

WATER SUPPLY ASSESSMENT

Proposed Residential Subdivision

**41-53 Courtney Drive, 176 & 202 Baileys
Mountain Road, Lot 57 & 288 Reserve Road,
Upper Coomera**

**Lots 185 & 186 on SP173728, Lot 183 on
RP156422, Lot 58 on SP191940, Lot 56 on
RP162858 & Lot 57 on SP214370**

For Norfolk Estates Pty Ltd

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Synopsis:	This <i>Water and Wastewater Assessment</i> describes the site investigations completed and determines the impacts of the proposed development on the local water and wastewater networks and ensure the development can be serviced while satisfying relevant design criteria.

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1.0 INTRODUCTION

OSKA Civil Consultants have been engaged by Norfolk Estates Pty Ltd to prepare a water and wastewater network investigation to support a Development Application for the proposed residential subdivision development situated at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera.

The objective of this investigation is to determine the impacts of the proposed Residential Subdivision on the local water and wastewater network and ensure the development can be serviced while satisfying relevant design criteria. Water and wastewater infrastructure have been adopted in accordance with the City of Gold Coast's (City's) Water Supply and Sewerage Infrastructure Plan 2019 (WSSIP) master planning servicing strategies.

1.1 Site Location

The subject site is located at 41-53 Courtney Drive, 176 & 202 Baileys Mountain Road, Lot 57 & 288 Reserve Road, Upper Coomera. The site fronts Courtney Drive to the north, Baileys Mountain Road to the east, Reserve Road and Richardson Crescent to the south and has existing residential properties to the north, east and west. The site covers a total combined area of 15.251ha, as illustrated in Figure 1. The development is within the City's local government area who act as the responsible distributor-retailer water authority.



Figure 1: Approximate location of Eden Upper Coomera proposed development

2.0 ASSUMPTIONS

This section details key assumptions made in the proposed development water and wastewater analysis.

2.1 Development Demands

The ultimate Equivalent Person (EP) demand for the proposed Eden Upper Coomera development has been nominated as 522 EP for both wastewater and water supply loadings. The proposed development summary produced by Saunders Havill Group was used as the basis to calculate the demand value adopted for the purposes of this assessment and is summarised in Table 1.

Table 1: Adopted development demand rates

Development Type	Demand Equivalent Conversion Rate	Quantity ¹	Demand (EP) ²
Detached Dwelling	2.79 EP / Dwelling	187	522
TOTAL			522

Notes: 1) Yields adopted as per development summary produced by Saunders Havill Group (November 2025)

The City has further requested that the impacts of additional ultimate (2066) demand from nearby approved development applications be assessed in the wastewater network analyses (approximately 85 EP & 340 EP respectively).

2.2 Desired Standards of Service

Key Design Standards of Service (DSS) adopted from the SEQ Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code) for water supply are presented in Table 2.

Table 2: Key DSS adopted for water supply

Design Criteria	Summary
Water Supply (adopted in accordance with the SEQ WS&S D&C Code)	
Average Day Demand (AD)	220 L/EP/day
Estimated Non-Revenue Water (NRW)	20 L/EP/day
Maximum allowable velocity (m/s)	2.5 m/s at peak hour (PH) demand
Minimum service pressure under normal operating conditions ²	22 m in the main adjoining the Property boundary
Emergency fire operating conditions ²	12 m min at the main at the hydrant
Urban Fire Fighting	Residential: 15 L/s for 2 hours Commercial / Industrial: 30 L/s for 4 hours
Minimum Operating Level (MOL)	15% depth maintained in all tanks

3.0 WATER SUPPLY NETWORK ASSESSMENT

The water supply network analysis has been undertaken in accordance with the 2019 WSSIP master planning service strategies.

3.1 Extent of Assessment

The existing primary connection point and adjacent water supply network servicing the proposed development can be seen in Figure 2.

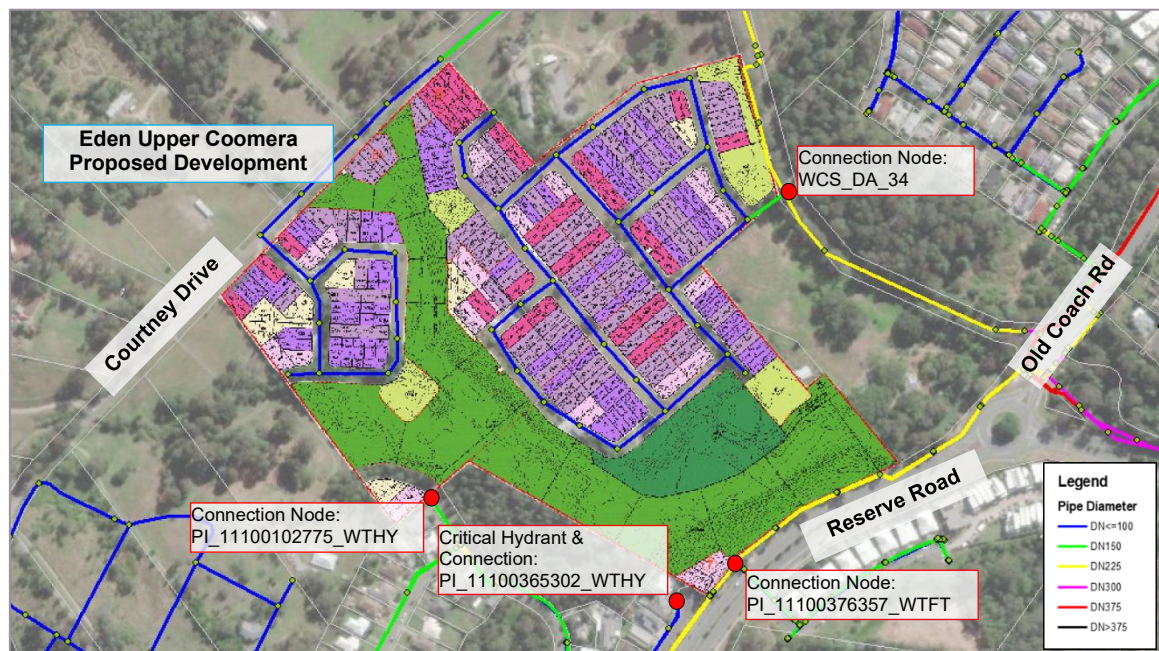


Figure 2: Existing external water supply infrastructure servicing the proposed development

The proposed development has been connected to the existing WSSIP19 network via the following connection nodes:

- WCS_DA_34 (new connection) located on the existing DN200 running along Baileys Mountain Road, downstream of the relocated booster pump.
- PI_11100365302_WTHY (also critical nearby existing hydrant for fire flow analysis) located on the existing DN200 running on Reserve Road.
- PI_11100102775_WTHY located on the existing DN150 running on Richardson Crescent.

The internal network analysis is addressed separately in Section 3.4.

It should be noted that the proposed development has been nominated to connect into the Old Coach Road DMA via a newly constructed water main along Bailey's Mountain Road, not included in the WSSIP19 network model received. The GIS data encompassing the new main was provided separately by City of Gold Coast, and the existing water network model updated on this basis.

From the existing (2021) through intermediate (2036) planning horizons only, the proposed development is gravity supplied by the Peanba Park Road tanks (47 ML) approximately 1.5 km to the southeast. Figure 3 illustrates the extent of the greater Coomera Pimpama Low Level Zone (LLZ) assessed. Beyond 2036, the proposed development will be rezoned to the Upper Coomera HLZ as described in Section 3.1.1.

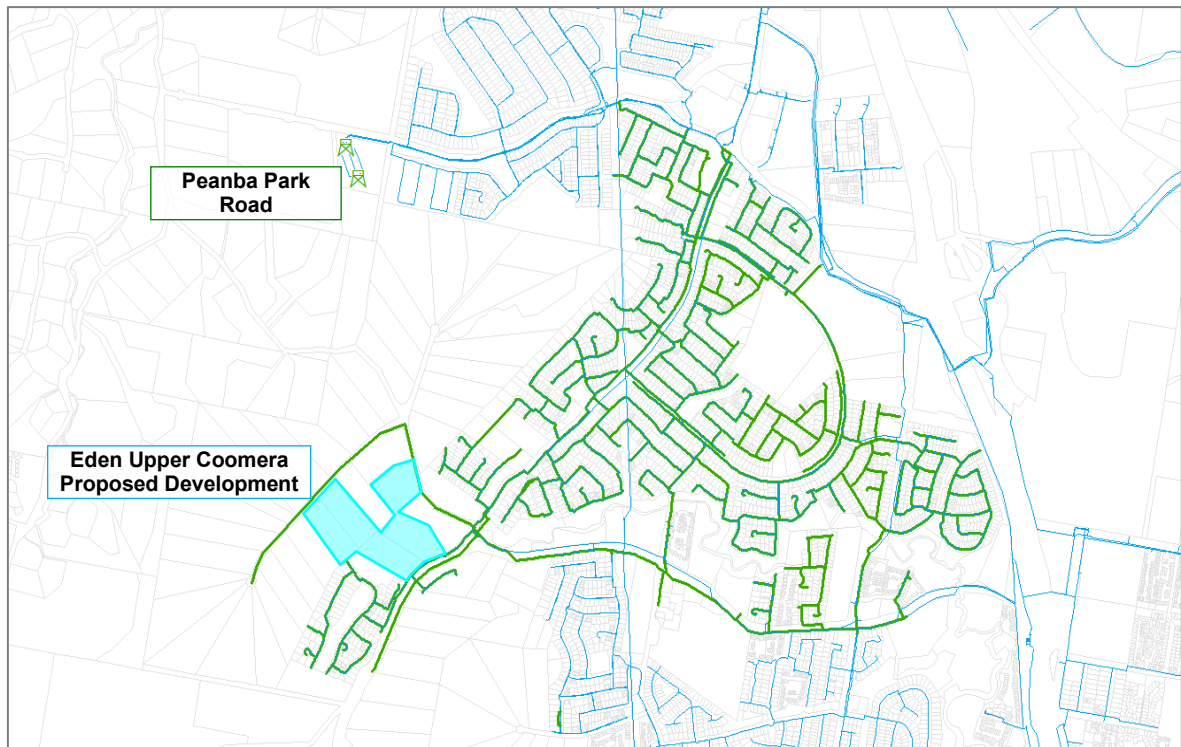


Figure 3: *Extent of greater Old Coach Road DMA area assessed (highlighted in green)*

3.1.1 Baileys Mountain Road & Courtney Drive Service Supply Rezoning

Advice from City of Gold Coast, stated that the proposed WSSIP19 booster pump (proposed for 2026) at corner of Reserve Road and Old Coach Road is not to be commissioned. Instead, to meet pressure and flow requirements, the WSSIP19 proposed booster service area is to be connected to the Upper Coomera High Level Zone (HLZ), via two new connection points, thus creating a supply loop encompassing Rangeview Road, Reserve Road, Baileys Mountain Road and Courtney Drive. As shown in Figure 4, a closed boundary valve at existing pipe CP_38342PIPE_11100105585 will need to be constructed for security of supply between the two zones.

