development.

In accordance with the Yarrabilba Precincts 5 MIBA South Context Planning Area Strategy (Precinct 5 MIBA South CPAS) endorsed by Economic Development Queensland (EDQ), Precinct 5 MIBA South ROL1 is located to the south of approved Precinct 5 MIBA North development (refer to Figure 1). This ROL comprises of 14.6 ha of MIBA land (51 non-residential lots) and 1.5 ha of stormwater treatment quality basin (refer to Appendix A).

Figure 1: Locality of Precinct 5 MIBA South Application 1 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 6 and 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.

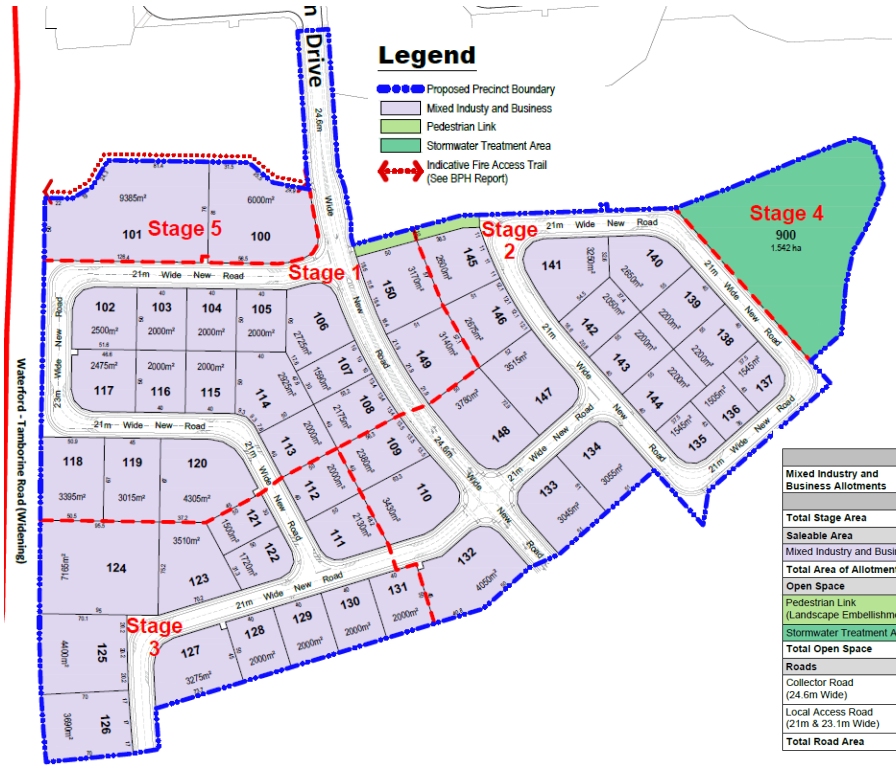
For the water infrastructure, the PNP includes details of all the water infrastructure required to deliver peak demand, fire flow and pressure management (as required), including layout plans, pipe sizes, and details of pressure reduction areas and equipment.

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.

Six PNP reports were prepared for the Precincts 1 to 6 and 8. This PNP report is proposed for the Precinct 5 MIBA South ROL1 development.

1.2 Precinct 5 MIBA South ROL1

There are 51 non-residential lots and one stormwater quality basin in the Precinct 5 MIBA South ROL1 development area (refer to Figure 2).



Development Statistics

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Overall	
Mixed Industry and Business Allotments	**17**	**19**	**13**	**—**	**2**	**51**	
Total Stage Area	**6.404 ha**	**7.408 ha**	**4.570 ha**	**1.542 ha**	**1.539 ha**	**21.463 ha**	**100.0%**
Saleable Area							
Mixed Industry and Business	4.344 ha	4.990 ha	3.740 ha	—	1.539 ha	14.613 ha	68.08%
Total Area of Allotments	**4.344 ha**	**4.990 ha**	**3.740 ha**	**—**	**1.539 ha**	**14.613 ha**	**68.08%**
Open Space							
Pedestrian Link (Landscape Embellishment)	0.050 ha	0.053 ha	—	—	—	0.103 ha	0.48%
Stormwater Treatment Area	—	—	—	1.542 ha	—	1.542 ha	7.18%
Total Open Space	**0.050 ha**	**0.053 ha**	**—**	**1.542 ha**	**—**	**1.645 ha**	**7.66%**
Roads							
Collector Road (24.6m Wide)	0.838 ha	0.451 ha	—	—	—	1.289 ha	6.01%
Local Access Road (21m & 23.1m Wide)	1.172 ha	1.914 ha	0.830 ha	—	—	3.916 ha	18.25%
Total Road Area	**2.010 ha**	**2.365 ha**	**0.830 ha**	**—**	**—**	**5.205 ha**	**24.25%**

Figure 2: Precinct 5 MIBA South ROL1 Development Contents

1.3 Development Timeline

Stockland advises that the Precinct 5 MIBA South ROL1 development is likely to start in 2026 and this study assumes that the entire Precinct 5 MIBA ROL1 development would be completed throughout 2027/2028.

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 and town houses 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 7 and 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.
- Non-residential planning densities:
    - 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.

3.3 Population Summary

Precinct 5 MIBA ROL1 comprises of 51 non-residential (industrial) lots (refer to Figure 2). A total of 438.2 EP for water and 540.4 sewerage were estimated for Precinct 5 MIBA South ROL1 in accordance with the planning densities documented above.

A summary of the EP in both earlier Precincts and Precinct 5 MIBA South ROL1 is provided in Table 3-1 and Table 3-2. The development applications of Precinct 6 ROL3 and Precinct 8 ROL1 are also included and assumed to be developed before 2028.

Table 3-1: Estimated 2028 Water EP for Precincts 1 to 4, Precincts 6 and 8 ROL1, Precinct 5 MIBA North & South ROL1

Precinct / Village	Residential Detached	Residential Attached	Commercial Employment/Retail/ Community	Education	Total EP	Estimated 2028 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**	**438.2**	**0**	**438.2**	**438.2**
Total	**18,954**	**1,278**	**1,567**	**840**	**22,640**	**22,640**

*: Based on development approvals up to and including 2028.

Table 3-2: Estimated 2028 Sewerage EP for Precincts 1 to 4, Precincts 6 and 8 ROL1, Precinct 5 MIBA North & South ROL1

Precinct / Village	Residential Detached	Residential Attached	Commercial Employment/Retail/ Community	Education	Total EP	Estimated 2028 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**	**540.4**	**0**	**540.4**	**540.4**
Total	**18,954**	**1,278**	**1,929**	**840**	**23,001**	**23,001**

*: Based on development approvals up to and including 2028.

