

AA Draft Decision Response

Capacity Development
CAPEX



Molonglo Primary Extension Stage 1

Molonglo Primary Stage 1: Overall Objective

- Objective
 - Main objective:
 - Ensure integrity of supply to the Molonglo area as new loads arise. This includes integrity of supply for current consumers and future consumers.
 - To meet this objective this main will operate as part of the secondary system in the short to medium term
 - Secondary objective:
 - Provide an effective and efficient stage that can be utilised as part of long term plan for the looping of the Primary Main to provide security/continuity of supply
 - To meet this objective the main will be designed and constructed to enable inclusion into the loop in the long term, avoiding duplication of infrastructure.

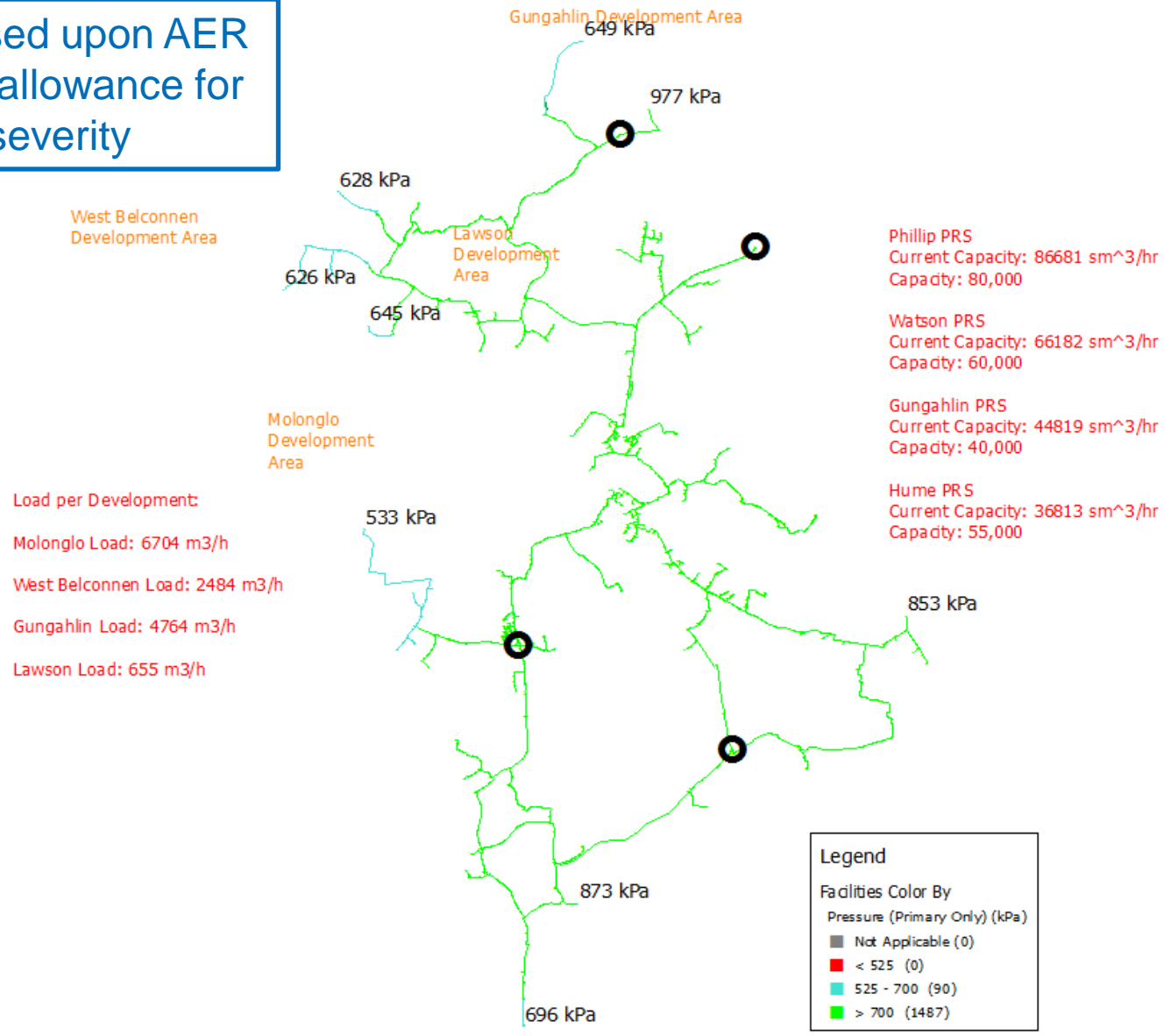
Molonglo Primary Stage 1: Schedule

- Schedule driver:
 - Capacity constraint within the secondary network in the Molonglo area caused by the growth of the Molonglo Valley Development.
- Basis for schedule:
 - System design pressures:
 - Secondary Pressure minimum : 525kPa
 - Medium Pressure minimum : 70kPa
 - Capacity of district regulators
 - Load Forecasts and terminal pressure