To accurately represent the revised (rezoning) configuration in the Northern v95_WSSIP_2019 provided by The City, recently commissioned and proposed infrastructure was incorporated into the network model, as outlined in Figure 5.

The proposed development lots on 41 & 53 Courtney Drive have been nominated to connect into the Upper Coomera HLZ via a new water main adjacent to 89 Courtney Drive, which was not included in the model received. The new water network infrastructure elements between Wimmera Crescent and Courtney Drive were requested from City of Gold Coast, however the network was not made available. Therefore, the new water network elements were incorporated with the best available data (City of Gold Coast Infrastructure Assets; Water Network Analysis for 71-99 Courtney Drive (H20ne)). A detailed modelling summary of additional model elements included can be reviewed in Appendix A.

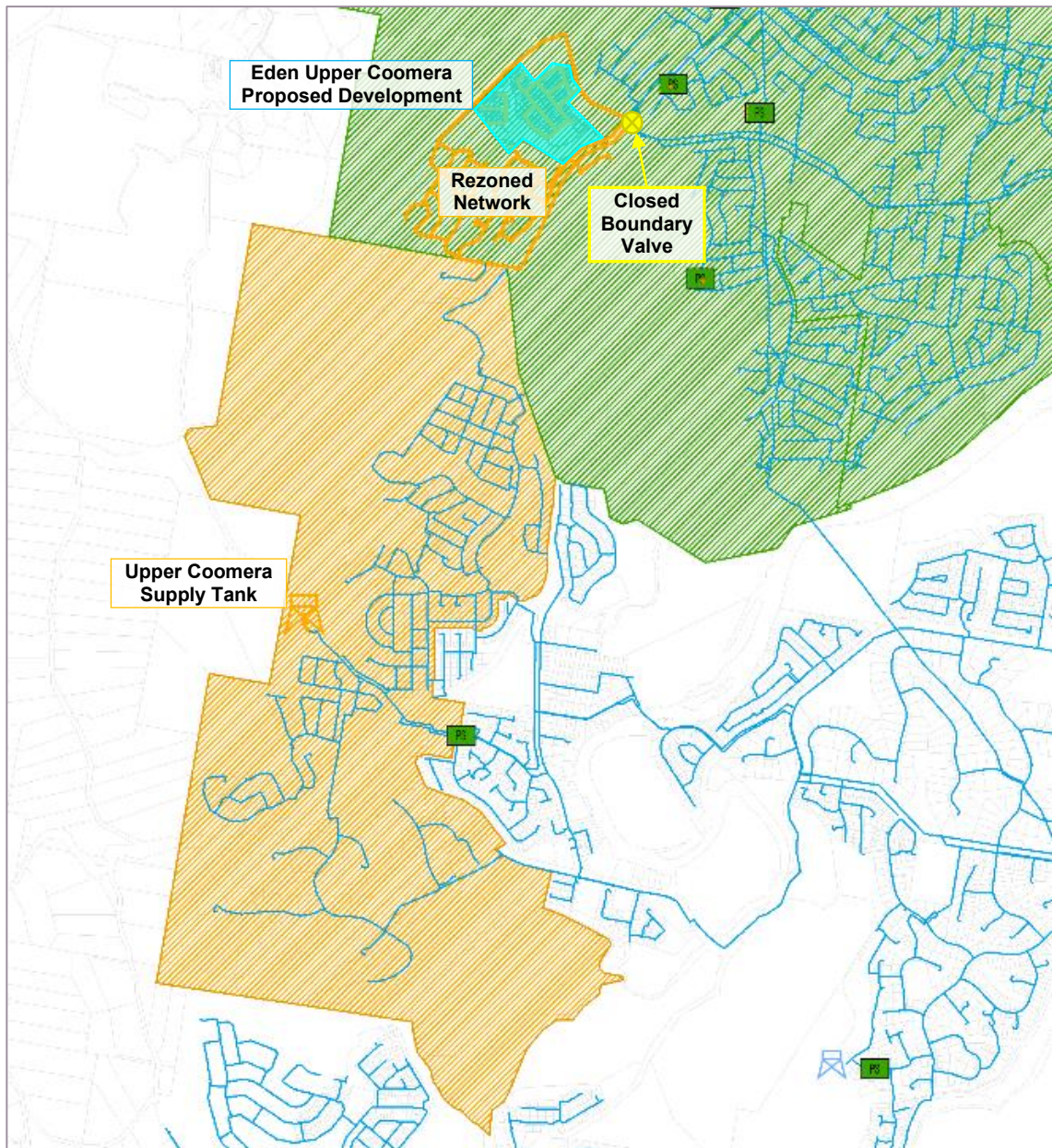
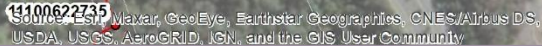


Figure 4: Extent of area to be rezoned from Coomera Pimpama LLZ (green) to Upper Coomera HLZ (orange).



Based on the proposed supply zone rezoning and associated infrastructure, the proposed development is to be gravity supplied by the Upper Coomera tank (3.5 ML) approximately 2.8 km to the southwest in the intermediate (2041) through ultimate (2066) planning horizons only. Figure 6 illustrates the extent of the (rezoned) Upper Coomera HLZ assessed.

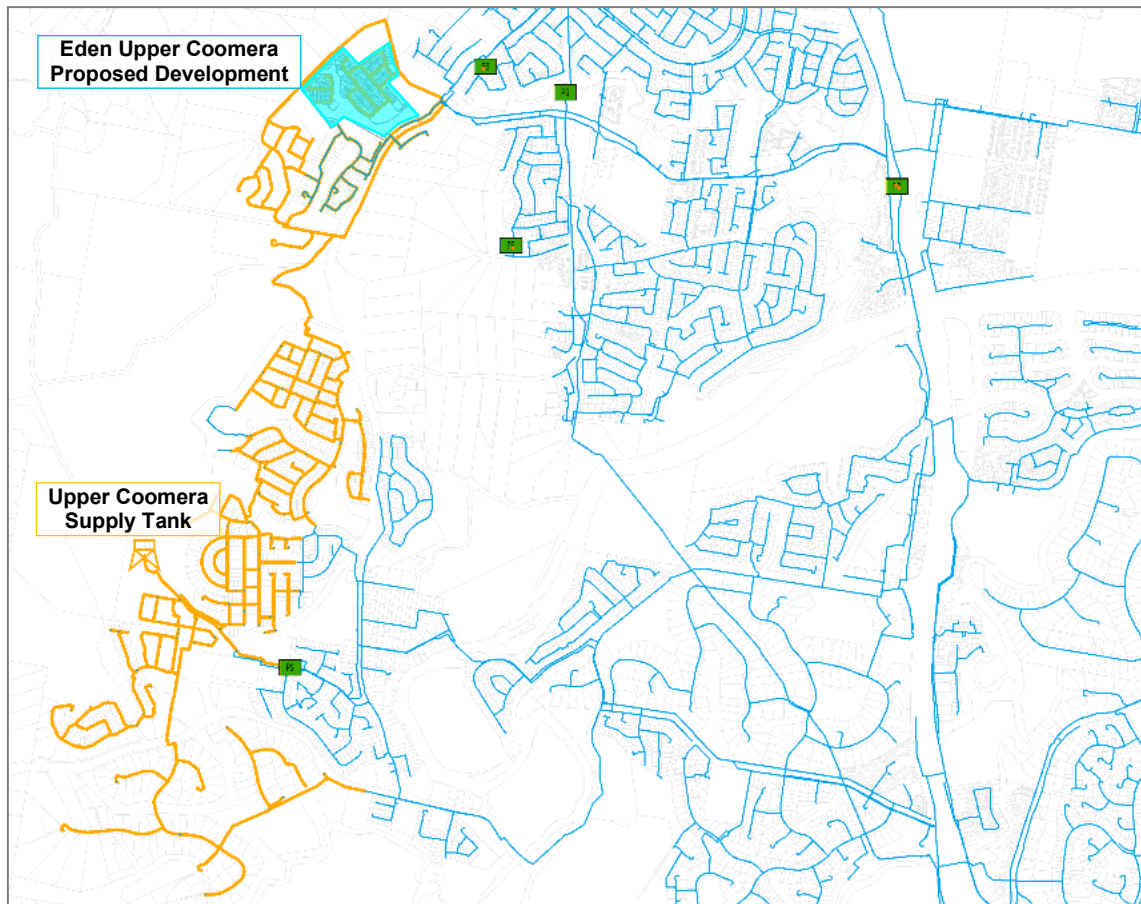


Figure 6: Extent of Upper Coomera HLZ area assessed (highlighted in orange)

3.2 Flow Projections

The following water flow projections have been estimated in accordance with the SEQ WS&S D&C Code. These projections have been compared to the City's 2019 WSSIP predicted demands and are presented in Table 3.

Table 3: Daily water flow projections

Site Loading	Land Use	Demand (EP)	Average Day (kL/d)	MDMM (kL/d)	Peak Day (kL/d)	Peak Hour (L/s)
Existing (2021) WSSIP Demand	Multi-Residential	0	0.0	0.0	0.0	0.00
Proposed DA	Multi-Residential	522	125.2	211.3	253.8	8.13
Total Increase		522	125.2	211.3	253.8	8.13
Approved DAs	Tourist	85	20.4	34.6	48.6	1.32

The daily water flow projections indicate that the proposed development is expected to increase the existing (2021) peak hour demand by approximately 8.13 L/s. Beyond the intermediate (2041) planning horizon, calculated flow projections decrease as the proposed development has lower demand (EP) than the WSSIP projections associated with the site.

It should also be noted that previously approved development demands within the greater Old Coach Road DMA area assessed are expected to increase the ultimate (2066) peak hour demand by approximately 1.3 L/s.

