2013 – 2017 Gas Access Arrangement Review (GAAR)

SP AusNet's Revised Access Arrangement Proposal (RAAP)

RAAP Chapter 2:
Capital Expenditure

Public

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SP AusNet
A member of Singapore Power Group

RAAP Chapter 2: Capital Expenditure

This chapter sets out SP AusNet's response to those aspects of the Draft Decision relating to Capital Expenditure which SP AusNet does not accept.

In the event of inconsistency between information contained in this chapter and SP AusNet's Access Arrangement Information (AAI) dated 30 March 2012, the information contained in this chapter prevails.

Confidential items are redacted in the public version of this chapter, replaced by "[C-I-C]".

1 Introduction

In the Draft Decision, the AER approved or did not materially change many aspects of SP AusNet's planned capital expenditure (capex) for the fourth regulatory period. Where this has been the case, amendments have been accepted and implemented.

The Draft Decision amendments, which SP AusNet does not accept, are set out in the following sections:

- Medium Pressure Mains Replacement [Section 2];
- Low Pressure Mains Replacement [Section 3];
- Mains replacement pass through [Section 4]
- Material Specific Mains Replacement – Class 250 [Section 5];
- Reactive Service Replacement [Section 6];
- Customer abolishment [Section 7];
- Capitalised overheads [Section 8]; and
- Capital contributions [Section 9].

The Draft Decision amendments, particularly in relation to Medium Pressure mains replacement, Low Pressure mains replacement and Customer abolishment above, result in a significant reduction in capex forecasts of 22.2% (or $117.5m)[1] over the fourth regulatory period. SP AusNet believes reductions of this magnitude are not supported by the evidence before the AER and result in a capex forecast that is not consistent with r.79 of the National Gas Rules (NGR).

The forecast information set out in this response to the Draft Decision accords with all of the applicable requirements of the NGR.

In addition to the required information, SP AusNet provides a number of Appendices, which support the expenditure forecast:

- RAAP Appendix 2.A: Tenix maintenance report of Medium pressure asset condition;
- RAAP Appendix 2.B: Approved Medium Pressure Business Cases;

[1] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p. 80.

- RAAP Appendix 2.C: ESV information request submission on SP AusNet's mains replacement methodology.

1.1 Revised Proposal

SP AusNet's revised capital expenditure forecast is presented below.

Table 2-1: Planned capital expenditure forecast summary[2]

$M, $2012	2013	2014	2015	2016	2017	Total
Mains replacement	23.2	26.1	26.7	27.1	29.7	132.9
Residential connections	36.0	36.5	37.6	36.5	35.3	181.9
Commercial/industrial connections	3.5	3.8	4.0	4.0	4.1	19.4
Residential meter replacement	4.8	5.1	4.5	4.4	4.3	23.0
Commercial/industrial meter replacement	0.9	1.0	1.0	1.0	1.1	5.0
Augmentation	6.1	6.0	6.9	1.0	2.3	22.2
IT	13.6	13.0	6.9	7.5	7.6	48.6
SCADA	0.9	0.8	0.9	0.8	0.8	4.3
Other	2.5	4.2	4.8	4.8	3.8	20.1
Gas Extensions-NGEP	1.5	1.0	0.1	0.1	0.0	2.8
Overheads	12.6	12.8	12.9	12.9	13.0	64.2
Gross capital expenditure	**105.7**	**110.4**	**106.3**	**100.1**	**102.1**	**524.6**
Customer contributions	4.0	4.1	4.2	4.3	4.4	21.0
Government contributions	0.0	1.7	0.0	0.0	0.0	1.7
Net capital expenditure	**101.7**	**104.6**	**102.0**	**95.8**	**97.7**	**501.9**

Source: SP AusNet

[2] Table presented may not add due to rounding.

2 Medium Pressure Mains Replacement Program

The Draft Decision amendments remove the medium pressure (MP) mains replacement program on the grounds that SP AusNet has not demonstrated that it is necessary or efficient. SP AusNet considers that this decision is based on a fundamental misunderstanding of the risk to public and employee safety posed by deterioration on the MP mains relative to the low pressure mains network. Specifically, MP mains present **3 times** the risk of equivalent assets operating at low pressure.

The replacement program proposed by SP AusNet targets medium pressure mains that have already failed the fracture incidence rate (FIR) and leakage incident rate (LIR) thresholds. The evidence presented in the original AAI and in the sections below show a continued deterioration of the leakage rate of the cast iron MP mains, in particular, to levels exceeding those seen on the low pressure network.

As the low pressure mains replacement program has been approved by the AER as consistent with r. 79(2)(c) of the NGR, SP AusNet considers a decision to reject the replacement of MP cast iron mains, with comparable failure rates to LP (but triple the safety risk) cannot be inconsistent with r.79 of the NGR. Therefore, the decision to remove the MP mains replacement program must be in error.

SP AusNet considers the MP replacement program to be a higher priority than the already approved low pressure mains replacement program.

2.1 SP AusNet Proposal

SP AusNet proposed the introduction of a proactive MP mains replacement program for the fourth regulatory period, with approximately 155km (31km p.a.) of MP assets to be decommissioned.

Table 2-2: Proposed MP replacement program[3]

	2013	2014	2015	2016	2017	2013-17 Total
Length (km)	28.6	30.2	29.2	29.8	37.8	**155.5**
Unit Rate ($/m)	185.5	197.1	216.6	207.9	209.3	**203.7**
Total Exp ($M)	**5.297**	**5.954**	**6.317**	**6.185**	**7.910**	**31.663**

Source: SP AusNet - Repeat of Table 11, SP AusNet's Mains & Services Strategy (AMS 30-52), March 2012, p 30. (Expenditure is in Direct 2011, excluding escalation)

Safety is the fundamental driver for the introduction of a MP mains replacement program, consistent with the delivery of the established low pressure mains replacement program.

[3] Dollars presented in tables have been expressed in real 2011, unescalated to aid in the reconciliation with the AER's capex model. Tables presented in this chapter may not add due to rounding.

In replacing approximately 31km p.a. of MP mains, SP AusNet will target the worst performing assets, hence minimising the risk to property and communities posed by the network. As is evident from Table 2-3, the removal of cast iron, Class 250 PE and unprotected steel mains are of highest safety priority.

Table 2-3: Pressure and material risk analysis

	Material	Average Leak Incidence[4] (leaks / km) (A)	Gas Flow Ratio[5] (B)	Risk Weighting (A x B)
High Pressure	PE	0.02	11.95	0.24
	Steel (Pr)	0.03	11.95	0.36
Medium Pressure	PE	0.04	4.01	0.16
	Steel (Pr)	0.19	4.01	0.76
	Steel (UPr)	0.36	4.01	**1.44**
	Class 250 PE	0.95	4.01	**3.81**
	Cast Iron	1.28	4.01	**5.13**
Low Pressure	PVC	0.16	1.00	0.16
	Steel (Pr)	0.54	1.00	0.54
	Steel (UPr)	0.68	1.00	0.68
	Cast Iron	1.47	1.00	1.47

Source: SP AusNet - Repeat of Table 11, SP AusNet's Mains & Services Strategy (AMS 30-52), page 30.

Further detail on the MP mains replacement program is provided in SP AusNet's original access arrangement proposal and supporting evidence.[6] These documents highlight the importance of this program as a key control measure to maintain the safety risks on SP AusNet distribution network to "As Low as Reasonably Practicable" (ALARP).

[4] Average Leak Incident Rate per year between the years 2007-2010 was used for this analysis.

[5] Refer to *SP AusNet's detailed Mains and Service Strategy*, Appendix 5J.3 for the underlying calculations.

[6] SP AusNet's Asset Management Strategy (AMS 30-01), Asset Management Plan (AMP 30-01) and Mains and Services Strategy (AMS 30-52)

2.2 Draft Decision

The Draft Decision rejected SP AusNet's proposed MP mains replacement program on the basis that the expenditure was not considered necessary, as required by clause 79(2)(c)(i)-(ii), or prudent and efficient as required by clause 79(1)(a) of the NGR.[7]

The AER acknowledged that the MP mains replacement program can maintain and improve the safety and integrity of services, but considered there was insufficient justification that the program expenditure was necessary.[8]

The AER also concluded that replacing the entire MP mains network is not prudent and efficient given that two thirds of the MP network is stable and that some of the replacement will be "like for like" replacement rather than an upgrade to high pressure.[9]

The AER also noted that the LIR for cast iron in the MP network is relatively stable and that a continuing increase in the rate would be expected in order to justify undertaking the replacement program on a proactive basis.[10]

In support of its decision, the AER drew heavily on advice provided by its engineering consultant, Zincara. In its assessment, Zincara noted:

- The current MP LIR is inconclusive to whether it is behaving in a cyclical manner or if there is an underlying increasing trend. Apart from unprotected steel, the number of leaks in the other materials has remained relatively constant and it is unclear whether the trend in the unprotected steel is increasing or cyclical.
- SP AusNet prioritises its mains replacement program based on the deterioration rate of the MP system and the technical life of the pipe material.
- The prioritisation methodology does provide a system for categorizing which mains are to be replaced first. However, it does not justify that the main replacement program has to commence in 2013.
- Further work should be done in conjunction to when the pipes are likely to fail after it has reached its "theoretical" technical life.
- SP AusNet's replacement method essentially consists of a "like for like" replacement and concluded that "like for like" method is already used during ad hoc replacement and as such, there is no specific advantage in moving to a programed replacement.[11]

Zincara concluded that there is insufficient justification for the program as there is no indication that the current safety level in the MP network is unsatisfactory. In addition, Zincara noted that there was no indication that SP AusNet is unable to manage the current leak program through its rectification work or that there is a capital and operating expenditure trade off. Therefore, Zincara recommended that the program is not justified, or prudent and efficient.[12]

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[7] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p. 22.

[8] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p. 52.

[9] Ibid, p. 52.

[10] Ibid, pp. 51-52.

[11] Zincara, *Review of SP AusNet's Capital Expenditure*, 7 September 2012, p. 8-10.

[12] Zincara, Review of SP AusNet's Capital Expenditure, 7 September 2012, p. 11.

2.3 SP AusNet Response

SP AusNet maintains its position that the MP mains replacement program achieves, or contributes to the achievement of the NGO; and complies with clauses 79(2)(c)(i)-(ii) and 79(1)(a) of the NGR. In reaching its conclusions on the MP mains replacement program, the Draft Decision contains two major categories of misunderstandings or criticisms being:

- A fundamental underestimation of the level of public safety risk on the identified sections of the MP network.
- A lack of understanding in the Zincara report of SP AusNet's mains replacement methodology (used to support the Draft Decision).

SP AusNet addresses these in the sections below and also provides additional evidence from its primary service provider, Tenix.

2.3.1 Level of Public Safety Risk in SP AusNet's MP Network

Safety is the fundamental driver for the introduction of a MP mains replacement program.

Under s.32 of the Gas Safety Act, SP AusNet has a statutory obligation to "manage and operate each of its facilities to minimise as far as practicable" the hazards and risks to the safety of the public (and to its employees) from the operation of those assets. SP AusNet considers leak incident rates as a key indicator of network safety. As emphasised throughout SP AusNet's original access arrangement proposal and supporting documentation: [13]

> *"Each leak on the network represents a real and present risk to safety; with each having the potential to cause death or injury should leaking gas build up to sufficient levels to become explosive. Although this risk can never be entirely eradicated, it is SP AusNet's obligation to minimise these risks as far as is reasonably practicable. The mains replacement program forms part of the control measures to minimise this risk."*

SP AusNet has identified the MP network (specifically mains constructed of cast iron, unprotected steel and Class 250 PE) poses a significant risk to the public due to continually increasing fractures and leakage rates, and the increased network pressure these assets operate. Medium pressure mains currently expose the public and SP AusNet's employees to safety risks that are approximately three times greater than equivalent assets operating at low pressure.[14]

SP AusNet considers this level of risk is unacceptable to the public and to its employees as they are exposed to energy release levels which are far greater than at low pressure. The continued increasing mains fracture and leakage rates within SP AusNet's MP network directs the specific targeting of these high risk mains (cast iron,

[13] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, p.102.

[14] The energy released (i.e. volume of gas) from a leak on a main operating at medium pressure is approximately 3 times that of an equivalent leak on low pressure (refer to Table 2-3). The higher release rate increases the likelihood of an explosive atmosphere being created (i.e. 5%-15% natural gas in air mixture).

unprotected steel and Class 250 PE) and defines the required rate of replacement (31km p.a.) needed to reduce risk to ALARP.

SP AusNet believes the Draft Decision is based on a misunderstanding about the current level of safety risk borne by SP AusNet's medium pressure network in relation to three issues:

1. MP leak trends;
2. MP network stability; and
3. The acceptable level of risk of SP AusNet's MP network.

Each issue is expanded in greater detail below.

MP network leak trends are increasing

The Draft Decision states that the LIR for MP cast iron mains is stable and therefore concluded that the proposed proactive replacement is not justifiable.[15] The AER also states that a continued increase in LIR is needed to justify undertaking the replacement program.[16] These statements are insupportable on the evidence before the AER.

Although cast iron mains only constitute 3% of the MP network, leaks on cast iron mains historically equate to 11% of the total leaks on the network. Analysis of 2011 data not available at the time of the original submission shows that this has increased substantially with cast iron mains contributing as much as 21% of total MP network leaks. Similar statements can be made for unprotected steel (36% of the network and 46% of leaks) and Class 250 PE (6% of the network and 15% of leaks.[17]) The safety risk to the public from these assets is three times greater than those operating at low pressure.[18]

Leaks and Leak Incident Rates (LIR) are used as key safety indicators representing overall safety performance of the network. FIR and LIR are both used as lagging indicators of mains failure and the continued increase in LIR over a prolonged period indicates a continued and concerning deterioration of the condition and performance of the asset.

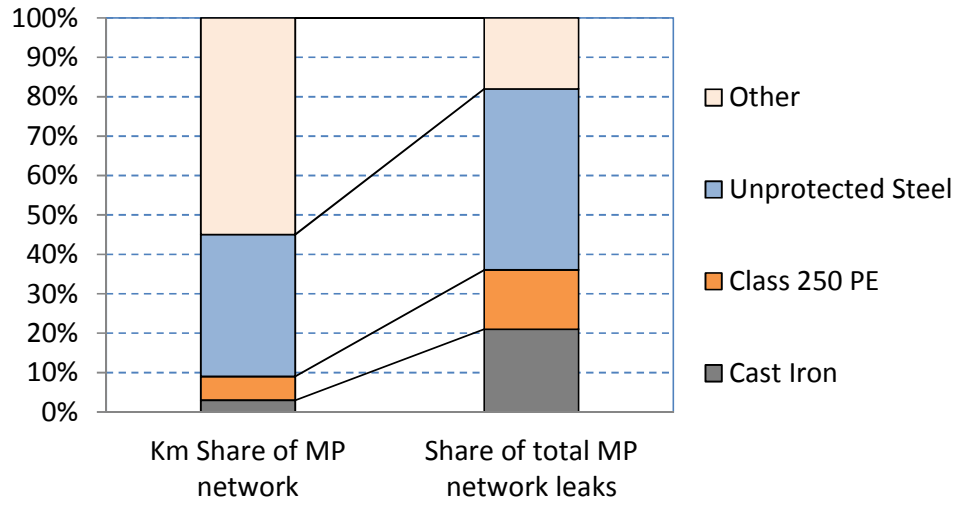
[15] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p. 51-52.

[16] Ibid, p.14.

[17] Based on 2011 leakage data.

[18] Refer to Table 2-3.

Figure 2-1: Contribution to the number of leaks by material versus asset share



Source: SP AusNet

A) Cast iron mains

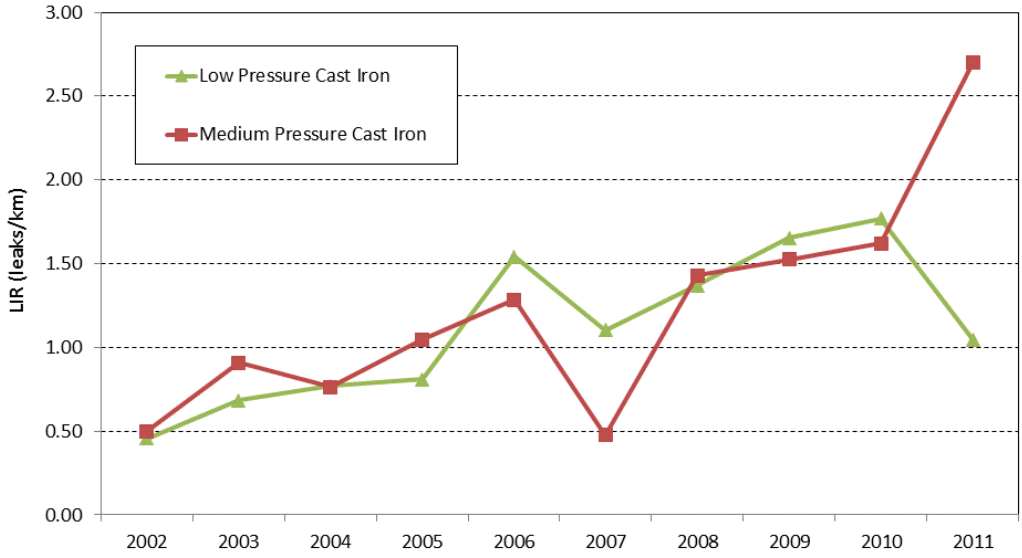
SP AusNet considers that the incidence of leaks on the MP cast iron mains is not stable; rather, it is continually increasing. As shown in Figure 2-2 below, LIR on cast iron mains increased by 55% in 2011 from 2010 after clearly trending up since 2002. It is important to note that the total length of cast iron has not changed (constituting just 3% of medium pressure network length), but the incidence of leaks continues to increase.

Figure 2-2 also shows that, in comparison with the low pressure network, the LIR for cast iron mains operating at MP is as high, and in 2011 even higher,[19] than the same material type operating at low pressure. The LIR on cast iron mains operating at MP in 2011 was the highest recorded of any material type, operating at any pressure, on SP AusNet's network over the past decade.[20]

[19] The leak rate of MP cast iron mains was 2.5 times higher than the same material type operating at low pressure in 2011.

[20] SP AusNet has limited its review of 10 years' worth of asset failure data. Failure data before this period is incomplete and not considered reliable.

Figure 2-2: MP Cast Iron LIR versus LP Cast iron LIR



Source: SP AusNet

SP AusNet considers that the increase in leaks and LIR over the past decade demonstrates that the program is justifiable. The extreme LIR witnessed in 2011 confirms the need for the program to begin as priority within the coming access arrangement period.

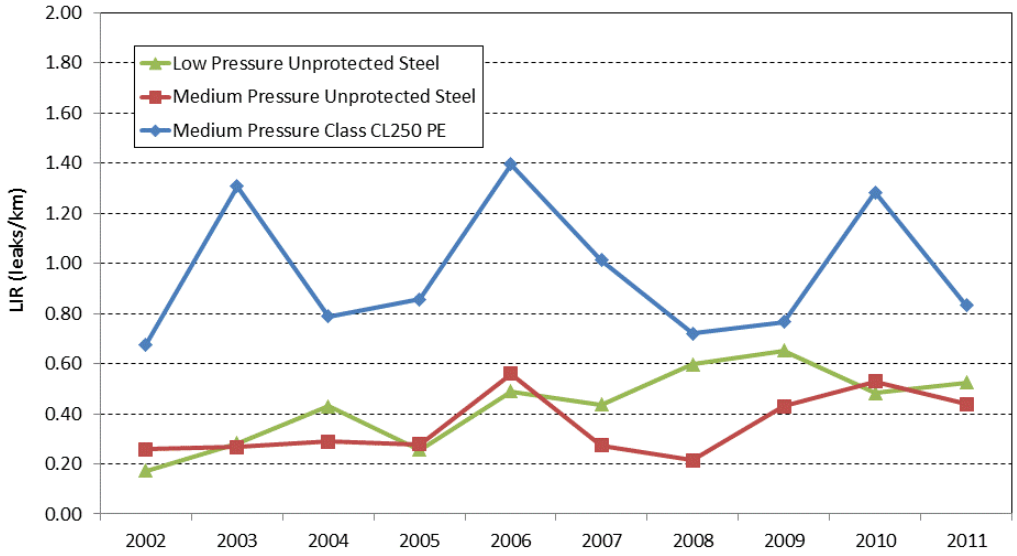
B) Unprotected steel and Class 250 PE mains

Continued network deterioration has also been seen on unprotected steel and Class 250 PE mains operating at MP. This indicates continued and concerning deterioration of the condition and performance of MP unprotected steel and Class 250 PE mains.

