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Gas Network

Network Planning Report – Point Cook
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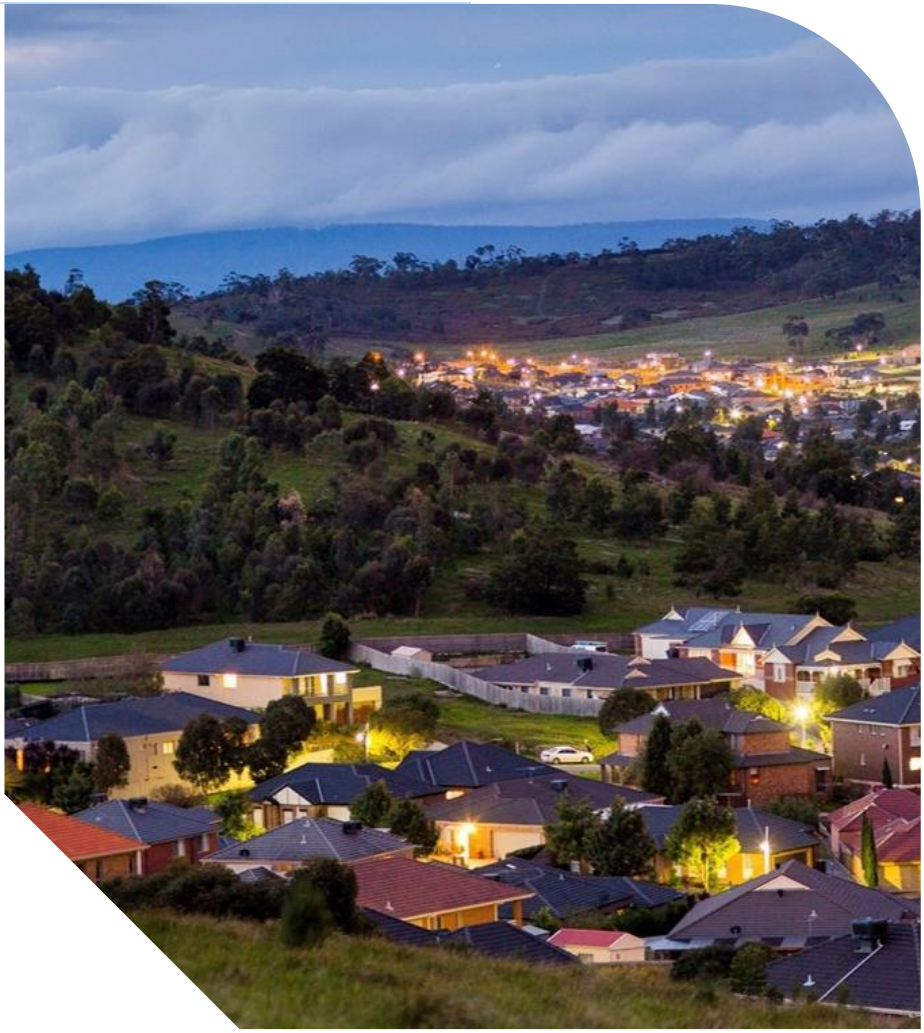

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Executive Summary

The Point Cook and Altona Meadows gas networks are continuing to experience substantial growth with the South-Western growth corridor and will be unable to support projected gas consumption growth. Therefore, the Point Cook network would require a reinforcement by FY2023/24 to increase network capacity in affected areas and maintain adequate minimum network pressure.

Recommendation - FY23/24

Looping of [C.I.C] of 200mm steel pipe from Old Sneydes Rd regulator outlet supply pipeline to tie-in to existing pipeline at Hacketts Rd, Point Cook.

1. Network Overview

The Point Cook and Altona Meadows gas networks are parts of AusNet Services' South Western metropolitan High Pressure (HP1) network. These networks are currently being supplied by a series of City Gates part of the Werribee, Tarneit, and Point Cook areas, with the closest supplying city gates at "Old Sneydes Rd" and "Laverton North" city gates regulators.

