Review of ATCO Gas Australia Capital and Operating Expenditure, Zincara, November 2014

Appendix 6.3

27 November 2014

Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System

Connecting WA to natural gas

Zincara

From strategy to action

Review of ATCO Gas Australia Capital and Operating Expenditure

Prepared for

ATCO Gas AUSTRALIA

25 November 2014

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Glossary

Term	Definition
AAI	Access Arrangement Information
AA3	Access Arrangement Third Period
AA4	Access Arrangement Fourth Period
AA5	Access Arrangement Fifth Period
AER	Australian Energy Regulator
ALARP	As Low As Reasonably Practicable
AMP	Asset Management Plan
AS/NZS	Australian Standards/New Zealand Standards
ATCO	ATCO Gas Australia
Capex	Capital Expenditure
ECS	Economic Consulting Services
ERA	Economic Regulation Authority Western Australia
GJ	Gigajoule
NGR	National Gas Rules
NPV	Net Present Value
Opex	Operating Expenditure
SCADA	Supervisory Control and Data Acquisition
Zincara	Zincara P/L

1. EXECUTIVE SUMMARY

ATCO Gas Australia (ATCO) has submitted its revision of its Access Arrangement to the Economic Regulation Authority (ERA) for its fourth regulatory period. In October, 2014, the ERA issued its Draft Decision for the Access Arrangement. ATCO has engaged Zincara to provide expert advice on the capital and operating costs in relation to the Draft Decision. Specifically Zincara is to report on the following:

- reviewing ATCO approach to, and the ERA's Draft Decision in relation to, Sustaining Capital Expenditure forecasting;
- reviewing ATCO interpretation of and approach to, and the ERA's Draft Decision in relation to, the As Low as Reasonably Practicable (ALARP) test;
- reviewing ATCO approach to, and the ERA's Draft Decision in relation to, the risk of loss of supply in the context of applicable regulations and industry standards;
- reviewing ATCO approach and assumptions, and the ERA's Draft Decision, in relation to greenfields growth investment;
- in relation to forecast operating expenditure, reviewing ATCO'S assumptions as to increases in network operating expenditure over time, and the ERA's Draft Decision, including in relation to:
  - additional regulatory obligations;
  - expansion of the network (and its impact on maintenance requirements, meter reading and emergency response capabilities);
  - offsets available through improved asset condition achieved through capital expenditure (such as mains renewal); and
- based on the above considerations, as to whether ATCO'S proposed capital expenditure forecasts meet the criteria in Rule 79 of the National Gas Rules.

ALARP

The ERA has said that ATCO had relied on its application of ALARP to justify its sustaining capital expenditure on security of supply projects but had not carried out a cost benefit analysis as part of its ALARP test.

Zincara considers that ATCO risk management framework is consistent with the Australian Standards AS2885 and AS/NZS4645 (Standards). The framework requires that any event that is considered to have extreme or high risk needs to have specific action taken to reduce the risk without cost benefit analysis. If after taking the action, the risk is deemed to be intermediate, further actions are required. However if these actions do not lower the risk to low, it may be required to consider extreme steps and in this case, a cost benefit analysis needs to be carried out to determine if the cost grossly outweighs the benefits.

Zincara considers that ATCO applies the above steps. However, ATCO has misused the word "ALARP" in its Asset Management Plan and its Safety Case. ATCO has used ALARP to mean "acceptable risk". It should be noted that the misuse of the term ALARP, has not affected application in relation to safety.

Risk of loss of Supply

The ERA said that the risk thresholds that ATCO had prescribed are not in the relevant standards or are they mandated by EnergySafety. The risk thresholds are low by industry Standards. In addition, ERA has also said that ATCO's risk threshold for catastrophic events appears to be lower than other gas distribution businesses.

The Standards do not prescribe the risk thresholds but provide guidance on how to define the risk thresholds. Zincara considers that ATCO's risk thresholds are within the

guidelines put out by the Standards. In addition, ATCO's definition of a catastrophic event is the loss of supply to 25,000 customers. Zincara considers that it is similar to the definitions used by other gas distributors (Envestra, Allgas and Multinet). Zincara therefore considers that the definition is not conservative but is consistent with the Australian gas industry.

Sustaining Capital Expenditure

Sustaining capital expenditure consists of two categories: asset replacement and asset performance and Safety. In regard to asset replacement, ATCO proposes to extend its metallic mains replacement to the fifth regulatory period partially consistent with the ERA's Draft Decision.

The Asset Performance and Safety Category has been accepted by the ERA except for the HP spur lines projects of:

- Two Rock Spur Line;
- Peel Spur Line; and
- Independency Projects

Zincara considers that the projects are consistent with rule 79(2) (c) as the projects have been justified on the basis they provide a solution to events considered as high risks and the residual risks following the implementation of the projects are low.

Growth Capital Expenditure

Based on the advice from ERA's consultant, EMCa, ERA has rejected ATCO's greenfields customer initiated capital expenditure. Zincara considers that EMCa's use of 11.5 GJ/annum for B3 customers for its NPV analysis is considered low. ATCO reviewed its initial assumption in its Access Arrangement Information and has revised its consumption for B3 customers to 13.6 GJ/annum for a 25 period. The result is a positive NPV.

Zincara therefore considers the greenfields customer initiated capital expenditure to comply with rule 74, 79(1) and 79(2) (b).

ATCO's draft response to the ERA provides a cohesive and reasoned justification for the demand projects. Whilst Zincara has only seen a draft response due to time constraints, Zincara considers the draft response has more robust justifications to comply with rule 79(1) and 79(2).