Figure 2-3 shows that the LIR for unprotected steel and Class 250 PE mains operating at medium pressure is as high, and in the case of Class 250 PE mains, substantially higher than the same material type operating at low pressure.[21] A comparison of with Class 250 PE LP mains is not possible as this material type does not form part of the low pressure network.

[21] The leak rate of MP cast iron mains was 2.5 time higher than the same material type operating at low pressure in 2011.

Figure 2-3: MP Unprotected Steel and Class 250 PE LIR versus LP Unprotected Steel LIR



Source: SP AusNet

Two thirds of the MP network remains stable

The Draft Decision concluded *"that a proactive [medium pressure] replacement program is not prudent and efficient under r.79(1)(a) of the NGR given that two thirds of the pressure network is stable..."*.[22]

The observation that a substantial part of the medium pressure network is stable is not relevant to the assessment of SP AusNet's proposed MP replacement program as SP AusNet is not proposing to replace any mains in the stable part of the MP mains network. Rather, the program is required to address the unacceptable risk that exists on the one third of the network that is not stable and deteriorated as the evidence presented in the previous section clearly shows.

SP AusNet's approach to the identification and prioritisation of the MP mains replacement program is identical to the approach it applied to its low pressure mains replacement program. As stated in *AMS 30-52*, Stage 3: Prioritisation of SP AusNet's mains replacement methodology ensures that the most effective replacement is completed within the defined replacement rate (i.e. 31km p.a.).

Throughout Stage 3, SP AusNet, acting as a prudent and efficient service provider, has endeavoured to ensure the replacement of high risk mains (the part of the network that is not stable and deteriorated) is targeted to maximise the program's safety outcomes. Under this approach, network assets that are currently operating within acceptable limits are not targeted for replacement and will remain in operation and maintained for ALARP. A total of 15 packages and Cast Iron allocation have been identified for inclusion into the 2013-2017 MP Mains Replacement Program. SP AusNet has

[22] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p. 22.

prioritised the removal of cast iron, unprotected steel and Class 250 PE materials within the program.

As is evident within the figure below, [C-I-C] of the proposed 155km[23] replacement program results in the removal of the identified high risk material types. The remainder (i.e. [C-I-C]) consists of protected steel or modern polyethylene mains replaced through the 'block renewal'[24] method, which is considered the most efficient approach in upgrading a network and employed where possible.

Figure 2-4: MP network over the 2013-17 Access Arrangement Period[25]

[C-I-C]

Source: SP AusNet

The proposed MP mains replacement program will replace:

- [C-I-C] of all cast iron mains operating at medium pressure;
- [C-I-C] of all Class 250 PE mains operating at medium pressure; and
- [C-I-C] of all unprotected Steel mains operating at medium pressure.

The current level of risk posed by the MP network has reached unacceptable levels

Zincara's report concludes there is insufficient justification for SP AusNet's MP main replacement program. This suggests that Zincara considers the current safety level of SP AusNet's MP network is satisfactory:[26]

> *"… Zincara is of the view that there is insufficient justification for the program. Zincara notes that the purpose of the program is to enhance the safety level of*

[23] 155km includes the proposed 15 packages of work and cast iron allocation.

[24] Block renewals involves the replacement of a sizeable area of mains where network characteristics allow (i.e. proximity to HP network and mains identified for replacement). It is considered the most efficient and cost effective method of mains replacement due to economics of scale, work force management, and mobilisation costs.

[25] [C-I-C]

[26] Zincara, Review of SP AusNet's Capital Expenditure (Confidential), p. 11.

the MP network but there is no indication that the current safety level is unsatisfactory..."

This conclusion is not supported by the evidence. In particular, the evidence of continued network deterioration at rates equal to or higher than the low pressure mains network, when combined with the potential energy release of MP leaks, results in safety risk weightings that are the highest among all pipe material types. Refer to Table 2-3 for a comparison of risk weightings by material and pressure bands.

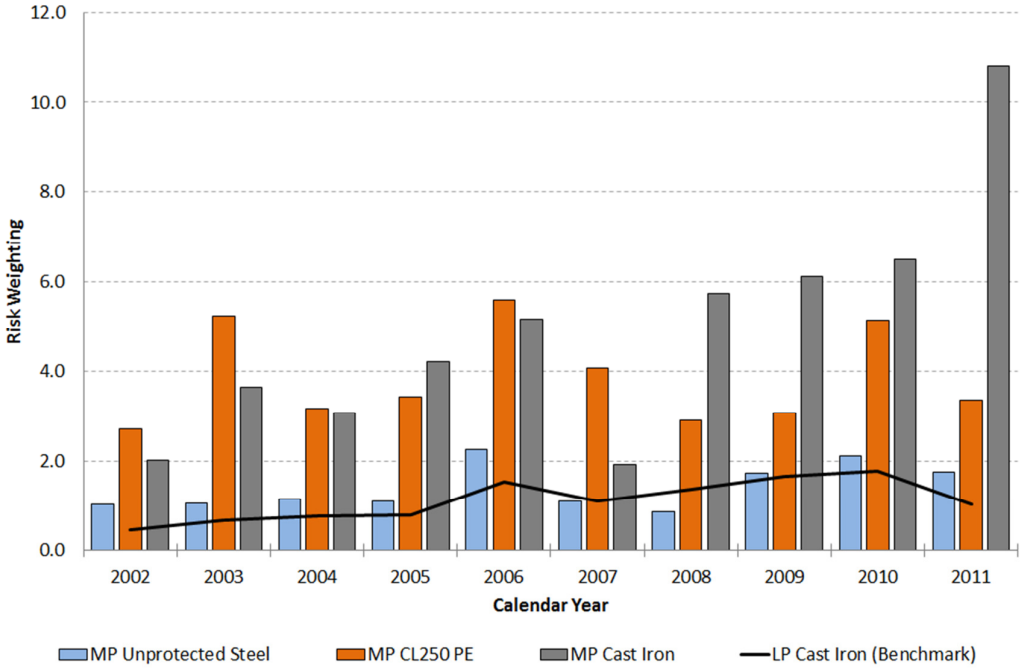
Under s.32 of the Gas Safety Act, SP AusNet has a statutory obligation to "manage and operate each of its facilities to minimise as far as practicable" the hazards and risks to the safety of the public (and to its employees) from the operation of those assets. In measuring network safety (risk), SP AusNet considers LIR as a key indicator of network safety.

As the LIR for MP material types is equal to or higher than the LIR observed for the same material operating at low pressure, in combination with the potential energy release associated with medium pressure leaks (see Table 2-3), SP AusNet considers that the current LIR levels of MP mains is unacceptable. Therefore, as a prudent operator, SP AusNet has a statutory obligation (under the Gas Safety Act) to minimise this risk to ALARP.

The figure below highlights that the relative risk weightings[27] associated of MP cast iron, unprotected steel and Class 250 PE are consistently above low pressure cast iron mains. Low pressure cast iron mains are the primary focus of the low pressure replacement program which has been approved by the AER as consistent with the NGR. SP AusNet considers its approach to target and prioritise the replacement of cast iron, unprotected steel and Class 250 PE mains within SP AusNet's proposed MP mains replacement program is also consistent with the NGR.

[27] Risk weightings are calculated using similar methodology in Table 2-3. Refer to SP AusNet, Mains & Services Strategy (AMS 30-52), p. 115 for details of calculations.

Figure 2-5: Benchmarking MP risk weightings



Source: SP AusNet

SP AusNet has proactively addressed the risks associated with low pressure cast iron mains through its targeted replacement since the inception of the low pressure mains replacement program in 2003. Mitigating the elevated safety risk posed by cast iron, unprotected steel and Class 250 PE mains operating at MP (driven by the continued increase of LIRs and their increased operating pressures) is the primary driver for the timely introduction of the MP mains replacement program.

2.3.2 SP AusNet's Mains Replacement Methodology

SP AusNet applies the same mains replacement methodology to both its low pressure and MP networks, using FIR and LIR as the primary indicators of network safety. Applying this methodology to MP network, it has been found to be returning unacceptably high FIR and LIR results. As a prudent service provider, SP AusNet is targeting the replacement of its worst performing assets to mitigate the ongoing risk to public safety and the safety of its employees.

The AER's analysis of the Mains Replacement Methodology is based on a misunderstanding of five key elements of the methodology:

1. The definition of "like for like" replacement;
2. The MP Mains Replacement Program continuation to 2035;
3. "End of Technical Life" as the primary driver of the MP mains replacement program;
4. Additional works proposed by Zincara; and

5. Management of the risks posed by the MP network through an opex/capex trade-off.

The following sections respond to the Draft Decision criticisms of the methodology and provide further evidence for the introduction of the MP mains replacement program in the forthcoming access arrangement period. This evidence demonstrates that the methodology results in a program that is:

- timely and effective; and
- would be undertaken by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services.

Clarification on the definition of "like for like" replacement

The Draft Decision concluded that the proposed program of works will result in some "like for like" replacement which would be inefficient as these mains will have to be upgraded to high pressure in the future.[28] This reflects a misinterpretation of the "like for like" replacement method to be deployed by SP AusNet.

Historically, "like for like" replacement involved replacing mains with inferior material types (i.e. PVC) that have a lower pressure rating. The Draft Decision states SP AusNet's proposed MP mains replacement program will undertake this type of replacement.[29]

This is not correct and does not describe the approach SP AusNet will take. SP AusNet's Mains and Services Strategy defines the "like for like" from SP AusNet's prospective:[30]

> *"Like for like replacement involves replacing existing mains with polyethylene or steel mains of similar capacity. Like for like replacement is employed where HP supply is not immediately available, and the mains has been identified as a high priority for replacement. The replacement mains will be laid to HP standard (to enable future upgrade of entire network pressure once high pressure is available) but operated at the existing network pressure. Existing domestic regulators remain but services are pressure tested to HP standard. If a service fails a pressure test, it is decommissioned and re-laid to HP standard but sized for the existing network pressure to ensure continuity of supply".*

The key distinction between the historic notion of "like for like" replacement and the replacement method SP AusNet will adopt for its MP mains replacement program is that new high pressure standard mains are laid but are operated at the existing network pressure (being medium pressure for the MP mains replacement program). Once high pressure is available to the area (through future replacement works and extensions of the High Pressure network) the mains can then be upgraded to operate at high pressure at a much lower cost than if mains capable of operating only at MP were used.

[28] AER, Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17, Part 4, September 2012, p.14.

[29] Ibid, p.14.

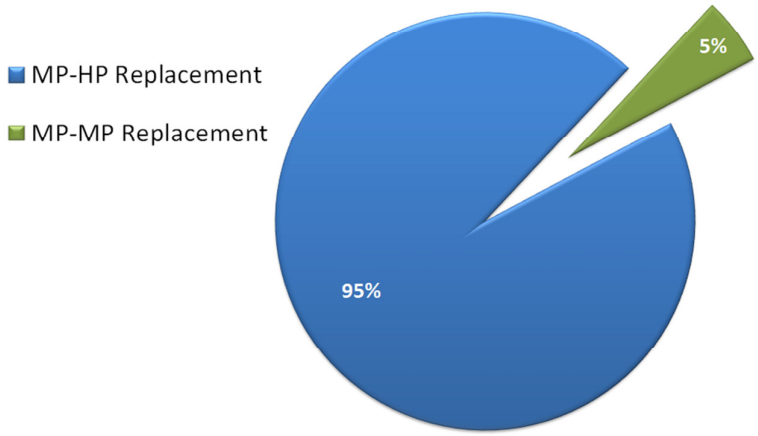
[30] SP AusNet, Mains & Services Strategy (AMS 30-52), p. 27

To avoid further confusion or misinterpretations of what constitutes "like for like" replacement, SP AusNet proposes the following terms be adopted:

- "MP-MP Replacement" to represent non-pressure upgrades where MP mains are replaced with High Pressure standard pipes but continue to operate at medium pressure.
- "MP-HP Replacement" to represent MP mains replacement which involves upgrades of mains with High Pressure standard pipes to be operated at high pressure.

There is no replacement of MP standard rated pipes with MP standard rated pipes in the proposed program.

Figure 2-6: Replacement method of the MP replacement program



Source: SP AusNet

As indicated in the figure above, MP-MP replacement contributes only 5% or 8.1km[31] of the 155km[32] MP mains replacement program. MP-MP replacement is only employed where high pressure supply is not immediately available, and the main(s) have been identified as priority for replacement.

MP network to be replaced by 2035

Both the AER and Zincara in their assessments of SP AusNet MP mains replacement program incorrectly stated that that it was SP AusNet's intention to convert its entire medium pressure network to High Pressure by 2035.[33]

For the fourth access arrangement period, SP AusNet proposes approximately 31km p.a. MP mains replacement. Although this replacement rate could result in the whole

[31] Packages C, D and P, and the Cast Iron replacement allocation will be completed using the MP-MP Renewal type replacements method.

[32] 155km mains as identified within the 15 packages of MP Mains Replacement Program and Cast Iron allocation.

[33] AER, A*ccess Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p. 20; and Zincara, *Review of SP AusNet's Capital Expenditure (confidential)*, 7 September 2012, p. 8.

Medium Pressure network being decommissioned by 2035, it is not SP AusNet's current intention to replace the whole network by 2035.[34]

SP AusNet's original access arrangement submission states:[35]

> *"Towards the end of the fourth regulatory period, SP AusNet will re-evaluate the medium replacement rate to determine whether the resulting risk profile associated with the remaining material types warrants a continuation, acceleration or potentially even a cessation of the medium pressure replacement program."*

The re-evaluation of the program towards the end of the coming fourth regulatory period is consistent with Stage 1 of SP AusNet's mains replacement prioritisation methodology which establishes if there is a need for mains replacement.

EOTL is not the primary driver of the MP replacement program

Zincara's report to the AER incorrectly considered that "End of Technical Life" (EOTL) was the prevailing factor used by SP AusNet in the prioritisation of mains for replacement.[36] Zincara's simplification of the program methodology led it to conclude that commencing the program in 2013 is unjustified.[37]

SP AusNet's approach for the MP Main Replacement program identification and prioritisation is based primarily on the key safety indicators; FIR and LIR. Fractures and leaks are lagging indicators of mains failure. The use of FIR and LIR for prioritisation is an accepted approach to mains replacement to ensure that mains are not replaced prematurely.

End of Technical life (EOTL)[38] is used only as a leading supplementary safety indicator within the prioritisation methodology. Once mains have reached EOTL, the main may have not necessarily failed, but has a higher probability of failure. Therefore, EOTL alone is not a prevailing driver for prioritisation but a complementary factor that supplements the use of FIR and LIR.

By considering FIR and LIR in conjunction with EOTL variables, SP AusNet is able to show that replacing the MP mains targeted by the MP mains replacement program is warranted, and that any further delay in the implementation of this program results in unacceptable risk to the public and field personnel.

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[34] SP AusNet, Access Arrangement Information, March 2012, p.106. SP AusNet, Asset Management Strategy AMS 30-01, March 2012, p. 73 incorrectly states the 2035 timeframe. This statement was made in error and should have been removed from the document.

[35] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, p.107.

[36] Zincara, *Review of SP AusNet's Capital Expenditure (confidential),* 7 September 2012, p. 10.

[37] Ibid, p. 10.

[38] Technical life is based on Engineering Life Model that assigns a technical life to each section of main based on a number of criteria (material type, pressure, diameter, length and installation year). Refer to AMS 30-52, Section 20 – Engineering Life Modelling Methodology for further details.

It is not efficient to manage the risks posed by the MP network through an OPEX/CAPEX trade-off

Zincara, in its conclusion, also stated (in addition to other factors):[39]

> *"… there is also no indication that SP AusNet is unable to manage the current leak program through its rectification work or that there is a capital and operating expenditure trade off…"*

In this revised access arrangement proposal, SP AusNet provides the AER with additional information about the condition and maintenance requirements of its MP network through a report prepared by Tenix (see RAAP Appendix 2.A of this chapter). In many instances, mains in the network (particularly those constructed of cast iron and unprotected steel) are physically unrepairable. Failure of these mains (which is highly likely given their age and condition) exposes the public and field personnel to unacceptable safety risks.

In most scenarios, the economic value of replacing MP assets is considered positive, which is consistent with r.79(2)(a) of the NGR. SP AusNet has provided a total of eight (8) approved business cases for year 1 (2013) of the proposed program as RAAP Appendix 2.B.[40] The approval of all eight (8) business cases emphasises SP AusNet's continued commitment and economic efficiency of this safety driven program.

2.3.3 External Support for a MP Replacement Program

Tenix, SP AusNet's primary service provider, has developed an expert report outlining the current condition of SP AusNet's MP mains and operational hazards faced in maintaining these assets.[41] Tenix is well-placed to make comment on the condition of these assets, not only as a service provider to SP AusNet, but as an industry-wide provider of both capital and operational services in the gas industry. The report provides insight from a field maintenance perspective on the difficulty and increasing safety risks associated with the continued ineffective repair of highly deteriorated MP mains.

Tenix's expert report concludes that:

- MP mains are deteriorating with a higher number of leaks recorded on both unprotected steel and cast iron mains;
- Everyday maintenance has become more frequent with leaks harder to control and increasingly difficult to repair due to the deterioration of the unprotected steel and cast iron mains; and
- Due to the severely deteriorated of some MP mains, field crews are facing higher than normal risks due to the limited ability of repair equipment.

Tenix's report is provided in RAAP Appendix 2.A of this chapter.

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[39] Zincara, *Review of SP AusNet's Capital Expenditure (confidential)*, 7 September 2012, p. 11.

[40] RAAP Appendix 2.B: Medium Pressure mains replacement Business Cases for 2013

[41] Tenix has been SP AusNet primary service provider since privatisation. Tenix undertakes all physical maintenance activities on the distribution network which includes the maintenance of the medium pressure networks.

SP AusNet's MP mains replacement methodology and approach is endorsed by Energy Safe Victoria (ESV) as an effective safety mechanism for the reduction of risks associated with aged and deteriorated mains. ESV's support for the program has further been articulated to the AER (by the ESV) throughout the consultative process of this access arrangement review. SP AusNet has conducted formal discussions with ESV on the low and medium pressure replacement proposals and demonstrated the need and expected safety benefits each aims to deliver.[42]

SP AusNet's submission to ESV on the mains replacement program is provided in RAAP Appendix 2.C of this chapter.

2.4 SP AusNet Revised Proposal

SP AusNet reiterates its position that the MP mains replacement program is consistent with the safety components of the NGO and rules r. 79(2)(c)(i)-(iv) and r. 79(1)(a) of the NGR.

Table 2-4: Proposed MP replacement program

	2013	2014	2015	2016	2017	2013-17 Total
Length (km)	28.6	30.2	29.2	29.8	37.8	**155.5**
Unit Rate ($/m)	185.5	197.1	216.6	207.9	209.3	**203.7**
Total Exp ($M)	**5.297**	**5.954**	**6.317**	**6.185**	**7.910**	**31,663**

Source: SP AusNet. Repeat of Table , page 4. (Expenditure is in Direct 2011, excluding escalation)

SP AusNet considers that the AER's conclusion that proactive replacement of MP mains is not prudent under r. 79(1) of the NGR is based on factual misunderstandings about the nature and scope of the program, given that:

- The risk to the public and SP AusNet personnel from failing MP assets (specifically cast iron, unprotected steel and Class 250 PE) is 3 times greater than equivalent assets operating at low pressure.
- The replacement program focuses on the third of the MP network that is heavily deteriorated and considered by SP AusNet to pose an unacceptable safety risk.
- The program targets the material types of highest safety risk. Cast iron, unprotected steel and Class 250 polyethylene make up [C-I-C] out of the 155km program.
- All replacement mains are laid to High Pressure standard (allowing future upgrade to high pressure at minimal cost). "MP to MP" replacement contributes only 5% of the planned replacement works.
- SP AusNet's mains replacement methodology (which has been endorsed by the ESV) considers FIR and LIR as the primary lagging indicators.

[42] SP AusNet, Response to ESV - Information Requirements of 11th June 2012.

- Cast iron and some unprotected steel mains within the MP network are so highly deteriorated that they are no longer repairable which presents a serious risk to field personnel when these assets fail.
- SP AusNet has been consistent in its approach (as a prudent and efficient service provider) in the need, volumes and unit costs for both the low pressure and MP mains replacement programs.
- SP AusNet has demonstrated its commitment to the program with those projects scheduled for year 1 (2013) of the program having gained internal approval for expenditure.
- SP AusNet will re-evaluate the need for the MP mains replacement program towards the end of the fourth regulatory period to establish if the risk profile of the network warrants the continuation, acceleration or potential cessation of the MP mains replacement program.