4 Water Supply Network Assessment

Water supply to the Yarrabilba development Precinct 5 MIBA South 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 and MIBA South 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 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 Demand Summary

Category	MD (ML/d)	MDMM (ML/d)
Detached residential	6.1	4.7
Attached residential	0.5	0.4
Commercial / education	0.4	0.3
Industry	0.2	0.2
Open space	0.0	0.0
Leakage/loss allowance	0.7	0.7
Total (ML/d)	7.9	6.3

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 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 plus 2026 Logan Village population (extracted from the LCC water reticulation model) was estimated as 5.8 ML. The existing Travis Road reservoir capacity is 9 ML. Hence there will be sufficient storage for Yarrabilba development until the end of Precinct 5 MIBA South 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 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 development (refer to Section 4.4).

4.3 Proposed Precinct Water Supply Layout

Precinct 5 MIBA South ROL1 will be also served by the new DN375 mm trunk water main (refer to the Figure 4.3 Ultimate Yarrabilba Water Network in the IMP report) connected to the existing Wongawallan Drive DN375 trunk water main in the Precinct 5 MIBA North development. One DN200 mm reticulation main from MIBA North and the other interim DN150 reticulation main teed off the new DN375 mm trunk mains are then connected to the proposed MIBA South ROL1 reticulation mains shown in in Figure 3. After the future MIBA district metered area (DMA) inlet devices located in the MIBA South ROL2 development are constructed, the DMA boundary valve of interim DN150 reticulation main will be normally closed.
3

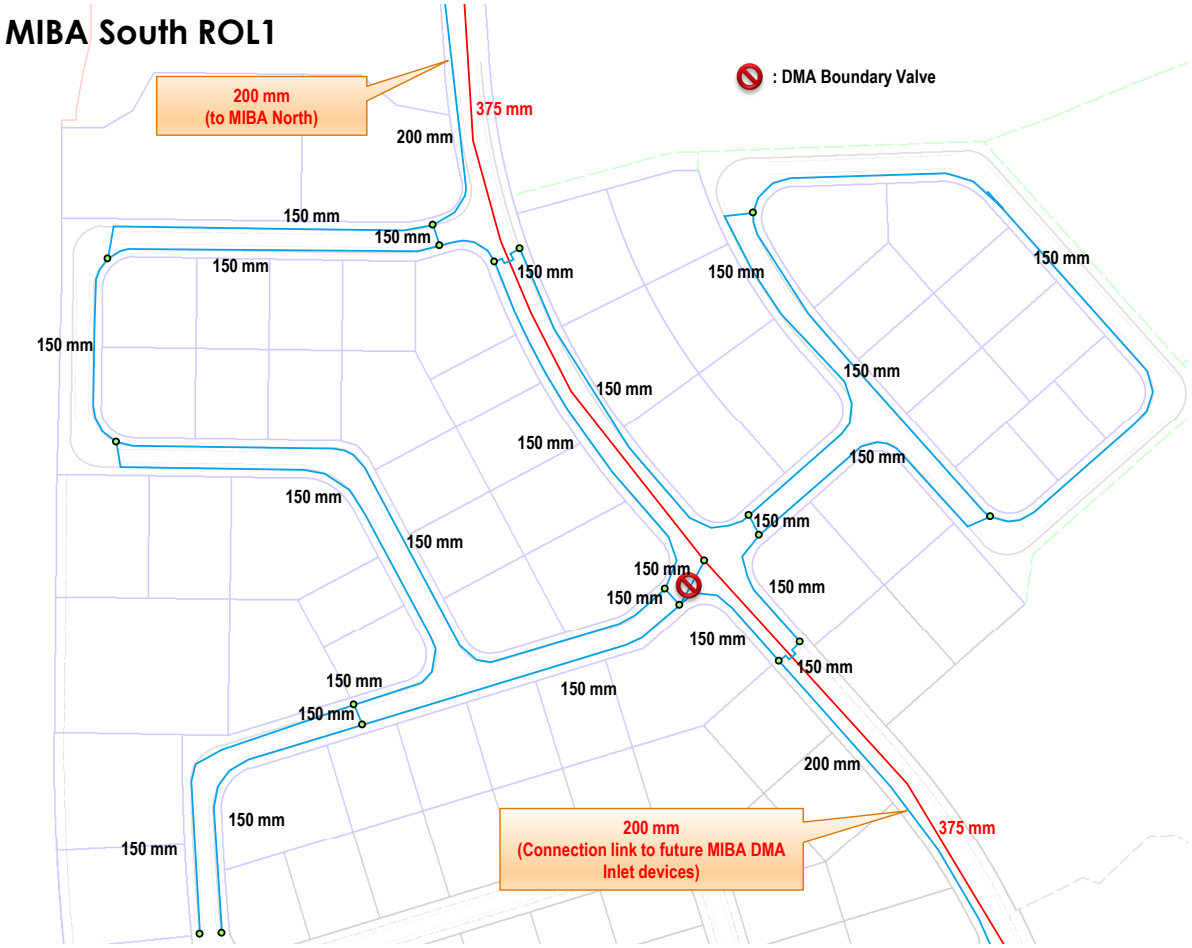


Figure 3: Proposed Precinct 5 MIBA South ROL1 Water Reticulation Mains

The preliminary elevations of the 51 MIBA non-residential lots in Precinct 5 MIBA South ROL1 range from 47.5 m AHD to 57 m AHD. By comparing with the top water level (TWL) of 110 m AHD at the Travis Road reservoirs to the development elevations it is proposed that a new DMA with a modulated pressure reduce valve is required to comply with LCC DSOS.

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.

This study has updated the background future Yarrabilba population as 34,401 EP (the rest of Stockland Precincts 9 to 17 plus four external lots in the Yarrabilba PDA) based on the projected yield of each village of future precincts (Precincts 9 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 5 MIBA South ROL1 lots are as follows:

- ADWF of 1.0 L/s; and
- PWWF of 6.3 L/s.

Sewage from Precinct 5 MIBA South ROL1 lots will be collected by the local DN150 reticulation network before being transferred by the DN225/DN300/DN375 trunk sewers to the pumping station SPS 153 (interim) or PS 3 (ultimate). The preliminary sewerage reticulation layout is provided in Appendix F. 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 is higher than the total sewerage EP of 23,001 EP from the Yarrabilba Precincts 1 to 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 development. 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 the SPS 153 dynamic capacity in 2023 / 2024. EDQ, LCC and Stockland agreed the following actions/approaches are to be used for the recent development applications, which include Precinct 8 ROL1 and Precinct 5 MIBA South ROL1:

- 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".