ATCO's Capital Expenditure

ATCO's capital expenditure consists of sustaining capital expenditure and growth capital expenditure. As discussed above, Zincara considers that both sustaining and growth capital expenditure meet the criteria in rule79. As such, Zincara considers that ATCO's total capital expenditure complies with rule79 of the NGR.

Network Operating Expenditure

The ERA has accepted the non-recurring costs under network operating expenditure but has not accepted the incremental expenditure.

Zincara considers that the bottom up approach for the development of incremental recurring expenditure is appropriate and essential to ensure ownership and accountability by operating line managers. Zincara also considers that ATCO governance structure ensures that the costs are critically reviewed.

Zincara also considers that the ATCO's methodology based on an estimate of additional volumes multiplied by market tested rates to determine the incremental recurring expenditure is typical of industry practice for developing operational estimates.

In relation to additional regulatory obligations such as the Safety Case, Zincara is of the view that the additional responsibility identified in the Safety Case is incremental to ATC's base activities and as such, the cost is therefore incremental to its base costs.

Zincara has analysed the impact of the expansion of the network on the operating expenditure and considers that there is justification for additional incremental costs for a number of activities (e.g. DBYD, preventative maintenance, leakage survey, market services etc). Zincara's analysis also showed that ATCO's estimate of the additional costs due to the expansion of the network to be reasonable and therefore complies with rule 91(1).

There is sufficient information to show that ATCO has incorporated a 2.5% savings into its network operating expenditure for the AA4 period.

In summary, Zincara therefore considers that the incremental recurring expenditure has been arrived at from a reasonable basis and represents the best forecast possible. The expenditure therefore complies with rule 91(1).

2. INTRODUCTION

2.1 BACKGROUND

ATCO Gas Australia (ATCO) has submitted its revision of its Access Arrangement to the Economic Regulation Authority (ERA) for its fourth regulatory period. In October, 2014, the ERA issued its Draft Decision for the Access Arrangement. ATCO has engaged Zincara to provide expert advice on the capital and operating costs in relation to the Draft Decision. The specific terms of reference is detailed below.

2.2 TERMS OF REFERENCE

The terms of reference prepared by Johnson Winter & Slattery Lawyers (JWS) on behalf of ATCO is for Zincara to review the ATCO's submission to the ERA and ERA's Draft Decision in relation to the capital and operating costs assumptions. Specifically, ATCO is seeking an expert report on:

- reviewing ATCO approach to, and the ERA's Draft Decision in relation to, Sustaining Capital Expenditure forecasting;
- reviewing ATCO interpretation of and approach to, and the ERA's Draft Decision in relation to, the As Low as Reasonably Practicable (ALARP) test;
- reviewing ATCO approach to, and the ERA's Draft Decision in relation to, the risk of loss of supply in the context of applicable regulations and industry standards;
- reviewing ATCO approach and assumptions, and the ERA's Draft Decision, in relation to greenfields growth investment;
- in relation to forecast operating expenditure, reviewing ATCO'S assumptions as to increases in network operating expenditure over time, and the ERA's Draft Decision, including in relation to:
  - additional regulatory obligations;
  - expansion of the network (and its impact on maintenance requirements, meter reading and emergency response capabilities);
  - offsets available through improved asset condition achieved through capital expenditure (such as mains renewal); and
- providing your opinion, based on the above considerations, as to whether ATCO'S proposed capital expenditure forecasts meet the criteria in Rule 79 of the National Gas Rules.

Ed Teoh, Director of Zincara and the lead consultant has read, understood and complied with the Practice Note CM7.

A copy of the Terms of Reference for the review is attached in Appendix A.

2.3 ZINCARA'S EXPERIENCE AND CONSULTANT'S QUALIFICATION

Zincara P/L has been providing strategic advice to the energy industry, government and energy regulators on energy infrastructure. In particular, Zincara has carried out a number of reviews on the reasonableness of the capital and operating expenditure for energy infrastructure as part of the Access Arrangement regime in Australia. Zincara has been operating in Australia and overseas for over 10 years.

This review has been carried out by Mr. Edward Teoh, Director, and Brian Fitzgerald, Associate of Zincara.

Ed Teoh has provided strategic and management advice to the utilities sector in Australia and overseas for over 10 years. He has undertaken capital and operating cost studies for the state energy regulators in Australia and the Commerce Commission in New Zealand. Ed has also provided advice to the Victorian Government on gas infrastructure, in particular on the development of energy infrastructure in regional areas. Ed has also worked in various Asian countries such as Malaysia, Singapore and Mongolia.

Prior to consulting, Ed was a seasoned executive in strategic and operational management with more than 35 years in the energy industry. Ed was the operations and asset manager for Westar and also the asset manager for TXU responsible for both gas and electricity networks. Ed is a qualified engineer with a Diploma in Business Management and Logistic Management.

Brian is an associate of Zincara and has over 28 years' experience in the gas industry. Prior to consulting, Brian was the APA Group Manager for Victorian Gas Networks. His experience covers general and operational management of a Victorian gas utility, organisational reviews, outsourcing of gas fitting activities for Gas and Fuel Corporation and the implementation of IT systems for full retail contestability. Brian also worked on the due diligence team for the acquisition of Country Energy Gas. Brian must recent employment was with the APA Group as Manager of Envestra's Victorian gas assets (supplying over 620,000 consumers). During that time Brian has been responsible for operational development and input for a number of access arrangements.

Both Ed and Brian were emergency managers for their respective networks during the Longford Gas Emergency.

Summaries of Ed and Brian's CV are attached in Appendix B.