Given the low pressure mains replacement program has been approved by the AER as consistent with r. 79(2)(c) of the NGR, the higher risk mains replacement program must also be consistent with r.79 of the NGR.

SP AusNet also maintains that the unit rates submitted in its original access arrangement proposal for the MP mains replacement program are consistent with r.74(2) and r.79(1)(a) of the NGR. The approach adopted to estimate unit rates for the MP program is identical to that applied for the low pressure program. This approach was assessed by the AER as consistent with r.74(2), resulting in units rates that were considered prudent and efficient, as required by r.79(1)(a) of the NGR. The average unit rate for MP mains replacement is $222.92/metre ($2012, escalated direct costs, excluding overheads).

Similar to low pressure unit rates assessed by the AER, where there were material variations of unit rates provided for each package of work, the AER has sought further information from SP AusNet. SP AusNet has provided the AER with additional information and provided explanations in terms of the added difficulty factors and has provided a breakdown of costs for components such as mains laying, insertion, services and reinstatements.[43] Following additional provision of information by SP AusNet to information request from the AER, the AER made no commentary on the efficiency of SP AusNet's proposed unit rates for MP mains replacement.

The detailed MP replacement program is shown in table 2-5.

[43] SP AusNet, Response to Information Request 15 of 4th July 2012, pp. 14-16.

Table 2-5: SP AusNet MP Replacement Program[44]

[C-I-C]

[44] Table presented may not add due to rounding.

3 Low Pressure Mains Replacement Program

The low pressure (LP) mains replacement program is a safety-driven program with the primary objective of reducing the incidence of leaks on SP AusNet's low pressure network.

The proposed forecast capital expenditure for the program is a key Gas Safety Case (GSC) control to meet SP AusNet's general safety obligations to:[45]

> *"manage and operate each of its facilities to minimise as far as practicable-*
>
> *(a) the hazards and risks to the safety of the public and customers arising from gas; and*
>
> *(b) the hazards and risks of damage to property of the public and customers arising from gas"*

In this context, practicable means having regard to:[46]

> *(a) [..] the severity of the hazard or risk in question; and [..]*
>
> *(c) the state of knowledge about the hazard or risk and any ways of removing or mitigating the hazard or risk; and*
>
> *(d) the availability and suitability of ways to remove or mitigate the hazard or risk; and*
>
> *(e) the cost of removing or mitigating the hazard or risk"*

Further, the forecast satisfies the criteria in the NGR for conforming capital expenditure, and promotes the safety objectives of the NGO.

In light of these obligations, SP AusNet expects to replace 110km of low pressure mains in CY2012, bringing the total length of replacement over the 2008-12 regulatory period to 401km or approximately 90% of benchmark. These replacements were made in light of the state of knowledge about leak rates and costs established during the 2008-12 access arrangement period.

SP AusNet does not accept the Draft Decision amendments that reduce the program of low pressure mains replacement to the current average decommissioned length in the current regulatory period. SP AusNet also does not accept amendments introducing a pass through mechanism to recover the cost of replacement volumes in excess of those approved by the AER, or the capping of those volumes at the replacement volume proposed by SP AusNet in its original access arrangement proposal (addressed in Section 4 below).

Specifically, SP AusNet submits that:

- the reduced volume of approved replacement is not sufficient to maintain network safety and integrity at acceptable levels over the regulatory control period given evidence of increasing leak rates; and
- the AER's reprioritisation of the program by cost is incompatible with SP AusNet's mains prioritisation methodology, which underpins the GSC that prioritises replacement by safety risk.

[45] s.32, Gas Safety Act 1997.

[46] s.3, Gas Safety Act 1997.

SP AusNet is proposing a replacement program that strikes a practicable balance between the known safety risks and the ability to deliver the proposed program at an acceptable cost. Replacing 90km per annum of low pressure mains translates to a 10% increase in actual mains replacement on the current regulatory period and to an eventual but not immediate arrest in increasing leak rates.

Given SP AusNet's track record and these particular circumstances, it would be more appropriate for the AER to fund the program directly, rather than through a pass through event.

3.1 Original Proposal

SP AusNet's replacement program targets heavily deteriorated low pressure cast iron mains, which are responsible for a high incidence of mains leaks. Modern polyethylene mains, installed through open cut or insertion methods, are predominantly used to upgrade the low pressure networks to high pressure, reducing leakage and improving safety.

For the 2013-17 access arrangement period, SP AusNet is seeking expenditure allowances for approximately 450km of low pressure replacement (approximately 90km p.a.). The original expenditure allowance is summarised below.

Table 2-6: SP AusNet's original LP mains replacement program proposal

	2013	2014	2015	2016	2017	2013-17 Total
Length (km)	93.5	90.2	90.4	85.9	90.4	**450km**
Unit Rate ($/m)	164.5	161.1	166.2	172.4	174.5	**167.7**
Total Exp ($M)	**15.4**	**14.5**	**15.0**	**14.8**	**15.8**	**75.5**

Source: SP AusNet. Repeat of Tables 29.2.1 & 29.2.2 of SP AusNet's Mains and Services Strategy (AMS 30-52). (Expenditure is in Direct 2011, excluding escalation)

Further detail on the LP mains replacement program is referenced in SP AusNet's original access arrangement proposal[47] and supporting evidence.[48] Each document reiterates the importance of the program to minimising, as far as practicable, the hazards and risks to the safety of the public and customers.

3.2 Draft Decision

The Draft Decision approved a low pressure mains replacement program of 365km for the next regulatory period and introduced a pass through mechanism to permit additional replacement kilometres to be funded if they are delivered.

[47] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, pp.102-109.

[48] SP AusNet's Asset Management Strategy (AMS 30-01, pages 69-73), Asset Management Plan (AMP 30-01, pages 27-28) and Mains & Services Strategy (AMS 30-52)

3.2.1 Volumes

The AER approved replacement of 365km (or 73km p.a.) of LP mains for the forthcoming access arrangement period. This figure equates to the annual average kilometres of mains replacement completed by SP AusNet between 2008 and 2011.

The decision to approve volumes based on historical performance reflected the AER's view that:[49]

> *"The credit constraints associated with the GFC and the need to divert capital towards other programs has revealed that the least cost mix of work required to meet SP AusNet's safety and reliability obligations involves lower volumes of mains replacement than was proposed by SP AusNet for the current access arrangement period."*

The AER concluded that historical volumes of low pressure mains replacement were *"sufficient to meet SP AusNet's chosen level of risk in the current period",* and allowed the business to remain compliant with any legal or regulatory obligations.[50]

Further, the AER noted that:[51]

> *"as it has done in the past, SP AusNet will be able to address any change in risk through the alternative programs available while still undertaking the rate of mains replacement which it has undertaken in 2008-11."*

3.2.2 Unit rates

The AER was satisfied that SP AusNet's methodology for estimating LP mains replacement unit rates is a reasonable basis for estimating the unit cost of future works, consistent with clause 74(2) of the NGR, and that the resulting rates (at a postcode level) were prudent and efficient (as required by clause 79(1)(a) of the NGR).[52]

3.2.3 Adjusted program expenditure

The AER reprioritised SP AusNet's low pressure mains replacement program on the basis of cost (cheapest first) and approved expenditure for the first 365km based on the re-prioritised program (i.e. least cost). In the reduced program, the suburbs of [C-I-C] did not receive expenditure approval.

The AER drew on its understanding of past network behaviour as justification for reducing the program expenditure:[53]

> *"SP AusNet and other distribution businesses have indicated that when undertaking a reduced volume of mains replacement, the works prioritised tend to be in the outer parts of the network where the work is less costly."*

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[49] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p.48.

[50] Ibid, p.48.

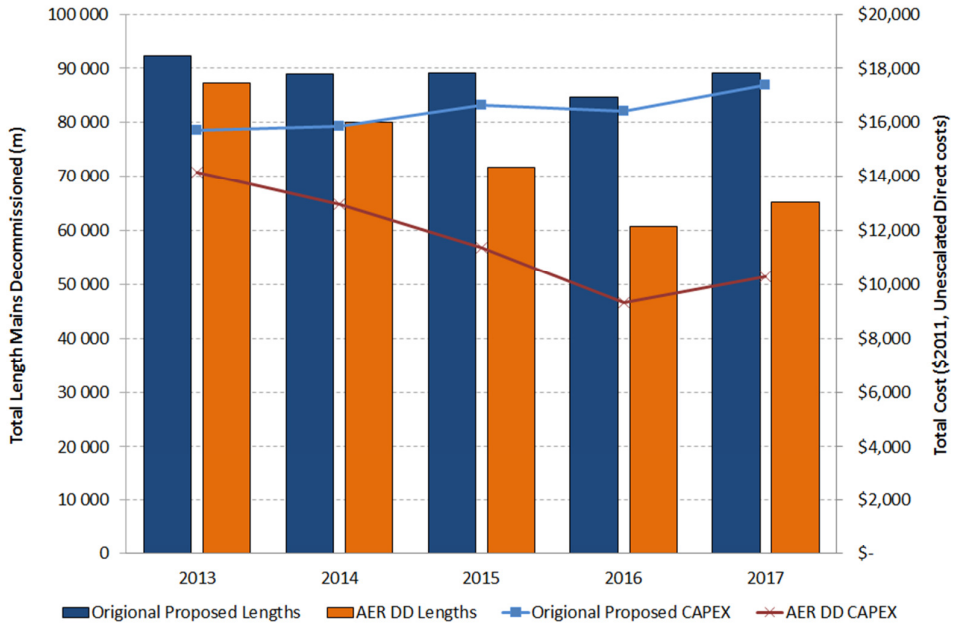
[51] Ibid, p.48.

[52] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.6.

[53] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.17.

A comparison between the scope of SP AusNet's proposed LP mains replacement program and that approved by the AER is shown in Figure 2-7 below.

Figure 2-7: Low Pressure mains replacement - Proposed v Draft Decision



Source: SP AusNet. (Expenditure is in Direct 2011, excluding escalation)

The approved program of low pressure replacement and subsequent expenditure profile is front ended. This reflects the AER's reprioritisation of replacements which maintains SP AusNet's proposed phasing of mains replacement (by suburb) but eliminates the suburbs of highest cost (per unit length) until the 365km of approved replacement is achieved. SP AusNet's replacement proposal includes increased lengths of mains replacement in the suburbs that, under the Draft Decision, do not receive expenditure approval in the later years of the regulatory period.

3.3 SP AusNet Response

SP AusNet rejects the AER's requested revisions to the low pressure mains replacement program. SP AusNet's response focuses on the following aspects of the Draft Decision:

- the volume of LP pipes requiring replacement;
- the prioritisation (or scheduling) of works; and
- the design of the pass through event.

SP AusNet does not accept the Draft Decision for low pressure mains replacement. It submits that the AER's approach is not consistent with the NGR or the NGO as it would not provide an adequate forecast of capital expenditure to meet SP AusNet's Gas Safety Act obligations.

This revised access arrangement proposal demonstrates how the reduced volumes (Section 3.3.1) and the revised prioritisation (Section 3.3.2) severely undermine the network safety

objectives of the low pressure mains replacement program and SP AusNet's ability to deliver the program. The reprioritisation of the mains replacement program proposed by the AER will not deliver the necessary safety outcomes.

SP AusNet's prioritisation methodology uses network leaks and fractures (i.e. a lagging indicator of network performance) as the primary driver to identify mains to be replaced, not the least expensive mains as indicated by the AER's reprioritisation of the program. SP AusNet's methodology promotes network safety because it minimises the risk associated with the LP network, having had regard to cost in establishing the overall program.

SP AusNet also has a number of specific concerns regarding the ability of the proposed pass through event to enable SP AusNet to complete the program to the volumes it proposed in its original access arrangement proposal. These concerns are detailed in Section 4.

3.3.1 Low Pressure Mains Replacement Volumes

SP AusNet considers the AER's decision to reduce the volumes of mains replacement to the 2008-11 regulatory period annual average will be insufficient to maintain network safety and integrity at acceptable levels given the ongoing deterioration of the LP network, as evidenced by increasing leak rates.

Inclusion of 2012 data increases the average delivered volume

SP AusNet considers the AER has overstated the extent to which SP AusNet will under-deliver on the benchmark kilometres of mains replacement this period. Accordingly, the AER has overstated SP AusNet's appetite to assume safety risks on its LP network and has therefore imposed a greater than desirable level of risk in the forthcoming regulatory period.

The AER has approved (for each of the network service providers) the average volume of replacement completed in the current regulatory period as the benchmark volume for the coming period. In calculating this average, only the years 2008-11 were considered. A total of 365km p.a. (or 73km p.a.) of LP mains replacement for the regulatory period was approved for SP AusNet.

In making its Draft Decision, the AER only had available to it historical data up to 2011 because actual data for 2012 was not available at the time SP AusNet submitted its access arrangement proposal. As the ESC made its decision for five years of expenditure for the mains replacement program[54] and the regulatory framework allows for distribution businesses to manage and balance their expenditures across years within that period, it is appropriate to consider performance against the benchmark set by the ESC for the entire regulatory period.

With the timeline for the final decision for the Gas Access Arrangement Review being extended to March 2013, SP AusNet expects to be able to submit its actual 2012 replacement lengths in January for consideration by the AER prior to making its Final Decision.[55]

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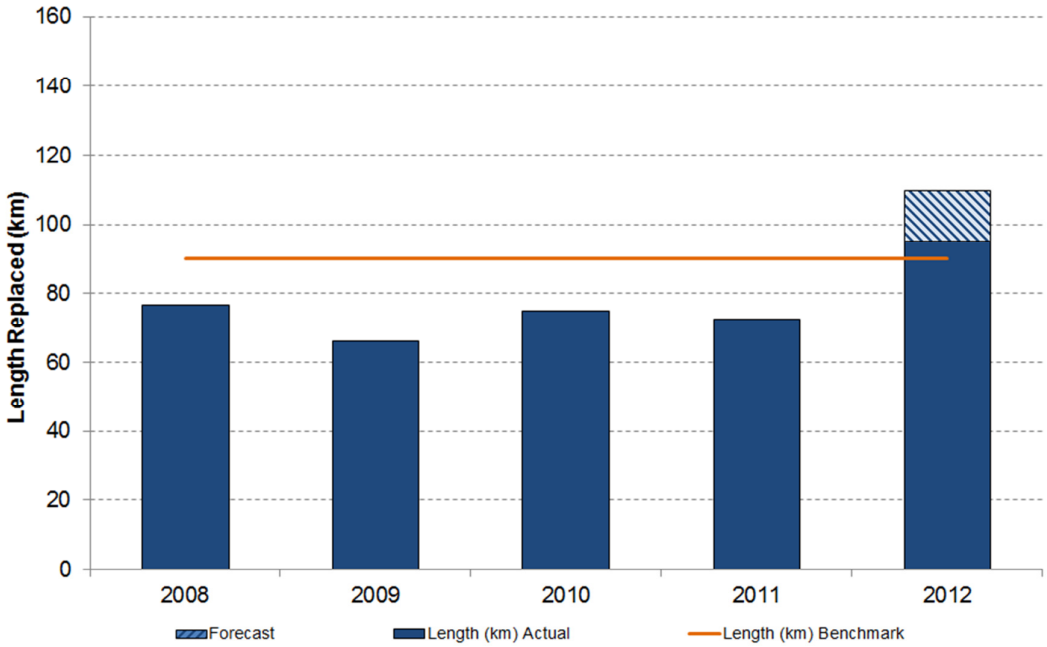
[54] ESC, *Gas Access Arrangement Review 2008-2012 – Final Decision* , Public Version, 7 March 2008, p. 331-334

[55] Actual volumes completed can be provided to the AER in early January 2012.

SP AusNet is on track to replace 110km of low pressure mains within the 2012 calendar year, with 95.3km completed to the end of October. This brings the total of LP mains replaced over the current regulatory period to 401km (or 80.2km p.a.), representing approximately 90% completion of benchmarked volumes.

Figure 2-8: The length of LP mains replacement versus benchmark 2008-12



Source: SP AusNet.

A step up in volumes is needed

In reducing the volume of LP mains to be decommissioned relative to SP AusNet's proposal, the Draft Decision asserts that SP AusNet's actual behaviour has revealed a 'chosen level of risk' that is higher than that associated with SP AusNet's proposed LP mains replacement program.

However, this fails to account for the increasing leak rate found during the 2008-12 access arrangement period and forecast for the 2013-17 period. Even if the 2008-12 period did provide unbiased evidence of SP AusNet's risk appetite (and it does not), the increasing leak rate would justify an increase in the LP mains replacement program.

- ***SP AusNet's appetite for risk***

As acknowledged in the Draft Decision, the key reason SP AusNet has not completed full benchmark volumes in the current period was the need to manage the large above-forecast growth in customer connections within existing capital constraints. These capital constraints were quite stark post the global financial crisis (GFC), and so increasing expenditure above the allowance was not a realistic option.

As the connection of customers is a firm regulatory obligation (non-discretionary), higher than forecast expenditure could only be managed within existing capital constraints by deferring programs such as mains replacement for as short a period as

possible. In addition, the regulatory regime design encourages these trade-offs through incentive schemes while providing for updated forecasts every five years so these trade-offs do not have to be sustained to the detriment of customers reliability and safety.

This recognises that from a risk perspective deferring some mains replacements for a few years is materially different to permanently slowing the replacement program as the Draft Decision proposes.

Therefore, the current period does not provide unbiased evidence of SP AusNet's long term risk appetite. The current period was coloured by other short term demands on capital expenditure, the GFC and the fact that these were short term decisions. Consequently, the Draft Decision overstates SP AusNet's risk appetite ("Chosen level of Risk") by failing to recognise the trade-offs that can be made within the five year regulatory period cannot be maintained over the long term, particularly now that evidence of increasing leak rates is available.

- ***SP AusNet's safety obligation to its employees and the public***

As emphasised throughout SP AusNet's original access arrangement proposal:[56]

> *"Each leak on the network represents a real and present risk to safety; with each having the potential to cause death or injury should leaking gas build up to sufficient levels to become explosive. Although this risk can never be entirely eradicated, it is SP AusNet's obligation to minimise these risks as far as is reasonably practicable. The mains replacement program forms part of the control measures to minimise this risk."*

SP AusNet has a statutory obligation to manage and operate its networks to minimise the risk to the safety of the public and its employees. This obligation was summarised by the AER in its Draft Decision:[57]

> *"All distribution businesses have a statutory general obligation under s. 32 of the Gas Safety Act to "manage and operate each of its facilities to minimise as far as practicable" the hazards and risks to the safety of the public and customers arising from gas, interruptions to the conveyance or supply of gas and the reinstatement of an interrupted gas supply. The obligation also includes minimising hazards and risks of damage to public property and the property of customers arising from gas."*

The LP replacement program (coupled with the MP program) is identified as a key mitigation measure within SP AusNet's Formal Safety Assessment, which underpins its GSC. The program is also consistent with rules 79(1)(a), 79(2)(i)-(ii) of the NGR, where a prudent service provider acting efficiently, in accordance with good industry practice, would seek to manage its risks through mitigating the safety exposure associated with deteriorating assets. SP AusNet considers that it is good industry practice to have regard to the LIR in arriving at a replacement forecast.

Analysis conducted by SP AusNet as an input into its Mains & Services Strategy (AMS 30-52) revealed that the historical rate of replacement has not maintained LP LIR; rather, total

[56] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, p. 102.

[57] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p.46.

LIR has steadily increased. This is due to the continued and aggressive deterioration of LP mains that exceeds the completed mains replacement programs.

As evident in Table 2-7, an annual average LP replacement rate of [C-I-C] per year would be required to keep the LIR at its current levels over the next regulatory period. However, SP AusNet considered that this rate of replacement would not be pursued by a prudent service provider acting efficiently as it would place strain on the labour market required to deliver the necessary works and unnecessarily increase costs. As the AER observes, the current level of leaks is manageable (in the short run) through other aspects of SP AusNet's GSC.