3.3 Existing Network Modelling

Hydraulic modelling of the water supply network was undertaken using the InfoWater model for the City's northern potable water network (Northern v95_WSSIP_2019) provided by the City. The hydraulic modelling was completed to evaluate system performance under existing (2021) through to the ultimate (2066) planning horizon flow conditions, both with and without the proposed development loading.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will lead to a decrease in overall EP compared to the existing network demands.

3.3.1 Reservoir Analysis

To ensure the Peanba Park Road and Upper Coomera Tanks achieve the City's DSS recommended minimum operating level of 15% depth, a 3-day extended simulation was run in accordance with SEQ WS&S D&C Code recommendations using the Maximum Day (MD) demand scenario within the network model.

Modelling results indicate that the existing (2021) through ultimate (2066) network demands do not deplete the Peanba Park Road or Upper Coomera Tanks below the DSS of 15%.

3.3.2 Peak Hour Analysis (Coomera Pimpama LLZ)

To determine peak hour minimum pressures and maximum network velocities, a 3-day standard flow analysis was run using the MD scenario within the network model.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will not lead to an increase in demands compared to the existing network demands.

The results from the network peak hour analysis are detailed in Table 4 and Table 5.

Table 4: Peak hour minimum pressures modelled at connection node and greater Old Coach Road DMA

Planning Horizon	Location	Peak Hour Minimum Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	PI_11100365302_WTHY	59.2	-	56.6	-	56.5	-
	PI_11100102775_WTHY	68.8	-	66.2	-	66.1	-
	WCS_DA_34	52.0	-	51.8	-	50.3	-
	OLD COACH ROAD DMA	22.1	-	21.8	1	20.9	3
2026	PI_11100365302_WTHY	59.1	-	55.8	-	55.7	-
	PI_11100102775_WTHY	68.6	-	65.4	-	65.3	-
	WCS_DA_34	50.0	-	49.5	-	48.1	-
	OLD COACH ROAD DMA	24.9	-	24.4	-	22.9	-
2031	PI_11100365302_WTHY	58.1	-	54.6	-	55.0	-
	PI_11100102775_WTHY	68.0	-	64.5	-	64.8	-
	WCS_DA_34	55.7	-	55.4	-	54.5	-
	OLD COACH ROAD DMA	30.5	-	30.2	-	29.3	-
2036	PI_11100365302_WTHY	57.7	-	54.0	-	54.9	-
	PI_11100102775_WTHY	67.7	-	64.0	-	64.7	-
	WCS_DA_34	52.7	-	52.7	-	51.5	-
	OLD COACH ROAD DMA	27.4	-	27.5	-	26.3	-

Planning Horizon	Location	Peak Hour Minimum Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2041	PI_11100365302_WTHY	57.6	-	53.9	-	54.9	-
	PI_11100102775_WTHY	67.7	-	64.0	-	64.7	-
	WCS_DA_34	41.7	-	41.2	-	40.0	-
	OLD COACH ROAD DMA	16.4	4	15.9	4	15.4	4
2066	PI_11100365302_WTHY	31.0	-	30.8	-	31.0	-
	PI_11100102775_WTHY	40.3	-	40.1	-	40.2	-
	WCS_DA_34	43.5	-	43.3	-	43.4	-
	OLD COACH ROAD DMA	18.1	4	17.9	4	18.2	4

Modelling results indicate that the existing (2021) through intermediate (2041) network have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended minimum pressure of 22 m. However, several loading nodes within the Old Coach Road DMA fall below the recommended minimum pressure in the existing (2021), intermediate (2041) and ultimate (2066) network scenarios (Refer to Appendix B). Failures were found to occur under existing WSSIP19 demands or are not significantly worsened by the proposed development demand.

Table 5: Maximum velocities modelled within Old Coach Road DMA

Planning Horizon	Location	Peak Hour Maximum Velocity (m/s)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	Old Coach Road DMA	1.8	-	1.8	-	1.8	-
2026		1.9	-	1.9	-	1.9	-
2031		2.0	-	2.0	-	2.0	-
2036		2.2	-	2.2	-	2.2	-
2041		2.2	-	2.2	-	2.2	-
2066		1.3	-	1.3	-	1.3	-

Note: No water mains under 10 m in length were considered as part of this assessment

Modelling results indicate that the existing (2021) through intermediate (2041) network have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended maximum velocity of 2.5 m/s.

3.3.3 Fire Flow Analysis (Coomera Pimpama LLZ)

Fire flow simulations were completed using the InfoWater Fireflow simulator and the 2/3 PH time noted in the model. Minimum fire flow residual pressures modelled at the nearest hydrant to the proposed development and greater Old Coach Road DMA are summarised in Table 6.

Table 6: Fire flow minimum residual pressures modelled at nearest hydrant and greater Old Coach Road DMA

Planning Horizon	Location	Fire Flow Minimum Residual Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2021	PI_11100365302_WTHY	37.7	-	37.4	-	37.1	-
	PI_11100102775_WTHY	59.9	-	57.8	-	57.8	-
	WCS_DA_34	56.2	-	56.1	-	55.5	-

Planning Horizon	Location	Fire Flow Minimum Residual Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
	OLD COACH ROAD DMA	16.3	-	16.2	-	15.9	-
2026	PI_11100365302_WTHY	36.7	-	36.3	-	36.0	-
	PI_11100102775_WTHY	59.9	-	57.3	-	57.3	-
	WCS_DA_34	54.9	-	54.7	-	54.0	-
	OLD COACH ROAD DMA	13.2	-	13.1	-	12.8	-
2031	PI_11100365302_WTHY	38.3	-	38.1	-	37.8	-
	PI_11100102775_WTHY	59.1	-	56.5	-	56.7	-
	WCS_DA_34	57.3	-	57.1	-	56.7	-
	OLD COACH ROAD DMA	14.7	-	14.6	-	14.4	-
2036	PI_11100365302_WTHY	37.0	-	36.8	-	36.6	-
	PI_11100102775_WTHY	58.8	-	56.1	-	56.7	-
	WCS_DA_34	55.6	-	55.6	-	55.0	-
	OLD COACH ROAD DMA	13.2	-	13.2	-	12.9	-
2041	PI_11100365302_WTHY	32.0	-	30.9	-	30.8	-
	PI_11100102775_WTHY	58.7	-	56.0	-	56.6	-
	WCS_DA_34	48.8	-	48.6	-	48.4	-
	OLD COACH ROAD DMA	6.2	3	6.0	3	5.9	4
2066	PI_11100365302_WTHY	26.9	-	26.8	-	27.0	-
	PI_11100102775_WTHY	37.1	-	36.9	-	37.0	-
	WCS_DA_34	49.9	-	49.8	-	49.8	-
	OLD COACH ROAD DMA	7.6	3	7.5	4	7.6	2

Note: 1) Fire flow pressure calculated in accordance with SEQ WS&S D&C Code recommendations at 2/3 PH demand (11:00) with 15 L/s adopted at the proposed development hydrant

The fire flow analysis indicates that the existing (2021) through ultimate (2066) networks have sufficient capacity to service the proposed development for fire flow demands with the nearest hydrant (PI_11100365302_WTHY) having adequate capacity to satisfy SEQ WS&S D&C Code recommended 12 m minimum residual pressure.

Within the greater Old Coach Road DMA, there are four hydrant failures under the existing (2021), intermediate (2041) and ultimate (2066) planning horizons (See **Appendix B**). These failures occur both with and without demands from the proposed development and are therefore considered existing failures.

3.3.4 Peak Hour Analysis (Upper Coomera HLZ)

To determine peak hour minimum pressures and maximum network velocities, a 3-day standard flow analysis was run using the MD scenario within the network model.

It should be noted that beyond the intermediate (2041) planning horizon, desktop analysis shows the proposed development demands will not lead to an increase in demands compared to the existing network demands.

The results from the network peak hour analysis are detailed in Table 7 and Table 8.

Table 7: Peak hour minimum pressures modelled at connection node and greater Old Coach Road DMA

Planning Horizon	Location	Peak Hour Minimum Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2041	PI_11100365302_WTHY	55.1	-	50.6	-	49.9	-
	PI_11100102775_WTHY	64.5	-	59.9	-	59.2	-
	WCS_DA_34	67.3	-	62.7	-	61.7	-
	Upper Coomera HLZ	19.8	2	16.8	3	16.2	3
2066	PI_11100365302_WTHY	54.9	-	51.7	-	51.5	-
	PI_11100102775_WTHY	64.1	-	61.0	-	60.7	-
	WCS_DA_34	66.9	-	63.7	-	62.8	-
	Upper Coomera HLZ	19.8	2	18.1	3	17.9	3

Modelling results indicate that the intermediate (2041) through ultimate (2066) networks have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended minimum pressure of 22 m. However, several demand nodes within the Upper Coomera HLZ fall below the recommended minimum pressure in (Refer to Appendix B). Failures were found to occur under existing WSSIP19 demands or are not significantly worsened by the proposed development demand.

Table 8: Maximum velocities modelled within Old Coach Road DMA

Planning Horizon	Location	Peak Hour Maximum Velocity (m/s)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2041	Upper Coomera HLZ	1.7	-	1.7	-	1.7	-
2066		1.7	-	1.7	-	1.7	-

Note: No water mains under 10 m in length were considered as part of this assessment

Modelling results indicate that the intermediate (2041) through ultimate (2066) networks have sufficient capacity to service the proposed development under peak hour demands while satisfying the SEQ WS&S D&C Code recommended maximum velocity of 2.5 m/s.

3.3.5 Fire Flow Analysis (Upper Coomera HLZ)

Fire flow simulations were completed using the InfoWater Fireflow simulator and the 2/3 PH time noted in the model. Minimum fire flow residual pressures modelled at the nearest hydrant to the proposed development and greater Upper Coomera HLZ are summarised in Table 9.