Point Cook is continuing to experience substantial development and expansions growing outwards from all current supply City Gate supply sources. This is causing continued supply pressure decline and limiting supply for customers in these areas.

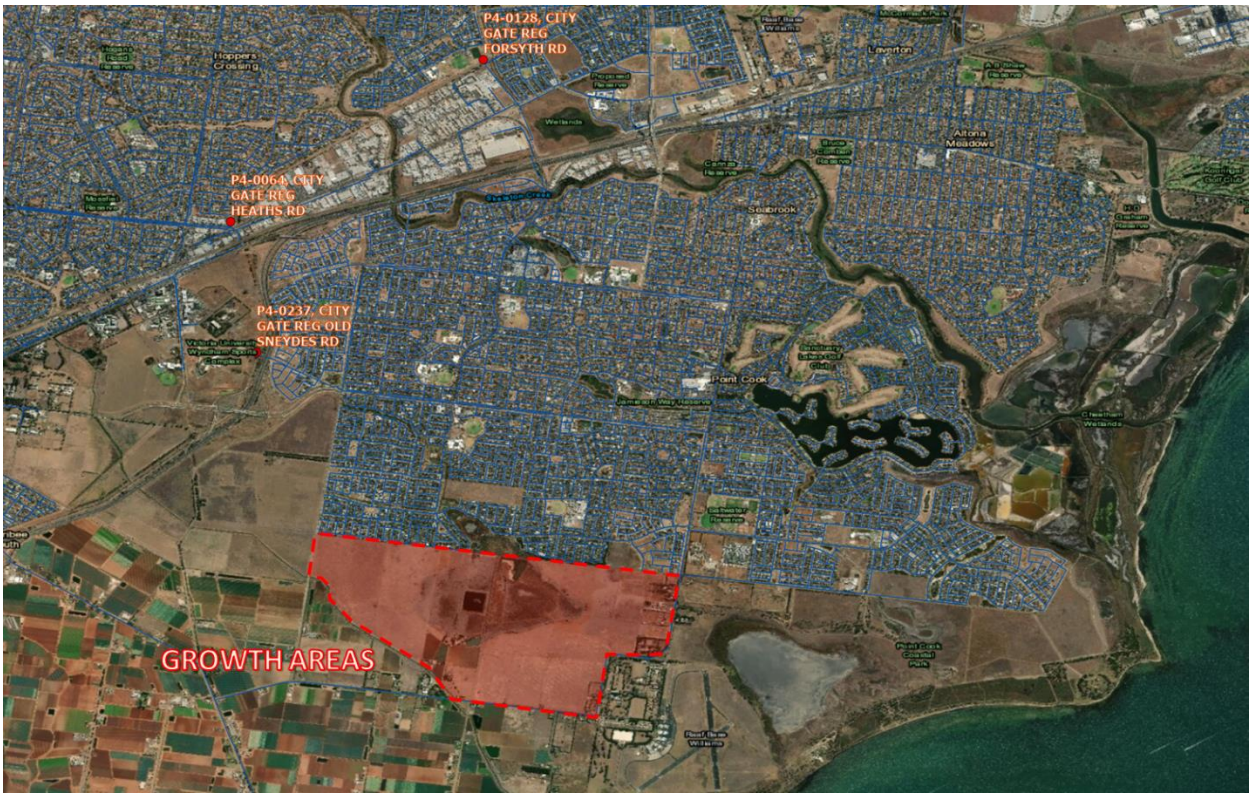

Figure 1: Point Cook gas distribution network overview

2. Network Performance

As a result of continued significant growth in the Werribee, Tarneit, and Point Cook growth corridor, network pressures at the Point Cook and Altona Meadows fringe areas have been experiencing an increase of low network pressures instances, falling below gas distribution code of 140kPa minimum requirement during peak demand periods. The chart below details the instances of low network pressure instances experienced in the Point Cook and Altona Meadows areas in recent years as of August 2020.