Sm ³ /hr	AAD			AER		
	Base Load	Winter (1:20)	Min kPa	Base Load	Winter (1:20)	Min kPa
Winter '18	4165	4831	674	3623	4203	709
Winter '19	4991	5789	614	4342	5037	655
Winter '20	5817	6748	542	5061	5870	599
Winter '21	6643	7706	454	5779	6704	533
Winter '22	7469	8664	342	6498	7538	454

Network Performance Winter 2021 (1:20 model)

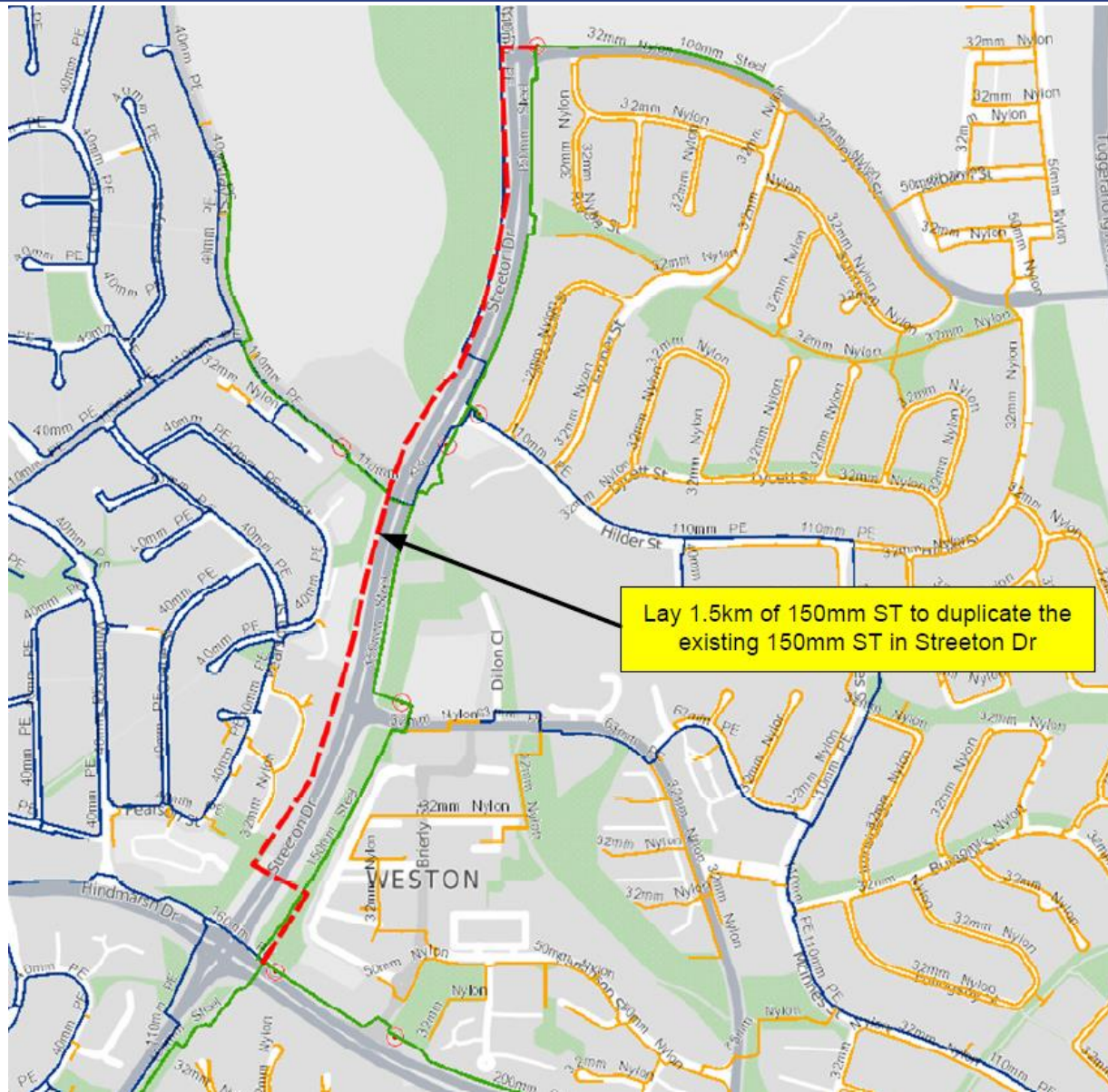
Modelling based upon AER forecast with allowance for winter severity



Network Performance Severe Winter 2021

- Basis:
 - AER forecast with allowance for 1:20 winter
- Analysis:
 - Terminal pressure drops to 533 kPa (at 'critical level') in Winter 2021
 - Cause is the growth in the Molonglo development leading to high pressure decay in the 150mm ST main in Streeton Drive
 - Potential restrictions and loss of supply to consumers fed by current Molonglo district regulator
- Credible remediation options:
 1. Duplicate 150mm ST main in Streeton Dr
 2. Lay Molonglo Primary Stage 1 in accordance with long term capacity plan