6 Conclusions

The following conclusions are drawn from the assessment of the water supply and sewerage network requirements for Precinct 5 MIBA South ROL1:

1. 438.2 water EP and 540.4 sewerage EP were estimated for Precinct 5 MIBA South ROL1.
2. The estimated population of Precincts 1 to 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 is 22,640 EP for water and 23,001 EP for sewerage.
3. A total of 5.8 ML of storage capacity is required to supply Precincts 1 to 4, 5A MIBA North, 6, 8 ROL1 and MIBA South 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 5 MIBA South ROL1 development.
4. The proposed water network layout, as outlined in Figure 3, can service the ultimate demands of Precincts 1 to 4, 5A MIBA North, 6, 8 ROL1 and MIBA South ROL1 with the DMA arrangement outlined in the endorsed 2018 PNP 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 8 ROL1 and Precinct 5 MIBA South ROL1) 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 combined Precinct 8 ROL1 lots are ADWF of 1.0 L/s and PWWF of 6.3 L/s respectively.
7. Sewage from Precinct 5 MIBA South ROL1 lots will be collected by the local DN150 reticulation network before being transferred by the DN225/DN300/DN375 trunk 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 5 MIBA South ROL1 Layout Plan and Population Development

Water EP/ha of site area:	30		
	Area EMT ex. (m^2)	Demand Node	EP
Lot 100	6000	YB_P5_MIBA_S_01	18.0
Lot 101	9385	YB_P5_MIBA_S_03	28.2
Lot 102	2500	YB_P5_MIBA_S_03	7.5
Lot 103	2000	YB_P5_MIBA_S_03	6.0
Lot 104	2000	YB_P5_MIBA_S_07	6.0
Lot 105	2000	YB_P5_MIBA_S_07	6.0
Lot 106	2725	YB_P5_MIBA_S_13	8.2
Lot 107	1590	YB_P5_MIBA_S_13	4.8
Lot 108	2175	YB_P5_MIBA_S_13	6.5
Lot 109	2380	YB_P5_MIBA_S_09	7.1
Lot 110	3430	YB_P5_MIBA_S_09	10.3
Lot 111	2130	YB_P5_MIBA_S_09	6.4
Lot 112	2000	YB_P5_MIBA_S_09	6.0
Lot 113	2000	YB_P5_MIBA_S_09	6.0
Lot 114	2925	YB_P5_MIBA_S_09	8.8
Lot 115	2000	YB_P5_MIBA_S_09	6.0
Lot 116	2000	YB_P5_MIBA_S_09	6.0
Lot 117	2475	YB_P5_MIBA_S_09	7.4
Lot 118	3395	YB_P5_MIBA_S_09	10.2
Lot 119	3015	YB_P5_MIBA_S_09	9.0
Lot 120	4305	YB_P5_MIBA_S_25	12.9
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Lot 123	3510	YB_P5_MIBA_S_25	10.5
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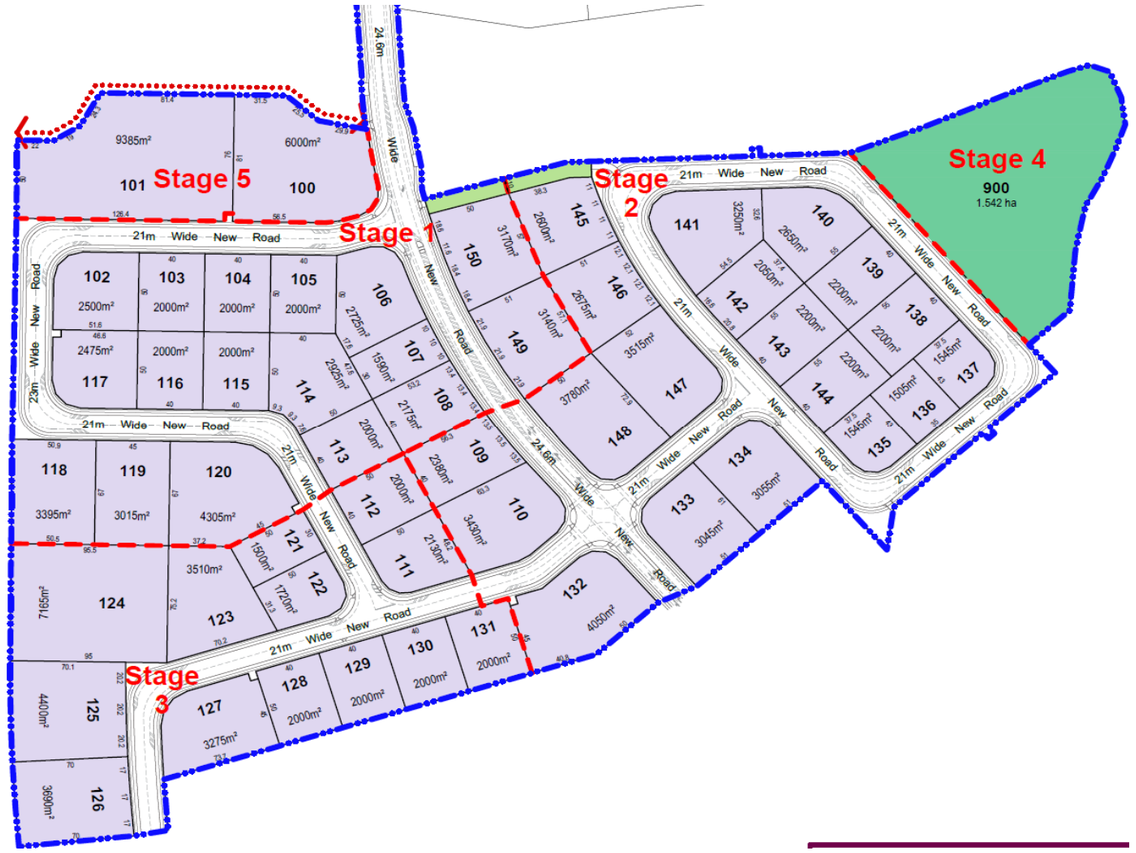
Lot 130	2000	YB_P5_MIBA_S_27	6.0
Lot 131	2000	YB_P5_MIBA_S_11	6.0
Lot 132	4050	YB_P5_MIBA_S_33	12.2
Lot 133	3045	YB_P5_MIBA_S_35	9.1
Lot 134	3055	YB_P5_MIBA_S_19	9.2
Lot 135	1545	YB_P5_MIBA_S_23	4.6
Lot 136	1505	YB_P5_MIBA_S_23	4.5
Lot 137	1545	YB_P5_MIBA_S_23	4.6
Lot 138	2200	YB_P5_MIBA_S_23	6.6
Lot 139	2200	YB_P5_MIBA_S_21	6.6
Lot 140	2650	YB_P5_MIBA_S_21	8.0
Lot 141	3250	YB_P5_MIBA_S_21	9.8
Lot 142	2050	YB_P5_MIBA_S_21	6.2
Lot 143	2200	YB_P5_MIBA_S_23	6.6
Lot 144	2200	YB_P5_MIBA_S_23	6.6
Lot 145	2600	YB_P5_MIBA_S_21	7.8
Lot 146	2675	YB_P5_MIBA_S_21	8.0
Lot 147	3515	YB_P5_MIBA_S_17	10.5
Lot 148	3780	YB_P5_MIBA_S_17	11.3
Lot 149	3140	YB_P5_MIBA_S_15	9.4
Lot 150	3170	YB_P5_MIBA_S_15	9.5
MIBA North Total	**146,065**		**438.2**

