

To	CC@sawater.com.au				
CC	Jack Nelson: Water Network Retic Asset Planner majorld@sawater.com.au MeteringTechnicalServices@sawater.com.au Lawrie McGing: Tech Services Metering Officer Rowan Steele: Lead Asset Planner				
From	Patrick Hayde: Mgr. Systems Planning Water				
Phone	+61 8 7424 2006	Email	patrick.hayde@sawater.com.au		
Date	6/11/2019	SA Water Ref	H0090889		
Subject	FF 201910_42 168 Prospect Rd, Prospect – Network Analysis				
Version	Comment	Author	Date	Approved	Date
1.0	FS Required. Commercial.	Stephen Daenke	6/11/2019	Mark Bridger	7/11/2019

1. CUSTOMER REQUEST

I refer to your email requesting a network analysis for a fire service based on the following customer request details:

- | | |
|---|--|
| • Customer/Applicant: | Lucid Consulting Australia |
| • Property Owner/Client: | Anthony Farina |
| • Location Details: | 168 Prospect Rd, Prospect |
| • Date of Request received by SA Water: | 09/10/2019 |
| • Date of Request received by Systems Planning: | 29/10/2019 |
| • Estimate of Peak Flow Rate in Litres per second (L/s) | |
| ○ Unassisted (L/s) | TBA (analysis up to 40 L/s) |
| ○ MFS/CFS Boosted (L/s) | TBA |
| • Map provided showing locations points for analysis | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| • Development plan and building details provided | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| • Maximum number of storeys including ground floor | Not provided |
| • Maximum building height (metres) | Not provided |
| • Internal fire reticulation plan provided | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| • Supply to: | |
| ○ Hydrant | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> |
| ○ Sprinkler | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> |
| ○ Booster Assembly | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> |
| ○ Tank | Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> |
| ○ Inline Pumps | Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input checked="" type="checkbox"/> |
| If Yes also fill in Inline Pump Engagement Form | |
| • Using existing fire connection | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> |

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- Hydrant Hydraulic Assessment Report provided Yes ☐ No ☒
- Requesting new fire connection Yes ☒ No ☐ Unknown ☐
- Certainty rating that project will proceed: High ☒ Med ☐ Low ☐ Unknown ☐
- Development start date: Not provided

Associated Cases

- PI/DAC Assessment CAMS Reference: Not provided
- Water Meter Connection CAMS number H0088025 (conn complex)
- Fire Plug Test Results CAMS Reference: H0055892
- Fire Flow Network Analysis CAMS Reference: H0090889
- Fire Connection Application CAMS Reference: Not provided
- Associated Cases SA Water CAMS Reference: H0059703; H0057488

2. ANALYSIS

Network

- The subject main is contained in the following water supply zone: **Metro EL103**
- Approximate ground level at the water meter location is: EL 38 m
- The maximum static head at the no flow condition is approximately: **65 mH** (EL103 – 38 m)

Existing Connections

- Existing 20 mm water meter K40901034 off the Ex. 200 PVC main in Prospect Road

Nominated Offtake Location

- Ex.200 PVC main along Prospect Road, **shown at POINT A on Figure 1.**

Model

The following WaterGems model was used to simulate the performance of the system with the nominated flows under steady state conditions only (i.e. excluding transient conditions).

- WaterGems model: EL103&EL170_Feb2019_FF.wtg
- Scenario: FF201910_42 168 Prospect Rd Prospect H0090889

Flows Analysed

- 0, 10, 20, 30 & 40 L/s

Results

The ground level residual pressure results (within the estimated peak demand 24 hour period) are **shown on Figure 2**. Results are based on the main offtake location rather than the customer end of the fire connection, i.e. do not account for minor losses in the customer connection. These results are presented on the basis that requested flows are not occurring simultaneously at multiple locations.

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3. COMPARISON OF MEASURED AND MODELLED RESULTS

On the basis that the difference in pressure is **NOT (marginal)** within the acceptable range as per Table 1 below, SPW are **NOT** satisfied that modelling results are reflecting measured conditions. **The risk is that the customer's expectation will not be met if they proceed solely on the basis of the modelling results.**

Table 1: Modelled results compared to actual flow test #1 on 28/10/19 from the Ex.200 PVC main in Prospect Road (@10L/s<5m, @20L/s<15m) as at 1130 HRS

Location point	Existing main	Flow (L/s)	Analysis pressure (mH)	Actual pressure (mH)	Difference (mH)
Prospect Road	Ex. 200 PVC	0	60.4	58	-2.4
Prospect Road	Ex. 200 PVC	10	59.9	54	-5.9
Prospect Road	Ex. 200 PVC	20	59.4	45	-14.4

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4. CONCLUSION

Steady state network modelling results indicates that the requested flow of 0, 10, 20, 30 and 40 L/s from the following location(s) are currently available but not simultaneously:

- Ex.200 PVC main along Prospect Road

Notwithstanding the above conclusion, given that some of the supply mains in the area are CICI mains, there is a risk that these mains have some internal corrosion on the mains or fittings which may impact on their hydraulic capacity. This impact on hydraulic capacity may give rise to flow and pressures lower than those modelled.