2.4 LEGAL FRAMEWORK

Under the Access Arrangement Review, the efficiency of the proposed expenditure must be consistent with the National Gas Rules. Under Rule 79(1), to be Conforming Capital Expenditure, capital expenditure must, amongst other things:

"*…be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services*".

Under Rule 79(1)(b), capital expenditure must also be justifiable. Capital expenditure is justifiable if it meets any of the criteria in Rule 79(2), namely if:

"*(a) the overall economic value of the expenditure is positive; or*

(b) the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or

(c) the capital expenditure is necessary:

(i) to maintain and improve the safety of services; or

(ii) to maintain the integrity of services; or

(iii) to comply with a regulatory obligation or requirement; or

(iv) to maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity); or

(d) the capital expenditure is an aggregate amount divisible into 2 parts, one referable to incremental services and the other referable to a purpose referred to in paragraph (c), and the former is justifiable under paragraph (b) and the latter under paragraph (c)."

Rule 91(1) provides:

"*Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.*"

In addition, Rule 74 provides:

"*(1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.*

(2) A forecast or estimate:

(a) must be arrived at on a reasonable basis; and

(b) must represent the best forecast or estimate possible in the circumstances."

Rule 75 provides:

"*Information in the nature of an extrapolation or inference must be supported by the primary information on which the extrapolation or inference is based.*"

Capital expenditure is defined as:

"*…costs and expenditure of a capital nature incurred to provide, or in providing, pipeline services.*"

Operating expenditure is defined as:

"*…operating, maintenance and other costs and expenditure of a non-capital nature incurred in providing pipeline services and includes expenditure incurred in increasing long-term demand for pipeline services and otherwise developing the market for pipeline services.*"

Zincara has adopted the following meaning for Rule 79 (1) (a) and Rule 91(1):

"Prudent", as "discreet" or "cautious in managing one's activities to avoid undesirable consequences[1]";

'Efficient' as functioning or producing effectively and with the least waste of effort[1]; and

"Good industry practice" as the actions carried out by ATCO'S peers in Australia.

In relation to Rule 79 (2), the new capital expenditure criteria are essentially a hierarchy of tests for whether prudent capital expenditure can be added to the capital base. The capital expenditure must comply with the following:

- If the expenditure is required for safety, to maintain the integrity of services, to comply with the regulations or to maintain capacity to meet the existing demand for services, it can be added to the capital base (Rule 79(2) (c)).

[1] Australian Concise Oxford Dictionary

- If the expenditure is not required for the above but provides positive economic value (i.e. the expected incremental revenue exceeds present value of the project), it may be added to the capital base (Rule (2) (b)).
- If the expenditure is not required for (1) and (2), it may be added to the capital base if it provides overall economic value to the service provider, gas producers, shippers and gas users (Rule 79 (2) (a)).

2.5 METHODOLOGY

Zincara carried out a desktop review of ATCO's capital and operating costs. The review was carried out as follows:

- Gain an understanding of ATCO's network including the key drivers for capital and operating expenditure and the key assumptions used in developing the expenditure.
- Examine ATCO's submission to the ERA and the various supporting documentation (e.g. Asset Management Plan, Gas Safety Case etc).
- Gain an understanding of ERA's Draft Decision and EMCa's report to the ERA.
- Obtain information provided in the ERA and EMCa in response to their further inquiries
- Review the requirements of the Australian Standards AS2885 and AS/NZS4645.
- Prepare its report using publicly available relevant data and Zincara's experience in the gas industry.

2.5.1 Data Sources:

Zincara has relied on information provided by ATCO and publicly available information from other gas distributors, ERA and the Australian Energy Regulator (AER) for its analysis and its conclusions. Zincara has not confirmed the veracity of the information

2.6 STRUCTURE OF THE REPORT

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The structure of this report is as follows:

- Section 1 is the executive summary of Zincara's findings.
- Section 2 describes the scope of work and Zincara's interpretation of the National Gas Rules.
- Section 3 is the analysis of ATCO's risk management framework
- Section 4 is a description of ATCO's business process
- Section 5 provides Zincara's capital expenditure analysis
- Section 6 provides Zincara's operating expenditure analysis
- Section 7 is a summary of the conclusions

The appendixes contain Zincara's engagement letter and other supporting information.

3. RISK MANAGEMENT

3.1 ALARP

ALARP stands for "As Low As Reasonably Practicable". The concept of ALARP is used in the Australian Standards for Pipelines, AS2885.1 and the Australian Standard for Gas Distribution Networks AS/NZS4645.1 in their risk management processes. Both standards effectively have a similar risk management approach. As ATCO's networks are mainly gas distribution network, Zincara will make reference to AS/NZS4645.1 only.

Section C5.2 AS/NZS4645.1 describes the actions that need to be taken for a risk to be described as ALARP and defines it as "the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result."

AS/NZS4645.1 Appendix C provides guidance on how risk assessment is to be carried out. In summary, Appendix C specifies that the analysis of a failure event requires that the consequence and frequency of the effect to be considered. The consequence analysis stipulates that the severity of the consequences should include the following:

- Human injury or fatality.
- Interruption to continuity of supply with economic impact.
- Environmental damage.

The frequency analysis is described in Table C2 of AS/NZS4645.1 but in summary, the table has divided the frequency into various levels starting from hypothetical to frequent with definition for each category provided.

The risk consequence and frequency is then set out in a table which is used to determine the severity of the risk. The risk matrix is shown in the table below.