Table 9: Fire flow minimum residual pressures modelled at nearest critical hydrant and greater Old Coach Road DMA

Planning Horizon	Location	Fire Flow Minimum Residual Pressure (m)					
		Existing	Failures	w/ Approved DAs	Failures	w/ Approved DAs & Proposed Development	Failures
2041	PI_11100365302_WTHY	43.0	-	39.8	-	39.9	-
	PI_11100102775_WTHY	60.1	-	49.9	-	57.0	-
	WCS_DA_34	62.9	-	60.4	-	59.6	-
	Upper Coomera HLZ	5.7	1	5.7	1	5.6	1
2066	PI_11100365302_WTHY	41.7	-	39.8	-	39.7	-
	PI_11100102775_WTHY	51.9	-	49.9	-	49.8	-
	WCS_DA_34	62.4	-	60.4	-	60.3	-
	Upper Coomera HLZ	5.7	1	5.7	1	5.7	1

Note: 1) Fire flow pressure calculated in accordance with SEQ WS&S D&C Code recommendations at 2/3 PH demand (11:00) with 15 L/s adopted at the proposed development hydrant

The fire flow analysis indicates that the existing (2021) through intermediate (2041) networks have sufficient capacity to service the proposed development for fire flow demands with the nearest critical hydrant (PI_11100365302_WTHY) having adequate capacity to satisfy SEQ WS&S D&C Code recommended 12 m minimum residual pressure.

Within the greater Upper Coomera HLZ, there is a single hydrant failure (HE_11100008252_WTHY). These failures occur both with and without demands from the proposed development and is therefore considered an existing failure.

3.4 Internal Network Modelling

The internal water network analysis was undertaken using an InfoWater model developed using the proposed water layout attached in Appendix C. Internal modelled nodes have adopted surface RL levels from the Gold Coast 2014 LGA 1m Digital Elevation Model. All demands from the proposed development have been allocated evenly across the modelled internal nodes. The analysis has been undertaken in accordance with SEQ WS&S D&C Code recommendations with connections points to the existing network model as outlined in Figure 2.

3.4.1 Internal network modelling results (Coomera Pimpama LLZ)

The internal network model was run under peak hour and fire flow demands under the previously mentioned assumptions and design standards of service, with key results detailed in Figure 7 through Figure 12.

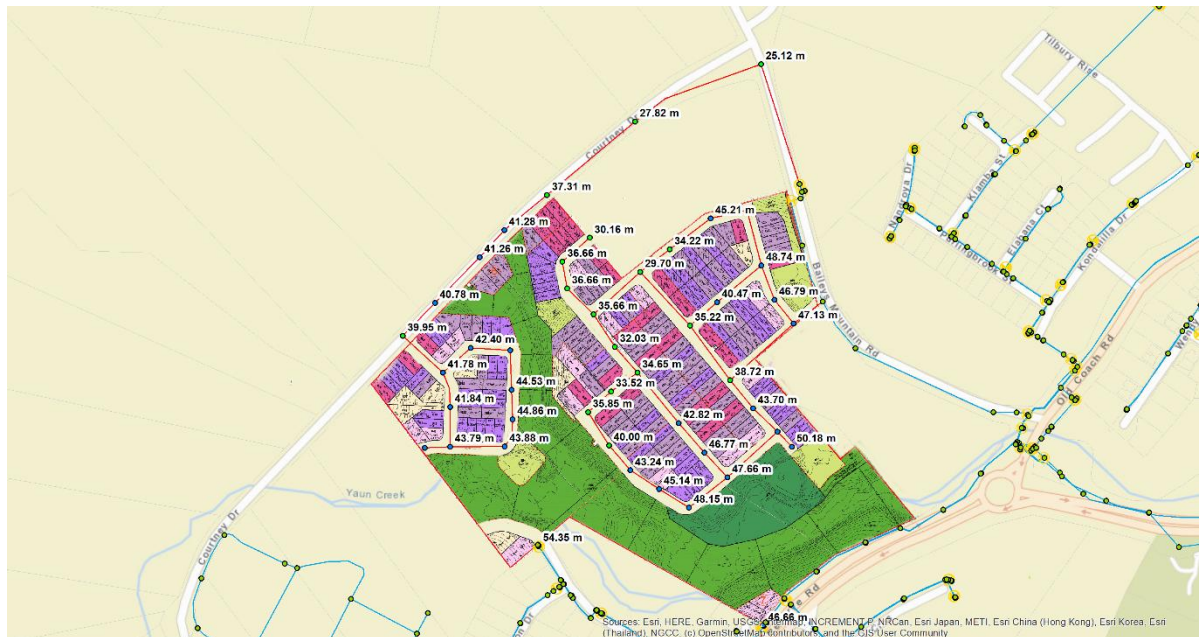


Figure 7: Peak hour internal network peak hour minimum pressure under existing (2021) planning horizon.

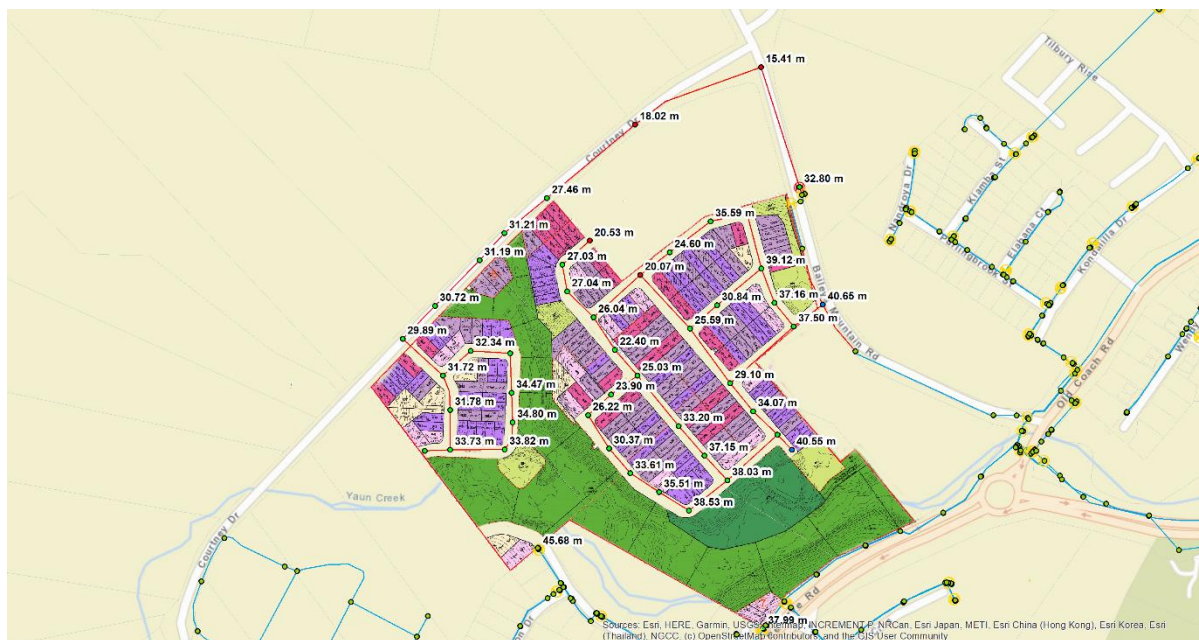


Figure 8: Peak hour internal network peak hour minimum pressure under intermediate (2041) planning horizon.



Figure 9: Peak hour internal network peak hour minimum pressure under ultimate (2066) planning horizon.

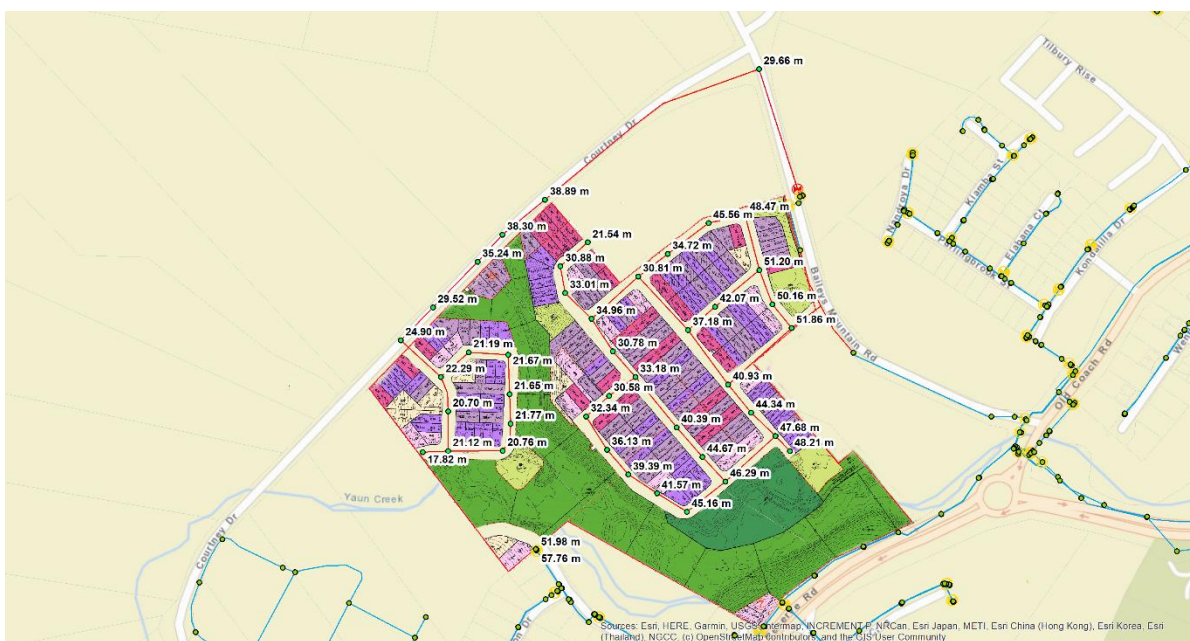


Figure 10: Fire flow internal network residual pressure under existing (2021) planning horizon.