Row Labels	Sum of EP
YB_P5_MIBA_S_01	18.0
YB_P5_MIBA_S_03	41.7
YB_P5_MIBA_S_07	12.0
YB_P5_MIBA_S_09	83.3
YB_P5_MIBA_S_11	6.0
YB_P5_MIBA_S_13	19.5
YB_P5_MIBA_S_15	18.9
YB_P5_MIBA_S_17	21.9
YB_P5_MIBA_S_19	9.2
YB_P5_MIBA_S_21	46.3
YB_P5_MIBA_S_23	33.6
YB_P5_MIBA_S_25	33.1
YB_P5_MIBA_S_27	18.0
YB_P5_MIBA_S_29	45.8
YB_P5_MIBA_S_31	9.8
YB_P5_MIBA_S_33	12.2
YB_P5_MIBA_S_35	9.1
Grand Total	**438.2**

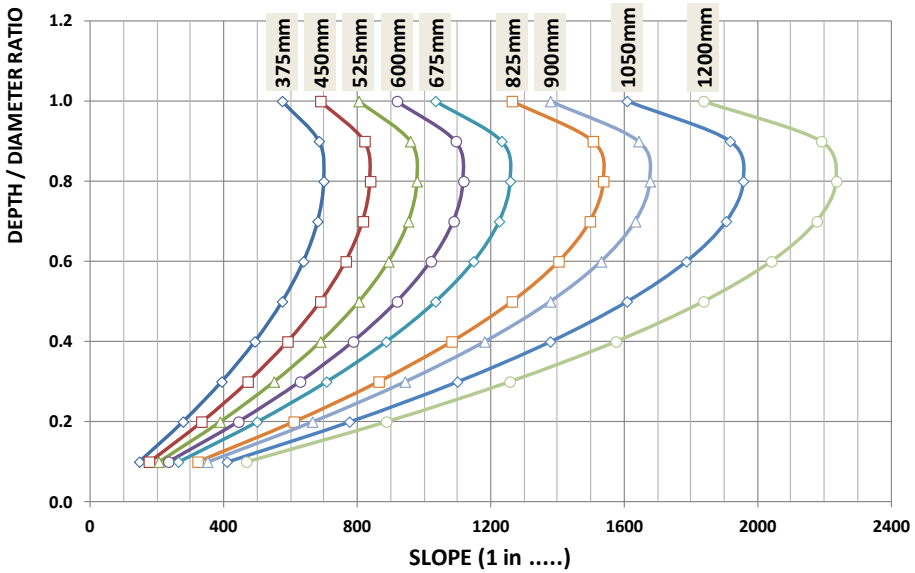
Revised MIBA South App2

YB_P5_MIBA_S_37 Comm	18.03
YB_P5_MIBA_S_37 Ind	517.6
YB_P5_MIBA_S_37 LOSS	535.587



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

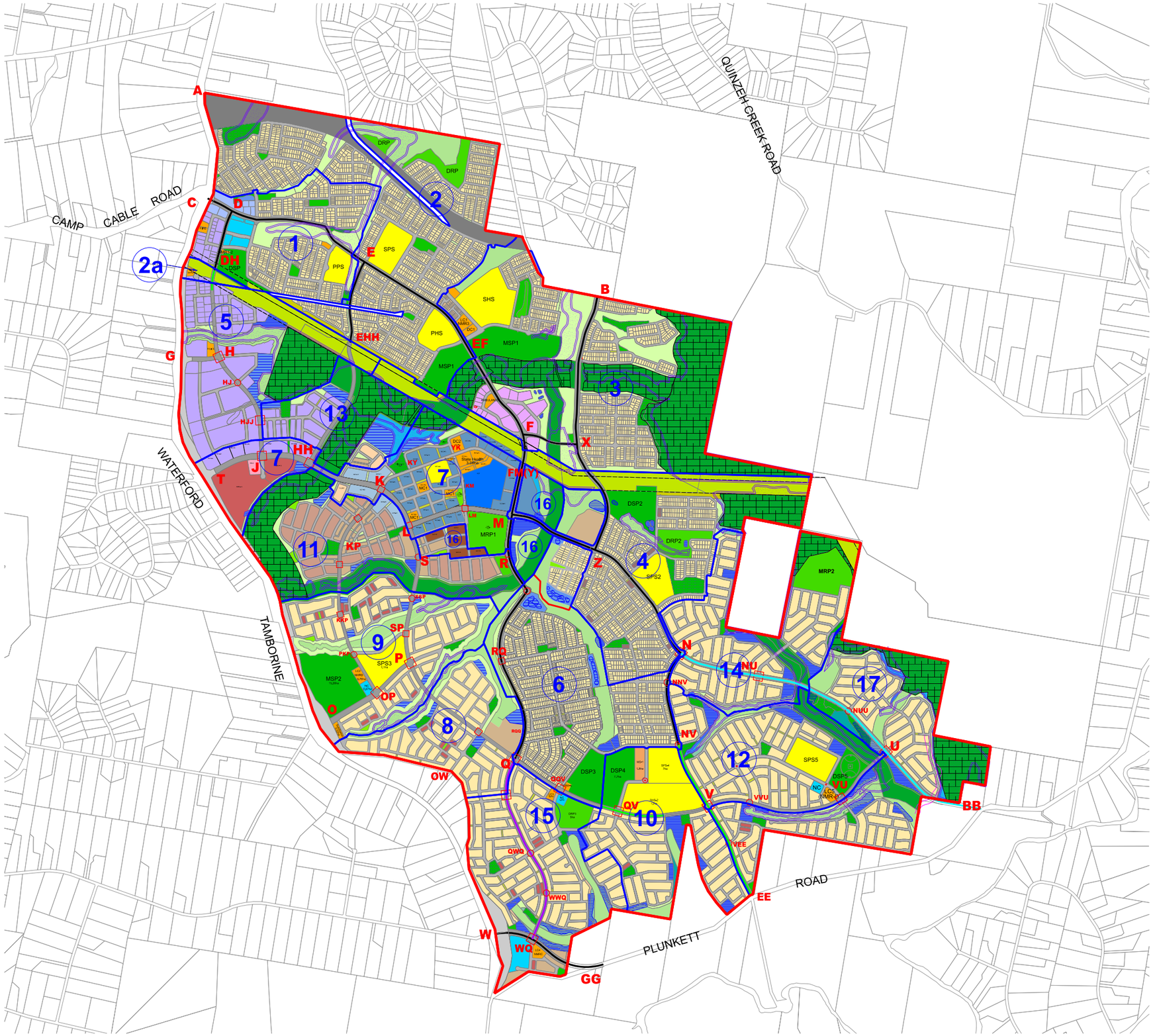
Guidance Note:
In-line pressure booster pumping without high-level storage shall be considered where satisfactory pressures can be provided by gravity flow during low demand periods or booster failure can be mitigated to an acceptable level (risk assessment required) and where there is no other feasible 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