Table 3-1 Risk Matrix

	Catastrophic	Major	Severe	Minor	Trivial
Frequent	Extreme	Extreme	High	Intermediate	Low
Occasional	Extreme	High	Intermediate	Low	Low
Unlikely	High	High	Intermediate	Low	Low
Remote	High	Intermediate	Low	Negligible	Negligible
Hypothetical	Intermediate	Low	Negligible	Negligible	Negligible

Source: AS/NZS 4645.1 pg 65

Depending on the severity of the risk, AS/NZS4645.1 prescribes the actions to be taken as shown in the table below.

Table 3-2 Risk Treatment Actions

Risk Rank	Required Action
Extreme	Modify the threat, the frequency or the consequences to ensure that the risk rank is reduced to Intermediate or lower
High	Modify the threat, the frequency or the consequences to ensure that the risk rank is reduced to Intermediate or lower
Intermediate	Repeat threat identification and risk evaluation processes to verify and, where possible, quantify the risk estimation; determine the accuracy and uncertainty of the estimation. Where the risk rank is confirmed to be Intermediate, if possible modify the threat, the frequency or the consequence to reduce the risk rank to Low or Negligible. Where the risk rank cannot be reduced to Low or Negligible action shall be taken to-

	(a) remove threats, reduce frequencies and/or reduce severity of consequences to the extent practicable, and (b) demonstrate ALARP. For a gas distribution network that is in operation the reduction to low or Negligible or demonstrate of ALARP must be completed as soon as possible, typically within a timescale of not more than a few months.
Low	Determine the management plan for the prevent occurrence and to monitor changes which could affect the classification.
Negligible	Review at the next review interval

Source: AS/ZNS4645-1 pg 63

As can be seen from the table, any risk that is considered to be extreme or high should be dealt with to reduce to intermediate or lower. If the action taken reduces the risk to intermediate only, further actions should be considered to reduce it to low. If a business decides not to proceed with that action, it needs to record the reasons for not proceeding and substantiate that the cost of further risk reduction measures is grossly disproportionate to the benefit gained.

3.1.1 ATCO Approach

ATCO's approach to its risk management is set out in Section 4.2 Formal Safety Assessment (FSA) of its Safety Case. In summary, ATCO's approach consists of the following steps:

- Identify and characterize the threat;
- Assess the vulnerability of the network asset to the threat;
- Determine the severity of the risk
- Identify ways to reduce the risk

To determine the severity of the risk, ATCO has a risk management matrix[2] which sets out the consequences and frequency criteria as shown in the tables below.

[2] ATCO Gas Australia Risk Management Matrix Document Code RMT PL00001 PR0002 Wl001

Table 3-3 ATCO's Risk Consequence

CONSEQUENCE							
Rating	***Descriptor-Business Impact***		***People***	***Environmental***	***Supply***	***Reputation***	***Financial (NPAT)***
5	Catastrophic	Threatens the survival of ATCO Gas Australia	More than 2 fatalities	Effects widespread; Viability of threatened ecosystems or species affected or permanent major changes	Interruption of supply affecting > 25,000 customers	Irreversible loss of confidence from regulators, government or public in ATCO Gas Australia	>$8m
4	Major	Threatens the effective operation of ATCO Gas for a substantial period - Including the ability to raise capital - or significantly effects the operation of ATCO Gas Australia in the future	Up to 2 fatalities; Several people with life threatening or permanentl y disabling injuries	Major offsite impact; Long term (2yrs or more), severe effects; Rectification difficult; Major impact in an area of high conservation value of significance	Interruption or restriction of supply affecting >5,000 customers	High profile adverse attention/concerns from - – Regulators; – Government; – State/National /international media; or – Public	>$4m-$8m
3	Severe	No Threat to the affective operation of ATCO Gas Australia, but exposes ATCO Gas Australia; to unacceptable cost consequences	Injuries or illness requiring hospital treatment	Localised with short term effects (<2yrs); Easily rectified; Moderate impact upon cultural & heritage sites or rare/endangered flora/fauna; Chemical release contained with outside assistance	Interruption or restriction of supply affecting >500 customers Prolonged interruption to critical customers*	Adverse attention/concerns from - – Regulators; – Government; – State/National/international media; or – Public	>$2m - $4m
2	Minor	No material impact on ATCO Gas Australia; Issues are dealt with internally	Injuries or illness requiring first aid or medical treatment	Localised with very short term (weeks) effects; Easily rectified; Minor impact on rare/endangered flora/fauna; Onsite chemical release with is contained without outside assistance	Interruption or restriction of supply affecting >=100 customers Short-term interruption to critical customers*	Minor adverse attention/concerns from- – Regulators; – Government; – Local/State media attention; or – Public	>$400k - $2m
1	Trivial	No material impact on ATCO Gas Australia; Issues are dealt with routinely by	Minimal impact on health and safety	No effect or minor onsite effects that are rectified rapidly with a negligible, residual effect;	Interruption or restriction of supply affecting <100 customers	Minor concerns from isolated members of the public.	$400k

		operational areas		Minor lead that doe4s not lead to contamination	No impact to critical customers*		

Source: ATCO's Risk Management Matrix

Table 3-4 ATCO's Risk Frequency

FREQUENCY			
Rating	**Descriptor**	**Definition - Network Related Risk**	**Definition - Non - Network Related Risk**
5	Frequent	The event is expected to occur once per year or more	The event is expected to occur
4	Occasional	The event may occur occasionally in the life of the asset	The event may occur occasionally
3	Unlikely	The event is unlikely to occur within the life of the asset, but it is possible	The event is unlikely to occur, but it is possible
2	Remote	The event is not anticipated to occur for the asset at this location	The event is not anticipated to occur
1	Hypothetical	The event is theoretically possible, but has never occurred on a similar asset	The event is theoretically possible, but has never occurred in businesses similar to ATCO Gas Australia

Source: ATCO's Risk Management Matrix

Using the above tables, ATCO rates the risk based on the following table.