Table 2-7: Modelling results for LP Replacement Rate[58]

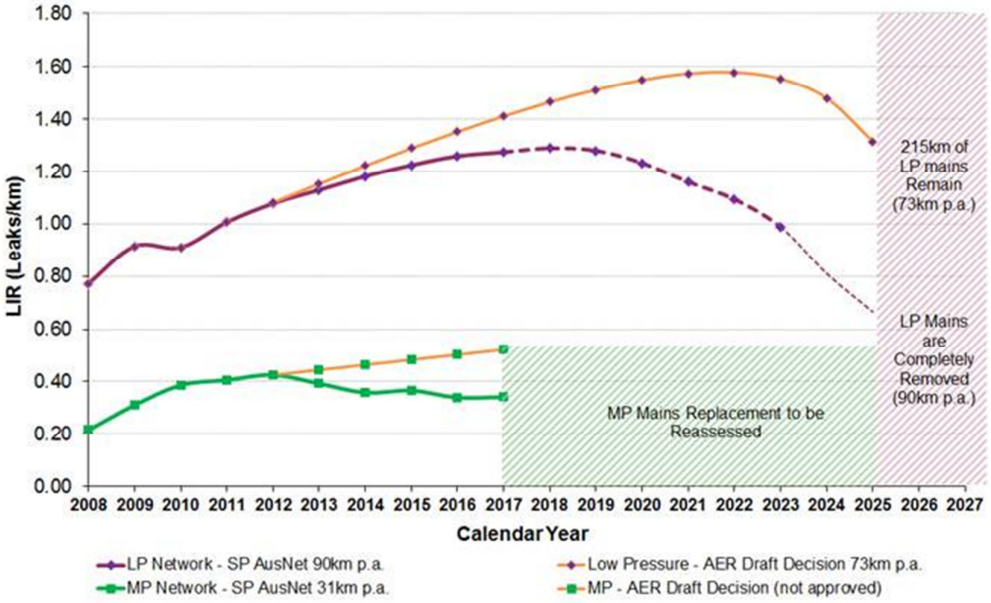
Factor	Driver	Rate of Replacement (p.a.)
Age Profile	Maintain network age profile	[C-I-C]
Leak Incident Rate	Maintain Average Leak Incident Rate	[C-I-C]
Technical Life	Replacement of all mains that have reached end of technical life by 2017	[C-I-C]
Proposed Replacement Rate	**Achieve network objectives**	**90km**

Source: SP AusNet

A replacement rate of 90km per annum was determined in Stage 2 of SP AusNet's prioritisation methodology which assess four key criteria to determine the mains replacement rate; age, LIR, technical life, and economic drivers. Based on SP AusNet's modelling and as illustrated in Figure 2-9, this replacement rate will arrest the current trend in the LIR before it exceeds 1.3 leaks per kilometre.

[58] Repeat of Table 12, Mains & Services Strategy (AMS 30-52), Page 31.

Figure 2-9: Leak incidence per km of mains by pressure tier[59]



Source: SP AusNet

As can be seen in Figure 2-9, even with 90km per annum of replacements, SP AusNet expects the LIR on the LP network to increase over the access arrangement period. As noted by the AER, SP AusNet has sought to mitigate this increased risk (in the course of undertaking the 95.3km p.a. of mains replacement completed to date in 2012)[60] through alternative programs of work, including the reactive maintenance and replacement of failed assets.[61] The further deterioration of SP AusNet's LP assets makes this approach unsustainable in the coming regulatory period.

Completing 90km per annum of replacement will continue to rely on SP AusNet's alternative programs to mitigate the risk on the network, but any further reduction in SP AusNet's proposed replacement program will exacerbate the future risk profile of the network to a level that is considered unacceptable. Accordingly, SP AusNet considers that replacing 90km per annum represents an appropriate balance between SP AusNet's safety obligations, the practicability of the replacement program and the criteria for conforming capital expenditure.

- ***The GSC necessitates SP AusNet's Mains Replacement methodology***

SP AusNet's mains replacement methodology and approach underpins the GSC accepted by Energy Safe Victoria (ESV). This same approach has been adopted for identification and prioritisation of both the low and MP mains replacement programs.

[59] Adapted from Figure 5-11 of SP AusNet's Access Arrangement Information, March 2012, page 109.

[60] 110km of LP mains is forecasted for decommission in 2012.

[61] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, September 2012, p.13.

The ESV's support for SP AusNet's mains replacement program has further been articulated to the AER (by the ESV) throughout the consultative process. SP AusNet have also conducted formal discussions with ESV on SP AusNet's proposed replacement program for the coming regulatory period with SP AusNet demonstrating the need and expected safety benefits of the program.[62] SP AusNet's responses to information requests by the ESV on SP AusNet's mains replacement program and methodology have been included within RAAP Appendix 2.C.

SP AusNet's current program, of replacing low pressure mains with high pressure mains, dates back to the second access arrangement period. Since this time, the program has featured extensively within SP AusNet's Asset Management Strategy (AMS), Asset Management Plan (AMP) and identified as the key control measure to mitigate the incidence of leaks on SP AusNet's distribution network with the GSC.

The GSC is a statutory requirement under the *Gas Safety Act 1997* and the *Gas Safety (Safety Case) Regulations 2009 No.6*. SP AusNet's GSC for forthcoming regulatory period was accepted by the ESV in 2010 and is valid up to 2015. In addition, on an annual basis, the ESV endorses SP AusNet's AMS and AMP which are complementary documents to the GSC and, combined, underpin the operation of SP AusNet gas networks.

- ***SP AusNet has further defined the program's scope***

Following the submission of SP AusNet's original access arrangement proposal in March 2012, further work has been completed to define the scope of each project within the 450km proposal for the coming access arrangement period. This includes detailed scopes and internal approval of all major projects within calendar year 2013 of program. The definition of all projects within the 450km program is based on SP AusNet's mains prioritisation methodology which prioritises replacement based on safety risk.

3.3.2 Mains Replacement Prioritisation Methodology

SP AusNet does not accept the AER's methodology for estimating the expenditure requirements for delivery of the reduced LP replacement program on the basis that it is inconsistent with r. 74(2) of the NGR.

The Draft Decision accepted SP AusNet's methodology of determining unit rates (by postcode) as consistent with r. 74(2) and r. 79(1)(a) of the NGR. However, the Draft Decision reprioritised SP AusNet's proposed program by approving funding for only those suburbs with the lowest replacement unit costs.

The AER's cost-based reprioritisation of the program conflicts with SP AusNet's mains replacement prioritisation methodology,[63] which prioritises replacement of mains based on safety risk as required under the *Gas Safety Act 1997*. In other words, SP AusNet's methodology minimises risk having regard to cost, whereas the AER's approach only minimises cost. SP AusNet considers the expenditure profile that follows from the AER's prioritisation methodology will preclude SP AusNet from completing necessary mains

[62] SP AusNet, Response to ESV - Information Requirements of 11th June 2012.

[63] See Section 6 (p. 28) of SP AusNet's Mains & Services Strategy (AMS 30-52) for an overview of SP AusNet's Mains and Service replacement methodology.

replacements in prioritised high-risk areas. SP AusNet considers such an outcome is inappropriate and, further, does not satisfy the criteria for conforming capital expenditure.

The AER justified its approach by reference to distribution network business behaviour in the current regulatory period: [64]

> *"SP AusNet and the other distribution businesses have indicated that when undertaking a reduced volume of mains replacement, the works prioritised tend to be in the outer parts of the network where work is less costly."*

SP AusNet, in its original access arrangement proposal,[65] stated that it maximises the replacement of LP mains within an identified risk area by undertaking work in the lower cost zones of that area to maximise the rate of replacement within capital constraints. To be clear, the areas with the highest risk take precedence, even if the unit rate happens to be higher. This is demonstrated (as an example) by SP AusNet currently undertaking the following projects in priority postcodes that have resulted in unit rates that are significantly above historical averages: [66]

- "Cambra Road", Belmont (3216) – Unit rate of [C-I-C] above historic average)
- "Little Street", Burnside (3023) – Unit rate of [C-I-C] above historic average)
- "Lucknow Street", Ascot Vale (3032) – Unit rate of [C-I-C] above historic average).

Following SP AusNet's original Access Arrangement Proposal, high level scopes of all projects within the replacement program for the access arrangement period have since been developed. Detailed prioritisation and phasing of the program ensures the highest risk mains are targeted for replacement over the access arrangement period.

The AER's re-prioritisation excluded expenditure for replacement works in the high risk areas of [C-I-C]. Further, it makes provision for only limited replacement within [C-I-C]. A total of 13 projects are planned for completion during the next regulatory period within postcodes excluded by the AER due to cost-based re-prioritisation. This equates to 93.5km of LP mains replacement within priority areas that have not gained expenditure approval. In the case of the projects planned for [C-I-C][67], the AER's re-prioritisation defers the replacement of mains in each program for a minimum of 5 years (from 2013 to 2018, i.e. to the next regulatory period).

Table 2-8 compares the key prioritisation metrics of each of the projects excluded from SP AusNet's LP replacement program.

[64] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, September 2012, p.17.

[65] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, Section 3.2: Low Pressure Pipe Replacement (mains replacement). p.50.

[66] Direct $2011. Comparable network average: $135.92/m

[67] Example projects planned for year 1 of the LP mains replacement program within the excluded postcodes

Table 2.8: Summary Statistics of Excluded Projects due to AER's cost based reprioritisation

Postcode	Project Name	Project Suburb	Planned Project Year	AER Deferral (min)[68]	Project Length (m)[69]	Fracture Incidence Rate (FIR)[70]	Leak Incidence Rate (LIR)[71]	Percentage Cast Iron (%)[72]	End of Technical Life (EOTL)[73]

[C-I-C]

[68] [C-I-C]

[69] [C-I-C]

[70] [C-I-C]

[71] [C-I-C]

[72] [C-I-C]

[73] [C-I-C]

Key points to note about the projects that were rejected in the AER's draft decision include:

- The key prioritisation metrics FIR and LIR are lagging safety indicators, which represent mains that have already failed and present a serious risk to public safety. These mains require urgent repair or replacement. EOTL is a leading safety indicator used as a supplementary metric predicting potential failures but not actual failures.
- All the projects in the LP replacement program have (including those included in Table 3, in practice rejected by the AER) have higher FIR, LIR and/or percentage of Cast Iron mains in comparison with LP network averages. Most in Table 3 have high FIR or LIR.
- Projects in Table 2-8 with below average FIR or LIR are required due to project sequencing and need for high pressure provision to high risk areas, as follows:
    - [C-I-C]
    - [C-I-C]
    - [C-I-C]
- The targeted replacement of cast iron mains is justified by the high increased composition of cast iron mains (compared to network average) in the defined projects.

In short, the AER's approach of cost based re-prioritisation will imprudently increase risk to customers within the excluded areas that are exposed to high FIR and LIR.

3.4 SP AusNet Revised Proposal

SP AusNet maintains that its proposed LP mains replacement program (which has been updated from that proposed in its original access arrangement proposal) satisfies rule 79(2)(c) of the NGR as a program necessary to maintain and improve the safety of SP AusNet's LP network. Failure to undertake the complete program would undermine network safety, thereby undermining the achievement of the NGO.

SP AusNet's revised proposal for LP mains replacement is summarised in Table 2-9 below. As it did in the requests for information, SP AusNet has provided the AER with updated information on its capital programs as it becomes available, consistent with this approach, SP AusNet has further defined the remainder of the replacement program for the fourth regulatory period (i.e. the final three years of the period, 2015-17). In doing so, SP AusNet now has a complete project list with known lengths of replacement (by postcode) for the fourth regulatory period.

Table 2-9: Summary of SP AusNet's revised LP mains replacement program

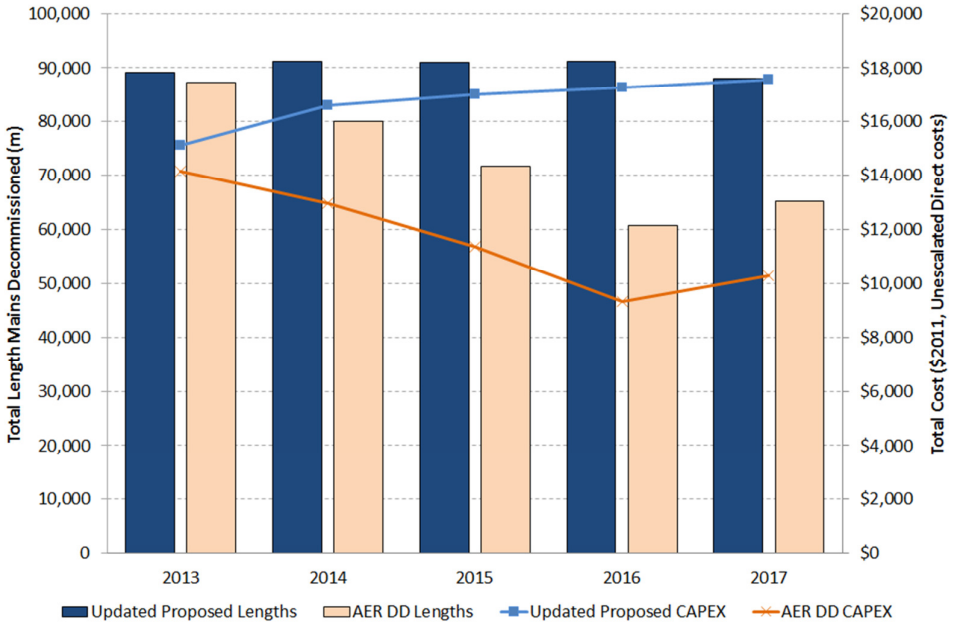
	2013	2014	2015	2016	2017	2013-17 Total
Length (km)	89.1	91.3	91.0	91.3	88.0	**450.7 km**
Unit Rate ($/m)	$169.6	$181.9	$187.2	$189.2	$199.7	**$185.5**
Total Exp ($M)	**$15,116**	**$16,605**	**$17,026**	**$17,268**	**$17,582**	**$83,597**

Source: SP AusNet. (Expenditure is in Direct 2011, excluding escalation)

In calculating the required expenditure for LP replacement program, SP AusNet has accepted AER's decision to approve SP AusNet's forecasted unit rates (by postcode). SP AusNet has applied these approved unit rates to the volume of mains replacement per year by postcode. SP AusNet's revised forecast for its low pressure mains replacement project satisfies the criteria set out in clause 79(1)(a) of the NGR.

The AER's draft decision and SP AusNet's revised proposal for LP mains replacement is summarised below in Table 2-10 below.

Figure 2-10: SP AusNet's revised LP mains replacement program.



Source: SP AusNet. (Expenditure is in Direct 2011, excluding escalation)

Table 2-10: Detailed breakdown of SP AusNet's Revised LP mains replacement program

[C-I-C]

4 Proposed Pass Through

SP AusNet does not accept amendments introducing a pass through mechanism to recover the cost of replacement volumes in excess of those approved by the AER, or the capping of those volumes at the replacement volume proposed by SP AusNet in its original access arrangement proposal.

Specifically, SP AusNet submits that the pass through is inconsistent with SP AusNet's proposed efficiency incentive mechanism and should not apply to the mains replacement program. Nonetheless, if the AER maintains the pass through, SP AusNet submits that:

- the pass through should, at a minimum, consider the lengths of LP mains decommissioned in CY2012 in the calculation of approved benchmarks;
- the trigger for the pass through (i.e. completion of approved volumes) is neither practical nor consistent with the delivery requirements of the mains replacement program because of the required lead times from project initiation to completion;
- the pass through provides SP AusNet with little scope to respond to new knowledge about risks and costs due to the:
    - insufficient approval of funding needed to reach the trigger points, and
    - limited scope to expand the program (if required by new information during the period) due to the cap of the pass through to SP AusNet's original access arrangement proposal;
- SP AusNet forecasts it will not be eligible for the pass through until the final year of the forthcoming access arrangement period (i.e. 2017), leaving the business effectively unfunded for extra replacement undertaken during the current access arrangement period.

4.1 Draft Decision

In conjunction with the approved kilometres of LP mains replacement, the Draft Decision introduced a pass through event for LP mains replacements in excess of the approved volumes (i.e. 365km), capped at 450km, being the replacement volume in SP AusNet's original access arrangement proposal.

Based on information included in the Capital Expenditure[74] and Tariff Variation Mechanism[75] sections of Part 2 of the Draft Decision, SP AusNet understands that the proposed mains replacement pass through event operates as follows:

- The pass through is triggered by the completion of all approved volumes for the access arrangement period (i.e. 365km of LP mains decommissioned);

[74] AER, Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17, Part 2, Section 3.4.3, September 2012, p. 72-74.

[75] AER, Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17, Part 2, Section 11.4.2, September 2012, p. 341-343.

- The scope of the pass through is limited to LP mains replacement that utilises the block renewal method;
- The pass through is capped at the volume set out in SP AusNet's original access arrangement proposal (i.e. 450km of LP mains decommissioned);
- Only expenditure for the lengths of mains in excess of approved volumes incurred within the forthcoming access arrangement period is eligible for the pass through;
- The efficient unit cost associated with the proposed works (at a postcode level) is the cost set out in SP AusNet's original access arrangement proposal;
- SP AusNet will be compensated for the additional return on capital accruing because the mains replacement program has been completed in a shorter time frame then initially approved. SP AusNet understands that this clause only relates to the phasing of expenditure, not the total volume of expenditure required to achieved the trigger; and
- No materiality threshold will apply for the LP mains replacement pass through event.

4.2 SP AusNet Response

The following sections outline SP AusNet's response on the rationale advanced for the mains replacement pass through event and its operation. SP AusNet's comments on the related tariff adjustment mechanism are contained in RAAP Chapter 8.

4.2.1 Rationale for the pass through

In explaining its rationale for introducing a mains replacement pass through event, the Draft Decision outlines factors that may legitimately alter the volume of replacements a distribution business chooses to complete including safety or risk assessment, and capital availability:[76]

> *"The AER is mindful that proactive replacement of mains involves a longer-term objective of eventually replacing all low pressure mains for safety and reliability reasons. Distribution businesses may alter the timing in response to changing risk and capital availability. The AER also notes that the program is currently being reviewed by the ESV."*

The AER's intention for the pass through is that the distribution businesses' scope to respond to "changed market conditions through altering the mix of risk management programs" is not limited, saying:[77]

> *"This may require the ability to alter the volume of mains replacement delivered. Consistent with [section 45 of] the Gas Safety Act, this may be driven by factors such as new information on safety risks and changes in the relative costs of different methods for mitigating or removing safety risks".*

The Draft Decision also expressed a concern that under-delivering replacement volumes against benchmarks in the current regulatory period detrimentally affect consumer gas prices:[78]

[76] AER, Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17, Part 2, p.49.

[77] Ibid, p.49.

[78] AER, Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17, Part 4, p. 10.

"because of how the regulatory framework operates, consumers have paid gas prices reflective of higher volumes approved in the previous regulatory period, not the actual volumes completed".

SP AusNet considers that the AER's concerns are misplaced given that the existing regime includes clear adjustment mechanisms to ensure that the benchmarks used in the calculation of the efficiency carryover amount reflect the actual volume of customer connections, mains replacement works and meter replacement capex undertaken. These adjustments ensure that SP AusNet is not over-rewarded if the volumes underlying actual capital expenditure are below the benchmark volumes. Therefore, the assertion in the Draft Decision that the regulatory framework results in consumers paying for higher volumes than achieved is in error.

Even if the framework did operate as the Draft Decision suggests (and it does not), it could equally be said that consumers have paid gas prices that are reflective of lower customer connections than actually eventuated (i.e. prices were lower because consumers did not have to pay the full cost of capex associated with connecting customers).

Furthermore, across the entire capex program the level of underspending to the end of 2011 was just 3.6% and is expected to be an overspend by the end of 2012. In SP AusNet's view, there is no evidence of widespread deferral occurring to the detriment of customers, noting that the benchmarks relating to the large expenditure programs are adjusted for deferral.

Finally the evidence suggests that SP AusNet has effectively managed the changes to capital availability and network risks within the existing regime obviating the need to weaken efficiency incentives embodied in the existing regime with a pass through mechanism. It is in the interests of customers that SP AusNet is encouraged to manage these risks given that they are controllable rather than be given the protection of a pass through.

Therefore, in combination with mains replacement benchmarks set at appropriate levels, SP AusNet considers its proposed capex efficiency carryover mechanism neatly addresses all the concerns raised in the Draft Decision with regards to a network's ability to accelerate or defer its mains replacement program. The advantages of this mechanism relative to the Draft Decision approach are outlined in detail in RAAP Chapter 7.

The proposed pass through mechanism is not consistent with Rule 98 of NGR and does not best promote the achievement of the NGO.

4.2.2 Operation of the pass through

While SP AusNet does not support the introduction of the pass through mechanism, it also considers the operational aspects of what is proposed could be improved. These improvements are set out below.