These results were cross referenced with pre-existing on site tests.

In this case, there is a difference between the modelled and measured results tabulated in Section 3. At the time of application for a new fire service connection, the associated risks can be assessed.

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General Notes

- Minimum water main size abutting the property for a fire service is DN100.
- The applicant is referred to SA Water TS 0522 and Table 3.1 WSA 03-2011 for minimum water main sizes, as per the land use zoning below:
 - High density residential (≥ 8 storeys) requires a minimum DN200
 - High density residential (≥ 4 storeys and < 8 storeys) requires a minimum DN150
 - Low and Medium density (< 4 storeys) requires a minimum DN100
 - **Commercial/Industrial requires a minimum DN150**
- The fire service connection cannot be larger than the water main. For example a DN150 fire service connection will not be approved from an Ex.100 water main.
- Fire service connections are not to be interconnected with other pressure supply zones.
- Approval to be sought from Connections SA Water if inline pumps are proposed or used.
- Water mains that connect to supply by measure connections are not considered available as they only have water available during periods of transfer pumping.

Regards

Patrick Hayde

Mgr. Systems Planning Water, Customer Growth

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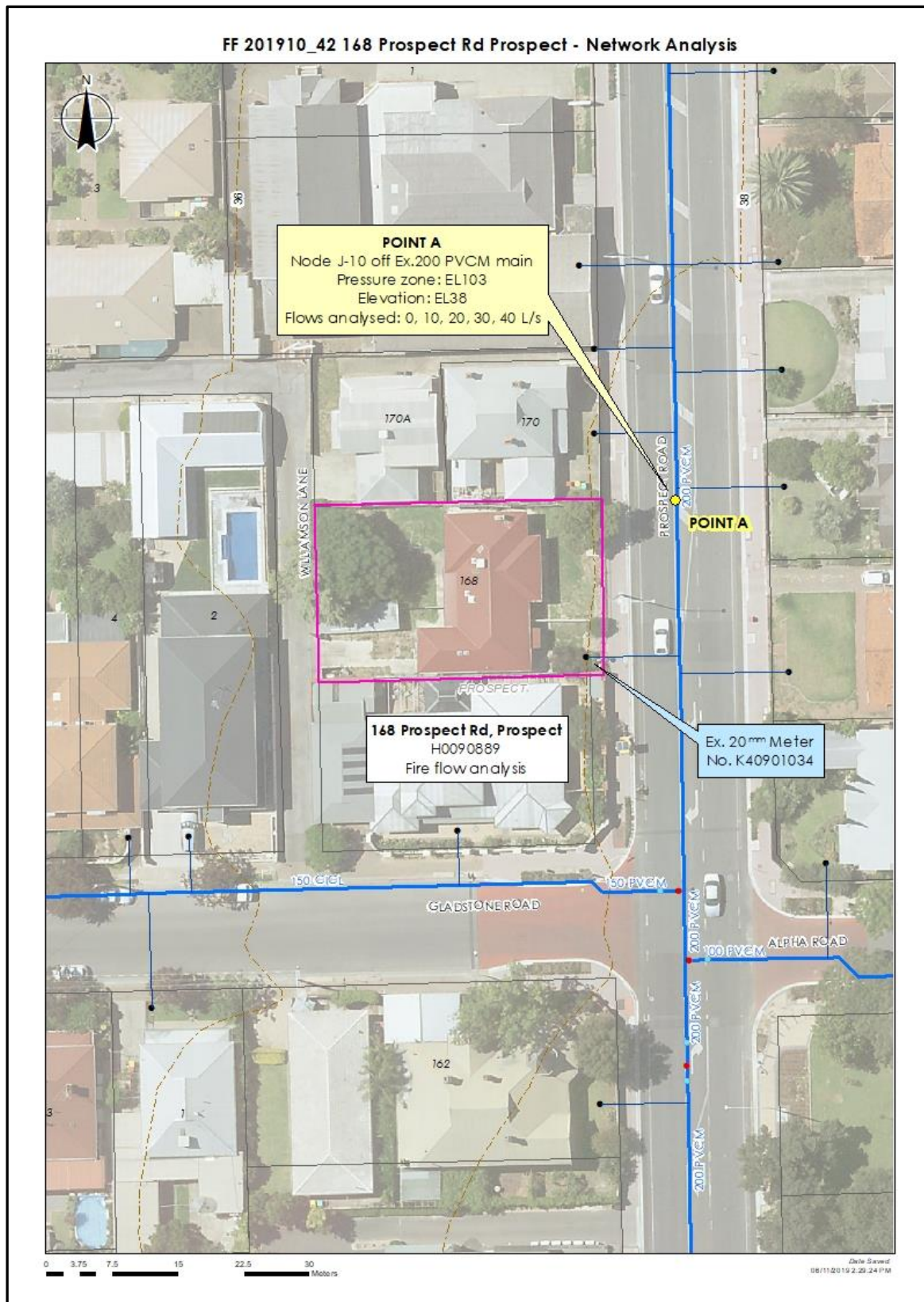