Table 3-5 ATCO's Risk Matrix

	CONSEQUENCE				
FREQUENCY	***1 Trivial***	***2 Minor***	***3 Severe***	***4 Major***	***5 Catastrophic***
5 Frequent	**5 Low**	**10 Intermediate**	**15 High**	**20 Extreme**	**25 Extreme**
4 Occasional	**4 Low**	**8 Low**	**12 Intermediate**	**16 High**	**20 Extreme**
3 Unlikely	**3 Negligible**	**6 Low**	**9 Intermediate**	**12 High**	**15 High**
2 Remote	**2 Negligible**	**4 Negligible**	**6 Low**	**8 Intermediate**	**10 High**
1 Hypothetical	**1 Negligible**	**2 Negligible**	**3 Negligible**	**4 Low**	**5 Intermediate**

Source: ATCO's Risk Management Matrix

To identify ways to reduce the risks of a particular asset, ATCO's risk management framework (Appendix D) illustrates the steps taken. In summary, ATCO carries out the following:

1. The first step of the exercise is to identify the risks associated with the asset.
2. If an asset is deemed to have an extreme or high risk, ATCO will action a risk treatment that would reduce it to intermediate or low.
3. No further action is required if the treatment option reduces the risk to low.

4. If the risk is considered intermediate after the risk treatment, ATCO will then conduct a further risk treatment option to reduce the risk to low or negligible.
5. If the treatment option does not reduce the risk to low, ATCO will consider additional treatment option and also carry out a cost benefit analysis in accordance with the Standard AS4645.1.
6. If the cost benefit analysis shows that the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result, ATCO would not undertake the additional treatment and declare the risk to be at ALARP.

3.1.2 ERA Decision

In its draft decision, the ERA acknowledged[3] that as part of its Safety Case, ATCO carries out Formal Safety Assessment (FSA) for all asset classes. ATCO has applied the ALARP test to identify the actions that are required to reduce network risks.

In addition, the ERA also said that ATCO has relied on its application of ALARP to justify its forecast sustaining capital expenditure on security of supply projects. ERA has also accepted the advice from EMCa that ATCO has not conducted a cost benefit analysis as part of its ALARP test and as such the ERA is not satisfied that the security of supply component in relation to ATCO's capital expenditure is consistent with good industry practice as required by Rule 79(1)(a).

3.1.3 Zincara Analysis

As the discussion on ALARP centers around ATCO's risk management framework, Zincara carried out a comparison between ATCO risk management framework to that of AS/NZS4645.1. Zincara considers that ATCO's consequence and frequency tables (Table 3-3 and Table 3-4) are consistent with that set out in AS/NZS4645.1 (Standard) and that ATCO's definitions in the table meet the guidelines as set out in the Standard. Similarly, the ATCO's risk matrix (Table 3-5) is also consistent with that of the Standard.

In relation to the steps taken to assess and reduce the risk as described in Section 3.1.1, Zincara considers that process is also consistent with Standard.

Zincara therefore considers that ATCO's risk management approach is consistent with AS/NZS4645.1. However, Zincara also believes that ATCO's safety case misuses the term ALARP and that it has used ALARP to mean "acceptable risk" which could be low or intermediate risk.

In Section 4.2.2.3.5 of the Safety Case, ATCO describes the steps that it takes following the risk ranking:

1. If the risk is ranked Extreme or High, ATCO determines the steps that are necessary to reduce the risk to ALARP.
2. If the risk is Intermediate, ATCO determines the appropriate action to reduce the risk to ALARP.
3. If the risk is Low or Negligible, ATCO determines the management plan to prevent future occurrence and to monitor changes that could affect the rating.

To be consistent with ATCO's risk management approach, Step 1 and Step 2 should use the term "acceptable risk" which could be intermediate (in which case the ALARP test should be applied) or low.

[3] ERA Draft Decision pg 106

An example of the above point is Section 4.3.4.3 Meter Compliance in the Asset Management Plan. The project involves the modification of 8,500 meter installations in which ATCO considers that they do not comply with the AS/NZS 4645 and AS/NZS5601 nor ALARP. ATCO said that its proposed project will make the installations compliant with the appropriate standards. Zincara believes that by making the installations compliant with the standards would reduce the risk to low and in which case there is not a need to carry out a quantitative risk assessment as required under ALARP.

Another example of the misuse of the use of ALARP can be seen in the business case "EOL Replacement Cast Iron Business Case". The business case mentions that the cast iron pipe network is not ALARP and discusses options to replace the pipe. By replacing the pipes, Zincara believes that the risk has reduced to low (not ALARP) although the business case has not explicitly stated the case.

Acknowledging that ATCO's use of ALARP is in the context of "acceptable risk", Zincara considers that ATCO has applied the requirements of AS4645.1 (and AS2885) in its risk management framework. This means that ATCO would only need to apply the guidelines for ALARP if the risk is at intermediate and it believes that quote: *"the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result."*

Zincara therefore believes that the misuse of ALARP would not affect the methodology adopted by ATCO in preparing its forecast capital expenditure. It should also be noted that the misuse of the term ALARP has not affected ATCO's application to safety.