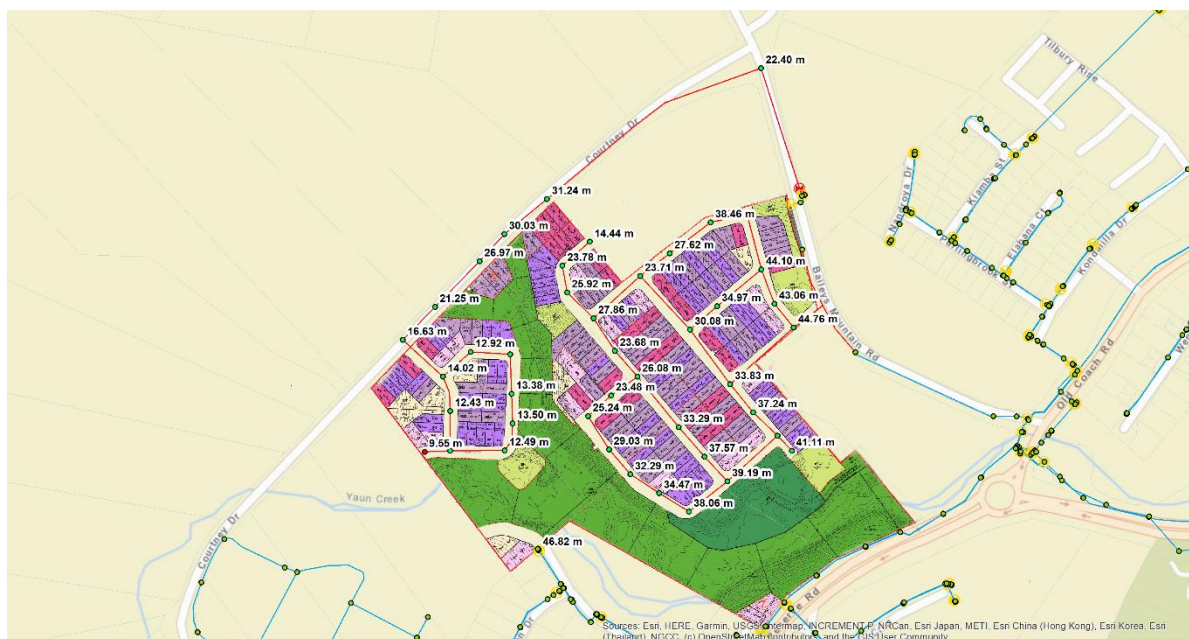


Figure 11: Fire flow internal network residual pressure under intermediate (2041) planning horizon.

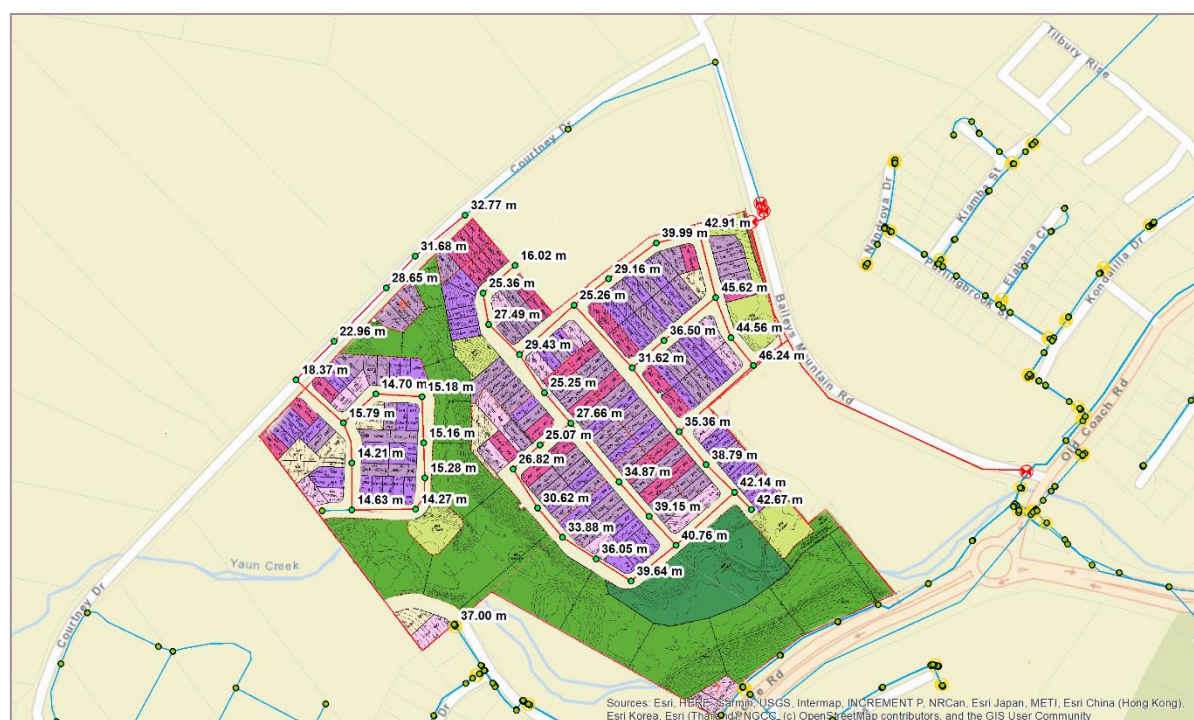


Figure 12: Fire flow internal network residual pressure under ultimate (2066) planning horizon.

Network modelling results indicate that the existing (2021) through intermediate (2036) and ultimate (2066) networks have sufficient capacity to service the proposed development while satisfying SEQ WS&S D&C Code recommendations under both peak hour and fire flow conditions. However, from the intermediate (2041) planning horizon, there is insufficient pressure to service the proposed development under both peak hour and fire flow demands.

It should be noted that in addition to modelled pressures, the internal network also satisfied SEQ WS&S D&C Code recommendations for maximum velocity (2.5 m/s) and maximum headloss (5 m/km).

3.4.2 Internal network modelling results (Upper Coomera HLZ)

The internal network model was run under peak hour and fire flow demands under the previously mentioned assumptions and design standards of service, with key results detailed in Figure 13 through Figure 16.

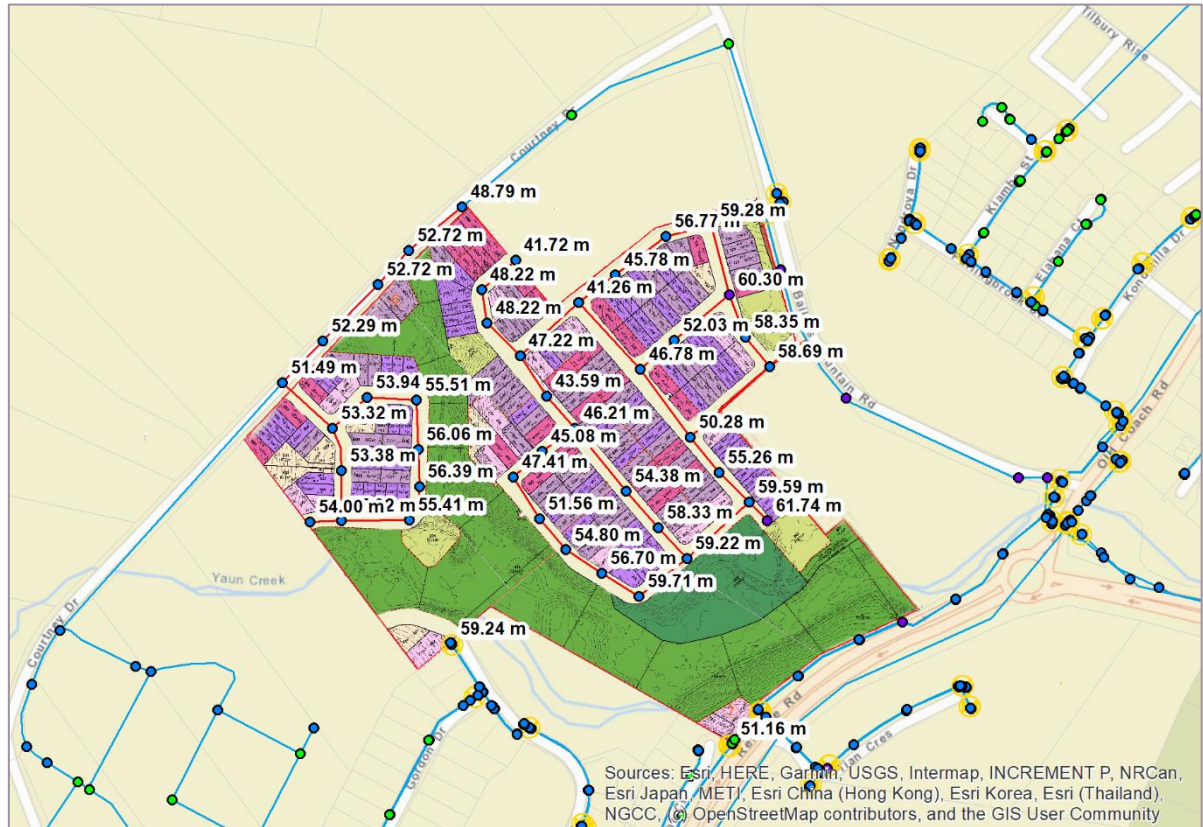


Figure 13: Peak hour internal network peak hour minimum pressure under existing (2041) planning horizon (rezoned).



Figure 14: Peak hour internal network peak hour minimum pressure under existing (2066) planning horizon (rezoned).



Figure 15: Fire Flow internal network residual pressure under existing (2041) planning horizon (rezoned).



Figure 16: Fire Flow internal network residual pressure under existing (2066) planning horizon (rezoned).

Network modelling results indicate that under the rezoned strategy the intermediate (2041) through ultimate (2066) networks have sufficient capacity to service the proposed development while satisfying SEQ WS&S D&C Code recommendations under both peak hour and fire flow conditions.

It should be noted that in addition to modelled pressures, the internal network also satisfied SEQ WS&S D&C Code recommendations for maximum velocity (2.5 m/s) and maximum headloss (5 m/km).

3.4.3 Conclusion and Recommendations

Analysis of the water supply network has concluded that there is sufficient capacity in the existing (2021) through intermediate (2036) and ultimate (2066) networks to service the proposed development during peak hour and fire flow demand while satisfying SEQ WS&S D&C Code recommendations. However, in the intermediate (2041) planning horizon, there is insufficient pressure to service the proposed development under both peak hour and fire flow demands.

Through adopting the rezoning strategy (from Coomera-Pimpama LLZ to Upper Coomera HLZ) outlined in Section 3.1.1 markup and presented in Appendix D, network modelling has shown that there is sufficient capacity in the intermediate (2041) and ultimate (2066) networks to service the proposed development during peak hour and fire flow demand while satisfying SEQ WS&S D&C Code recommendations.

Within the greater supply zones, there are several locations where modelled water infrastructure supply does not meet the SEQ WS&S D&C Code recommendations. However, these failures occur prior to the addition of demands associated with the proposed development and are not significantly worsened by the proposed development.

It is therefore suggested that the proposed development of approximately 522 EP be approved with respect to adequate water supply network capacity, with the following recommendations:

- To service the proposed development (northern stages), the developer is responsible for construction of the WSSIP19 proposed DN200 water main along Courtney Drive, connecting to the existing network adjacent to 176 Baileys Mountain Drive (refer to Appendix D markup for additional detail).