Figure 1. Location map of development

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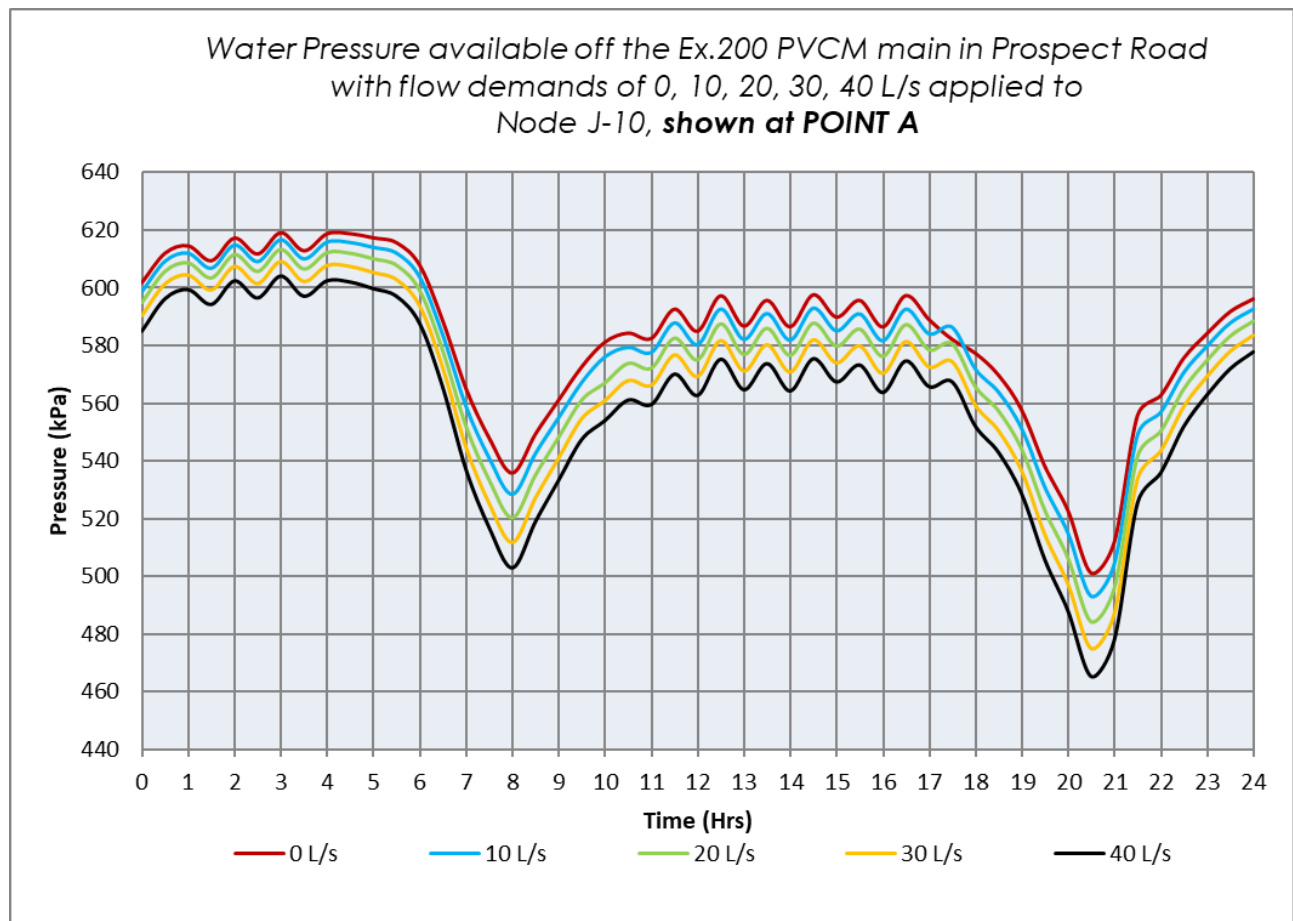