As such, Zincara considers that ATCO's risk management practice is consistent with that of a prudent service provider acting efficiently in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

3.2 RISK OF LOSS OF SUPPLY

As discussed in Section 3.1, Appendix C of AS/NZS4645.1 sets the guidelines for the qualitative risk assessment. To assess the risk of a particular event requires the consequence and frequency of each outcome to be assessed. The consequence analysis consists of a number of dimensions one of which is "Supply". As a result, ATCO's risk management matrix has developed a number of criteria in accordance with the Standard. Shown in the table below is ATCO's loss of supply criteria in comparison with the requirements of the AS/NZS4645.1.

Table 3-6 Comparison between AS/NZS4645 and ATCO Supply Consequence

	AS/NZS4645.1	ATCO
Catastrophic	Long term interruption of supply	Interruption of supply affecting >25,000 customers
Major	Prolonged interruption; long term restriction of supply	Interruption or restriction of supply affecting >5,000 customers
Severe	Short term interruption, prolonged restriction of supply	Interruption or restriction of supply affecting > 500 customers Prolonged interruption to critical customer
Minor	Short-term interruption; prolonged restriction of supply but shortfall met from other sources	Interruption or restriction of supply affecting >100 customers Short-term interruption to critical customers[4].

[4] Critical customers refers to hospital and the Public Transport Authority

Trivial	No impact; no restriction of gas distribution network/pipeline supply	Interruption or restriction of supply affecting <100 customers No impact to critical customers[4].

Source: AS/NZS4645 and ATCO's Risk Management Matrix

3.2.1 ERA's Draft Decision

The ERA in its Draft Decision said[5]:

"According to EMCa, the risk thresholds that ATCO has adopted are not prescribed in the relevant safety standards (AS/NZS4645 and AS2885), nor are they mandated by EnergySafety. The risk thresholds are predominatly based on ATCO's own risk appetite and are low by industry standards. Furthermore, ATCO has not justified these thresholds in the manner required by the relevant standars AS/NZS4645 and AS2885. The Authority considers that these risk thresholds would give rise to inefficiently high level of incremental recurring network operating expenditure."

"ATCO has adopted a risk threshold for catastrophic events that appears to be lower than the threshold employed by other gas distribution network. EMCa considers that the risk threshold that ATCO has adopted of 25,000 customers for loss of supply to be catastrophic is not prescribed in AS/NZS4645 and AS2885, nor mandated by EnergySafety, and is low by industry standard."

In support of its advice to the ERA, EMCa has drawn on the thresholds of other regulated gas pipelines and its report produced a table showing ATCO's supply risk consequence in comparison with other regulated gas pipelines. The table is replicated below:

Table 3-7 Risk definitions applied by ATCO vs other regulated gas pipelines

Company	Consequence Category Supply-Catastrophic	Consequence Category Supply - Major
ATCO	Interruption of supply affecting > 25,000 customers	Interruption or restriction of supply affecting > 5,000 customers
SP AusNet	>200,000 customers or System Black or loss of supply to entire CBD	>100,000 customers
Multinet	Major disruption of multiple services capacity for greater than 1 month – failure of gas supply	Major disruption of multiple services capacity up 1 month – failure of gas supply
Envestra	Long term loss of supply to mass market > 100,000 customer weeks	Short term loss of services to > 10,000 customer days.
Allgas		

Source: EMCa's Report Table 18 pg 104

EMCa also said[6]:

"In our view, for a non-essential service there is no evidence to support, at a policy level, that reinforcement is justified to ensure customers do not suffer loss of gas supply due to single point failure in the ATCO network at a threshold of 25,000 customers when the likelihood of such an event attributed to a distribution network failure is extremely low."

[5] ERA Draft Decision pg 55 and 106
[6] EMCa Report pg104

3.2.2 Zincara's Analysis

In relation to the ERA's comment regarding the risk thresholds being low by industry standards, it is unclear whether the ERA or EMCa refers to all or some of the thresholds being low by industry thresholds. The main focus by the ERA and EMCa is on the supply threshold of loss of supply on 25,000 customers being too low.

A comparison of the thresholds between ATCO (Table 3-3,Table 3-4 and Table 3-5) and Envestra/ Allgas risk matrix (Table 3-8) shows that whilst each business has developed its risk matrix using the guidelines prescribed in the Standards, the severity of each category is not materially different. Zincara's comments regarding the supply threshold are detailed in the text below.

Envestra's risk table is provided in the table below.