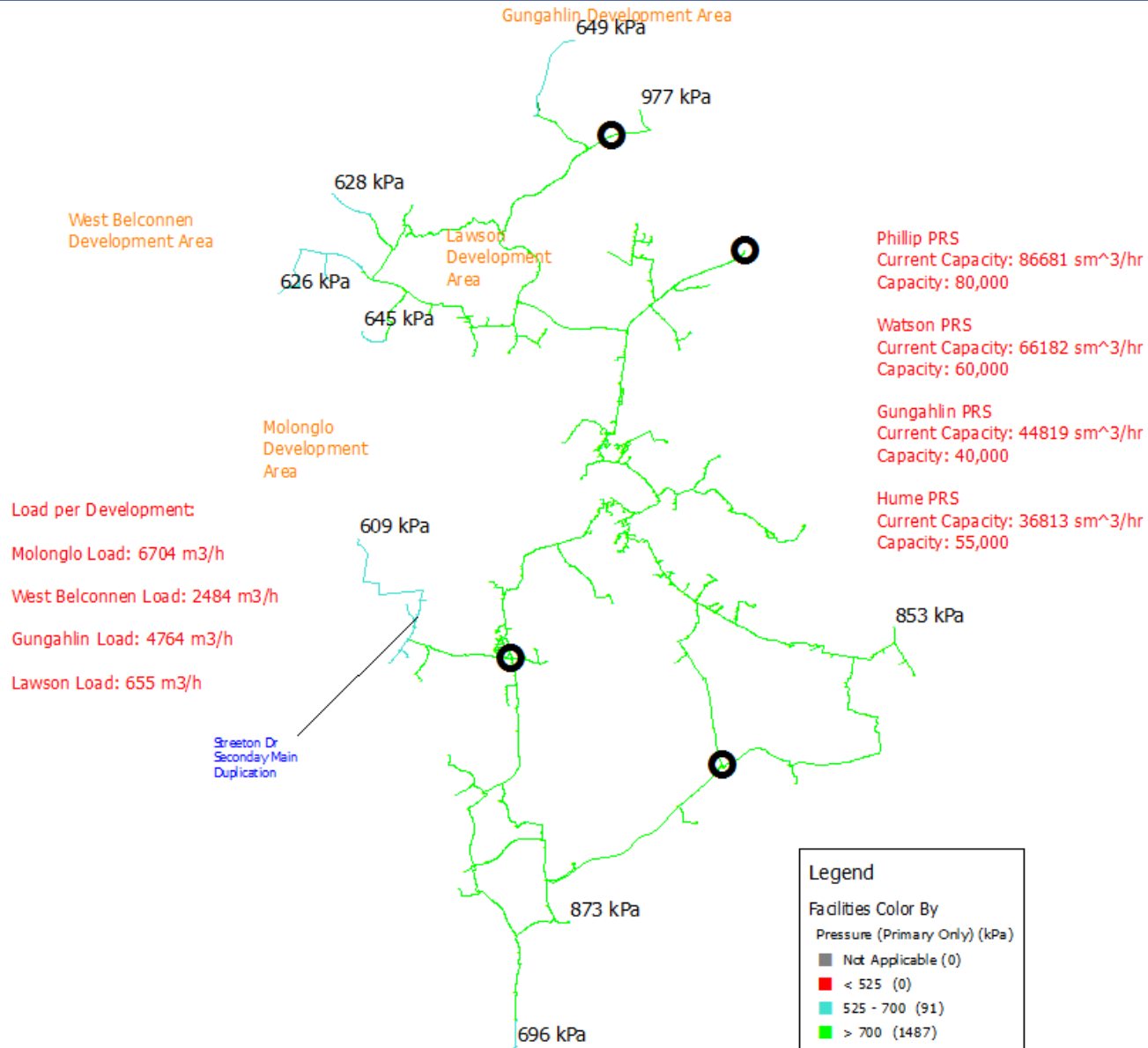
Option 1: Duplicate 150mm ST main in Streeton Dr