Figure 2. Graph showing pressure available at Node J-10 off Ex.200 PVC main in Prospect Road, shown at POINT A

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SOUTH AUSTRALIAN WATER CORPORATION : FLOW AND PRESSURE SURVEY

Metering, Technical Services- Happy Valley

Maximo No 7179260

TEST 1

STREET ADDRESS	PROSPECT RD
SUBURB	PROSPECT
MAIN-SIZE& TYPE	200PVC
ZONE SUPPLY EL	
TEST DATE	28/10/2019
TEMP	19°C

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TIME OF DAY 24hr 11:30 FIRE PLUG ID 8828740

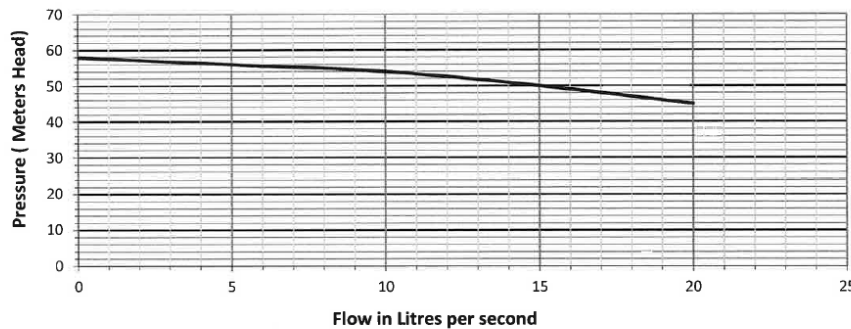


SA Water

FLOW AND PRESSURE SURVEY



Government of South Australia



THE TEST WAS TAKEN USING A SINGLE 65mm McCROMETER METER, WITH THE PRESSURE AND FLOW TAKEN AT THE SAME POINT, USING A SINGLE FIRE PLUG OR PILLAR HYDRANT AS INDICATED.

STATIC PRESSURE-MH 58.0

RESULTS TAKEN FROM A McCROMETER METER

Flow rate in litres per second	Pressure in metres head
0	58
5.0	56
10.0	54
15.0	50
20.0	45

PLEASE NOTE:

WHEN INCORPORATING THESE TEST RESULTS IN THE DESIGN CALCULATIONS OF THE PRIVATE SERVICE PIPEWORK, ALLOWANCE SHOULD BE MADE FOR HYDRAULIC LOSSES BETWEEN THE POINTS AT WHICH THE TEST WAS CONDUCTED AND THE PROPERTY SERVICE LOCATION.

THE CORPORATION ENDEAVOURS TO MAINTAIN A SATISFACTORY PRESSURE IN THE MAINS AT ALL TIMES, UNDER SOME CIRCUMSTANCES THIS MAY NOT BE POSSIBLE, THEREFORE NO GUARANTEE CAN BE GIVEN.

Comments:

AT A PRESSURE OF 200 kpa, THE FLOW WAS :
approx 25 litres per second

CONTACT NAME :

Lawrie McGing

TEST BY :

CHRISTIAN NAURATO

Phone Number :

408840117

Figure 3. Fire plug test #1 results as at 28/10/2019

SOUTH AUSTRALIAN WATER CORPORATION : FLOW AND PRESSURE SURVEY

Metering, Technical Services- Happy Valley

Maximo No 7179260

TEST 2

STREET ADDRESS	PROSPECT RD
SUBURB	PROSPECT
MAIN-SIZE& TYPE	200PVC
ZONE SUPPLY EL	
TEST DATE	28/10/2019
TEMP	19°C

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TIME OF DAY 24hr 11:55 FIRE PLUG ID 8828712

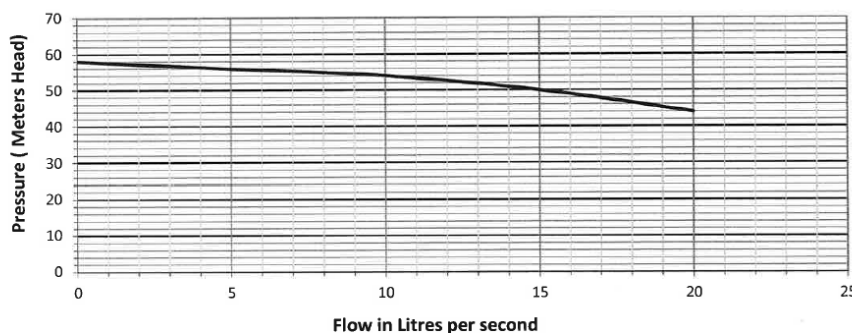


SA Water

FLOW AND PRESSURE SURVEY



Government of South Australia



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STATIC PRESSURE-MH 58.0

RESULTS TAKEN FROM A McCROMETER METER

Flow rate in litres per second	Pressure in metres head
0	58
5.0	56
10.0	54
15.0	50
20.0	44

PLEASE NOTE:

WHEN INCORPORATING THESE TEST RESULTS IN THE DESIGN CALCULATIONS OF THE PRIVATE SERVICE PIPEWORK, ALLOWANCE SHOULD BE MADE FOR HYDRAULIC LOSSES BETWEEN THE POINTS AT WHICH THE TEST WAS CONDUCTED AND THE PROPERTY SERVICE LOCATION.