Table 3-8 Envestra's Risk Management Framework

	Typical Severity Class		Minor	Moderate	Severe	Major	Catastrophic
CONSEQUENCE	Health &Safety		Single - no permanent injury Lost time injury	Multiple - no permanent injury	Hospitalisation Single permanent injury	Single fatality Multiple permanent injury	Multiple fatalities
	Financial Impact		Less than $1M Change to Project Budget	$1M - $5M Change to Business Unit Budget	$5 - $20M Financial explanation to Market Regulators	$20 - $50M Change to strategy due to Cash Flow constraints	$50M + Cash Flow crisis Credit Rating downgraded
	Customer & Business Interruption		Short term localised service interruptions to less than 100 customers / day Parameters not met to1 contract customer	Short term localised service interruptions to less than 1000 tariff customers / day or 1 contract customer	Loss of service to less than 10000 tariff customers / day, or few contract customers	Short term loss of service to more than 10000 customers / day Area growth affected	Long term loss of service to mass market (>100000 customers /weeks). Viability of Company in doubt
	Environment		Localised incident immediately contained	Localised damage immediately contained. Reportable - no financial penalty	Serious short term impact to ecosystem Reportable - financial penalty	Serious long term impact to ecosystem Reportable - prosecution	Wide area - long term affected Reportable - potential lost of licence
	Compliance & Legal		Technical non-compliance with statutory, licence, regulations. Voluntary explanation to Regulator	Non- compliance with statutory, licence, regulations. Compulsory explanation to Regulator	Non-compliance with statutory, licence, regulations New conditions to Licence manageable	Non-compliance with statutory, licence, regulations New conditions to Licence affecting ability to operate	Non-compliance with statutory, licence, regulations. Loss of Licence. Significant financial penalty Prosecution
	Reputation		Isolated localised public complaints	Adverse comments in local media Public statement required	Adverse comments in State media Widespread concern from investors, customers and regulators	Adverse coverage in National media. Customers and investors question company reliability	Prolong adverse coverage in national/ international media. Significant impact on shareholder value
LIKELIHOOD	Almost Certain	Expected in most circumstances, At least once per year or more	Moderate 11	High 16	Extreme 20	Extreme 23	Extreme 25
	Likely	Will occur in most circumstances At least once every 3 years	Moderate 07	High 12	High 17	Extreme 21	Extreme 24
	Possible	Might occur at some time At least once every 10 years	Low 04	Moderate 08	High 13	Extreme 18	Extreme 22
	Unlikely	Could occur at some time At least once every 25 years	Low 02	Low 05	Moderate 09	High 14	Extreme 19
	Rare	May occur only in exceptional circumstances Less than once every 25 years	Low 01	Low 03	Moderate 06	Moderate 10	High 15

Source: Envestra's Asset Management Plan (Public Version) pg16

The risk matrixes of other gas distributors are not available in the public domain. However, based on its experience, Zincara does not believe that they are materially different to that of Envestra's or ATCO's.

In relation to the threshold on gas supply as shown in Table 3-7, ATCO has deemed that catastrophic consequence is interruption to 25,000 customers. Other gas distributors have used different definitions:

- APA 100,000 customer weeks
- Multinet 1 month failure of gas supply
- SP AusNet 200,000 customers or system black or loss of supply to entire CBD

ATCO in its response to EMCa, said[7] that the Standards' guideline for a catastrophic event is associated with a long term interruption to supply. ATCO said in a situation such as third party damage to a high pressure pipeline or a pressure regulating station which affect more than 25,000 customers, the repair time could take a minimum of four weeks. The loss of supply could be greater if there is a possibility of air getting into the system.

Based on its experience[8], Zincara considers that ATCO's estimate of the length of time for long term interruption is realistic. Air getting into the gas network as a result of third party damage to a pipeline will result in an unsafe situation. The purging of the gas network to remove the air is a lengthy and complex situation and will take a considerable time and resources.

Using an average four week duration interruption to 25,000 customers will result in 100,000 customer weeks which is similar to that of Envestra. It is also similar to that of Multinet, which has defined a one month failure of gas supply as a catastrophic event.

In relation to SP AusNet's definition of 200,000 customers or system black or loss of supply to the entire CBD; it is unclear what are the conditions behind this definition. However to put it into context, SP AusNet had approximately 571,000[9] customers at the start of 2011 which means that 200,000 customers is 35% of its total customer base. Given the nature of gas networks with multiple feeds into the network, any third party damage in one section of the network or loss of supply from one injection point would not cause such a massive disruption. It would have to be a disruption in the transmission system (which SP AusNet does not own) that is likely to cause such a disruption. If SP AusNet uses this condition as the basis for deciding to carry out any reinforcement or duplicate injection points, there will no need for any reinforcement project. This is not the case if we look at Section 3.5.4 of SP AusNet's AAI Submission 2013 – 2017. As such, Zincara believes that it is not possible to compare ATCO's definition of a catastrophic event to that of SP AusNet.

As ATCO's definition of loss of supply is similar to that of Envestra (and Allgas) and Multinet, Zincara therefore considers that ATCO's definition of a catastrophic event for loss of supply is consistent with industry practice and as such consistent with a prudent service provider acting efficiently in accordance with accepted industry practice to achieve the lowest sustainable cost of delivering pipeline services.