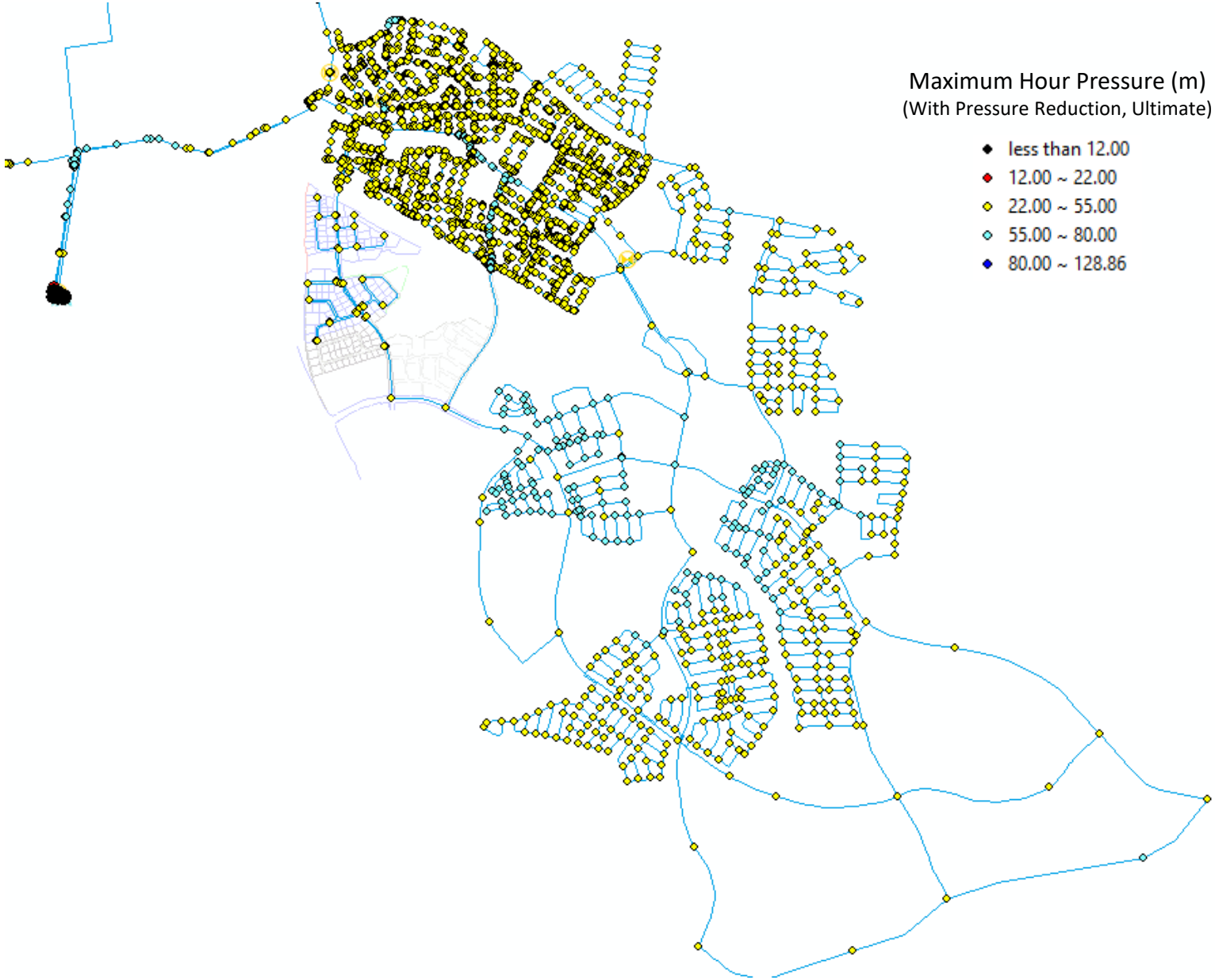
0 300 600 900 1200 1500m

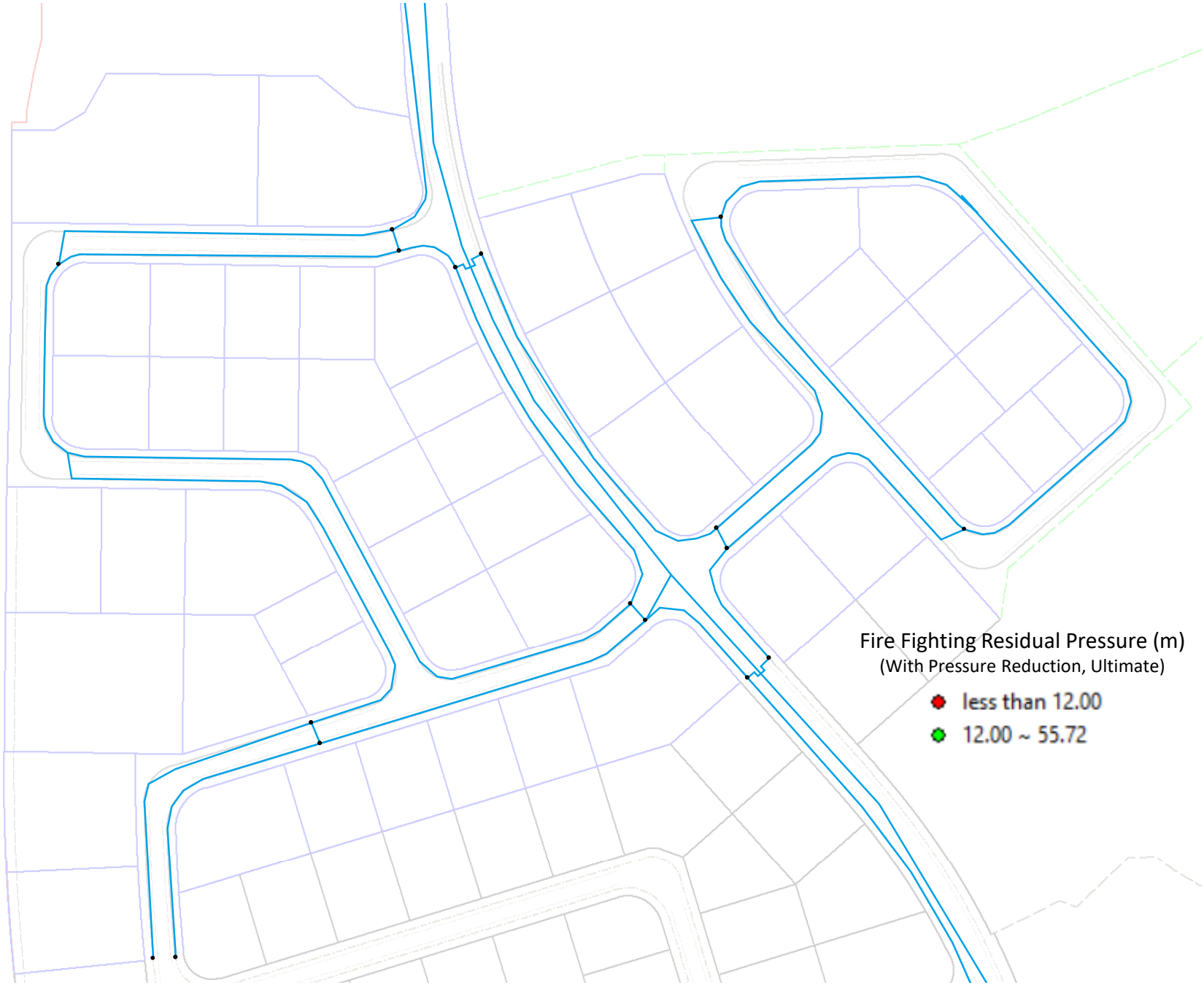
Scale 1:30,000 at A3

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

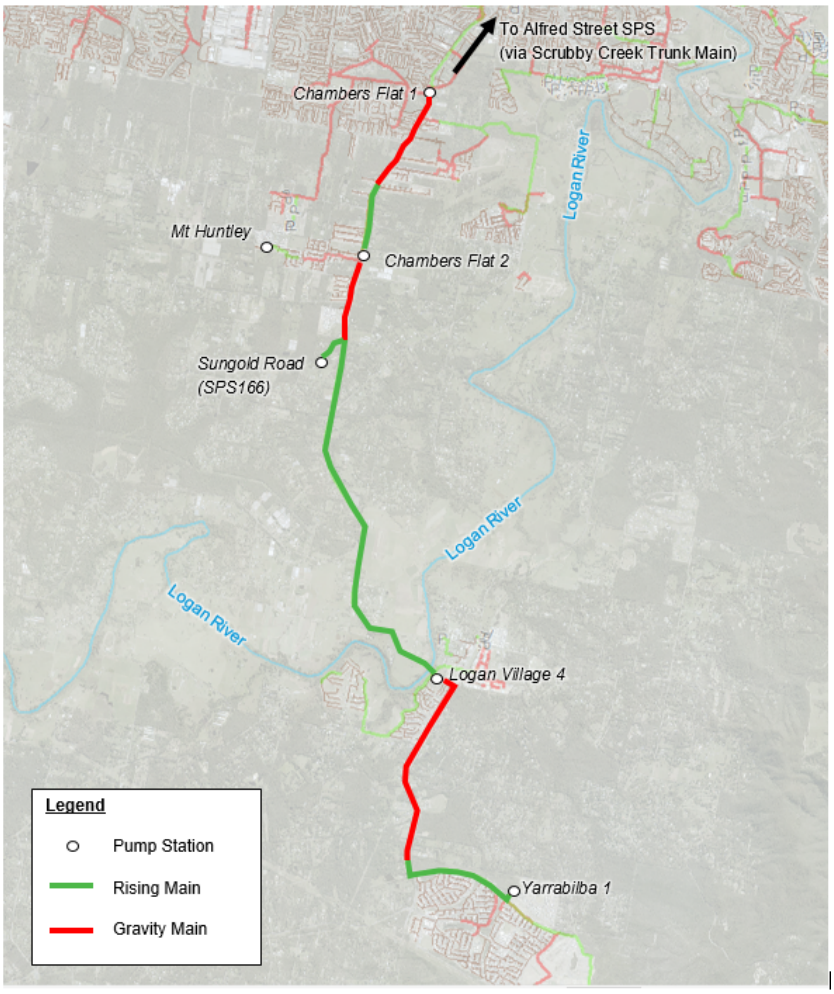
Lin, Henry

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