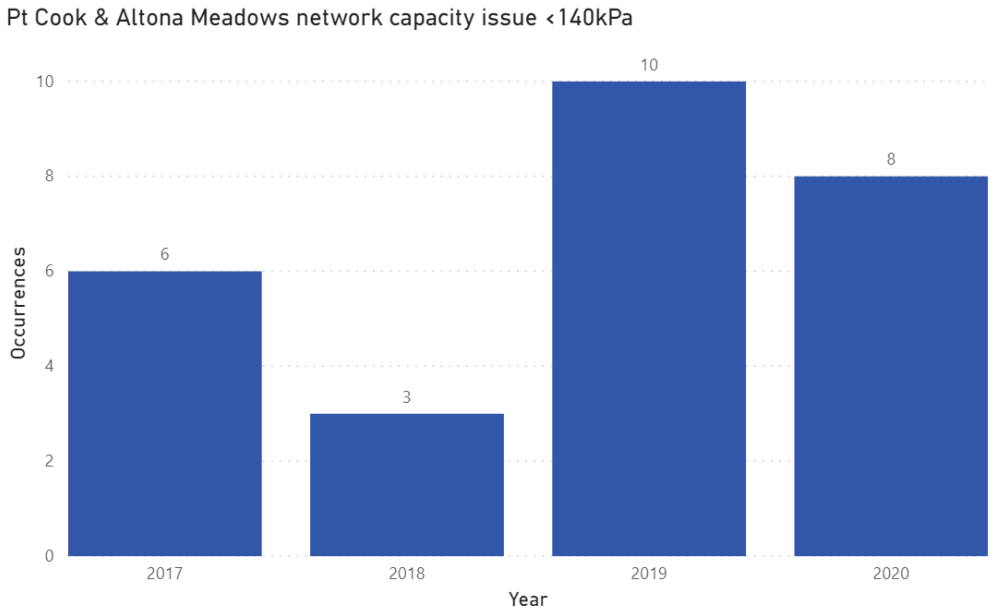

Figure 2: Point Cook and Altona Meadows Network Performance Issues

The lowest 20 instances of low fringe pressure event are shown below in below chart, dropping below Gas Distribution Code of 140kPa minimum during peak usage periods.