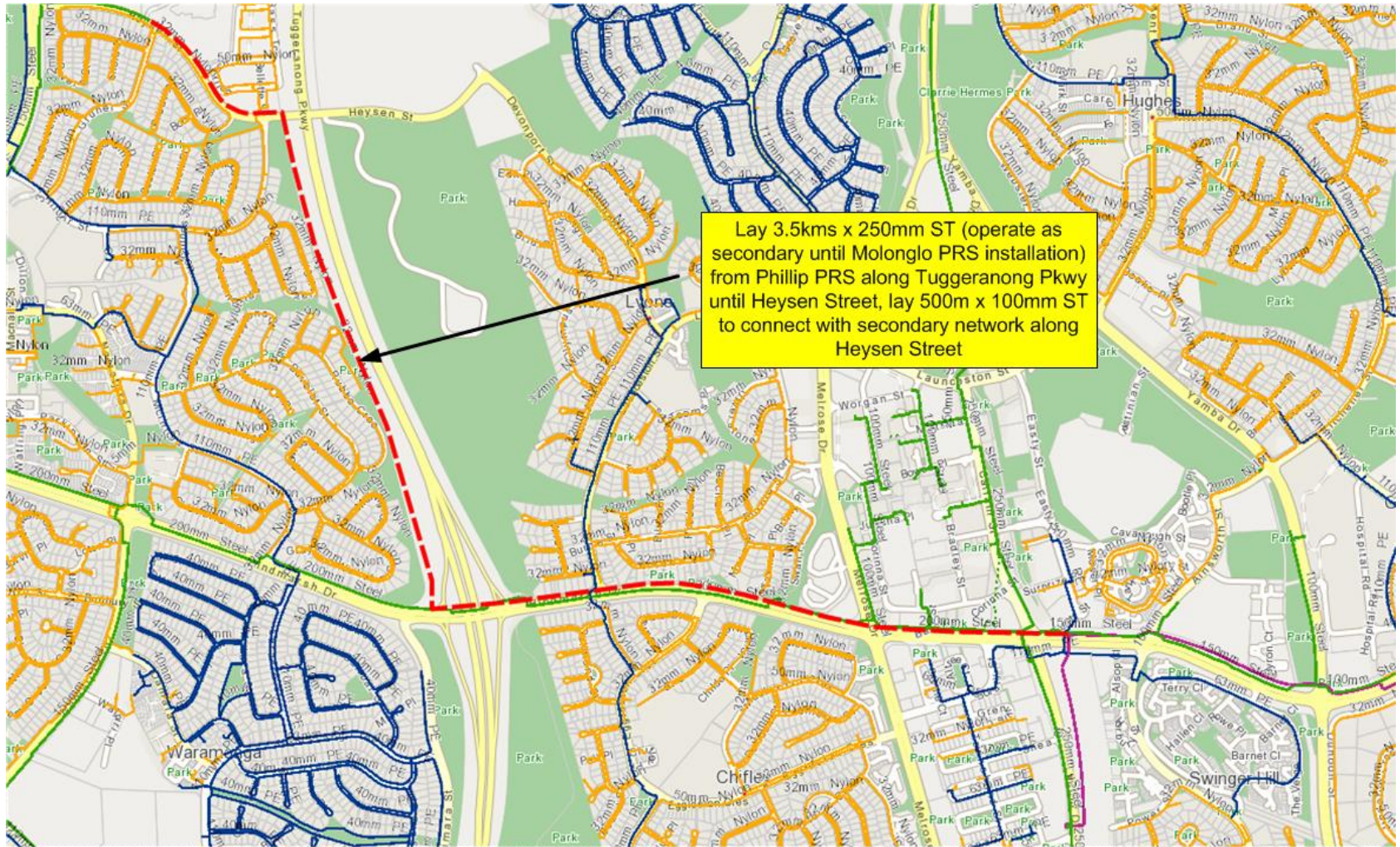
Option 1: Duplicate 150mm ST main in Streeton Dr

- Scope:
 - Lay 1.5km of 150mm ST main in Streeton drive (duplicating existing main)
- Cost:
 - \$2.2M
- Strengths:
 - Less expensive due to length and not building to primary standard
- Weaknesses
 - Only provides short term solution
 - Only minimal increase in capacity as indicated by terminal pressure
 - Does not provide for long term capacity plan for Primary main
 - Will be redundant.