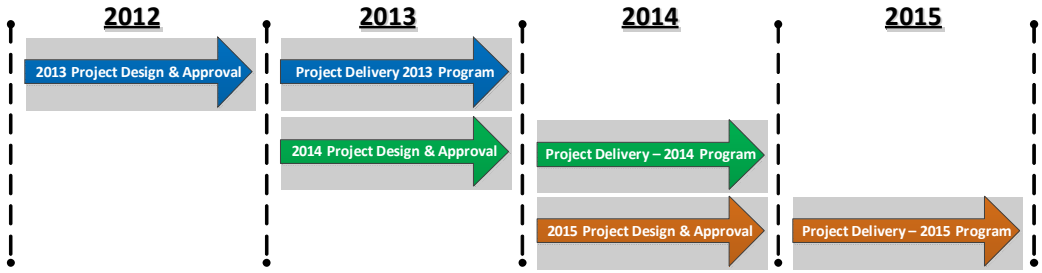
Historical benchmark is too low

As detailed in Section 3.3.1 above, without the inclusion of 2012 data, SP AusNet's mains replacement for the current period is understated, consequently the benchmark reflecting SP AusNet's 'current risk appetite' is set too low.

The trigger point is not consistent with the lead timeframes for delivery of LP replacement.

The LP mains replacement program has been a continuous program of work since its inception during the 2003-07 access arrangement period. The lead time from scoping the works to project completion is approximately two years. In the year preceding their delivery, individual projects within the program are designed, granted internal business approval, tendered, and awarded.

Figure 2-11: LP replacement timeline – Conception to Completion



Source: SP AusNet.

The AER's formulation of the pass through event creates a timing issue in relation to the trigger for the pass through. In its Draft Decision, the AER stated that, in its, view:[79]

> *"…the pass through provision will not materially change the existing level of certainty and control that SP AusNet currently has over future works."*

SP AusNet disputes that there is no material change to funding certainty under the AER's proposed pass through event. The continuous nature of the LP replacement program (the lead time to delivery and the project being awarded in the year preceding delivery) means that SP AusNet is committed to mains replacement projects before knowing whether the funding for those projects will be approved under the pass through mechanism.

For the pass through to be workable, SP AusNet must be permitted to apply for the additional volume of replacement (and the AER make its determination) in sufficient time to allow efficient delivery of the works. Based on the current lead time to market (and program delivery) this could be no less than 12 months prior to the expected completion of initial approved lengths.

The pass through provides SP AusNet with little scope to respond to changed knowledge

In SP AusNet's case, the proposed pass through does not meet the AER's stated rationale for providing the pass through; that is, the ability to respond to changing risk, or information about risk.

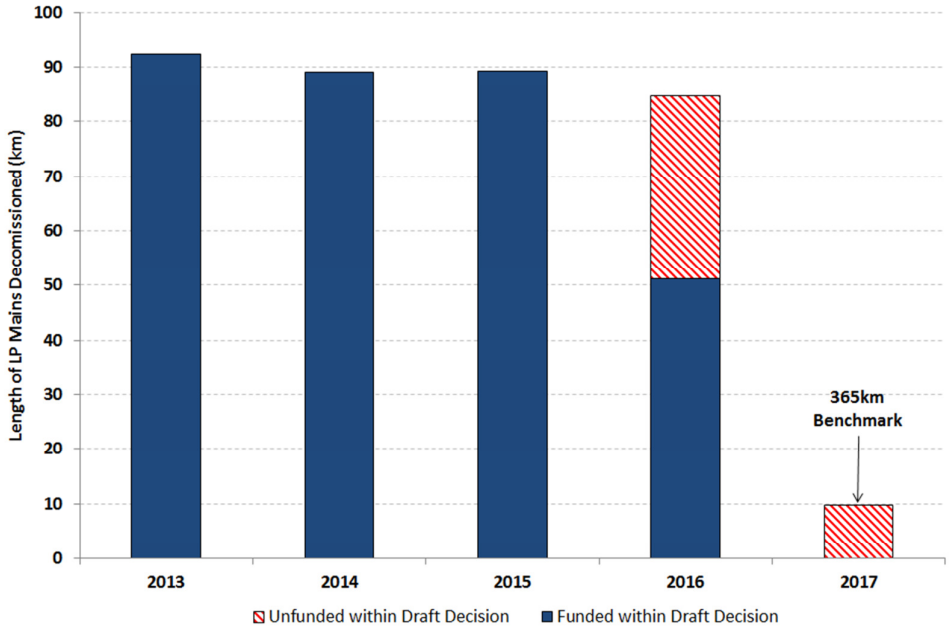
[79] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17,* Part 2, p.50.

- ***Insufficient funding to reach the trigger point***

SP AusNet mains prioritisation methodology targets those mains deemed the greatest risk to safety. Due to the AER's cost based re-prioritisation of the replacement program, when SP AusNet delivers the program in line with its prioritisation methodology, the AER has only provided funding for 322km of the 365km program (i.e. 43km remains unfunded). This amounts to a shortfall of $8.4m ($2011, Direct excluding escalation) which SP AusNet will be required to fund without any guarantees of reimbursement once the pass through trigger is reached. This is further exacerbated by the Draft Decision to reject forecast allowance for the higher risk MP replacement program.

Under the current pass through structure, SP AusNet could only gain access to funding for these projects (i.e. the $8.4m shortfall), if it funded these projects upfront, which may involve the re-prioritisation of other allowances.

Figure 2-12: Funded and Unfunded proportions on the mains replacement program



Source: SP AusNet.

- ***Pass through Scope is limited***

Due to the current structure of the pass through (which caps the pass through to the volume of mains to the original access arrangement proposals of each network) and SP AusNet's forecast of replacement which did not defer significantly from length achieved in the current regulatory period (i.e. approx. 10% variance), SP AusNet's ability to respond to changes in risk and market conditions is substantially restricted when compared to the other Victorian gas distribution network service providers.

SP AusNet has an established history of consistently delivering low pressure mains replacement (SP AusNet will have replaced 401km of LP mains within the current period). In its original access arrangement proposal, SP AusNet proposed a realistic

forecast for low pressure replacement for the forthcoming period, which maintained an appropriate balance of safety and commercial drivers in delivery of the program.

The following table summarises the potential for each Victorian gas distribution network to respond to changing market conditions.

Table 2-11: Approved LP replacement programs and Pass through summary

Distribution Network	Proposed	Approved	Pass through Parameters		
			CAP[80]	Scope	% of Program
SP AusNet	450km	365km	450km	85km	123%
MultiNet[81]	401km	240km	401km	161km	167%
Envestra[82]	636km	265km	636km	371km	240%

Source: SP AusNet.

When comparing the proposed versus approved volumes of LP replacement for each service provider, SP AusNet has been given limited scope to respond to changes in market. In absolute terms, SP AusNet is limited to 85km[83] of additional replacement for the period. This compares to 161km available to Multinet and 371km for Envestra. In relative terms, Envestra can more than double its current rate of replacement (i.e. its chosen risk level) while Multinet can increase it by 67%. SP AusNet, in comparison, has scope to in increase replacement by 23%[84] which is significantly less than the other service providers.

The "pass through" event may become impracticable for SP AusNet

As an efficient and prudent service provider, SP AusNet is committed to delivering the LP replacement program as defined in its Mains & Services Strategy (AMS 30-52).

Under the mains replacement program proposed by SP AusNet, the company will only become eligible for the additional lengths of replacement (i.e. have completed the approved kilometres of mains replacement) in the final year of the forthcoming access arrangement period (i.e. 2017).

As demonstrated in Figure 2-13, if the 365km benchmark is maintained, SP AusNet expects to reach the trigger for the pass through in early 2017. If the benchmark was

[80] The LP mains replacement pass through is capped at the total length of each distribution network original AAI submission.

[81] AER, *Access Arrangement Draft Decision Multinet Gas (DB No.1) Pty Ltd & Multinet Gas (DB No.2) Pty Ltd SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, September 2012, p. 57-64.

[82] AER, *Access Arrangement Draft Decision Envestra Ltd 2013-17*, Part 2, p. 78-86.

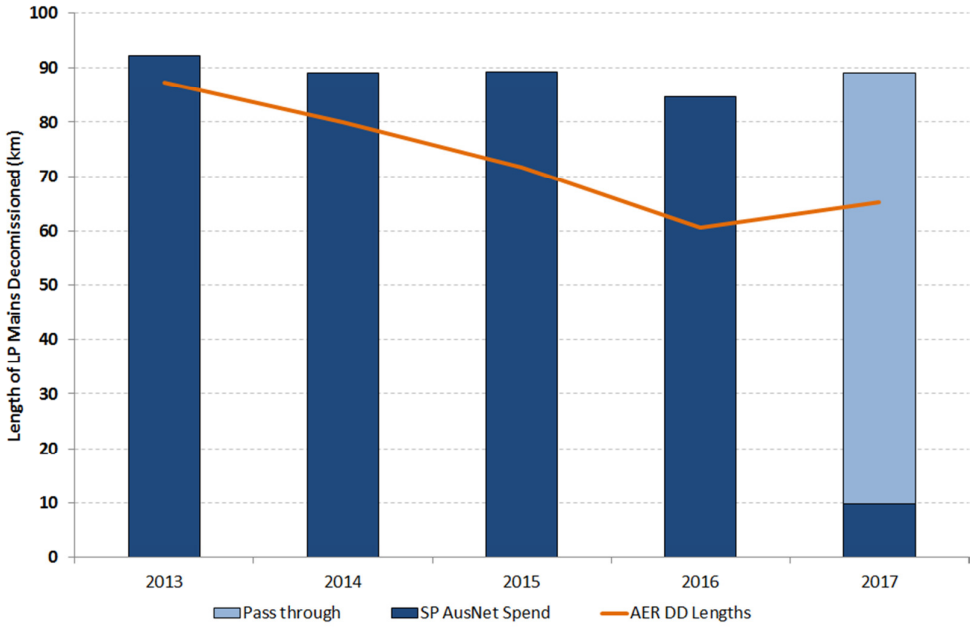
[83] This is revised to 50km of replacement if 2012 decommissioned lengths are considered in the average length of mains decommissioned over the current access arrangement period.

[84] This decreases to 11% if 2012 actual decommissioned lengths are considered in the calculation of the trigger point.

revised to include 2012 volumes, SP AusNet will reach the pass through trigger later in 2017.

If the trigger is reached in the final year, there is effectively no extra funding available through the pass through. Because the additional kilometres eligible for pass through funding is capped, there would be no point in seeking to reach the trigger earlier.

Figure 2-13: Forecast timing of trigger event for the proposed low pressure pass through



Source: SP AusNet.

5 Material Specific Mains Replacement – CL250 Polyethylene (PE)

SP AusNet does not accept the AER's Draft Decision that the Class 250 PE mains replacement program as not justifiable under r. 79(2)(c)(i) and not prudent and efficient under r. 79(1)(a) of the NGR.

The Draft Decision relies heavily on Zincara's advice. Taking into consideration Zincara's assessment in relation to this program, SP AusNet is proposing an alternative program of works that addresses the safety risk associated with Class 250 PE mains operating at pressures above their design limits.

SP AusNet's revised proposal is an opex step change to identify the risks posed by Class 250 PE mains operating at high pressure. SP AusNet's revised proposal draws on the Zincara report where additional works are recommended to pinpoint the location of mains operating beyond their design limits.

SP AusNet expects a corresponding increase in reactive mains replacement capital expenditure resulting from the proposed operating expenditure program of Class 250 PE mains. The size of the program is currently unknown but SP AusNet expects that, at a minimum, 2.5km of Class 250 PE mains will identified as requiring replacement.

5.1 SP AusNet Original Proposal

The Class 250 Polyethylene (PE) Mains Replacement Program refers to the specific replacement of Class 250 (thin wall) PE mains currently operating in SP AusNet's [C-I-C] high pressure network. These mains are of particularly high risk as they have been inadvertently upgraded to high pressure and are currently operating above their design pressure and therefore are at higher risk of critical failure.

SP AusNet's proposed proactive replacement program targeted an initial 2.5km of a potential 20km of suspect main over the 2013-17 access arrangement period. An allocation of $100k p.a. (Direct, $2011, excluding escalation) was required for this program.

5.2 Draft Decision

The AER in its draft decision rejected SP AusNet's proposal of a material specific Class 250 PE mains replacement program as not justifiable under r. 79(2)(c)(i) and not prudent and efficient under r. 79(1)(a) of the NGR.

In support of its decision the AER drew heavily on advice provided by its engineering consultant, Zincara. The following factors were referenced in the AER's draft decision in relation to the Class 250 replacement program[85]:

- There is no change in the risk associated with Class 250 mains;
- There has not been an increasing trend in the number of Class 250 leaks;

[85] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.23-24.

- The minimal proposed replacement program does not reflect the urgency implied by SP AusNet's assessment of the risk associated with Class 250 mains; and
- The exact location of Class 250 mains is not known with certainty.

5.3 SP AusNet Response

SP AusNet does not accept the AER's draft decision that the Class 250 PE mains replacement program as not justifiable under r. 79(2)(c)(i) and not prudent and efficient under r. 79(1)(a) of the NGR.

The need to proactively replace Class 250 PE mains is driven by the safety risk created by assets operating outside their design limits. In summary:

1. The maximum allowable operating pressure (MAOP) of Class 250 PE mains is 250kPa[86];
2. Identified Class 250 PE mains operating at high pressure has a higher potential of critical failure as the mains have exceeded its design limit.

These assets therefore pose a high safety risks to the public, with a consequent need for proactive replacement.

SP AusNet has isolated the location of Class 250 PE assets operating outside their design limits to the [C-I-C] High Pressure network. The [C-I-C] gas distribution network incorporating postcodes [C-I-C] and [C-I-C] was originally designed and operated at medium pressure by the 'Gas and Fuel Corporation' in the 1970's. In 2003-4 under the ownership of 'TXU Networks' the [C-I-C] network, which now encompasses approximately 318km of mains was upgraded to operate at high pressure (i.e. from a maximum operating pressure of 250kPa to 515kPa). Unfortunately, a number of non-high pressure rated assets, specifically thin walled polyethylene mains (Class 250) were not identified and were therefore not replaced.

In response to Zincara's assessment in relation to the 'Material Specific Replacement' program;

- Zincara has proposed that 'leakage rectification' be used to investigate the extent of the issue. SP AusNet considers this approach to be reactive, indirect and therefore potentially inconclusive in determining the existence of the material type in question.
- SP AusNet also notes that reacting to asset failures (i.e. leaks) rather than proactively addressing the risk places undue risk on the public.
- Zincara also stated *'there is a lack of consideration of other options to mitigate against the risk of over-pressuring the* [C-I-C]*network"*.[87] While there are options to limit over-pressuring of assets by limiting the operating pressure of the [C-I-C] network, these options were not considered prudent based on the fact that further augmentation works would be needed to lower the pressure below 250kPa (maximum operating pressure of Class 250 PE). SP AusNet does not consider this to represent efficient spend.

[86] Calculated as per the requirements of AS 4645: Gas Distribution Networks – Part 3: Plastic Pipe Systems.

[87] Zincara, Review of SP AusNet's Capital Expenditure (confidential), 7 September 2012, p. 12

Based on the available knowledge surrounding the nature of the [C-I-C] HP network, SP AusNet, as a prudent service provider, considers that it must identify and subsequently replace these assets to maintain and improve safety of the network.

5.4 SP AusNet Revised Proposal

Taking into consideration Zincara's assessment in relation to this program, SP AusNet is proposing an alternative program of works that addresses the safety risk associated with Class 250 PE mains operating at pressures above their design limits.

SP AusNet revised proposal is an opex step change to identify the risks posed by Class 250 PE mains operating at high pressure. SP AusNet's revised proposal draws on the recommendations made in the Zincara report where additional works are recommended be undertaken to pinpoint the location of mains operating beyond their design limits.

SP AusNet considers that this revised proposal (like the original) is consistent with the NGO as it aligns to the long-term interests of consumers in relation to the safety of the gas distribution network. SP AusNet maintains that safety is the key driver of this replacement program to ensure the replacement of identified high risk assets operating above design limits.

The opex change is to firstly identify the assets in question through direct verification of assets by directly proving the mains in order to establish their classification.[88] This will then determine the extent of the replacement program.

In line with the original submission, [C-I-C] of mains was identified as potentially operating beyond their design limits.[89] In order to establish the number of mains provings required, the [C-I-C] of mains identified has been grouped by street and its corresponding mains length.

Figure 2-14: Length of potential Class 250 PE Mains by Street

[C-I-C]

Source: SP AusNet.

[88] Proving involves exposing the existing asset to verify its material type, classification and wall thickness. This information is identifiable by markings imprinted upon the outer pipe surface which are repeated every meter.

[89] Non-rated mains assets are those not designed to operate at pressures in excess of 250kPa.

In total there are [C-I-C] streets containing suspect Class 250 PE mains with lengths varying from [C-I-C]. SP AusNet has applied the following allocation to calculate the number of provings per street required. The application of rules outlined in Table 2-12 provides SP AusNet with a sufficient sample size to gain confidence in determining the pipe material within each street.

Table 2-12: Rules followed in calculating the volume of provings required

Mains Length	0 to 10m	11 to 50m	51 to 100m	100m +
Number of provings	1	2	3	1 per 100m thereafter

Source: SP AusNet.

In total, [C-I-C] mains provings will be conducted in 2013 to confirm the location of the Class 250 PE mains within the [C-I-C] network and determine the extent of the replacement program. The total opex cost based on current rates for 'investigation provings' is $199,950.

Table 2-13: CL250 Polyethylene - Revised Opex Proposal Comparison

Summary	Totals
Total mains length (m)	[C-I-C]
Number of Streets	[C-I-C]
Number of mains Provings	[C-I-C]
Cost of Proving	[C-I-C][90]
Opex Cost	**$199,950**

Source: SP AusNet. (Expenditure is in Direct 2011, excluding escalation)

SP AusNet expects a corresponding increase in reactive mains replacement (capex) resulting from the proposed proving (opex) program of Class 250 PE mains. The size of the program is currently unknown but SP AusNet expects that, at a minimum, 2.5km of Class 250 PE mains will identified as requiring replacement. This is consistent with the initial analysis conducted on Class 250 PE replacement program. All resulting capital is expected to be incurred in 2014 (i.e. the year following identification).

[90] [C-I-C]

Table 2-14: CL250 Polyethylene - Revised Capex Proposal Comparison

Summary	Totals
Total mains length (m)	[C-I-C]
Estimate renewal length (m)	[C-I-C]
Unit cost ($/m)	[C-I-C]
Capex Cost	**$500,000**

Source: SP AusNet. (Expenditure is in Direct 2011, excluding escalation)

6 Reactive Service Replacement

The Draft Decision rejected SP AusNet's approach of maintaining a long run trend to forecast the volume of service replacements unless supported by evidence.

SP AusNet has identified several areas of concern with the AER's revised approach.

1. The AER has applied an inconsistent approach in forecasting reactive service replacement for each of the three distribution businesses,
2. The revised approach disregards trends in service replacement over the current access arrangement period, and
3. All the drivers of reactive service replacement have not been considered.

Based on the continuation of the LP mains replacement program (at a rate of 90km p.a.) and the introduction of a MP mains replacement program (at a rate of 30km p.a.), SP AusNet considers it appropriate that the current growth in service replacement will slow over the fourth regulatory period. Accordingly, SP AusNet has revised its forecast downward and is now seeking expenditure allowances for fewer reactive service replacements.

6.1 SP AusNet Original Proposal

The reactive replacement of assets is necessary when assets fail in the field. Reactive replacement maintains public safety, satisfies SP AusNet's compliance obligations[91] and enables SP AusNet to continue to maintain customer service levels.

One-off service replacements, which occur at a rate of approximately 550 per annum, is one component of SP AusNet's reactive replacement forecast of the fourth regulatory period. The need for service replacement is consistent with r.79(2)(c)(i)-(ii) of the NGR.

SP AusNet's forecast for the reactive service replacement (see Table 2-15 below) maintains a significant increasing trend in service replacement from 2005. This forecasting approach is considered consistent with r.74(2)(a) of the NGR.

Table 2-15: SP AusNet's proposal for reactive service replacement

	2013	2014	2015	2016	2017	2013-17 Total
Services	387	414	441	468	495	**2,025**
Unit Rate ($/m)	$1,986	$1,986	$1,986	$1,986	$1,986	**-**
Total Exp ($M)	**$0.769**	**$0.822**	**$0.876**	**$0.929**	**$0.983**	**$4.379M**

Source: SP AusNet, (Expenditure is in Direct 2011, excluding escalation)

[91] Connection obligations within the Gas Distribution System Code and safety obligations within the Gas Safety Act.