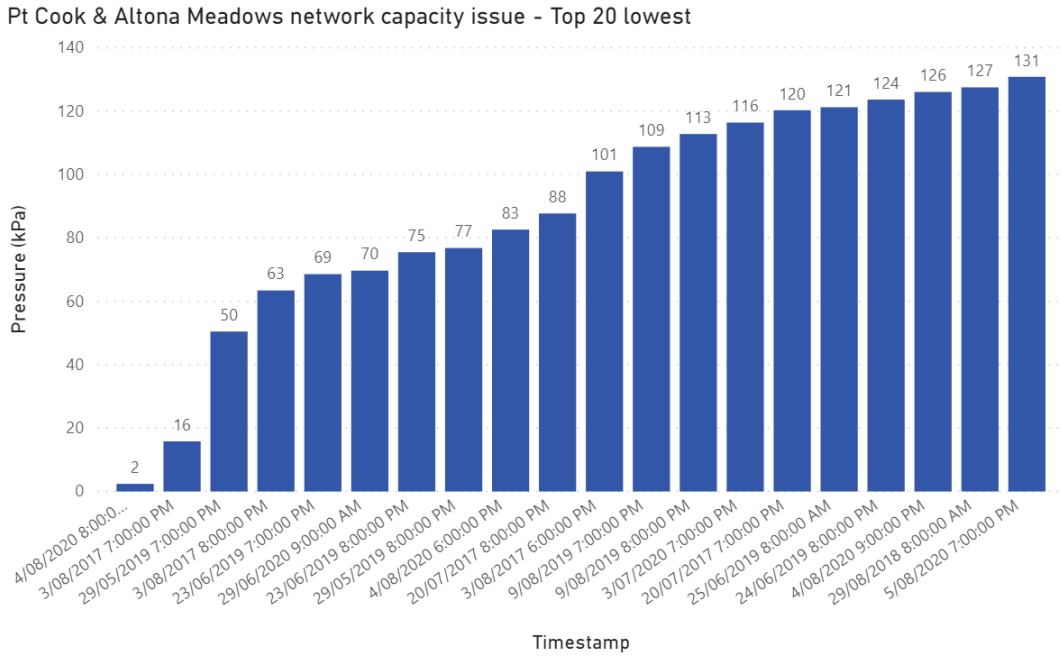

Figure 3: Lowest instances of fringe pressure at Point Cook

The increasing number of low network pressure instances shown above breaching gas distribution code of 140kPa minimum have been resulting in frequent customer supply impacts since 2015 showing the current capacity limitations of the Point Cook and Altona Meadows areas.

The major contributors to capacity constraints in the Point Cook and Altona Meadows networks include:

- Limited capacity with current supply mains outlet of closest city gate namely "Old Sneydes Rd" of 150mm steel pipe.
- Limited backbone supply mains throughout the large and growing Point Cook network.
- Expanding network fringes with continued residential developments in the Point Cook growth corridor.

3. Network Modelling

Network model for the Point Cook High Pressure network is matched with latest analysis of the network using SCADA monitoring, fringe pressures in 2020.

The matched model illustrates the affected areas at the Point Cook and Altona Meadows fringes as shown below.

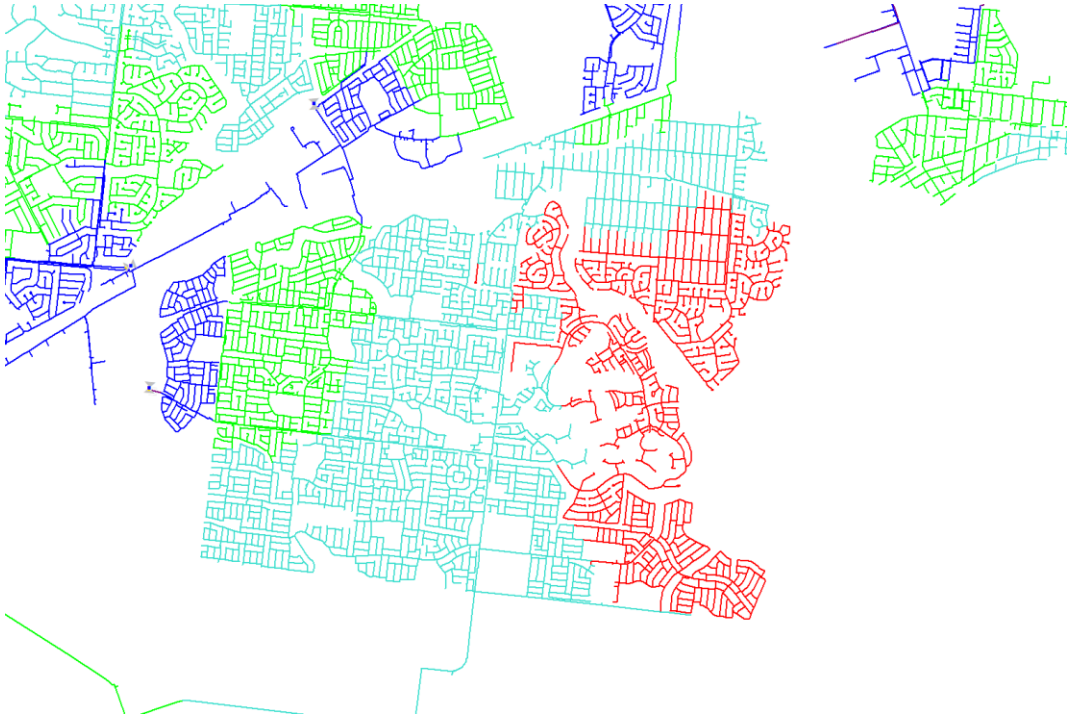

Figure 4: Point Cook model - winter 2020

Growth Forecasts rates provided by Financial Data Analytics team in AusNet Services' Finance department for the Point Cook area as shown in table below