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CONTACT NAME :

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TEST BY :

CHRISTIAN NAURATO

Phone Number :

408840117

Figure 4. Fire plug test #2 results as at 28/10/2019

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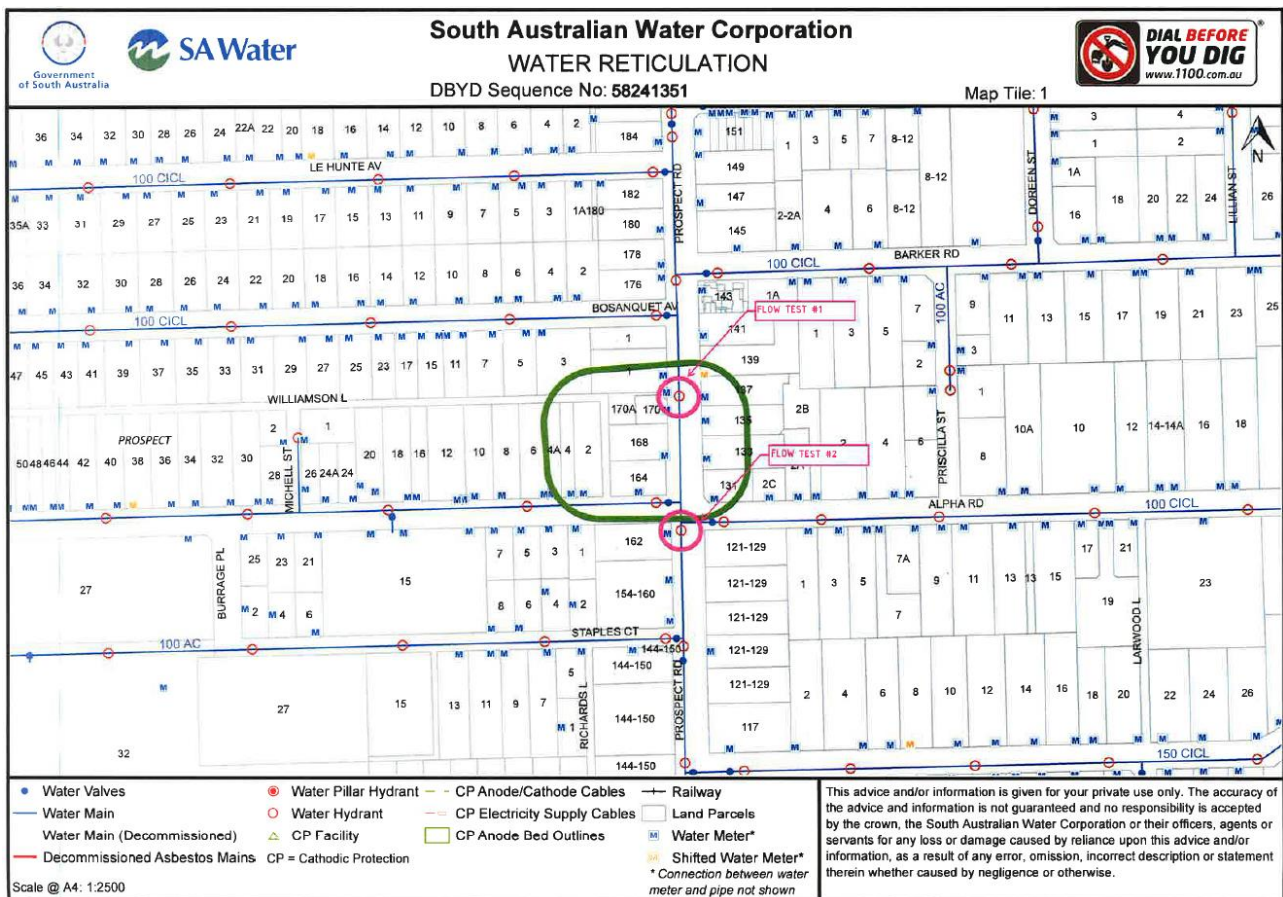