APPENDIX A: WATER NETWORK ELEMENTS INCORPORATED INTO EXISTING WSSIP19 NETWORK MODEL (REZONE)

ID (Char)	ELEVATION (m)	Demand (L/s)	2066 Min.Pressure (m)	2066 Residual Pressure (m)
11100585029	48.26	0.04	43.69	29.16
11100585036	46.64	0.04	45.31	31.01
11100585047	49.08	0.04	42.87	28.12
11100622669	61.42	0.08	31.09	28.23
11100622684	53.02	0.08	39.50	37.89
11100622685	50.56	0.00		40.61
11100622709	53.59	0.08	38.92	36.32
11100622715	51.64	0.08	40.88	38.86
11100622718	74.62	0.08	17.89	14.43
11100622732	51.02	0.08	41.50	39.27
11100622733	73.31	0.08	19.20	15.49
11100622735	38.39	0.00		56.73
11100622737	68.17	0.08	24.34	21.19
11100622739	65.07	0.00		26.40
11100622740	51.55	0.08	40.97	39.24
11100622742	70.30	0.08	22.21	18.32
11100746541	56.40	0.00		39.30
11100771826	49.19	0.00		41.59
11100771827	50.78	0.00		40.17
11100772071	57.50	0.09	34.94	33.20
9000345993	51.15	0.08	41.36	39.00
FCP1040	37.00	1.86	54.29	47.57
J176	59.50	0.09	32.84	30.64
J178	59.20	0.09	32.97	29.17
J180	62.30	0.09	29.69	24.79
J182	63.20	0.09	28.73	22.03
J184	61.30	0.09	30.60	23.30
J186	60.20	0.09	31.66	23.98
J188	58.00	0.09	33.82	26.13
J192	53.30	0.09	38.48	31.40
J194	55.00	0.09	36.78	24.97
J196	59.10	0.09	32.68	15.93
J198	52.50	0.09	39.26	33.45
J200	52.20	0.09	39.47	33.60
J202	51.10	0.09	40.48	34.98
J204	46.50	1.13	45.01	38.17
J206	55.90	0.09	35.71	29.38
J208	43.60	0.12	47.90	40.94
J210	40.00	0.12	51.49	45.19
J212	40.60	0.12	50.92	44.34
J214	46.80	0.19	44.73	36.33

ID (Char)	ELEVATION (m)	Demand (L/s)	2066 Min.Pressure (m)	2066 Residual Pressure (m)
J216	51.90	0.19	39.63	29.89
J218	49.40	0.19	42.13	30.55
J220	53.40	0.19	38.13	28.42
J222	53.60	0.19	37.94	29.47
J224	48.10	0.09	43.48	35.67
J226	57.70	0.09	33.94	28.06
J228	42.90	0.09	48.68	38.48
J230	61.30	0.09	30.81	26.12
J232	60.80	0.09	31.16	25.64
J234	59.40	0.09	32.41	26.46
J236	40.60	0.12	50.93	44.49
J238	51.90	0.09	39.68	34.11
J240	57.10	0.09	34.71	27.78
J242	61.80	0.09	30.06	22.97
J246	62.30	0.09	29.58	22.62
J250	61.90	0.09	30.02	23.45
J252	52.70	0.09	39.06	32.67
J254	49.60	0.09	41.96	33.77
J256	48.40	0.09	43.14	36.68
WCS_DA_01	38.25	0.08	53.05	44.33
WCS_DA_02	36.34	0.08	54.94	40.12
WCS_DA_03	33.65	0.08	57.63	41.10
WCS_DA_04	34.21	0.08	57.07	41.14
WCS_DA_05	35.78	0.08	55.50	40.61
WCS_DA_07	31.20	0.10	60.26	56.69
WCS_DA_08	31.50	0.10	59.93	54.91
WCS_DA_09	30.50	0.10	60.88	53.28
WCS_DA_10	33.00	0.10	58.37	50.39
WCS_DA_11	43.98	0.10	47.38	39.55
WCS_DA_12	48.50	0.10	42.86	35.62
WCS_DA_13	43.00	0.10	48.38	41.95
WCS_DA_14	37.76	0.10	53.62	46.86
WCS_DA_15	29.50	0.10	61.89	56.01
WCS_DA_16	39.50	0.10	51.88	45.75
WCS_DA_17	30.15	0.10	61.20	52.56
WCS_DA_18	28.00	0.10	63.35	53.08
WCS_DA_19	34.50	0.10	56.86	49.16
WCS_DA_20	30.50	0.10	60.83	51.17
WCS_DA_21	30.00	0.10	61.32	50.09
WCS_DA_22	33.01	0.10	58.31	46.47
WCS_DA_23	34.91	0.10	56.41	44.29
WCS_DA_24	38.15	0.10	53.17	41.06
WCS_DA_25	42.30	0.10	49.02	37.28
WCS_DA_26	44.63	0.10	46.69	35.51
WCS_DA_27	31.38	0.10	59.95	49.51

ID (Char)	ELEVATION (m)	Demand (L/s)	2066 Min.Pressure (m)	2066 Residual Pressure (m)
WCS_DA_28	35.33	0.10	56.00	45.28
WCS_DA_30	36.40	0.08	54.88	41.74
WCS_DA_31	43.50	0.10	47.83	38.06
WCS_DA_32	46.13	0.10	45.20	35.67
WCS_DA_33	42.50	0.10	48.83	39.85
WCS_DA_35	41.50	0.10	49.83	37.91
WCS_DA_36	41.50	0.10	49.83	35.78
WCS_DA_37	48.00	0.10	43.33	26.45
WCS_DA_38	33.32	0.08	57.96	41.23
WCS_DA_39	34.30	0.08	56.98	40.22
WCS_DA_41	35.71	0.08	55.57	37.27
WCS_DA_42	34.39	0.08	56.89	40.57
WCS_DA_43	37.00	0.06	54.29	46.83
WCS_DA_44	41.00	0.08	50.36	45.37
WCS_DA_45	37.44	0.08	53.85	45.51

ID (Char)	DESCRIPT (Char)	LENGTH (m)	DIAMETER (mm)	ROUGHNESS (k)	Max.Velocity (m/s)	Max.Headloss (m/k-m)
P13710	H20ne Network	68.58	150	110	0.35	1.51
P13712	H20ne Network	40.8	100	100	0.43	4.09
P13714	H20ne Network	46.7	100	100	0.42	3.89
P13716	H20ne Network	60.8	100	100	0.2	0.97
P13718	H20ne Network	38.2	100	100	0.18	0.87
P13720	H20ne Network	47.5	100	100	0.17	0.77
P13722	H20ne Network	54.7	100	100	0.16	0.68
P13724	H20ne Network	72.1	100	100	0.15	0.59
P13726	H20ne Network	71.3	100	100	0.02	0.02
P13728	H20ne Network	74.8	100	100	0.01	0.01
P13730	H20ne Network	38.6	100	100	0.12	0.37
P13732	H20ne Network	55	100	100	0.26	1.59
P13734	H20ne Network	59.4	100	100	0.25	1.47
P13736	H20ne Network	34.5	100	100	0.23	1.27
P13738	H20ne Network	59.4	100	100	0.07	0.15
P13740	H20ne Network	57.4	100	100	0.06	0.1
P13742	H20ne Network	79.2	100	100	0.11	0.34
P13744	H20ne Network	126.8	100	100	0.13	0.42
P13746	H20ne Network	16.9	100	100	0.13	0.43
P13748	H20ne Network	119.4	100	100	0.02	0.01

ID (Char)	DESCRIPT (Char)	LENGTH (m)	DIAMETER (mm)	ROUGHNESS (k)	Max.Velocity (m/s)	Max.Headloss (m/k-m)
P13750	H20ne Network	88.1	100	100	0.01	0
P13752	H20ne Network	27.7	100	100	0.02	0.02
P13754	H20ne Network	98.6	100	100	0.03	0.03
P13756	H20ne Network	86.6	100	100	0.05	0.09
P13758	H20ne Network	98.5	100	100	0.06	0.1
P13762	H20ne Network	36.2	100	100	0.01	0.01
P13764	H20ne Network	80.9	100	100	0.17	0.75
P13766	H20ne Network	57.8	100	100	0.14	0.52
P13768	H20ne Network	64.2	100	100	0.13	0.45
P13770	H20ne Network	13.1	100	100	0.01	0
P13772	H20ne Network	69.2	100	100	0.32	2.44
P13774	H20ne Network	58.6	100	100	0.33	2.61
P13776	H20ne Network	53	100	100	0.35	2.77
P13778	H20ne Network	76.7	100	100	0.36	2.95
P13784	H20ne Network	66.4	100	100	0.17	0.77
P13786	H20ne Network	76.7	100	100	0.16	0.68
P13788	H20ne Network	25.5	100	100	0.18	0.87
P13792	H20ne Network	65	100	100	0.21	1.08
P13794	H20ne Network	35.8	100	100	0.2	0.97
P13796	H20ne Network	24.7	100	100	0.1	0.3
P13798	H20ne Network	43.5	100	100	0.14	0.5
P13800	H20ne Network	31.3	100	100	0.15	0.58
P13802	H20ne Network	25.2	100	100	0.22	1.16
P13804	H20ne Network	4	100	100	0	0
WCS_DA_P01	Proposed DA	64.55	100	100	0.09	0.24
WCS_DA_P02	Proposed DA	41.93	100	100	0.04	0.05
WCS_DA_P03	Proposed DA	75.68	100	100	0.03	0.03
WCS_DA_P04	Proposed DA	46.86	100	100	0.02	0.02
WCS_DA_P05	Proposed DA	47.04	100	100	0.03	0.03
WCS_DA_P07	Proposed DA	100.81	100	100	0.18	0.83
WCS_DA_P08	Proposed DA	36.21	100	100	0.19	0.95
WCS_DA_P09	Proposed DA	43.27	100	100	0.18	0.83