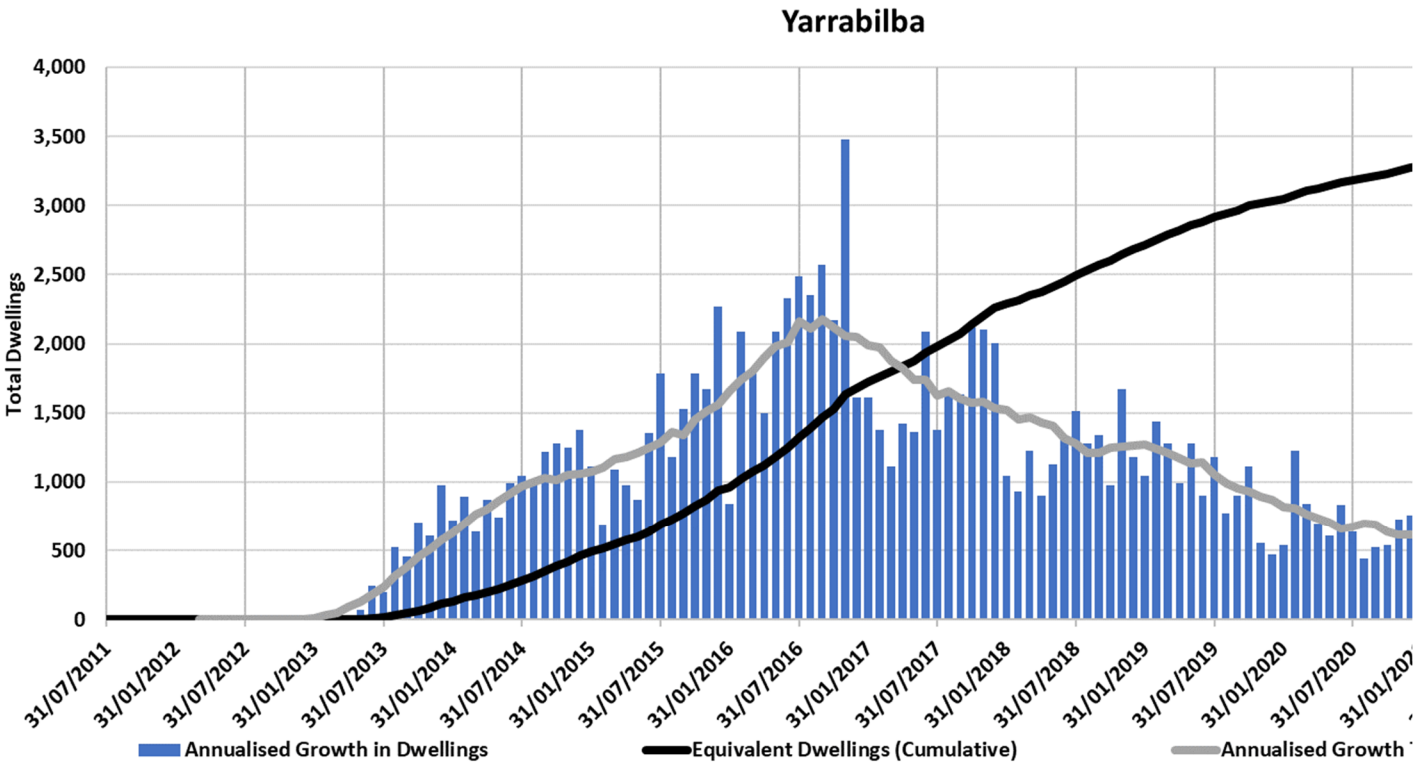
Logan Water stakeholders have agreed that for the Yarrabilba storage, the appropriate containment standard is the 2EY event and therefore the Yarrabilba population that the existing system can cater for is somewhere between 20,420 EP and 25,000 EP.