Figure 5. Fire plug test location as at 28/10/2019

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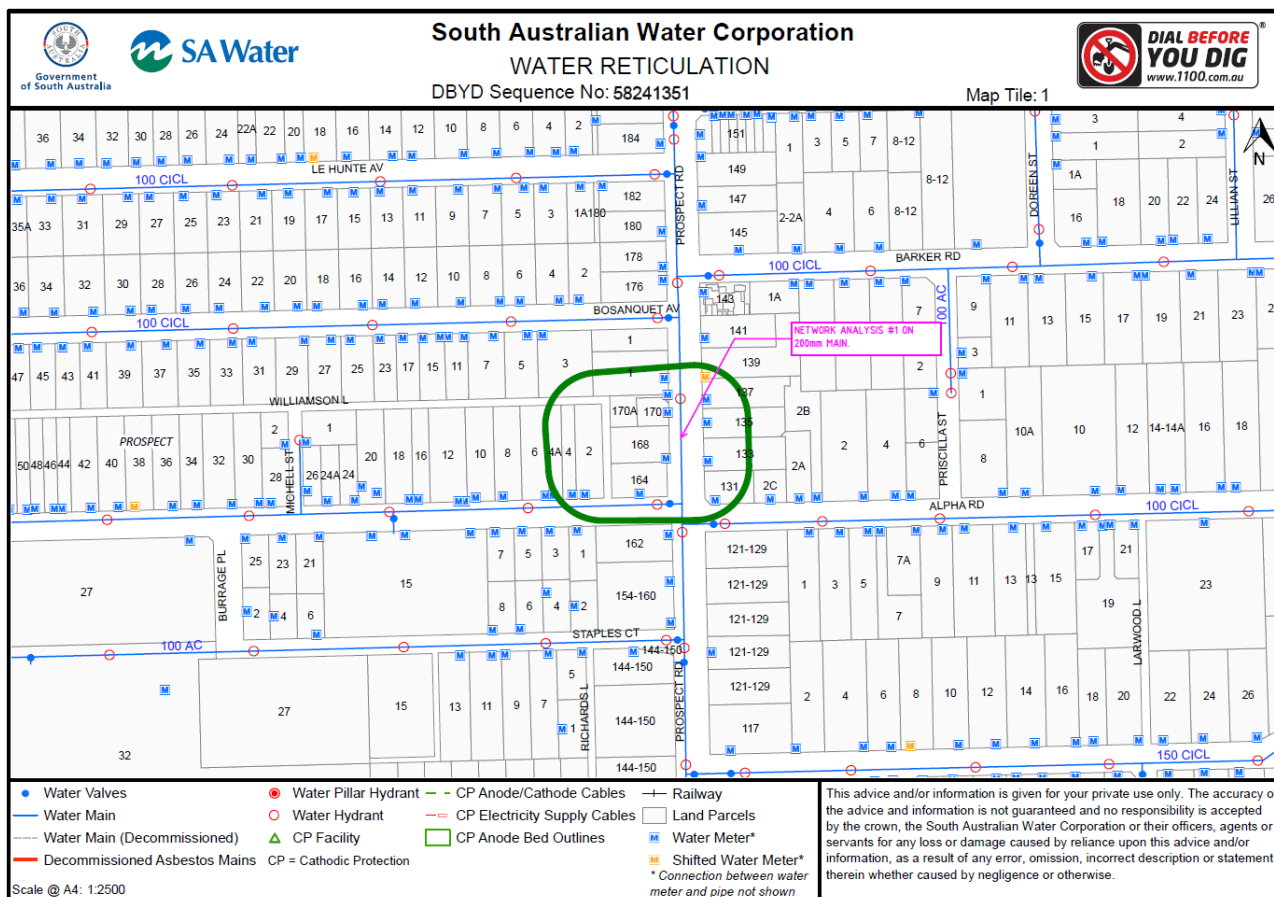