Table 1: Point Cook & Altona Meadows Growth Rate Forecast

Postcode	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
3030	2.98%	3.02%	3.00%	3.03%	3.03%	3.03%
3028	0.53%	0.54%	0.53%	0.54%	0.54%	0.54%

Modelling the growth forecast rates above, the forecast minimum network pressures and estimated number of customer impact for the regulatory period can be obtained and detailed below:

Table 2: Point Cook & Altona Meadows HP1 forecasted minimum pressure and customer impact

Point Cook	2022/23	2023/24
Minimum pressure (kPa)	50	Reinforcement Required
Customer impact (no.)	12,000	-

Based on the consumption growth forecast, the Point Cook & Altona Meadows HP1 network will be unable to support projected gas consumption growth and would require a network reinforcement by FY2023/24 to boost network capacity in affected areas to maintain adequate minimum network pressure and comply with Gas distribution code.

4. Recommendations

4.1. Options considered

Several options were considered to increase the Point Cook and Altona Meadows network capacity, which include:

Table 3: Options Description Summary

OPTION	DESCRIPTION SUMMARY
1	No Capital Expenditure
2	Old Sneydes Rd regulator outlet pipe looping reinforcement
3	Fitzgerald Road reinforcement

4.2. Option 1 – Do Nothing / No Capital expenditure

All non-capital expenditure options have been utilised to alleviate pressure issues in the Point Cook and Altona Meadows network including:

- Increase of all connected supply regulators outlet pressures to maximum allowable pressure of 500kPa during peak demand periods.
- Raising regulators outlet pressure during off-peak period to improve line pack capacity during peak.

These measures have all been unsuccessful to adequately maintain minimum pressures in the Point Cook and Altona Meadows network and increasingly poor network pressures have been occurring.

4.2.1. Cost Estimations

Raise Old Sneydes Rd City Gate outlet pressure to 510kPa

- The cost of the non-capital expenditure option is to accept safety risk from regulator failures due to the acceleration of deterioration of the regulator components.

Total capital expenditure = $0

4.2.2. Capacity

The benefits of the non-capital expenditure option are the deferred capital expenditure.

4.3. Option 2 – Old Sneydes Road regulator outlet pipe looping reinforcements

Due to the current capacity constraints caused by the limited size of outlet supply pipe from the closest City Gate at Old Sneydes Rd of 150mm steel. Looping [C.I.C] section along this pipeline with 200mm size steel pipe would remove the current bottleneck in critical supply City Gate output to the network and considerably increase flow capacity and pressure to the affected fringes in both the Point Cook and Altona Meadows areas.

Network Reinforcement work comprises of:

- Construction of approximately [C.I.C] of 200mm steel pipe from Old Sneydes Rd regulator outlet across Princess Hwy along Murphy St to tie-in to 150mm steel mains at Hacketts Rd and Sneydes Rd intersection.