6.2 Draft Decision

The AER in its draft decision agreed that it is justifiable to have an expenditure allowance for reactive service replacement, as it is necessary for maintaining the safety and integrity of services, consistent with r.79(2)(c)(i)-(ii) of the NGR.

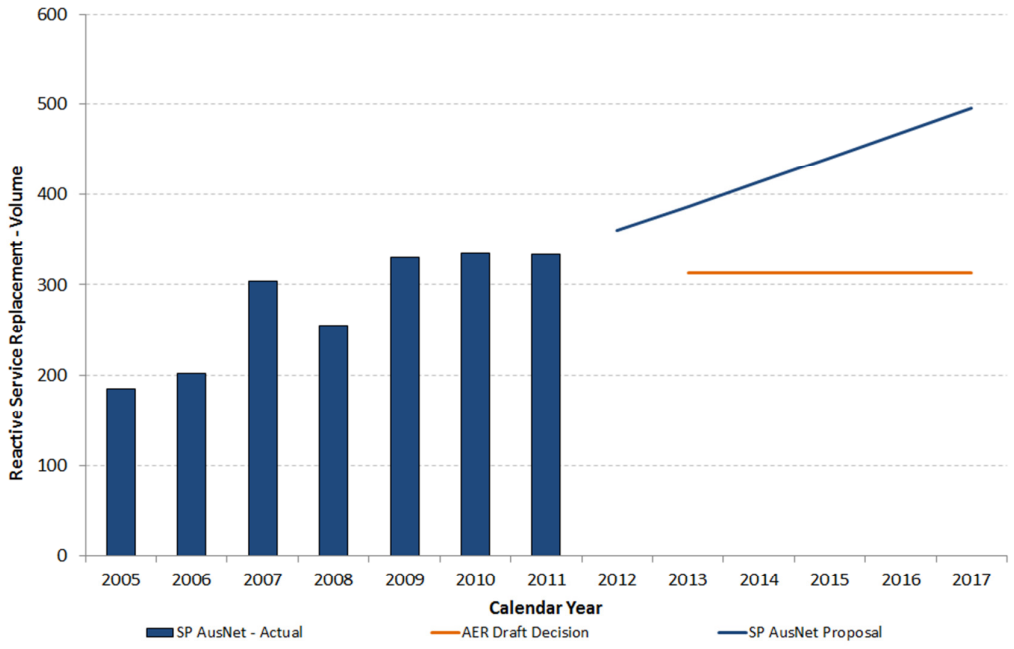
However, the AER rejected SP AusNet's approach of maintaining a long run trend to forecast the volume of service replacements unless supported by evidence. The AER stated that it has received no evidence to substantiate such approach.[92]

The AER considers that the number of services renewed should be based on the earlier access arrangement period as connections growth slows and the mains replacement program, which involves replacement of services, advances.

The annual number of service replacements over 2008-11 was adopted for each year from 2013-17. This approach is consistent with the other components of SP AusNet's reactive mains and service replacement program.[93]

The AER's revised approach reduces the number of services renewed over the access arrangement period from 2,025 to 1,566. This resulted in a reduction of program expenditure of $1.269M ($2011, unescalated direct costs)

Figure 2-15: Reactive Service Replacement – Proposed against AER Draft Decision



Source: SP AusNet

[92] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.26.

[93] Correction: SP AusNet's approach in forecasting volumes of reactive replacement, where significant trends did not exist, was to maintain 2011 volumes. The AER approved this approach for all components of reactive replacement with the exception of service replacement.

6.3 SP AusNet Response

SP AusNet does not accept the approach taken by the AER in forecasting the volume of service replacements for the 2013-17 access arrangement period.

SP AusNet believes the AER's substitute approach in forecasting reactive service replacement is not consistent with r.74(2)(a)-(b) of the NGR as it does not represent a reasonable forecasting method that would result in the best possible estimate of reactive service replacement for the coming access arrangement period.

SP AusNet has identified several areas of concern with the AER's revised approach.

1. The AER has applied an inconsistent approach in forecasting reactive service replacement for each of the three distribution businesses;
2. The revised approach disregards trends in service replacement over the current access arrangement period; and
3. All the drivers of reactive service replacement have not been considered.

Each of the above concerns has been addressed in Sections 6.3.1 to 6.3.3 below.

6.3.1 Inconsistent forecasting approach

Within its draft decision, the AER adopted a different forecasting methodology for the calculation of service replacement for each of the distribution networks. A summary of each is provided:

- **SP AusNet:** The annual average number of service replacements over in the 2008-11 period projected forward for each year of forthcoming period (2013-17).
- **Multinet:** The actual volume of service renewals in calendar 2011 projected forward (as a constant) for each year of the 2013-17 access arrangement period.
- **Envestra:** Interpolation of service renewals (i.e. maintaining current trend) from 562 units in 2011 to 200 service renewals in 2017.

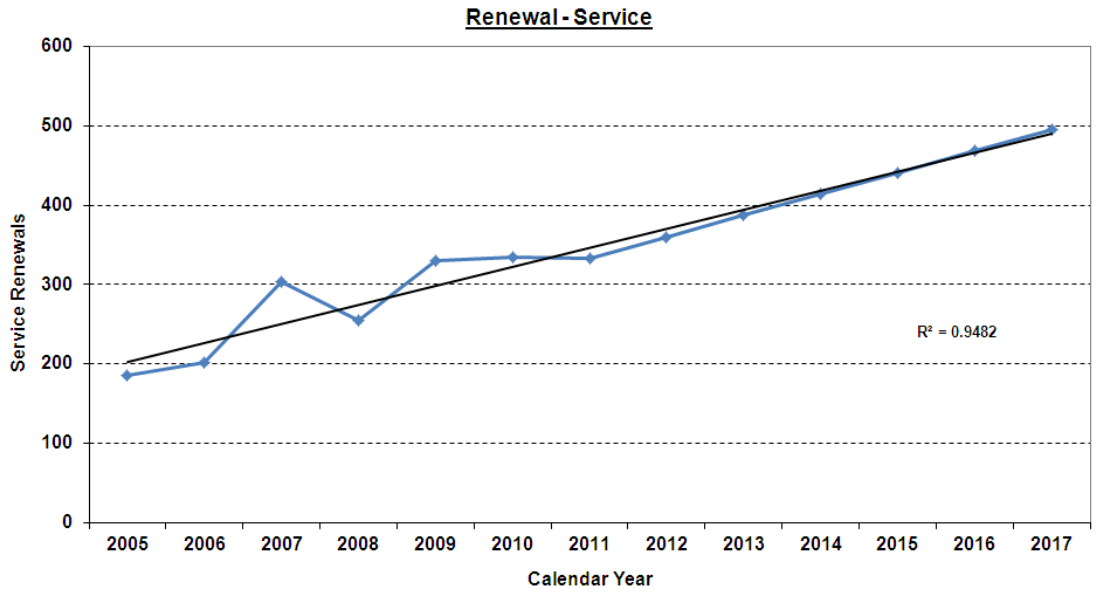
SP AusNet highlights that its approach of interpolating (i.e. maintaining a trend) of service renewals for the year 2013-17 was rejected by the AER as not consistent with r.72(2)(a)-(b) of the NGR, but this same approach was considered appropriate (when there is a declining trend) for the forecasting of replacement for Envestra's distribution network.

6.3.2 Trend in service replacement over the current regulatory period

As indicated in SP AusNet's response to the AER's Information Request number 4 sent on 1 June 2012 (and reiterated in Information Request 17 sent on 10 July 2012); in forecasting the volume of units within each of the reactive replacement programs, SP AusNet has reviewed the annual work volumes since 2005, and maintained significant trends where they exist (i.e. service renewals). Where significant trends do not exist (i.e. minor mains replacement, and lower/alter mains & service), 2011 volumes have been maintained.

The forecasted volume of reactive replacement is provided below in Figure 2-16.

Figure 2-16: Long-term trend of Reactive Service Replacement



Source: SP AusNet. Extract from Question 3 of Information Request 4, Submitted to the AER on 1st June 2012

The AER's alternative forecasting approach for service replacement fails in its consideration of significant trends service replacement over the current and preceding periods. This results in a projected underestimation of service replacement over the fourth regulatory period.

6.3.3 Drivers of reactive service replacement

In the justification of its alternative forecasting approach, the AER considered that the number of services renewed (in the 2013-17 regulatory period) should be based on the earlier access arrangement period as:[94]

- Connection growth slows; and
- The mains replacement program, which involves the replacement of services, advances.

SP AusNet does not accept the AER's assessment that the volume of reactive service replacement (i.e. the replacement of failed and heavily deteriorated assets that are at the end of their useful life) has any connection to the current growth in the distribution network. SP AusNet confirms that it is only replacing mains and services that can no longer be maintained. Network growth results in new assets being commissioned. These same assets are not the focus of reactive replacement.

SP AusNet agrees that service upgrades associated with the mains replacement program will decrease the number of reactive service replacement required, compared to what would have been needed if a mains replacement program was not undertaken. SP AusNet also notes that the annual volume of service replacements has continued to increase despite the implementation of the low pressure mains replacement program in the second regulatory

[94] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.25.

period.[95] This indicates that the deterioration rate of SP AusNet's distribution network has outpaced the rate of network replacement. This is considered counter intuitive to trends seen on other Victorian networks, where on Envestra's assets, "The number of services requiring replacement is reducing as more mains replacement is carried out".[96]

In the AER's Draft Decision for Envestra, it took into account the trend of service renewals over the current regulatory period in forecasting renewal volumes for 2013-17. In doing so, the AER has interpolated the number of services per year from 2011 to 2017.

6.4 SP AusNet Revised Proposal

Based on the continuation of the LP mains replacement program (at a rate of 90km p.a.) and the introduction of a MP mains replacement program (at a rate of 30km p.a.), SP AusNet considers it appropriate that the current growth in service replacement will slow over the fourth regulatory period. Accordingly, SP AusNet has revised its forecast downward and is now seeking expenditure allowances for fewer reactive service replacements.

SP AusNet's revised proposal for reactive service replacements is for 2011 actual volumes to be maintained (as a constant) for the 2013-17 access arrangement period. This approach is considered reasonable (consistent with r.74(2)(a)-(b) of the NGR) as:

- It takes into consideration the increased rate of LP mains replacement (90km p.a.) and introduction of medium pressure replacement (30km p.a.) for the fourth regulatory period.
- It is consistent with the forecasting methodology approved by the AER for the remainder of SP AusNet's reactive replacement program.[97]
- It is consistent with the AER's adopted approach in forecasting service replacement for Multinet.

Table 2-16: SP AusNet's forecast for reactive service replacement

	2013	2014	2015	2016	2017	2013-17 Total
Services	333	333	333	333	333	**1,665**
Unit Rate ($/m)	$1,986	$1,986	$1,986	$1,986	$1,986	**-**
Total Exp ($M)	**$0.661**	**$0.661**	**$0.661**	**$0.661**	**$0.661**	**$3.307**

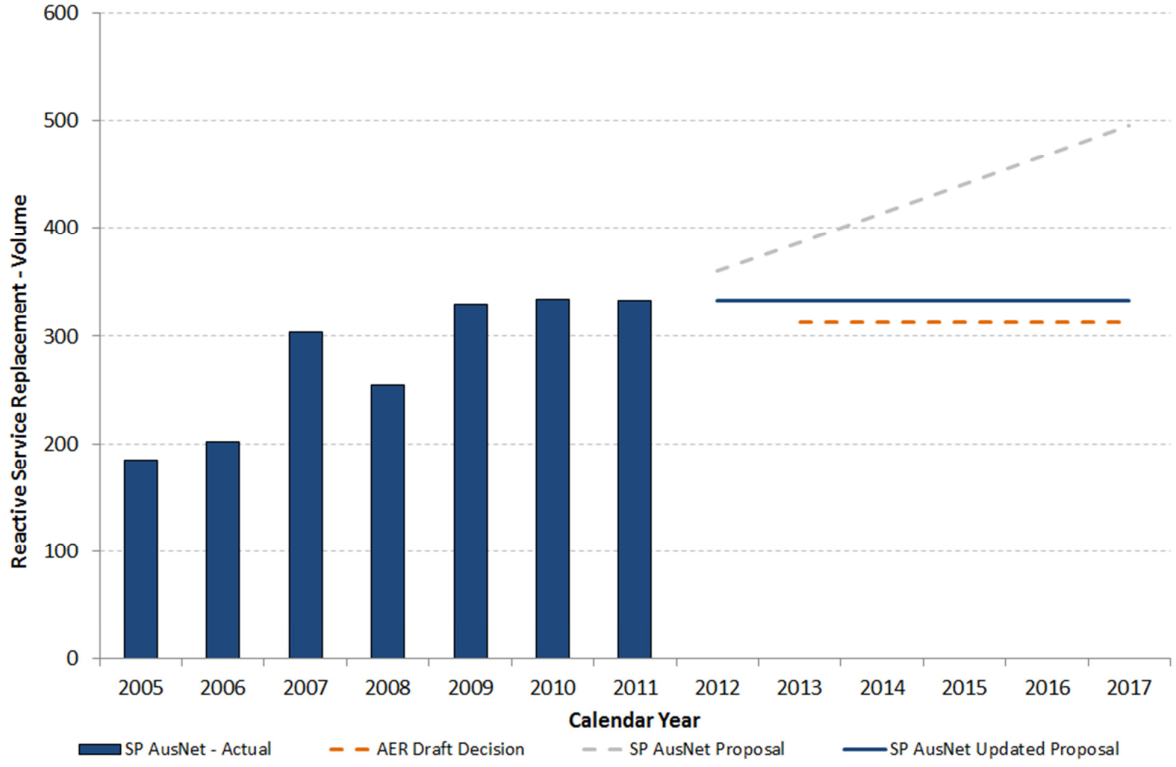
Source: SP AusNet, (Expenditure is in Direct 2011, excluding escalation)

[95] SP AusNet has decommissioned over 605km of low pressure mains (up to and including 2011) since the introduction of low pressure mains replacement in 2003.

[96] AER, *Access Arrangement Draft Decision Envestra Ltd 2013-17*, Part 2, September 2012, Table 3.16 p. 93

[97] Note: SP AusNet accepts the AER's decision to approve this approach for all other aspects of the reactive replacement program.

Figure 2-17: SP AusNet's revised forecast of Reactive Service Replacement



Source: SP AusNet

7 Tariff V Customer Connections – Customer Abolishment

The Draft Decision takes an annual average of the number of abolishments over the 2007-11 access arrangement period and applies this for each year of the coming access arrangement period. This approach was adopted for both domestic and non-domestic connection types.

SP AusNet has identified several areas of concern with the AER's revised approach.

1. The AER has applied an inconsistent approach in forecasting abolishment volumes for each of the three distribution businesses;
2. The revised forecast ignores trends in network abolishment in the current regulatory period;
3. The AER's assessment that the drivers for domestic and non-domestic abolishment are considered uniform; and
4. The revised forecast methodology ignores the growth in SP AusNet's customer base.

There is a positive relationship between the network growth and the corresponding volume of domestic network abolishment. As SP AusNet is forecasting an ease in network growth (from 3.1% to 2.6% p.a.), it is reasonable to forecast a corresponding ease in network abolishment. SP AusNet's revised forecast for domestic network abolishment is calculated by maintaining the average abolishment rate from 2007 to 2011 (as a percentage of total network net connections) to net connections within the coming regulatory period.

The positive relationship between domestic abolishment and economic activity does not apply for non-domestic connection types. A review of historical relationships suggests there is in fact a negative correlation between net connections and non-domestic network abolishment. A decline in the volume of non-domestic connections (a proxy to economic activity) will result in a proportional increase in non-domestic abolishment. As such, SP AusNet maintains its original proposal for non-domestic abolishment.

7.1 SP AusNet Original Proposal

Customer abolishment (from a capital prospective) involves the decommissioning of assets in which the customer is permanently disconnected from the distribution network. It is calculated as the difference between net connections (customers at 31 December less customers at 1 January) and gross network connections (i.e. new connections to the network requiring capital expenditure).

SP AusNet's forecast for network abolishment for the 2013-17 access arrangement period considered the strong underlying growth in network abolishment (calculated as the percentage of total network connections for both domestic and non-domestic customer types) in the current arrangement period to continue for the 2013-17 access arrangement period. The use of this historical relationship (which is considered consistent with r. 74(2) of the NGR) best allowed SP AusNet to forecast gross customer connections (i.e. volume of network abolishment) as, to SP AusNet's knowledge, there

are no exogenous variables that are likely to impact this relationship over the forthcoming access arrangement period.[98]

7.2 Draft Decision

The AER in its draft decision rejected SP AusNet's forecast of network abolishments as it was believed to be inconsistent to r. 74(2)(a) and r. 74(2)(b) of the NGR.[99]

In substitute, the AER provided commentary from which it then concluded that there is a positive relationship between the volume of network abolishment, economic activity and population growth. In doing so, the AER expects "some softening of the growth in abolishments over the 2013-17 access arrangement period", which it expects to be in line with SP AusNet's forecasts for net connections.[100] The AER's alternative forecasting method was to take an annual average of the number of abolishments over the 2007-11 period and apply this for each year of the coming access arrangement period. This approach was adopted for both domestic and non-domestic connection types.

The AER's alternative approach in forecasting network abolishments resulted in a significant reduction in domestic (2,606) and non-domestic (255) gross connections proposed by SP AusNet over the 2013-17 access arrangement period.

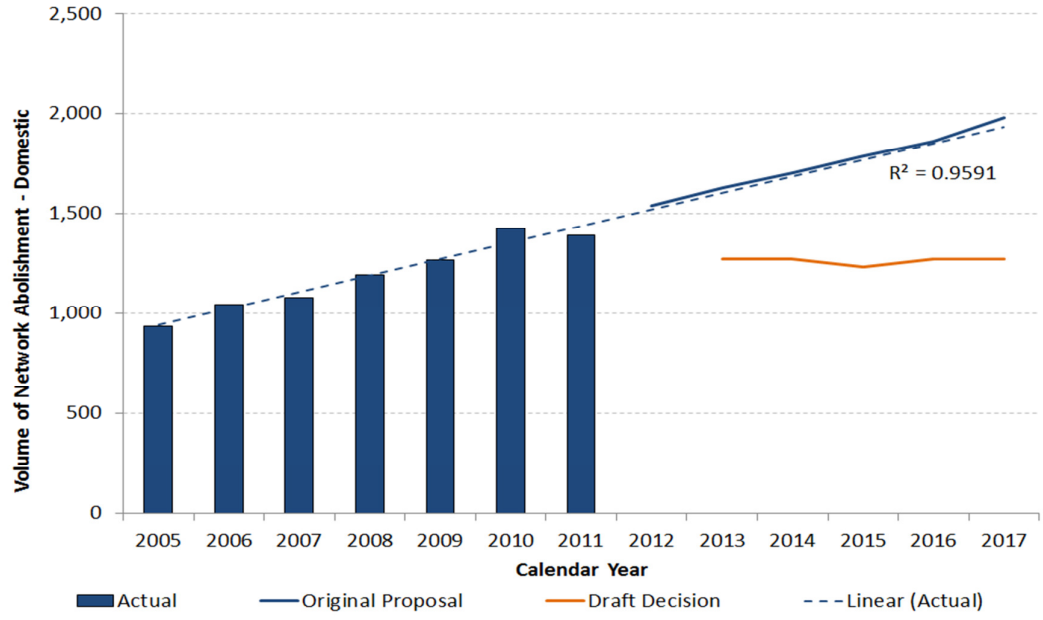
A comparison between SP AusNet's proposal and the AER draft decision is shown below for both domestic (Figure 2-18) and non-domestic (Figure 2-19) connection types.

[98] SP AusNet, *2013-2017 Gas Access Arrangement Review – Access Arrangement Information*, 30 March 2012, p. 91.

[99] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.31-32.