Figure 6. Requested network analysis location

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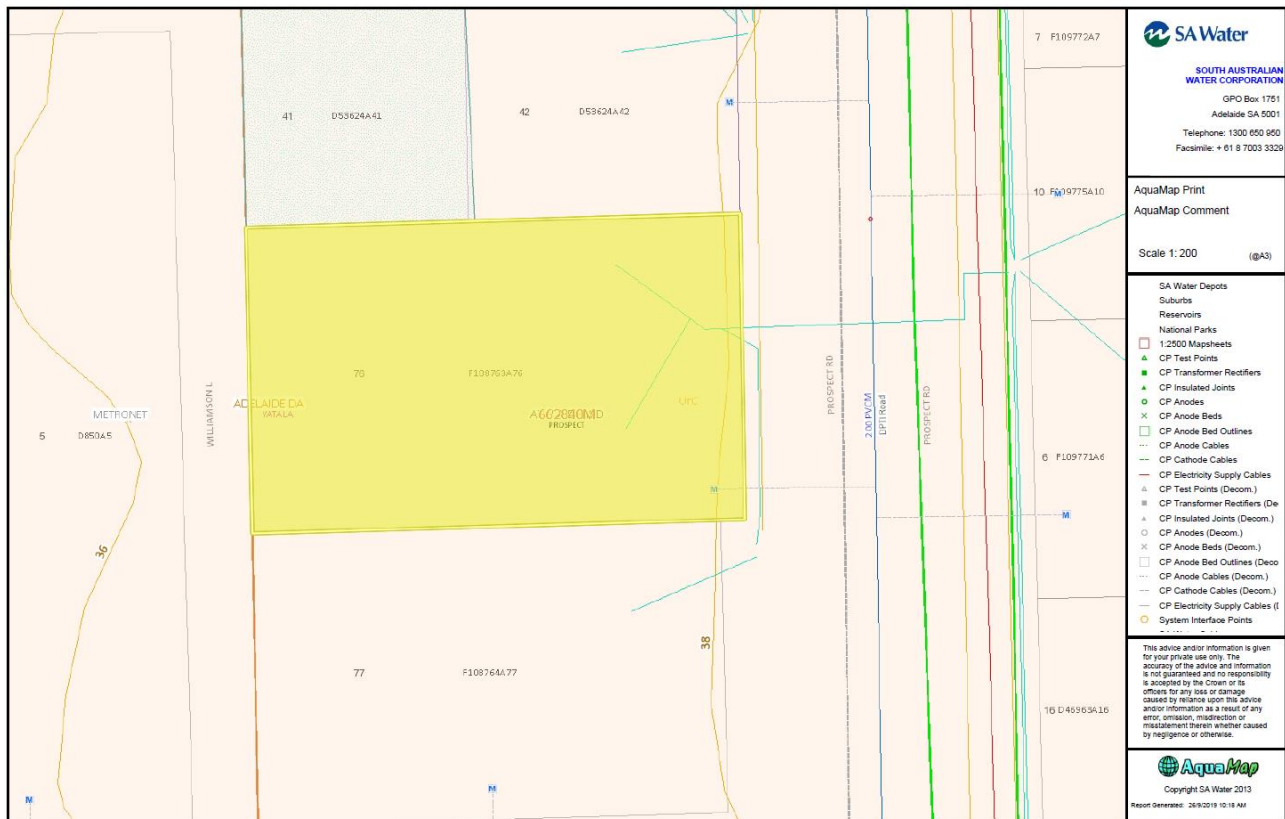