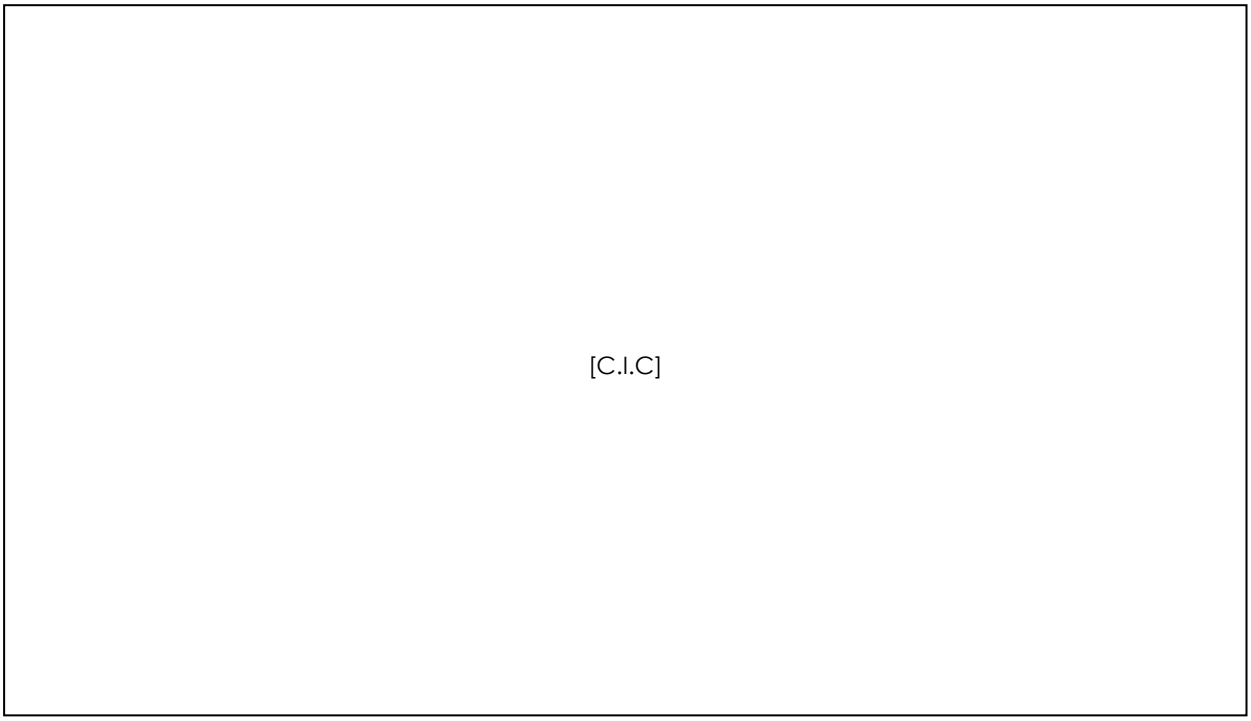

Figure 5: Point Cook and Altona Meadows reinforcement - Option 2

4.3.1. Cost Estimations

[C.I.C]

4.3.2. Capacity

Table 4: Option 2 – Point Cook Identified Network Reinforcement

2023/24 Forecast Minimum Pressure	Affected Customers	REINFORCEMENT SUMMARY	Post Reinforcement Minimum Pressure
28kPa	12,000	[C.I.C] of 250 Steel pipelines	168kPa

Table 5: Point Cook Forecast Minimum Network Pressures

2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
28kPa	168kPa	162kPa	159kPa	155kPa	145kPa

2023/24 Before Augmentation **2023/24 After Augmentation**

Figure 5: Point Cook before and after augmentation

4.4. Option 3 – Fitzgerald road reinforcement

Additional capacity can be provided by undertaking a reinforcement on Fitzgerald Road nearby to Laverton North City Gate. A mains extension of [C.I.C] in 200mm diameter steel pipe along Fitzgerald Road would be required to address current capacity shortfall in the Point Cook and Altona Meadows network.

Network Reinforcement work comprises of:

- Laying of [C.I.C] of 200mm steel pipe from Fitzgerald Road to tie-in to existing network along Merton Street, Point Cook.