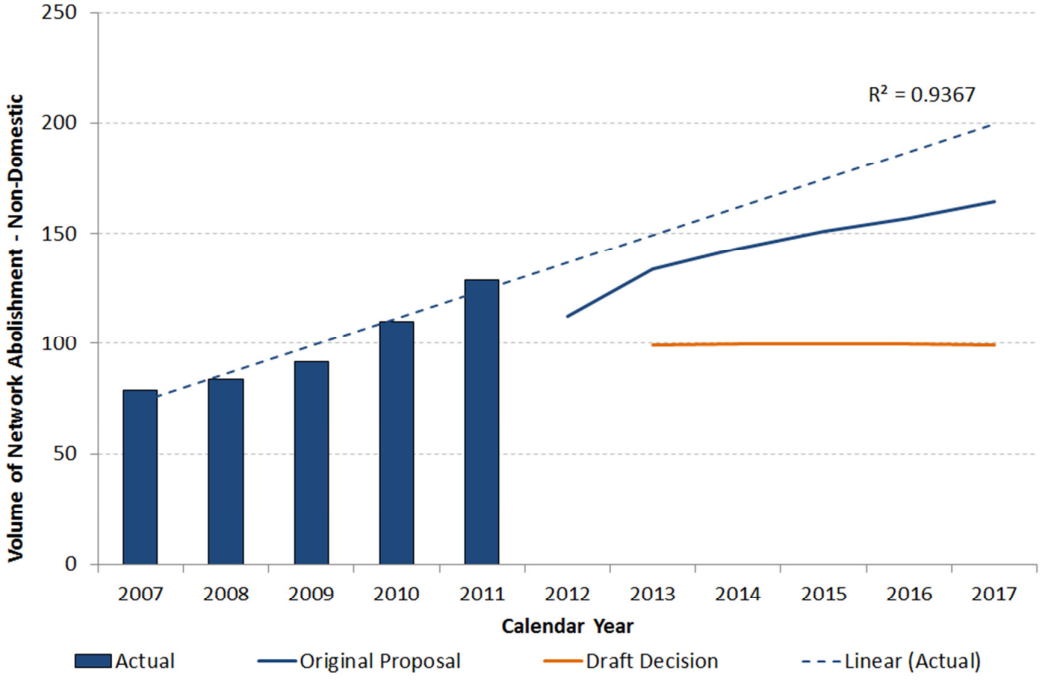
[100] Ibid, p.31.

Figure 2-18: Domestic Abolishment – Absolute – Proposed against Draft Decision



Source: SP AusNet

Figure 2-19: Non-Domestic Abolishment – Absolute – Proposed against Draft Decision



Source: SP AusNet

7.3 SP AusNet Response

SP AusNet does not accept the approach taken by the AER in forecasting both domestic and non-domestic abolishment volumes for the 2013-17 access arrangement period.

SP AusNet believes the AER's substitute approach in forecasting abolishment is not consistent with r. 74(2)(a) of the NGR as it does not represent a reasonable forecasting method that would result in the best possible estimate of network abolishment as required by r. 74(2)(b) of the NGR.

SP AusNet has identified several areas of concern with the AER's revised approach:

1. The AER has applied an inconsistent approach in forecasting abolishment volumes for each of the three distribution businesses;
2. The revised forecast ignores trends in network abolishment in the current regulatory period;
3. The AER's assessment that the drivers for domestic and non-domestic abolishment are considered uniform; and
4. The revised forecast methodology ignores the growth in SP AusNet's customer base.

Each of the above concerns has been addressed in Sections 7.3.1 to 7.3.4 below.

7.3.1 Inconsistent forecasting approach

Within its draft decision, the AER adopted a different forecasting methodology for the calculation of gross customer connections (hence abolishment volumes) for each of the three distribution networks. A summary of each is provided:

- **SP AusNet:** Average volume of abolishment for both domestic and non-domestic customer over the 2007-11 periods projected forward for the 2013-17 access arrangement period as a constant.
- **Multinet**: The 2012 gross connections number with the application of forecasted (NIEIR) growth rates for 2013-17 to derive estimates of the gross connections numbers for 2013-17.[101]
- **Envestra**: Historical disconnection to gross connection ratios (i.e. ratio of abolishments to gross connections) used by the other Victorian gas distribution businesses for residential and commercial/industrial connections applied to each year of the 2013-17 access arrangement period[102].

The three distinct approaches indicate that the AER is willing to adopt a different forecasting methodology (which is tailored to the information it has available) for each of the distribution networks. It may also be an indication that the AER is being selective in applying different forecasting methodologies that may result in conservative estimate for each of the networks.

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[101] AER, *Access Arrangement Draft Decision Multinet Gas (DB No.1) Pty Ltd & Multinet Gas (DB No.2) Pty Ltd SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p. 76.

[102] AER, *Access Arrangement Draft Decision Envestra Ltd 2013-17*, Part 2, p. 98.

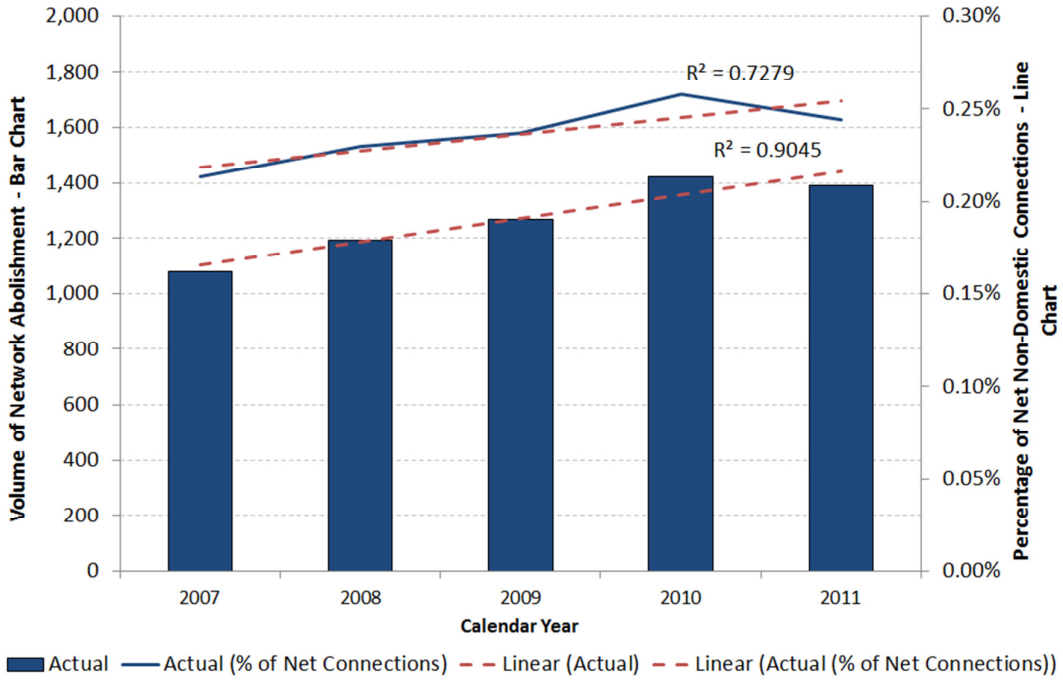
Of the three approaches adopted, SP AusNet believes that applied to Multinet provides the most reasonable basis for estimating abandonment volumes (hence gross connections) for the forthcoming access arrangement period. This is due to its consideration of network growth through the application of a growth rate (see Section 7.3.4) and its implicit acceptance of abolishment growth within the current access arrangement period (see Section 7.3.2) by using 2012 figures as the base for forecasting.

SP AusNet believes the relationship between gross network connections and network abolishment, which has been applied in Envestra's alternative forecast is considered inappropriate as it does not result in a reasonable forecast of gross connections. Section 7.3.3 provides further details on abolishment drivers.

7.3.2 Abolishment trends within the current regulatory period

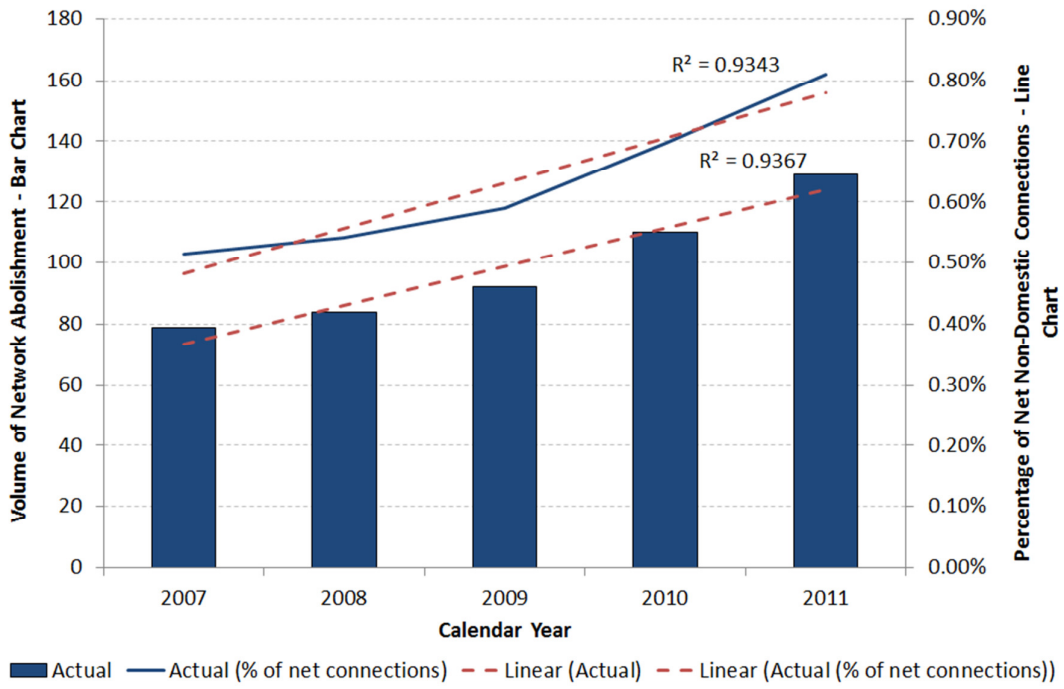
SP AusNet has witnessed significant growth in network abolishments over the current access arrangement period. Since 2007, the growth rate of domestic and non-domestic abolishments has been 6.7% and 13.2% per annum respectively. This has significantly outpaced growth witnessed for both gross and net connections. Figure 2-20 and Figure 2-21 (below) summarised the current trends in network abolishment.

Figure 2-20: Current trending of Domestic Abolishment



Source: SP AusNet

Figure 2-21: Current trending of Non-Domestic Abolishment



Source: SP AusNet

The AER's alternative forecasting method for network abolishment fails in its consideration of significant trends in the current period, resulting in a significant underestimation of abolishment volumes expected for the period.

As with new customer connections, SP AusNet is obligated by the Gas Distribution System Code to disconnect a customer on request. The methodology used to forecast network abolishment must consider the current trends seen on the network in the current period to ensure forecasts are arrived at a reasonable basis (r. 74(2)(B) of the NGR) and that SP AusNet has the opportunity to recover at least efficient costs for this activity (section 24(2) of the NGL).

7.3.3 Uniformity of domestic and non-domestic abolishment drivers

Within its Draft Decision, the AER concluded that there is a positive relationship between the volume of network abolishment, economic activity and population growth. In doing so, the AER expects "some softening of the growth in abolishments over the 2013-17 access arrangement period",[103] which it expects to be in line with SP AusNet's forecasts for net connections.

SP AusNet agrees with the AER (although it doesn't follow the AER's logic presented in the Draft Decision that there would be a positive relationship with economic activity, population growth and the volume of gross connections for domestic connection types.

[103] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 4, p.31.

A review of historical relationships showed there is a strong positive correlation between the volume of domestic network connections (a proxy to economic activity) and the volume of domestic network abolishment. With that notion, SP AusNet accepts that some softening of the growth in abolishments over the 2013-17 access arrangement period for domestic abolishments may in fact be a reasonable assumption. SP AusNet also notes that the current growth rate of network abolishments is ~6.7% p.a.,[104] which is outpacing domestic customer base growth (Net domestic growth is ~3.1% for the same period (see Section 7.3.2).

SP AusNet does not agree with the AER's assessment that the positive relationship between domestic abolishments and economic activity applies for non-domestic connection types. A review of historical relationships suggests there is in fact a negative relationship (correlation) between net connections and non-domestic network abolishment. A decline in the volume of non-domestic connections (a proxy to economic activity) will result in a proportional increase in non-domestic abolishment.

Within Information Request 8, SP AusNet stated that "*one driver of abolishment is the increase in infill development that is occurring in SP AusNet's network, whereby subdivisions and higher density developments are taking the place of existing low density connections*." This statement relates specifically to domestic connection types which form the bulk (92%) of the network abolishment. In this circumstance, subdivision helps substantiate the positive relationship between economic activity and network abolishment. For non-domestic customers the drivers for abolishment are different with the slowing of the economy placing increased financial strain on business' causing an increased proportion being closed down.

Consistent with the above, SP AusNet rejects some softening of the growth in abolishments over the 2013-17 access arrangement period for non-domestic abolishments as a reasonable assumption.

7.3.4 Revised forecast methodology ignores the growth in SP AusNet's consumer base

The AER's alternative forecasting method was to take the average of the number of abolishment over the 2007-11 period and projects forward as a constant. This approach was adopted consistently across domestic and non-domestic connection types.

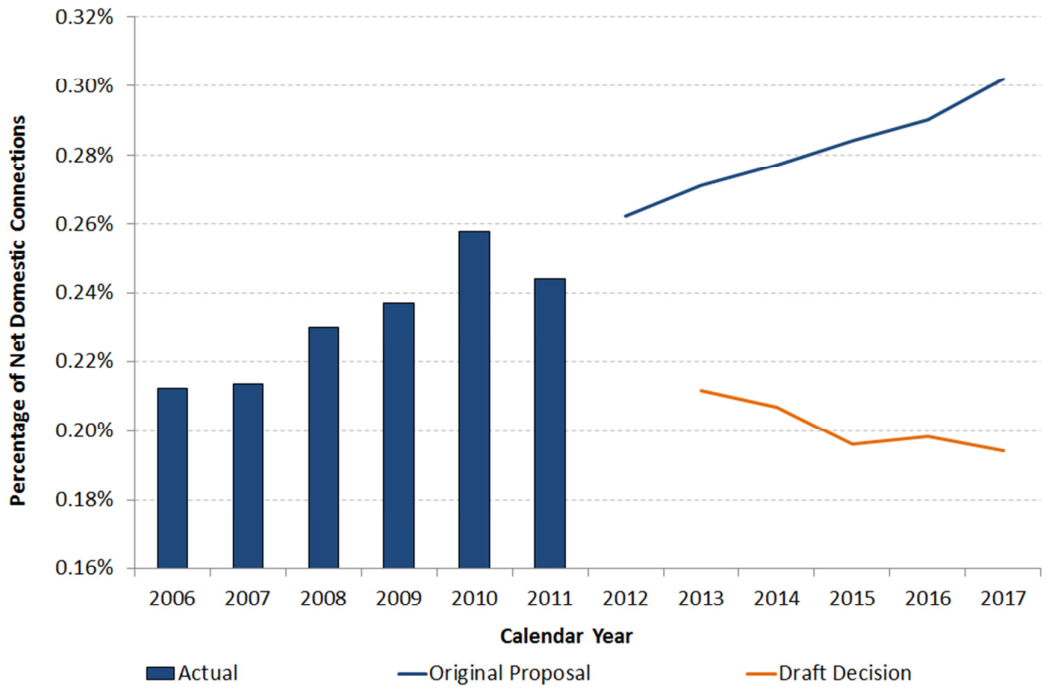
The AER's approach of using the 'absolute' average volume of network abolishment period has the effect of decreasing the relative level of network abolishment (when compared to net connections) over the forthcoming regulatory period.

When forecasting network abolishment, it is SP AusNet's belief that consideration needs to be given to the pool of customers which are capable of disconnecting from the network in a single year. This is best represented by the total customer base in the year preceding that being forecasted. As the network grows in customer base, all other factors being equal, there is an expectation that the absolute volume of network abolishments will also grow. Failure to consider the growing network customer base in

[104] Average growth rate from 2008-11.

the forecasting of network abolishments results in a significant underestimation of volumes to 2017 and is not consistent with r. 74(2)(a) and r. 74(2)(b) of the NGR.[105],[106]

Figure 2-22: Domestic Abolishment – Percentage of Net Connections

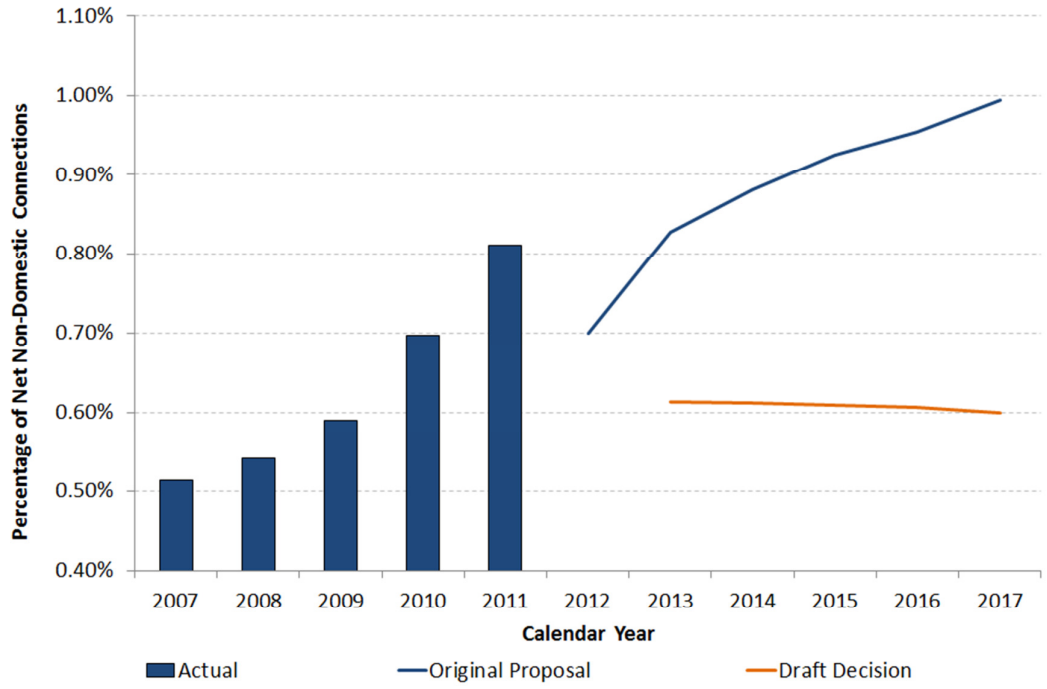


Source: SP AusNet

[105] Domestic abolishment is calculated as 0.21% of network connections in 2013, decreasing to 0.19% in 2017. Domestic network abolishment was recorded at 0.22% in 2006, increasing to 0.26% in 2010.

[106] Non-domestic abolishment is calculated as 0.61% of network connections in 2013, decreasing to 0.60% in 2017. Domestic network abolishment was recorded at 0.54% in 2008, increasing to 0.81% in 2011.

Figure 2-23: Non-Domestic Abolishment – Percentage of Net Connections



Source: SP AusNet

It should be noted that the relative decline in abolishment is less distinct for non-domestic connections due to the low growth rates expected for non-domestic connections in the forthcoming access arrangement period.

7.4 SP AusNet Revised Proposal

SP AusNet's revised proposal, which it believes is consistent with r.74 of the NGR, is to apply two separate approaches in forecasting domestic and non-domestic abolishment for the 2013-17 access arrangement period. Each method addresses the underlying driving factors which influence abolishment rates on its networks.

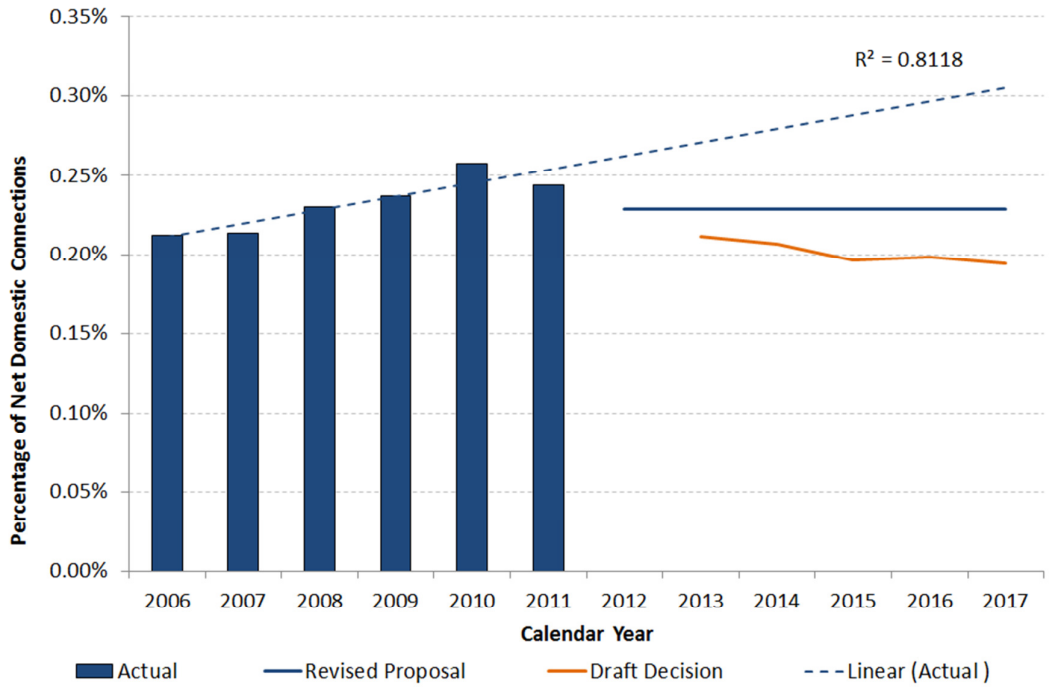
7.4.1 Domestic Abolishment

SP AusNet agrees that there is a positive relationship between the network growth and the corresponding volume of domestic network abolishment. As SP AusNet is forecasting an ease in network growth (from 3.1% to 2.4% p.a.), it is reasonable to forecast a corresponding ease in network abolishment. SP AusNet's revised forecast for domestic network abolishment is calculated by maintaining the average abolishment rate from 2007 to 2011 (as a percentage of total network net connections) to net connections within the coming regulatory period. This results in slowing of network abolishment growth from ~6.5% in the current period (2007-11) to an average of 2.4% p.a. over the coming regulatory period.