Figure 7. AquaMap site plan

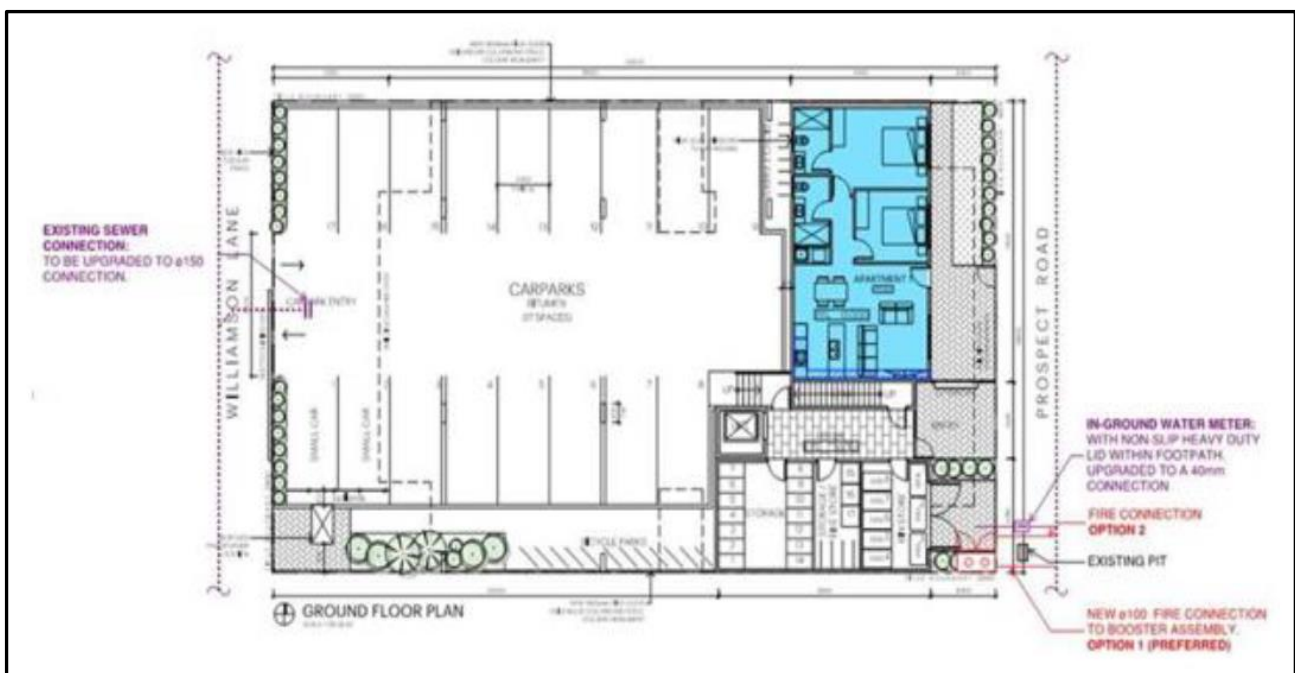


Figure 8. Proposed locations of water meter, sewer and fire connection

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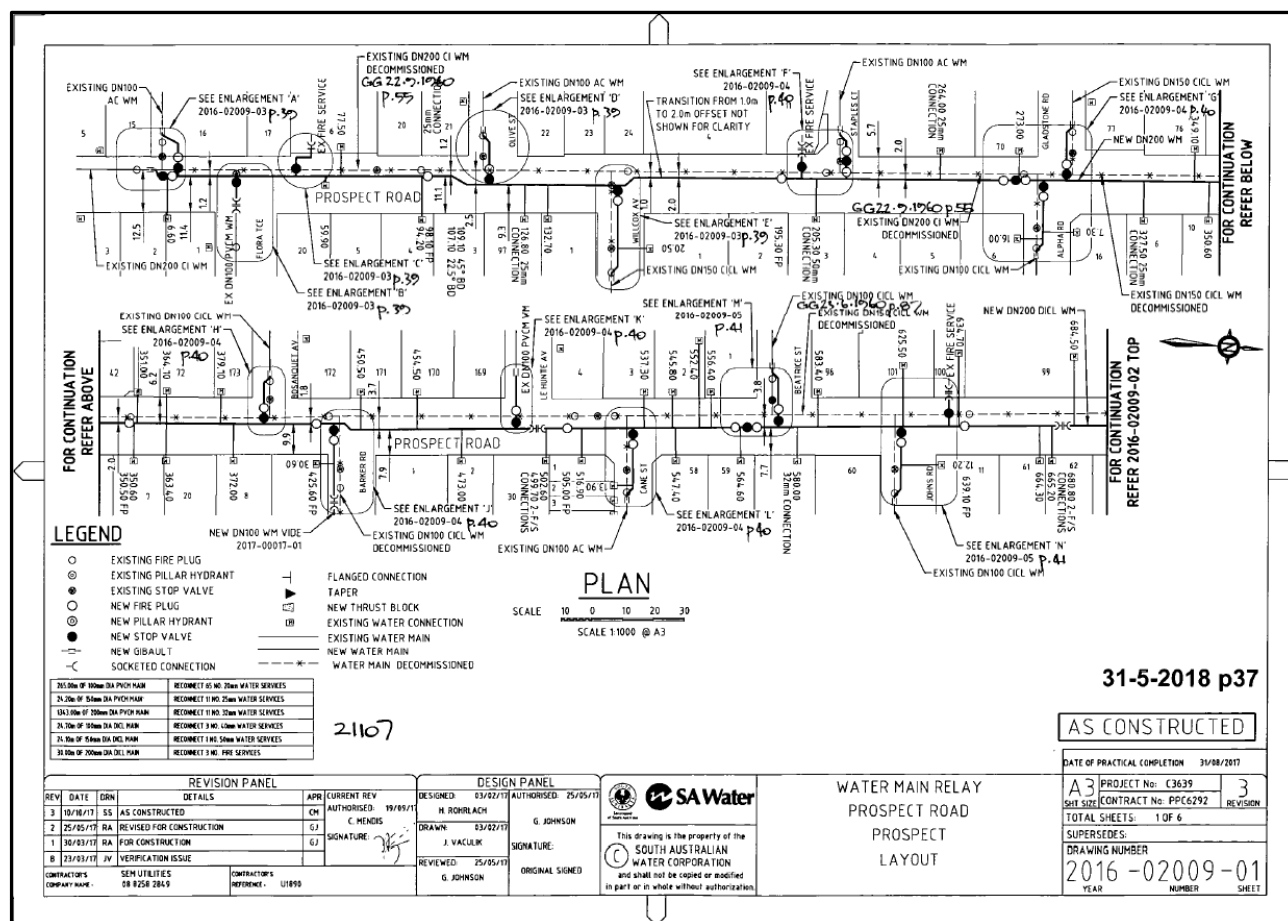


Figure 9. As-constructed SA Water drawing of DN200 PVC main in Prospect Road

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