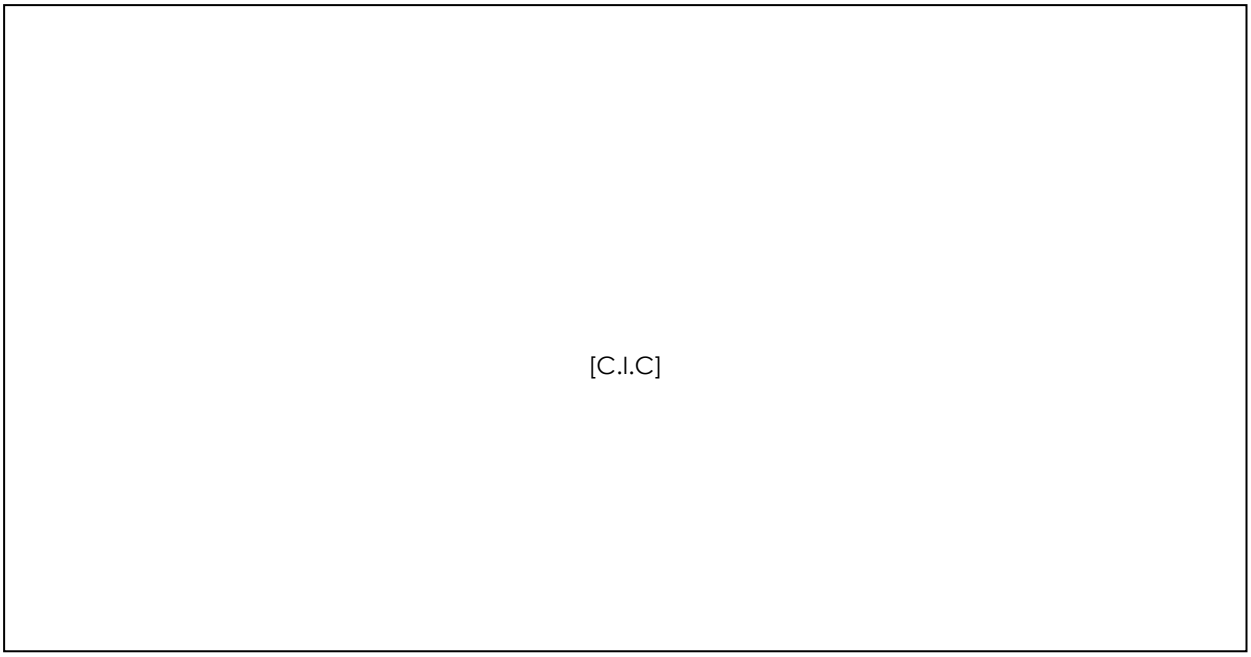

Figure 6: Point Cook and Altona Meadows reinforcement - Option 3

4.4.1. Cost and benefit analysis

[C.I.C]

4.4.2. Capacity

Table 6: Option 3 – Point Cook Identified Network Reinforcement

2023/24 Forecast Minimum Pressure	Affected Customers	REINFORCEMENT SUMMARY	Post Reinforcement Minimum Pressure
28kPa	12,000	[C.I.C] of 200mm Steel pipelines	168kPa

Table 7: Point Cook Forecast Minimum Network Pressures

2022/23	2023/24	2023/24	2024/25	2025/26	2027/28
28kPa	168kPa	162kPa	159kPa	155kPa	145kPa

2023/24 Before Augmentation **2023/24 After Augmentation**

Figure 8: Point Cook before and after augmentation

4.5. Benefit Assessment

The preferred reinforcement solution is Option 2 which involves the construction of a [C.I.C] of 200mm steel pipeline outlet of Old Sneydes Road to tie-in to existing network along Merton Street, Point Cook. This augmentation is considered the most cost-effective solution to augment the capacity of the Point Cook and Altona Meadows network and would be required to be in service by FY2023/2024.

Table 8: Options Assessment Summary

OPTION	BENEFITS	COSTS ($2020)
Option 1	Nil.	Continue reduction of Point Cook network capacity, hence impacting on the safety and reliability in the network.
Option 2	Preferred solution – most cost effective option of addressing current capacity shortfall for the growing Point Cook and Altona Meadows network.	[C.I.C]
Option 3	While this proposed option addresses current capacity shortfall, it requires double the length of mains compared to option 2 to achieve the same result. Additionally, the proposed mains extension in this option is also on a busier road and area, which would have higher project complexity resulting in higher project risks. Therefore, this option 3 is not a recommended solution.	[C.I.C]

5. Capital expenditure summary

Table 9: Capital Expenditure Summary

	2023-24	2024-25	2025-26	2026-27	2027-28	2024-28 TOTAL
			[C.I.C]			

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