In summary, this approach is considered reasonable as it:

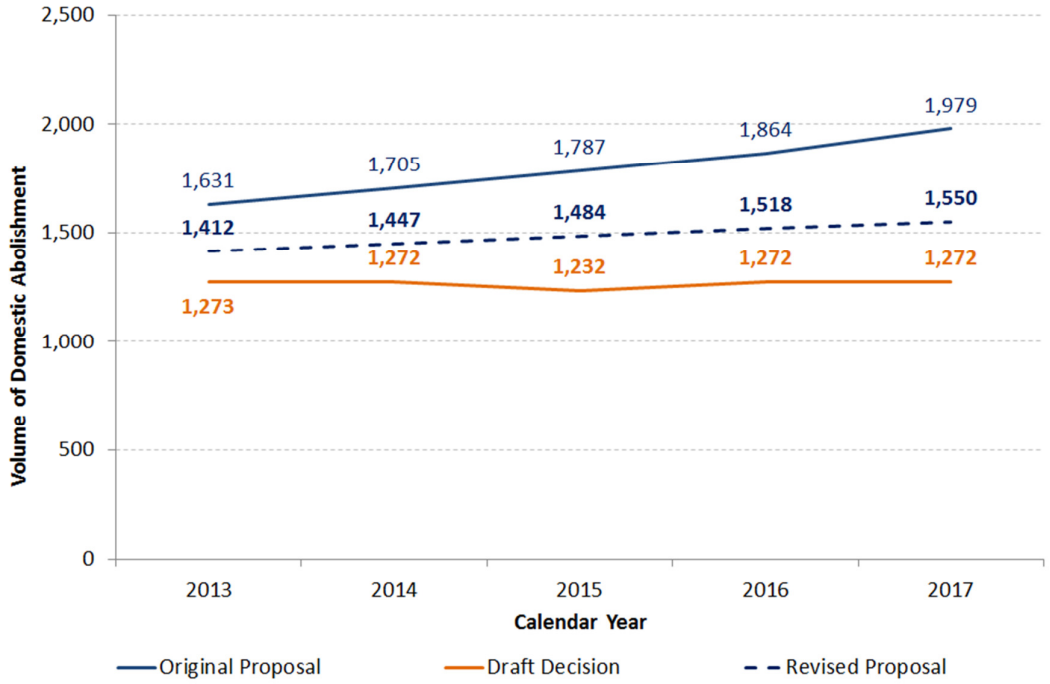
- Results in a slowing of the domestic abolishment rate (consistent with the opinion of the AER); and
- Uses the connections base from which disconnections can occur.

Figure 2-24: Revised Proposal: Domestic – Percentage of Net Connections



Source: SP AusNet

Figure 2-25: Revised Proposal: Domestic - Volumes



Source: SP AusNet

7.4.2 Non-domestic Abolishment

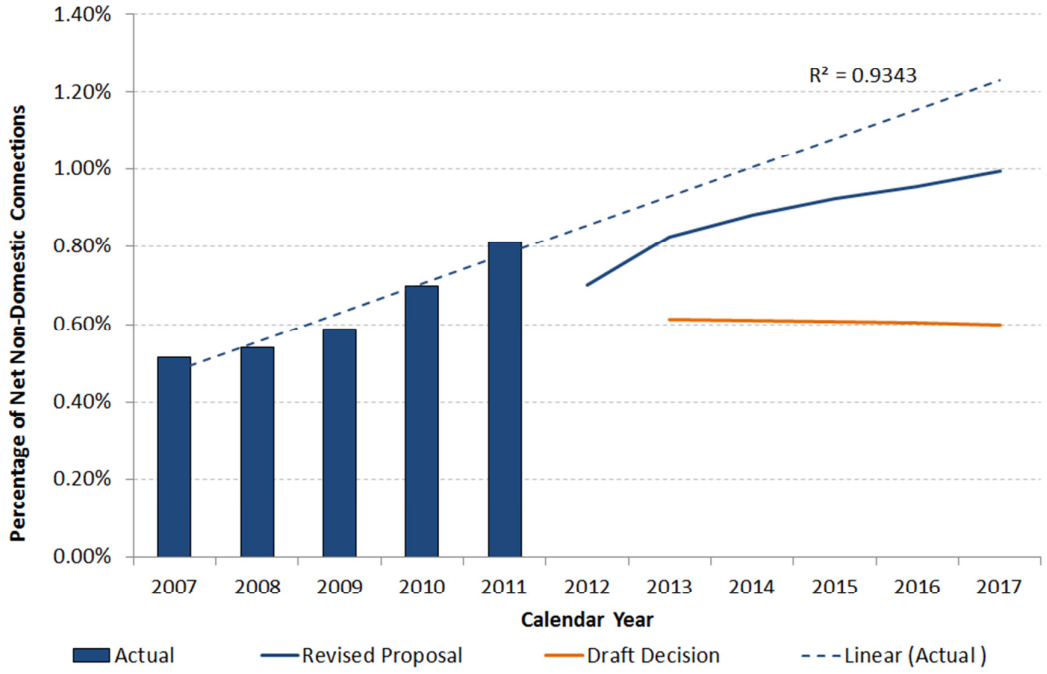
SP AusNet does not agree with the AER's assessment that the positive relationship between domestic abolishment and economic activity applies for non-domestic connection types. A review of historical relationships suggests there is in fact a negative relationship (correlation) between net connections and non-domestic network abolishment. A decline in the volume of non-domestic connections (a proxy to economic activity) will result in a proportional increase in non-domestic abolishment.

As SP AusNet is forecasting an ease in network growth (from 1% to 0.6% p.a.) for non-domestic connection types, it is reasonable to forecast that the current growth in non-domestic network abolishments will continue to increase proportionately. This results in SP AusNet maintaining its original proposal for non-domestic network abolishment presented within the original AAI.

This approach is considered reasonable as it:

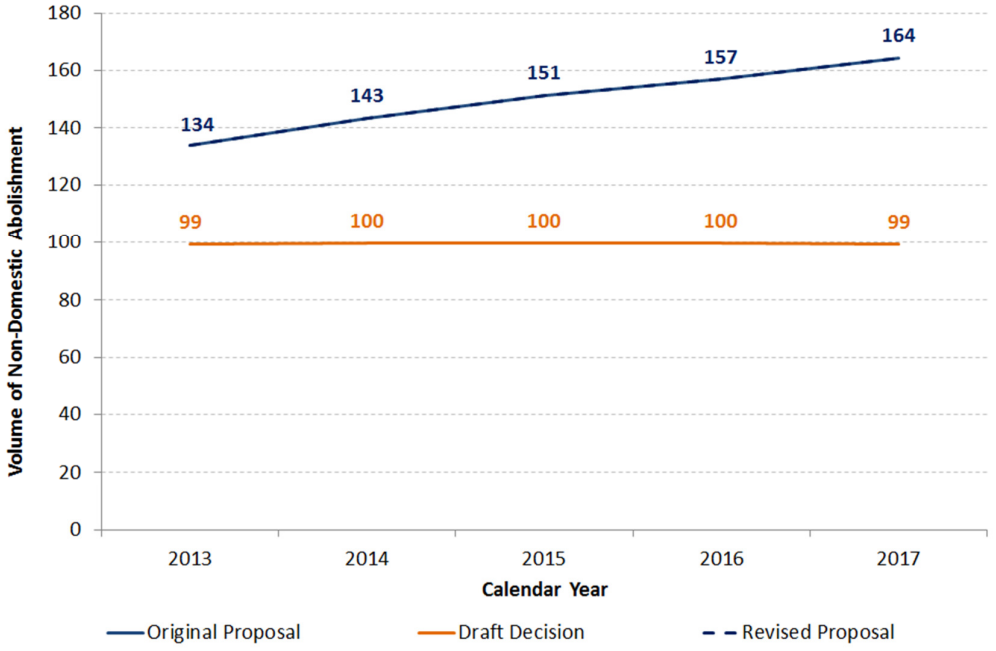
- Maintains the inverse relationship between network abolishment and connection growth;
- Acknowledges the drivers on non-domestic replacement being different to those for domestic customers (i.e. inverse relationship to economic activity); and
- Uses the connections base from which disconnections can occur.

Figure 2-26: Revised Proposal: Non--Domestic – Percentage of Net Connections



Source: SP AusNet

Figure 2-27: Revised Proposal: Non-Domestic – Volumes



Source: SP AusNet

SP AusNet's revised volumes for network abolishment represent a 17% and 0% reduction in domestic and non-domestic abolishment volumes submitted as part of SP AusNet's original AAI, but a 17% and 51% increase to those approved by the AER in its Draft Decision.

8 Capitalised Overheads

8.1 Draft Decision

The AER did not approve SP AusNet's capitalised overheads forecast of $66.7 million (revised by the AER to $68.2 million). The reasons the AER gave for its Draft Decision were:

- SP AusNet's base year (2011) was not a representative base year for capitalised overheads;
- SP AusNet did not provide sufficient evidence of the proportion between labour and non-labour overheads;
- In the context of SP AusNet's forecast capital program, the scale of SP AusNet's business did not support a step up in the fixed proportion of capitalised overheads.

The AER substituted its own capitalised overhead forecast which was derived in the following manner:

- Calculate the base year using an average of 2008-2011;
- Increase the base year for the proportion identified as having a variable relationship with the capital program.

The AER's Draft Decision was that there was no variable component in SP AusNet's capitalised overheads and therefore it forecast capitalised overheads as remaining at the base level in real terms over the access arrangement period.

The AER's Draft Decision was to allow $57.9 million of capitalised overheads across the 2013-2017 period.

8.2 SP AusNet Response

SP AusNet does not accept the AER's Draft Decision in regards to capitalised overheads.

8.2.1 Appropriate base year

The Draft Decision argument that 2011 does not provide a representative base for capitalised overheads is in error and is inconsistent with its treatment of the base year for operating expenditure. The AER noted:[107]

> *"The AER's draft decision is not to use an average of maintenance expenditure in 2008-10 for its base year estimate. It considers that this methodology would not result in a total forecast of opex that has been arrived at on a reasonable basis or is the best estimate possible in the circumstances.*
>
> *In any one year there are likely to be some costs that are higher than business-as-usual and some costs that are lower than business-as-usual. As there are many factors that influence actual opex in any one year in both directions, the*

[107] AER, *Access Arrangement Draft Decision SPI Networks (Gas) Pty Ltd 2013-17*, Part 2, p.148.

AER considers a forecast of total opex is more likely to include estimation errors if a forecast is not reflective of all opex incurred in a calendar year. As discussed above, the AER considers that actual opex in 2011 would lead to the best estimate of opex possible in the circumstances."

Capitalised overheads have the same properties as opex in the context of the above discussion. Some years will be higher and some years will be lower, depending on the size of the capital expenditure program, its complexity, the mix of internal and external labour, wage escalation and changes to accounting policies. In rejecting SP AusNet's proposed base year for capitalised overheads, and using an averaging period reaching back to 2008, the AER is denying SP AusNet the opportunity to recover the efficient costs of investment in the network.

In light of the above, by substituting SP AusNet's revealed base year capitalised overhead expenditure with an average over the 2008-11 period, the AER, by its own logic as set out above, has derived a forecast of capitalised overheads which has not been arrived at on a reasonable basis, or is the best estimate possible in the circumstances. On this basis, SP AusNet has resubmitted its revealed 2011 capitalised overheads as the base year on which to forecast future capitalised overheads.

8.2.2 Labour/non-labour mix

In its Original Proposal, SP AusNet sought to retain consistency with the capitalised overhead methodology approved by the AER in the 2011-15 EDPR, which assumed a 65/35 proportion between labour and non-labour. Whilst it rejected SP AusNet's proposed proportion, the AER did not specify what it considered to be the likely split between labour and non-labour.

SP AusNet has undertaken further analysis of its capitalised overheads. As outlined in section 5.11.1 of the Original Proposal, SP AusNet's overhead pool comprises both internal costs and external costs associated with the Tenix contract. SP AusNet has focused on its internal overhead pool as it is not in a position to interrogate the labour/non-labour proportion of the Tenix overhead costs.

SP AusNet's capitalised overhead model for the December 2011 quarter, which is used to derive the capitalised overheads for the regulatory accounts, shows a split between labour and non-labour of 63/37. It is therefore not unreasonable to rely on the 65/35 split adopted by SP AusNet in its Original Proposal.

On this basis, SP AusNet has reinstated the 65/35 proportion between labour and non-labour in its capitalised overhead calculation.

8.2.3 Escalating the capitalised overhead base

The AER has incorrectly exercised its discretion in keeping the revised capitalised overheads amount constant in real terms over the access arrangement period.

Firstly, the AER has used a statement from SP AusNet which read the "majority of costs allocated by the [Activity Based Costing overhead] process would be expected to be fixed in nature" and from this has concluded not only that all overhead costs are fixed, but further, that all 'fixed' costs do not attract any form of price escalation over the period.

These two conclusions are derived from an error of judgment. SP AusNet stands by its comment that the *majority* of its overheads are fixed *in nature*. But it does not follow that *all*

overhead costs are fixed in *dollar value*. Further, it should have been clear from reading of section 5.11.2 of SP AusNet's Original Proposal, that these "fixed" costs refer to SP AusNet's internal labour. Whilst it is true that the amount of internal resources capitalised may not vary 100% with the capital program (i.e. they are fixed in nature), the cost of those resources still increases because of price escalation.

As a simple example using hypothetical numbers, if SP AusNet's capital expenditure was growing by 10% per annum over five years, and an unchanging five person team working on the capital program was capitalising its labour over the same period, the costs of that team would be considered 'fixed in nature'. That is, all other things being equal, the costs that team capitalised would not be expected to increase by 10% per annum also, just because the value of the capital program was increasing by that amount. However, the cost incurred by SP AusNet on this team would still be increasing by whatever the prevailing labour escalation was. That is, the *price paid* for this labour would still vary over time, and not be held constant in real terms.

Therefore, at the very least, the AER should be escalating the capitalised overhead forecast by the proportion it considers attributable to labour multiplied by the respective forecast labour index.

The AER's Draft Decision is built on both of these errors of judgment – it has assumed that "the majority of costs" is equivalent to "all of the costs" and that "fixed in nature" means "fixed in terms of price paid".

8.2.4 Revised Proposal

For its Revised Proposal, SP AusNet has provided more information in support of its proposed scale escalation which was rejected by the AER on the apparent basis that it considered all overhead costs to be fixed.

SP AusNet has referred to the AER's Final Decision on Envestra's South Australian (SA) gas distribution network. In that Decision, the AER accepted a methodology proposed by Envestra to forecast capitalised overheads on the basis of fixed/variable split assigned to a number of overhead components. These components were:

- Operations, Management and Administration;
- Planning and System Design;
- Procurement and Fleet;
- Technical Assurance;
- Network Engineering;
- Support.[108]

For each component, the AER approved a fixed/variable split which it used to forecast capitalised overheads.

SP AusNet has performed a similar analysis on its capitalised overhead base, with the results presented in the below table. SP AusNet has adopted the AER's approved fixed/variable proportions from the Envestra SA and Queensland Final Decisions.

[108] AER, *Final Decision Envestra Ltd Access arrangement proposal for the SA gas network 1 July 2011 - 30 June 2016*, p.21.

Table 2-17: Components of capitalised overheads

Overhead component	Proportion of overheads	Percent fixed	Percent variable
Operations, Management and Administration	[C-I-C]	[C-I-C]	[C-I-C]
Planning, System Design and Network Engineering	[C-I-C]	[C-I-C]	[C-I-C]
Procurement and Fleet	[C-I-C]	[C-I-C]	[C-I-C]
Technical Assurance	[C-I-C]	[C-I-C]	[C-I-C]
Support	[C-I-C]	[C-I-C]	[C-I-C]

Source: SP AusNet

The weighted average fixed/variable proportion given by the above percentages is approximately 85/15. That is, 15% of SP AusNet's capitalised overheads are expected to move in line with the capital expenditure profile. A proportion of the capital expenditure increase is due to increases in labour costs, which is addressed separately by SP AusNet below, so this impact should be removed. Once labour escalation has been removed from SP AusNet's capital expenditure forecast, SP AusNet has escalated 15% of its capitalised overhead base by the same growth profile.

In regards to fixed costs, SP AusNet reiterates that these costs are fixed *in nature*, but not fixed in absolute terms. At the very least, the labour proportion of total overheads will increase in line with the prevailing labour index, as these labour costs are no different from any other labour costs incurred by SP AusNet. This applies equally to the fixed and variable portions of overheads.

Therefore, it is appropriate for SP AusNet to escalate the entire labour component of its overheads by its forecast labour escalators. This allows SP AusNet to recover the efficient costs of investing in its network. For calculation purposes, SP AusNet has used an average of the internal and external labour indices, as approximately [C-I-C] of SP AusNet's capitalised overheads are charged via the Tenix contract. SP AusNet's revised capitalised overhead forecast is set out below.

Table 2-18: Revised Capitalised Overhead Forecast

	2011	2012	2013	2014	2015	2016	2017
Base year ($2012)	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Variable proportion	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Base variable cost	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Gross capex excl. labour escalation	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Capital index	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Escalated variable overheads	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Base year plus variable growth	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Percent labour	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Capitalised labour overheads	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Labour index	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Escalated labour overheads	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Non-labour overheads	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]
Total forecast overheads	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]	[C-I-C]

Source: SP AusNet

9 Capital contributions

9.1 Draft Decision

The AER's Draft Decision on customer initiated capital expenditure resulted in customer and government capital contributions totalling $21.7 M over the regulatory period. This was a slight reduction compared to SP AusNet's proposed $22.3 M.

9.2 SP AusNet Response

SP AusNet accepts the AER's methodology for calculating capital contributions, however the dollar amount of capital contributions in SP AusNet's Revised Proposal has changed due to the other revisions SP AusNet has proposed to the Draft Decision.

Further, in the Draft Decision, the AER classified customer contributions on major alterations capital expenditure as 'government contributions' on the assumption that most common major alteration projects are associated with major roadways or freeways and hence are assumed to be government funded.

Whilst SP AusNet accepts that major alterations work is often (although not always) undertaken at the request of a government body, SP AusNet considers that contributions for these projects should still be classified as a 'customer' contribution rather than a 'government' contribution. The 'government contribution' category can then be restricted to instances whereby the government has contributed funds to projects which are undertaken to service specific gas consumers, such as the case of the *Energy for the Regions* program. Further, as noted, not all major alterations are requested by government bodies, the classification of all major alterations contributions as government contributions is misleading.

SP AusNet notes that the classification has no impact on SP AusNet's RAB or revenue requirement, however is of the view that the classification of customer contributions in the Original Proposal is a more meaningful approach.

9.3 Revised Proposal

SP AusNet's revised customer and government contributions forecast is presented below.

Table 2-19: Revised Capital Contributions

$M, $2012	2013	2014	2015	2016	2017	Total
Customer contributions	4.0	4.1	4.2	4.3	4.4	21.0
Government contributions	0.0	1.7	0.0	0.0	0.0	1.7
Total capital contributions	**4.0**	**5.8**	**4.2**	**4.3**	**4.4**	**22.7**