Option 1: Network Performance after CDP



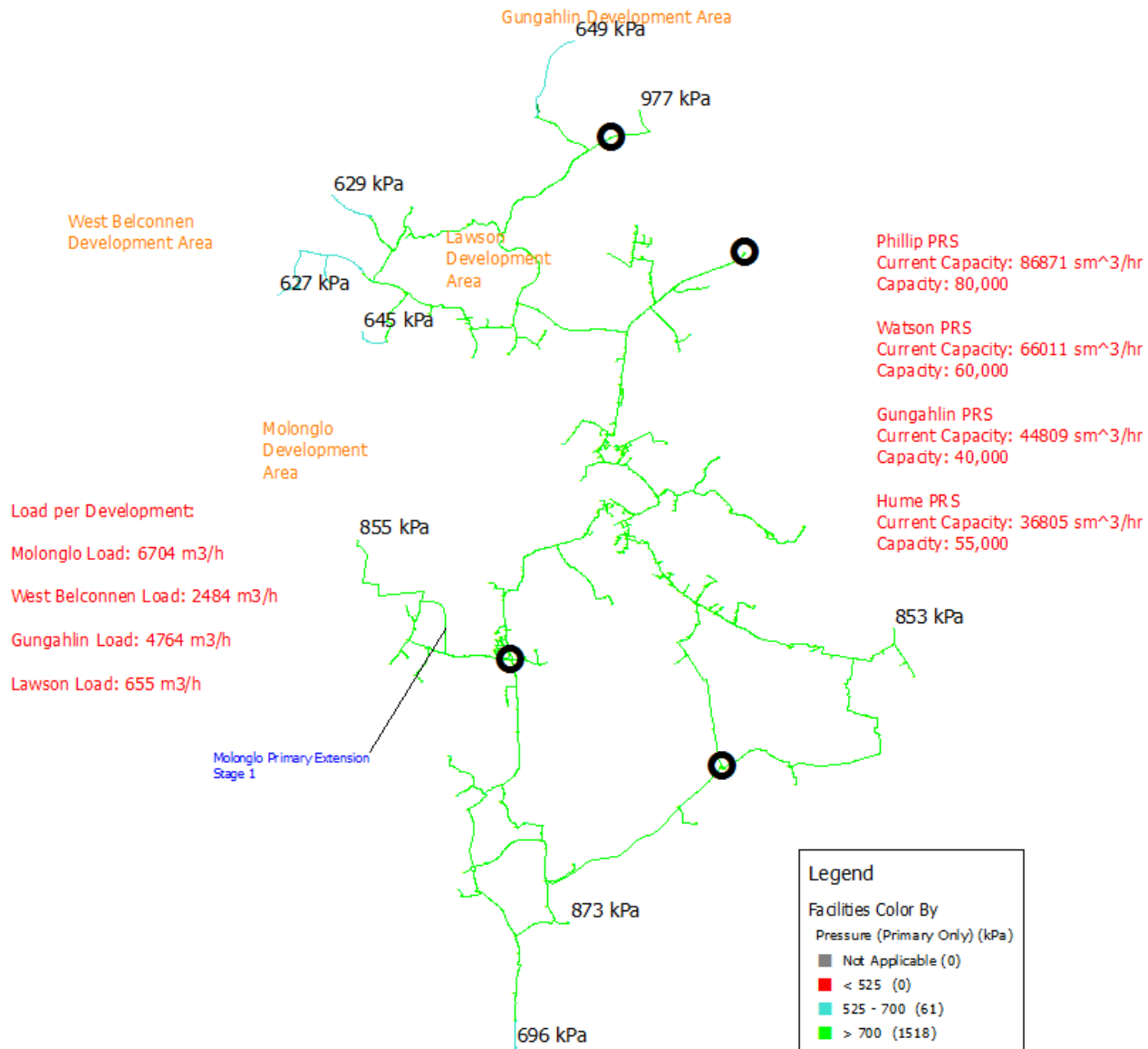
Option 2: Molonglo Primary Stage 1



Option 2: Molonglo Primary Stage 1

- Scope:
 - Lay 3.5km of 250mm ST Primary Main along Tuggeranong Pkwy (to initially operate as secondary)
 - Lay 500m of 100mm ST Secondary main along Heysen St
- Cost:
 - \$8.0M
- Strengths:
 - Provides long term solution
 - Substantive increase in capacity as indicated by terminal pressure
 - Supports long term capacity plan for Primary Main
 - Provides a second secondary feed into the Weston Creek Network improving the security of supply in the existing network
- Weaknesses
 - More expensive

Option 2: Network Performance After CDP



Options Comparison for Winter 2021

Options	Scope	Cost	Terminal Pressure	Comments
Option 1: Streeton Dr Secondary Main Duplication	Lay ~1.5km of 150mm ST to duplicate the existing 150mm ST in Streeton Dr. From Hindmarsh Dr to Heyseon St.	\$2.2m	Before: 533 kPa After: 609 kPa	<ul style="list-style-type: none"> • Short term solution • Not inline with long term strategy to construct a primary loop for increased capacity and security supply for the Canberra Network. • Further network reinforcement will be required in the near future.
Option 2: Molonglo Primary Extension Stage 1	Lay ~3.5km of 250mm ST (operate as secondary until Molonglo PRS installation) from Phillip PRS along Tuggeranong Pkwy until Heyson St, Lay 500m of 100mm ST to connect with secondary network along Heysen St	\$8.0m	Before: 533 kPa After: 855 kPa	<ul style="list-style-type: none"> • Long term solution • Inline with long term strategy to construct a primary loop for increased capacity and security supply for the Canberra Network.