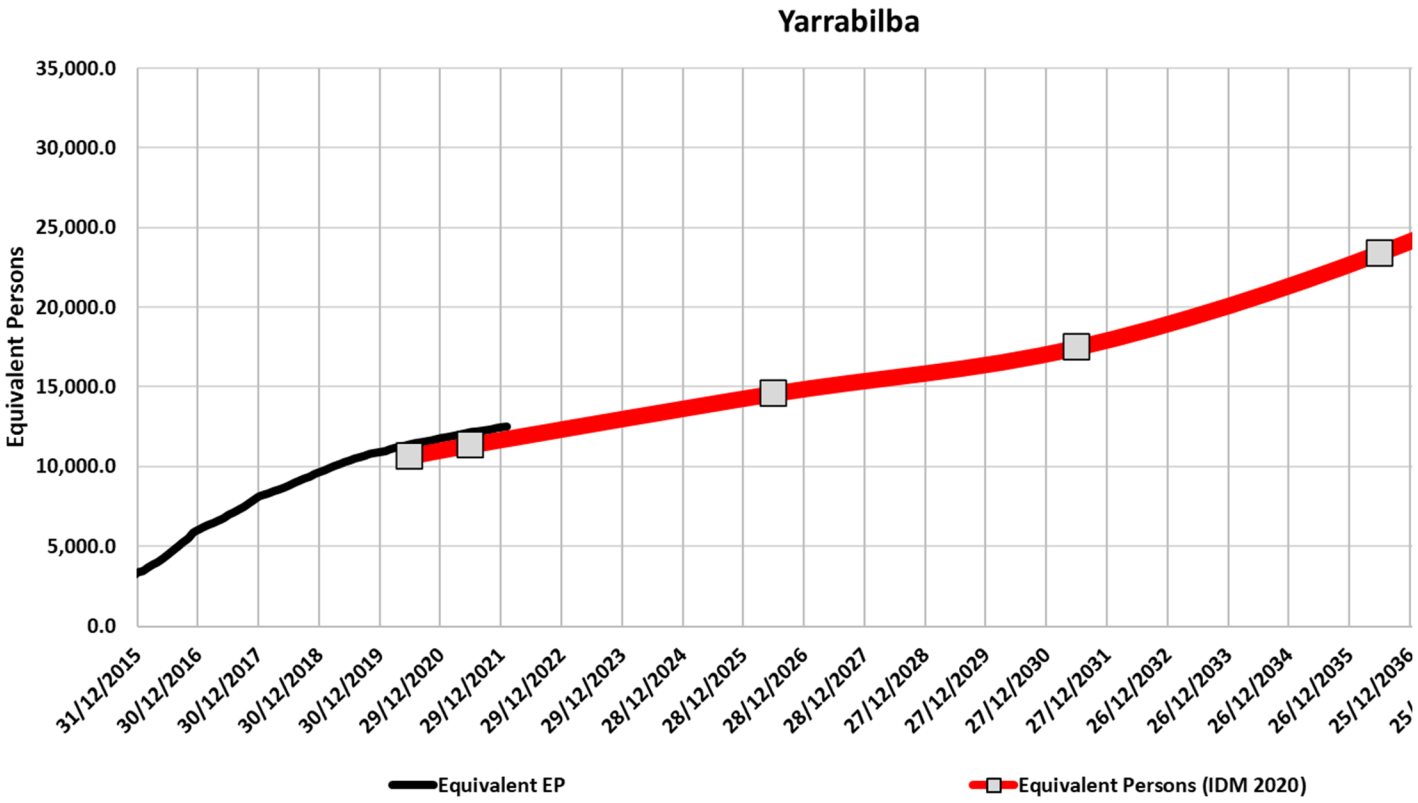
To achieve the performance outlined in the above table, works will be undertaken to upgrade the Chambers Flat 2 SPS. These works are included in the Subregional Infrastructure Program (SRIP).

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.

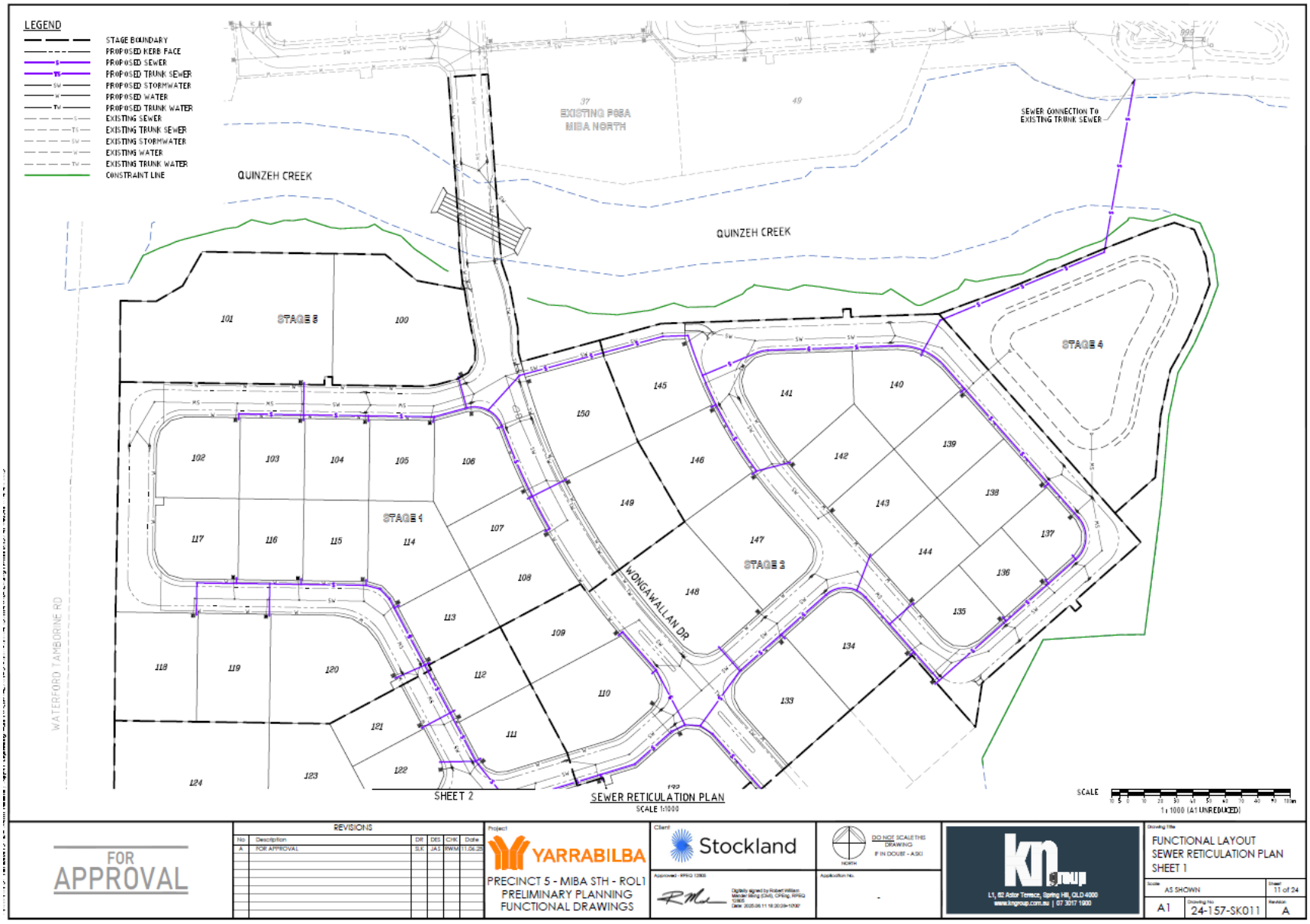
That aside, should the growth rates increase and be sustained, Council has already progressed planning for the Yarrabilba 3 regional / transfer pump station and the Chambers Flat WWTP so that the long term servicing solution can be brought forward if required.