ID (Char)	DESCRIPT (Char)	LENGTH (m)	DIAMETER (mm)	ROUGHNESS (k)	Max.Velocity (m/s)	Max.Headloss (m/k-m)
WCS_DA_P10	Proposed DA	67.77	100	100	0.09	0.23
WCS_DA_P11	Proposed DA	44.54	100	100	0.08	0.17
WCS_DA_P12	Proposed DA	60.43	100	100	0.06	0.12
WCS_DA_P13	Proposed DA	44.03	100	100	0.05	0.07
WCS_DA_P14	Proposed DA	68.02	100	100	0.08	0.17
WCS_DA_P15	Proposed DA	42.27	100	100	0.06	0.12
WCS_DA_P16	Proposed DA	43.31	100	100	0.13	0.47
WCS_DA_P17	Proposed DA	39.91	100	100	0.12	0.38
WCS_DA_P18	Proposed DA	24.6	100	100	0.01	0.01
WCS_DA_P19	Proposed DA	80.15	100	100	0.09	0.23
WCS_DA_P20	Proposed DA	39.82	100	100	0.03	0.03
WCS_DA_P21	Proposed DA	46.25	100	100	0.02	0.01
WCS_DA_P22	Proposed DA	58.02	100	100	0.04	0.06
WCS_DA_P23	Proposed DA	41.62	100	100	0.03	0.03
WCS_DA_P25	Proposed DA	40.56	100	100	0.02	0.01
WCS_DA_P26	Proposed DA	38.88	100	100	0	0
WCS_DA_P27	Proposed DA	46.57	100	100	0.01	0
WCS_DA_P28	Proposed DA	36.34	100	100	0.02	0.02
WCS_DA_P29	Proposed DA	53	100	100	0.04	0.05
WCS_DA_P30	Proposed DA	46.2	100	100	0.06	0.11
WCS_DA_P31	Proposed DA	74.73	100	100	0.12	0.37
WCS_DA_P32	Proposed DA	40.59	100	100	0.05	0.07
WCS_DA_P33	Proposed DA	77.11	100	100	0	0
WCS_DA_P36	Proposed DA	80.12	100	100	0.03	0.04
WCS_DA_P37	Proposed DA	86.57	100	100	0.08	0.19
WCS_DA_P38	Proposed DA	43.82	100	100	0.04	0.05
WCS_DA_P39	Proposed DA	32.06	100	100	0.03	0.03
WCS_DA_P40	Proposed DA	42.89	100	100	0.01	0.01
WCS_DA_P41	Proposed DA	35.11	100	100	0.01	0
WCS_DA_P42	Proposed DA	34.6	100	100	0	0
WCS_DA_P43	Proposed DA	64.88	100	100	0.01	0
WCS_DA_P44	Proposed DA	29.99	100	100	0.01	0

ID (Char)	DESCRIPT (Char)	LENGTH (m)	DIAMETER (mm)	ROUGHNESS (k)	Max.Velocity (m/s)	Max.Headloss (m/k-m)
WCS_DA_P45	H20ne Network	75.62	100	100	0.04	0.05
WCS_DA_P46	H20ne Network	65.38	100	100	0.2	1.03
WCS_DA_P47	H20ne Network	54.71	100	100	0.05	0.08
WCS_DA_P48	Future Connection	44.06	100	100	0.04	0.05
WCS_DA_P49	Future Connection	43.01	150	100	0.17	0.47
WCS_DA_P51	Proposed Rezone	316.5	100	100	0.15	0.62

APPENDIX B: SEQ WS&S D&C CODE FAILURES (WATER SUPPLY)

Peak Hour Minimum Pressure – Coomera Pimpama LLZ

2021 w/ Additional DAs	
ID	Minimum Pressure (m)
PI_11100447557_WTHY	21.76

2021 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
PI_11100080757_WTHY	21.60
PI_11100230646_WTHY	21.60
PI_11100447557_WTHY	20.92

2041 Existing WSSIP	
ID	Minimum Pressure (m)
WCS_DA_37	21.77
WCS_DA_12	21.27
FCP1038A	18.89
FCP1038	16.40

2041 w/ Additional DAs	
ID	Minimum Pressure (m)
WCS_DA_37	21.30
WCS_DA_12	20.80
FCP1038A	18.41
FCP1038	15.92

2041 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
WCS_DA_37	20.53
WCS_DA_12	20.07
FCP1038A	18.02
FCP1038	15.41

2066 Existing WSSIP	
ID	Minimum Pressure (m)
PI_11100246607_WTHY	21.93
FCP1038A	20.64
PI_11100365441_WTHY	18.18
FCP1038	18.11

2066 w/ Additional DAs	
ID	Minimum Pressure (m)
PI_11100246607_WTHY	21.75
FCP1038A	20.47
PI_11100365441_WTHY	18.00
FCP1038	17.94

2066 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
PI_11100246607_WTHY	21.93
FCP1038A	20.79
PI_11100365441_WTHY	18.18
FCP1038	18.16

Peak Hour Minimum Pressure – Upper Coomera HLZ

2041 Existing WSSIP	
ID	Minimum Pressure (m)
11100622737	21.29
FCP1046	19.80

2041 w/ Additional DAs	
ID	Minimum Pressure (m)
11100622718	16.77
11100622733	18.08
11100622742	21.09

2041 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
11100622718	20.48
11100622733	17.47
11100622742	16.16

2066 Existing WSSIP	
ID	Minimum Pressure (m)
11100622737	21.30
FCP1046	19.81

2066 w/ Additional DAs	
ID	Minimum Pressure (m)
11100622718	19.67
11100622733	19.44
11100622742	18.13

2066 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
11100622718	19.67
11100622733	19.20
11100622742	17.89

Residual Pressure (Fire Flow Analysis) - Coomera Pimpama LLZ

2041 Existing WSSIP	
ID	Residual Pressure (m)
PI_11100446101_WTHY	10.50
PI_11100230646_WTHY	7.56
PI_11100080757_WTHY	6.17

2041 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100446101_WTHY	10.39
PI_11100230646_WTHY	7.42
PI_11100080757_WTHY	6.02

2041 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
PI_11100081917_WTHY	11.97
PI_11100446101_WTHY	10.28
PI_11100230646_WTHY	7.29
PI_11100080757_WTHY	5.89

2066 Existing WSSIP	
ID	Residual Pressure (m)
PI_11100443956_WTHY	11.57
PI_11100230646_WTHY	8.98
PI_11100080757_WTHY	7.59

2066 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100446101_WTHY	11.98
PI_11100443956_WTHY	11.38
PI_11100230646_WTHY	8.92

2066 w/ Additional DAs	
ID	Residual Pressure (m)
PI_11100080757_WTHY	7.53

2066 w/ Additional DAs & Proposed Development	
ID	Minimum Pressure (m)
PI_11100230646_WTHY	8.97
PI_11100080757_WTHY	7.58

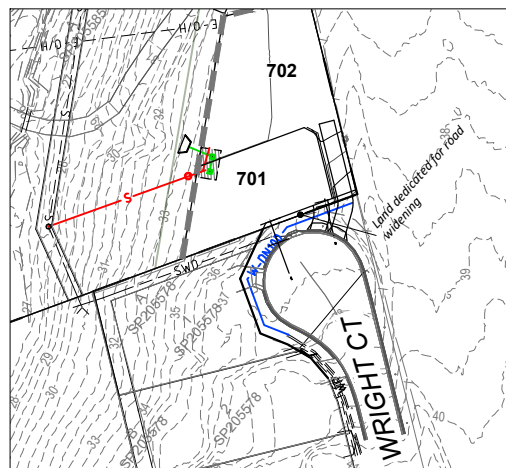
APPENDIX C: PROPOSED INTERNAL WATER SUPPLY LAYOUT

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED DN100 WATER MAIN
- PROPOSED DN150 WATER MAIN
- PROPOSED DN100 EXTERNAL WATER MAIN
- PROPOSED DN150 EXTERNAL WATER MAIN
- PROPOSED DN225 EXTERNAL WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- 80.0 FINISHED SURFACE CONTOURS
- 80.0 EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- CONCRETE BIN PADS
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS
- MAINTENANCE HOLE NUMBER
- INDICATIVE DRIVEWAY LOCATION
- STREET TREES

EXISTING SERVICES LEGEND

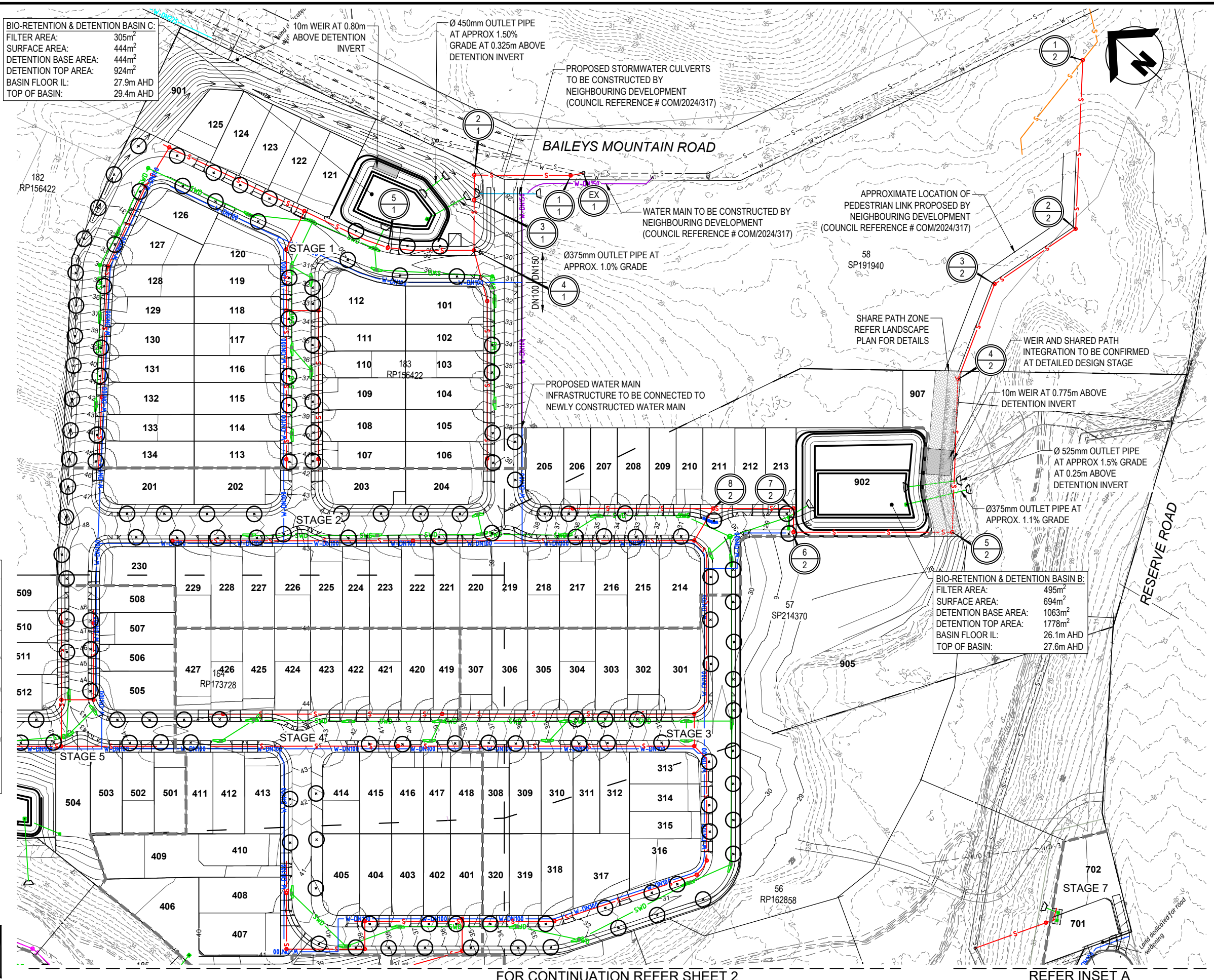
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE



INSET A
SCALE 1:750 AT A1

APPROVAL ISSUE
NOT FOR CONSTRUCTION
UNLESS STAMPED

CONTRACTOR TO DETERMINE AND
LOCATE ALL EXISTING SERVICES PRIOR
TO COMMENCEMENT OF WORKS



FOR CONTINUATION REFER SHEET 2

REFER INSET A

E	16-02-26	RESPONSE TO FURTHER INFORMATION REQUEST
D	07-11-25	RESPONSE TO FURTHER INFORMATION REQUEST
C	26-06-25	ISSUED FOR REPORT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
ISSUE No.	DATE	AMENDMENT



CLIENT
NORFOLK ESTATES PTY LTD

PROJECT
PROPOSED RESIDENTIAL SUBDIVISION
31-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN	DRAWN	APPROVED
DR	MS	TW

TITLE	PROJECT NO.
PRELIMINARY SERVICES LAYOUT PLAN - SHEET 1 OF 2	OSK6521
SCALE	DWG NO.
1:750 AT A1 1:1500 AT A3	P040
0 15 30 45 60m	ISSUE
	E

LEGEND

- PROPOSED SEWER MAIN
- PROPOSED TRUNK SEWER MAIN
- PROPOSED DN100 WATER MAIN
- PROPOSED DN150 WATER MAIN
- PROPOSED DN100 EXTERNAL WATER MAIN
- PROPOSED DN150 EXTERNAL WATER MAIN
- PROPOSED DN225 EXTERNAL WATER MAIN
- PROPOSED STORMWATER DRAINAGE
- FINISHED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- STAGE BOUNDARY
- CONCRETE BIN PADS
- PROPOSED SEWER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED WATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED STORMWATER MAIN (CONSTRUCTED BY OTHERS)
- PROPOSED SERVICE EASEMENTS



MAINTENANCE HOLE NUMBER



INDICATIVE DRIVEWAY LOCATION



STREET TREES

EXISTING SERVICES LEGEND

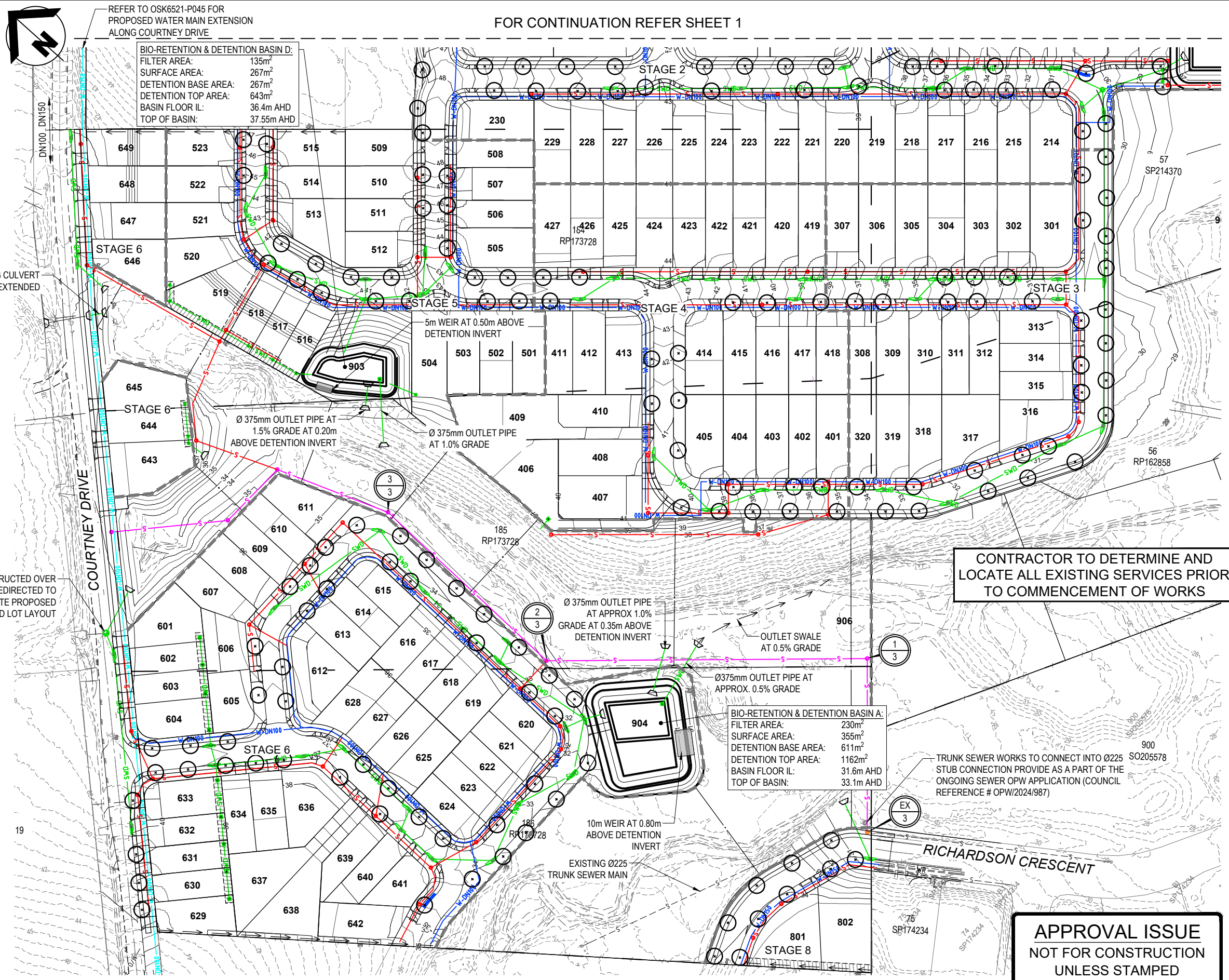
- EXISTING SEWER MAIN
- EXISTING WATER MAIN
- EXISTING STORMWATER PIPE
- EXISTING TELECOMMUNICATIONS CABLE
- EXISTING ELECTRICAL CABLE

PROPOSED WATER MAIN
EXTENSION TO BE
CONNECTED TO NEWLY
CONSTRUCTED WATER MAIN

WATER MAIN TO BE CONSTRUCTED BY
NEIGHBOURING DEVELOPMENT
(COUNCIL REFERENCE # OPW/2023/1202)

INSET B
SCALE 1:750 AT A1

REFER INSET B



E	16-02-26	RESPONSE TO FURTHER INFORMATION REQUEST
D	07-11-25	RESPONSE TO FURTHER INFORMATION REQUEST
C	26-06-25	ISSUED FOR REPORT
B	11-12-24	ISSUED FOR APPROVAL
A	06-12-24	ISSUED FOR INFORMATION
ISSUE No.	DATE	AMENDMENT



CLIENT
NORFOLK ESTATES PTY LTD

PROJECT
PROPOSED RESIDENTIAL SUBDIVISION
31-53 COURTNEY DRIVE
UPPER COOMERA, QLD, 4209

DESIGN
DR

DRAWN
MS

APPROVED
TW

TITLE
PRELIMINARY SERVICES
LAYOUT PLAN - SHEET 2 OF 2

SCALE
1:750 AT A1
1:1500 AT A3

0 15 30 45 60m

PROJECT NO.
OSK6521

DWG NO.
P041

ISSUE
E

APPENDIX D: WATER CATCHMENT MARKUP

OSKA
CONSULTING GROUP

Sketch Title:
Water Catchment Mark Up

Project Details:
31-53 Courtney Drive, Upper Coomera

Project No.:
OSK6521

Sketch No.:
SK001-B

Date:
24-09-2025

Scale:
N.T.S

Drawn:
AI

FUTURE WATERMAIN LINK
BETWEEN TWO WATERMAINS OF
COURTNEY DRIVE TO BE
CONSTRUCTED BY OTHERS.

WESTERN CATCHMENT TO BE SERVICED VIA THE
WATERMAIN EXTENSION ALONG COURTNEY DRIVE.
WATERMAIN TO STOP AT END OF LINE ARRANGEMENT
AT THE FRONT BOUNDARY OF THE SUBJECT SITE.

COUNCIL'S PROPOSED LGIP
WATERMAIN ALIGNMENT THROUGH
THE INTERSECTION OF COURTNEY
DRIVE AND BAILEYS MOUNTAIN ROAD

WATERMAIN TO BE CONSTRUCTED AS A PART
OF THE DEVELOPMENT AT 79 COURTNEY
DRIVE TO NOT BE LINKED TO PROPOSED
WATERMAIN ALONG COURTNEY DRIVE.

EASTERN CATCHMENT TO BE SERVICED VIA
THE RECENTLY CONSTRUCTED DN200
WATERMAIN ALONG BAILEYS MOUNTAIN ROAD.

EXISTING WATERMAIN CONSTRUCTED
AS A PART OF THE DEVELOPMENT OF
155 BAILEYS MOUNTAIN ROAD

FUTURE WATERMAIN EXTENSION
ALONG RESERVE ROAD TO BE
CONSTRUCTED BY OTHERS

FUTURE WATERMAIN BOUNDARY
LINK BETWEEN THE TWO
WATERMAIN CATCHMENTS TO
BE CONSTRUCTED BY OTHERS.

Mon Apr 7 2025

Imagery is 2025 Nearmap, HERE 100m

Nearmap