Long term options comparison

Year	Molonglo Customer load (scmh)	Option 1		Option 2		Comments
		Terminal Pressure	Cost	Terminal Pressure	Cost	
2021	6704	609 kPa	\$2.2m	855 kPa	\$8.22m	
2022	7538	564 kPa	\$0	840 kPa	\$0	
2023	8372	817 kPa	\$8.22m	817 kPa	\$0	Option 1: Network reinforcement required in this year to maintain minimum network design pressure in the Molonglo area.
2024	9206	796 kPa	\$0	795 kPa	\$0	
2025	10039	770 kPa	\$0	768 kPa	\$0	
2026	10465	756 kPa	\$0	754 kPa	\$0	
2027	10890	742 kPa	\$0	739 kPa	\$0	
2028	11316	727 kPa	\$0	724 kPa	\$0	
2029	11741	711 kPa	\$0	708 kPa	\$0	
2030	12166	695 kPa	\$0	691 kPa	\$0	
		Total Cost	\$10.42m	Total Cost	\$8.22m	Option 2 has superior performance over 10 years.

Recommendation

- Option 2 provides a prudent and efficient outcome.

Project	Scope	Cost	Old Year Proposed Commencement	New Year Proposed Commencement
Molonglo Primary Stage 1	Lay ~3.5 km of 250mm ST (operate as secondary until Molonglo PRS installation) from Phillip PRS along Tuggeranong Pkwy until Heyson St, Lay 500m of 100mm ST to connect with secondary network along Heysen St	\$8.22m	2018	2019

The background features a dynamic composition of curved, overlapping shapes in various shades of blue (from light turquoise to deep navy) and white. The text is positioned in the upper left quadrant, set against a light blue curved backdrop.

Molonglo Secondary Extension Stage 2

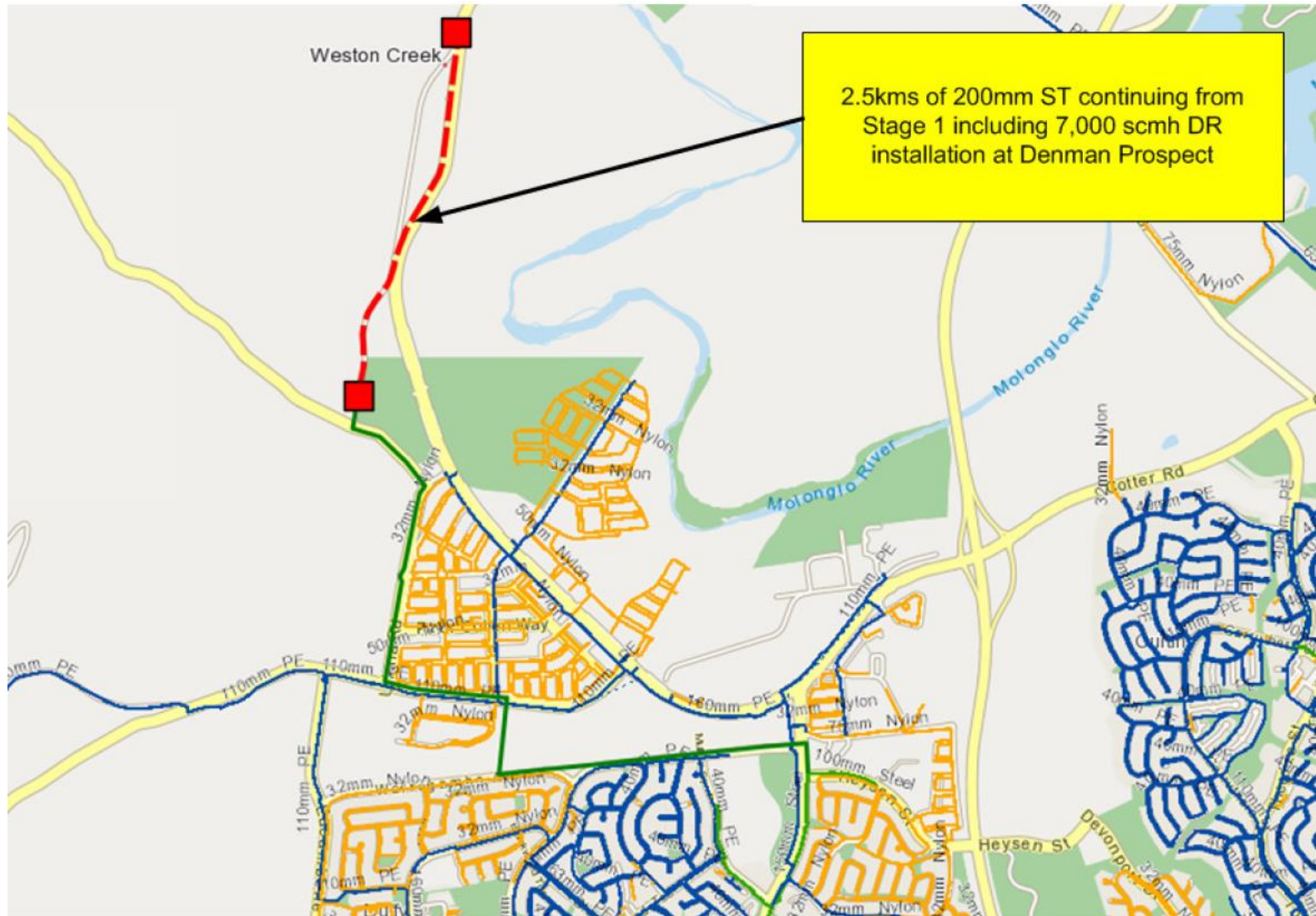
Molonglo Secondary Stage 2: Overall Objective