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

Appendix F Preliminary Sewerage Reticulation Plan


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
CONSTRAINT LINE
QUINZEH CREEK
EXISTING PDBA
MIBA NORTH
SEWER CONNECTION TO EXISTING TRUNK SEWER
STAGE 8
STAGE 4
STAGE 1
STAGE 3
WONGAWALLAN DR
WATERFORD TAMBORINE RD
SHEET 2
SEWER RETICULATION PLAN
SCALE 1:1000
SCALE
1:1000 (A1 UNREDUCED)
FOR APPROVAL
REVISIONS
YARRABILBA
PRECINCT 5 - MIBA STH - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS
Stockland
DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!
kn group
FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 1
AS SHOWN
11 of 24
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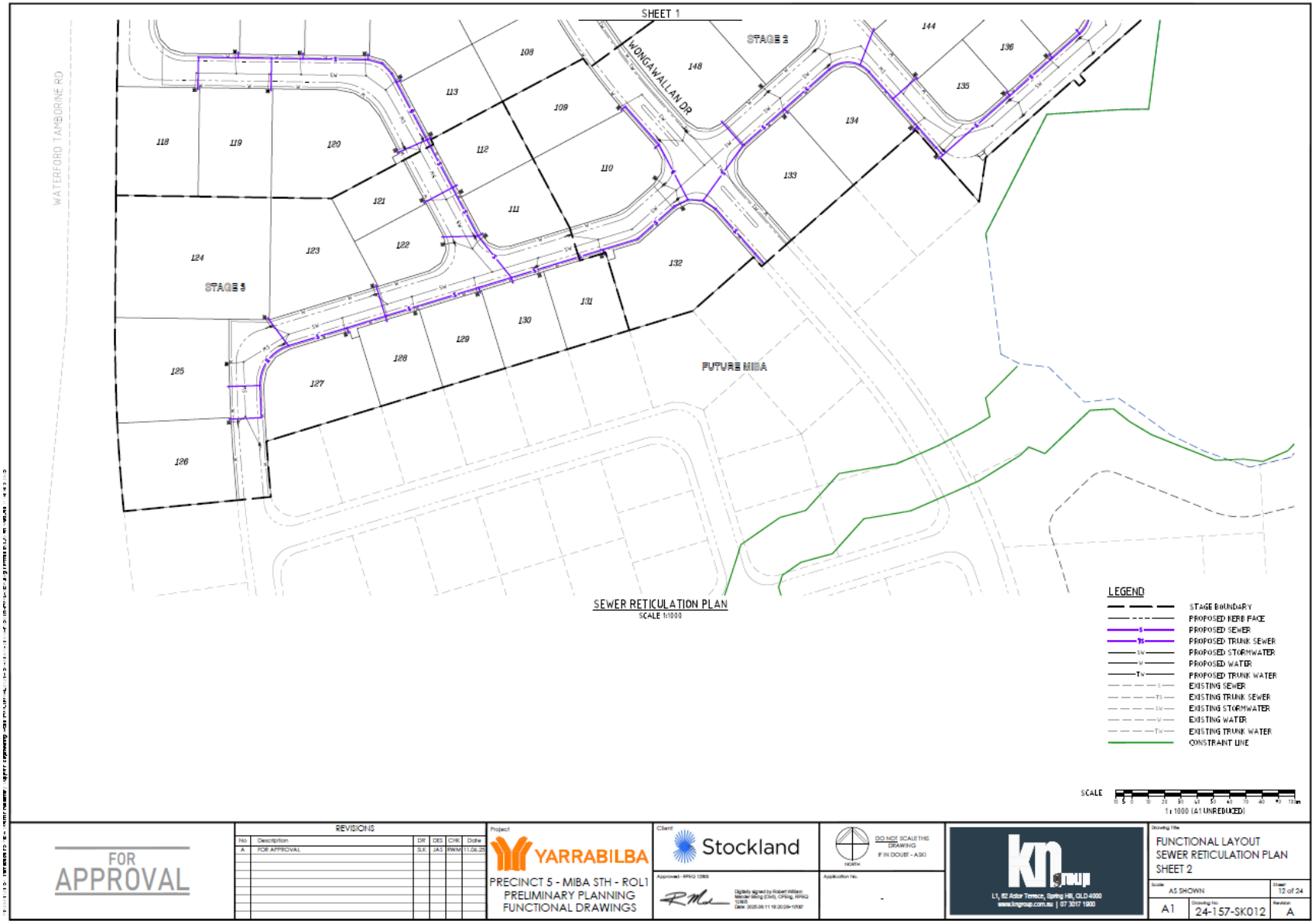
SHEET 1
WATERFORD TAMBORINE RD
WONGAWALLAN DR
STAGE 8
STAGE 9
FUTURE MIBA
SEWER RETICULATION PLAN
SCALE 1:1000
LEGEND
STAGE BOUNDARY
PROPOSED KERB FACE
PROPOSED SEWER
PROPOSED TRUNK SEWER
PROPOSED STORMWATER
PROPOSED WATER
PROPOSED TRUNK WATER
EXISTING SEWER
EXISTING TRUNK SEWER
EXISTING STORMWATER
EXISTING WATER
EXISTING TRUNK WATER
CONSTRAINT LINE
SCALE
1 x 1000 (A1 UNREDUCED)
FOR APPROVAL
REVISIONS
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Description
Date
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FOR APPROVAL
11.06.25
PRECINCT 5 - MIBA STH - ROL1
PRELIMINARY PLANNING
FUNCTIONAL DRAWINGS
Stockland
DO NOT SCALE THIS DRAWING
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FUNCTIONAL LAYOUT
SEWER RETICULATION PLAN
SHEET 2
AS SHOWN
12 of 24
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CREATING COMMUNITIES

Communities are fundamental. Whether around the corner or across the globe, they provide a foundation, a sense of belonging. That's why at Stantec, we always **design with community in mind**.

We care about the communities we serve—because they're our communities too. 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.

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