- Objective
 - Main objective:
 - Ensure integrity of supply to the Molonglo area, in particular the new estates in Denman Prospect, as new loads arise.
 - Ensure integrity of supply for existing consumers through:
 - Additional feed into the medium pressure network
 - Relieving of the 'work' by the existing SRS
- Schedule driver:
 - A 1 in 20 load forecast of 7538scmh by winter 2022
 - Existing SRS installed as part of the Molonglo secondary stage 1 will exceed its design capacity of 7000scmh
 - Subsequently outlet pressure will 'droop' thus limiting supply to customers.
 - Project schedule based upon planning, long lead requirements, etc.

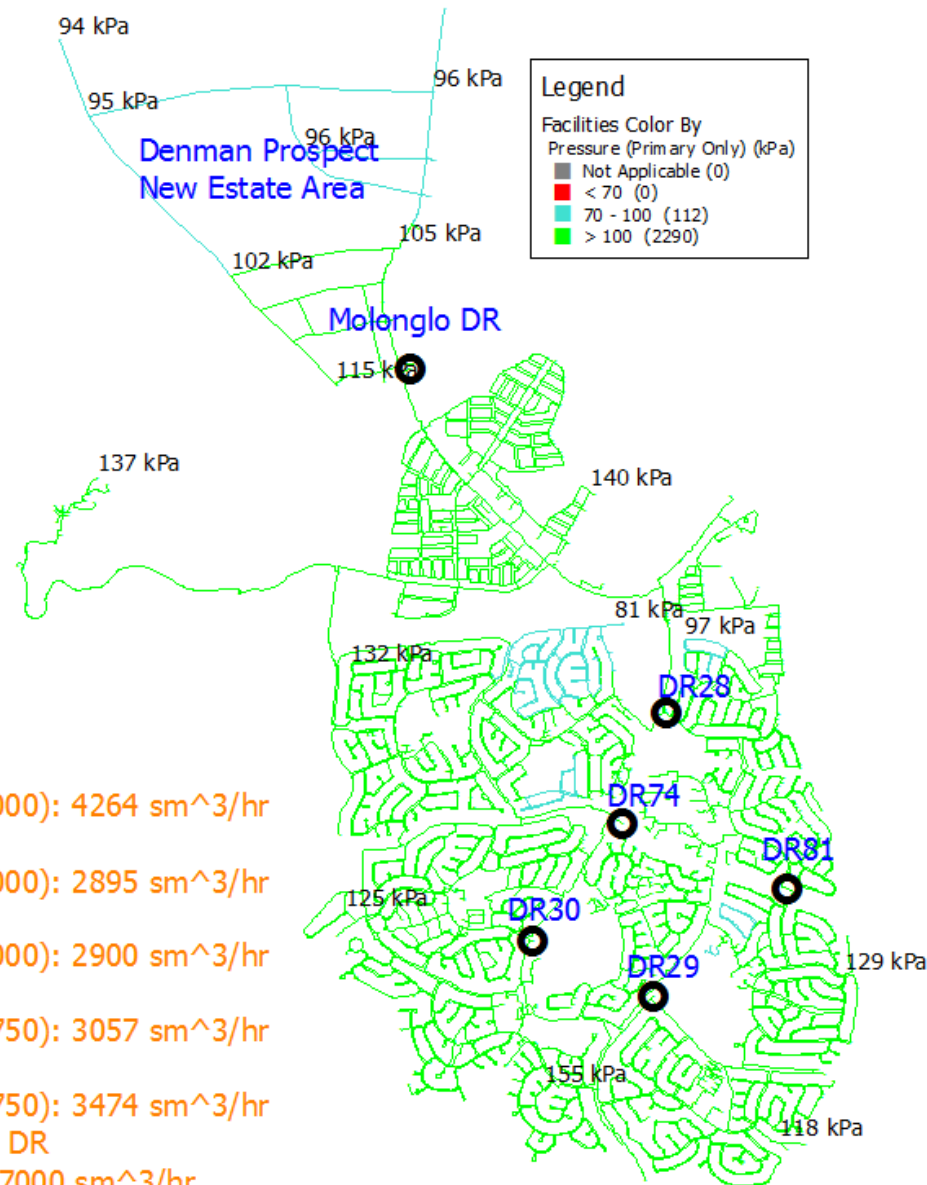
Options

- Predominate option
 - Lay 2.5km of 200mm ST and install 7,000 scmh SRS
- Additional options are constrained by:
 - Geography – restricting avenues of approach to the development area
 - Road/corridor infrastructure
 - Rollout/direction of new estate construction
- Other options considered:
 - Extending the existing medium pressure infrastructure
 - Does not relieve the load constraint on existing SRS
 - Install second DRS in vicinity
 - Does not provide long term solution as future load growth the north will still require a new SRS, making any 'duplication' redundant

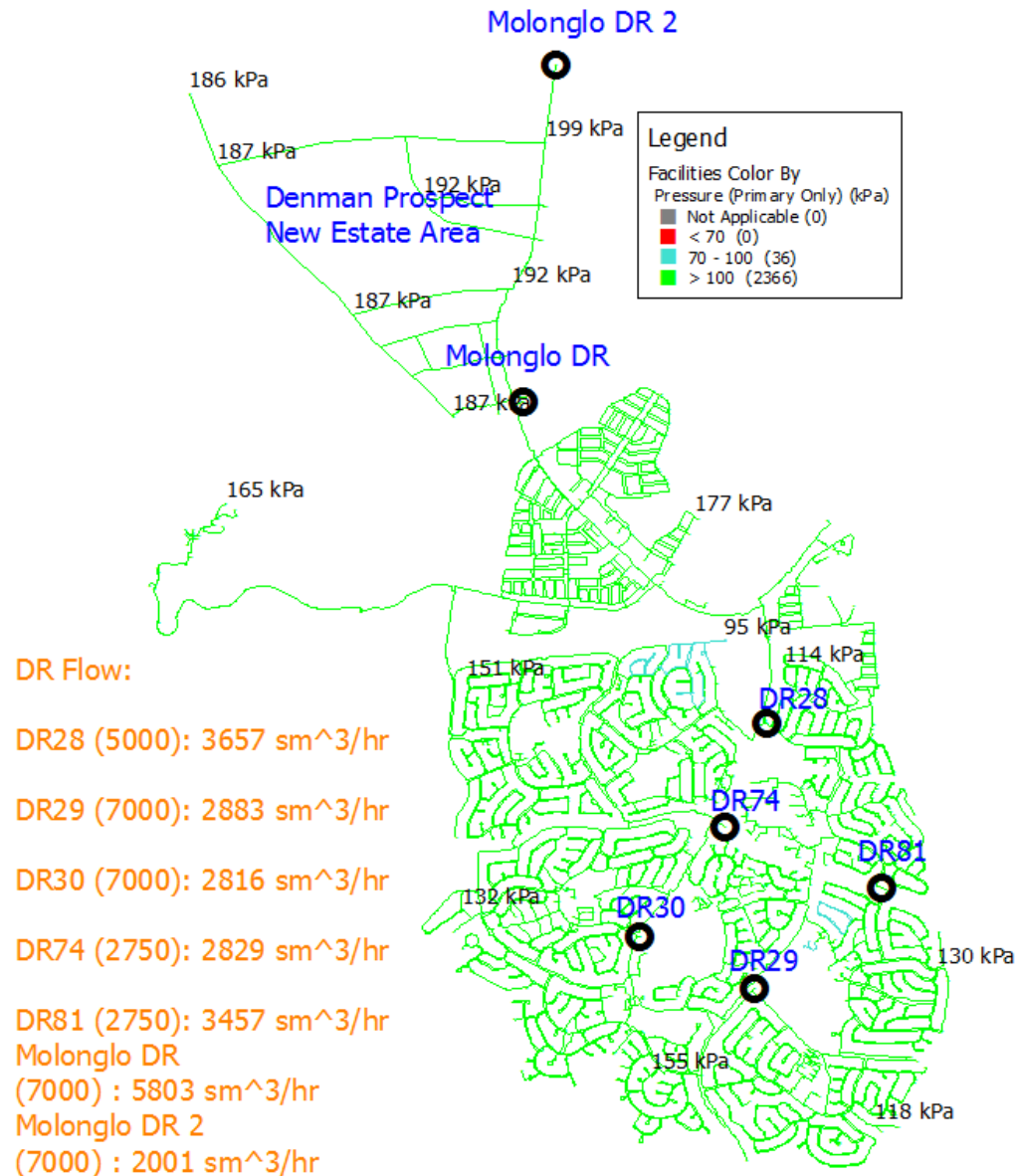
Molonglo Secondary Extension Stage 2



Network Performance Severe Winter 2022



Network Performance Severe Winter 2022 after CDP



Recommendation

- Complete project as per plan to provide efficient and prudent new supply to Denman area

Project	Scope	Cost	Old Year Proposed Commencement	New Year Proposed Commencement
Molonglo Secondary Extension Stage 2	Lay ~2.5 km of 200mm ST continuing from Stage 1 including 7,000 scmh DR installation at Denman Prospect.	\$3m	2017	2021