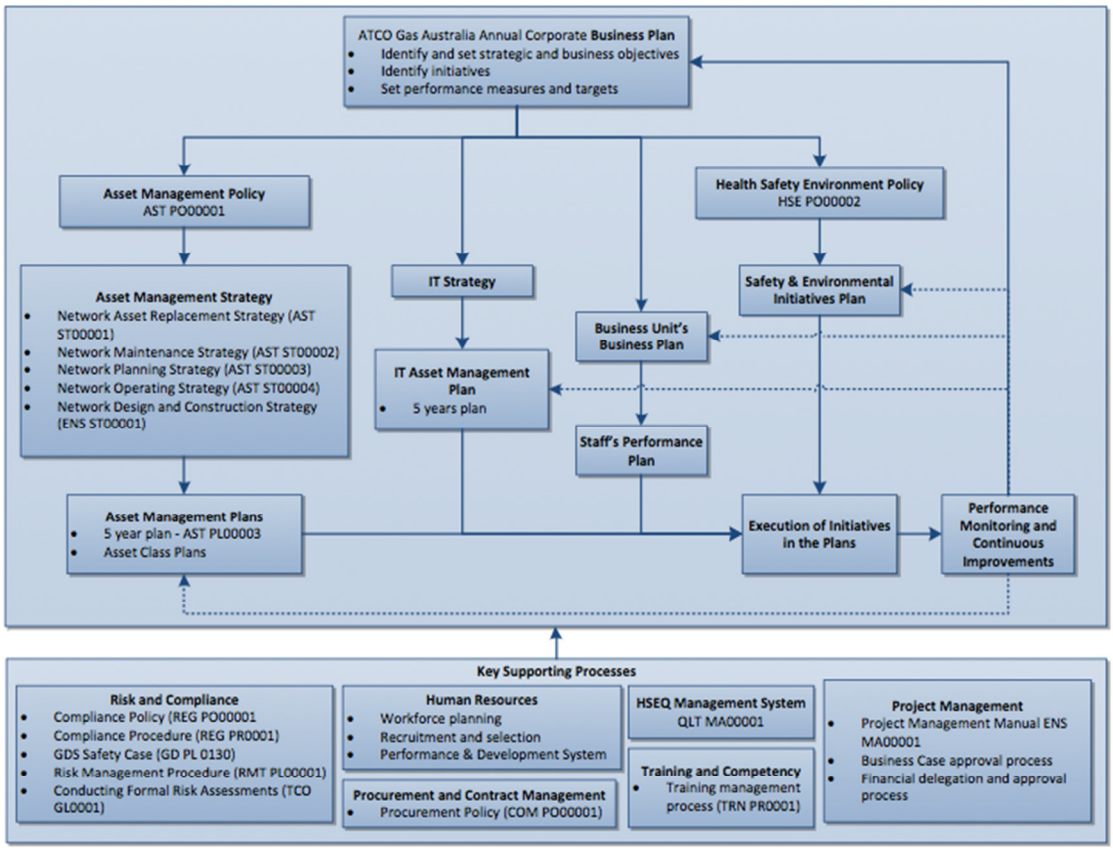
[7] ATCO's email to EMCa titled EMCa 48 dated 17 April 2014
[8] Ed Teoh has been emergency manager for a number of gas incidents including the Longford Gas Emergency in Victoria
[9] SP AusNet AAI Submission 2013-2017 pg43

4. BUSINESS PLANNING PROCESS

In its Access Arrangement Information, ATCO said[10] that its revision to the Access Arrangement for capital and operating expenditure forecast has been developed as part of its business planning process which takes into account risk, historical and forecast performance, external environment and future demand. As such, Zincara has reviewed ATCO's business planning process to support its conclusion in this review.

ATCO's corporate objectives are to grow its connections and throughput whilst maintain operational excellence and efficiency. The figure below is an illustration of its business planning process.

Figure 4-1 ATCO's Business Planning Process



Source: AAI pg 28

As can be seen from the figure above, ATCO's Asset Management Plan (AMP) is a key component of the business planning process.

4.1.1 ATCO's Business Management Systems and Processes

ATCO applies a range of policies, procedures and methodologies in managing its business. The following provides an overview of some of those systems and processes that have particular relevance in developing ATCO's capital and operating expenditures.

[10] Access Arrangement Information pg28

Investment governance[11]

A capital expenditure approval process is applied to all capital projects, with those in excess of $100,000 requiring a supporting business case, that must be signed off at executive management, president, managing director or board level, depending on the value of the project or works programme and the delegated financial authority levels. Technical and operational assumptions underpinning these activities are documented in the Asset Management Plan.

Management Systems

ATCO Gas Australia ensures its processes are effective and efficient by maintaining a Health, Safety, Environment and Quality (HSEQ) management system certified to AS/NZ 4801 (Safety Management Systems), ISO 9001 (Quality Management Standard) and ISO 14001 (Environmental Management Standard). This system is subject to an annual auditing programme, both internally and externally, to ensure compliance and is continually reviewed and improved.

Economic modelling of new connections[12]

Customer initiated network extensions are subject to an economic modelling assessment to determine whether the extension passes the economic test under Rule 79(2)(b) of the NGR. Where the connection does not satisfy this rule, a capital contribution from the customer is requested for the project to proceed.

Engaging specialists to assist with forecast information:

- ATCO commissioned *Economics Consulting Services (ECS)* to prepare a report on the forecast number of new B3 Network connections over the AA4 period.
- To improve the accuracy of demand forecasting in AA4, ATCO engaged *Core Energy* to help apply a more robust methodology to forecasting gas usage in Western Australia. Core Energy has conducted similar work for other Australian gas distribution businesses.

Project governance framework[13]

ATCO has thorough planning, approval and review processes to ensure capital expenditure is prudent, efficient and consistent with good industry practice. This involves rigorous application of technical, managerial and financial governance processes to ensure expenditure meets regulatory, legal and operational obligations in a manner that achieves the lowest sustainable cost of providing services to customers.

Procurement policy

All purchasing decisions that relate to capital expenditure are made in compliance with ATCO's Procurement Policy.

Tendering, probity and contract management guidelines

ATCO's tendering guidelines outline the tender process associated with procurement of goods and/or services. The guidelines cover the key responsibilities involved in tender formation and the procedures that must be carried out by staff to ensure effective tender process management.

[11] AAI 7.4.3, page 126 and AAI 8.3.1 page 163
[12] AAI 7.4.2, page 124
[13] AAI 7.4.2, page 124

Benchmarking

To assist in assessing its performance ATCO compares its historical and forecast expenditure against other Australian gas distribution network operators. Benchmarking analysis was conducted by Economic Insights for Envestra Victoria, Mulitnet and SP Ausnet in 2012. ATCO also commissioned ACIL Allen to undertake a similar benchmarking analysis with updated information in early 2014.

Operating Expenditure

Labour resources

Operational activities and works programmes are delivered using a combination of ATCO Gas Australia's internal workforce, external suppliers and contractors (including sub-contractors) to ensure that efficient and lowest sustainable cost activities, projects and work programme resources are maintained over the long term.

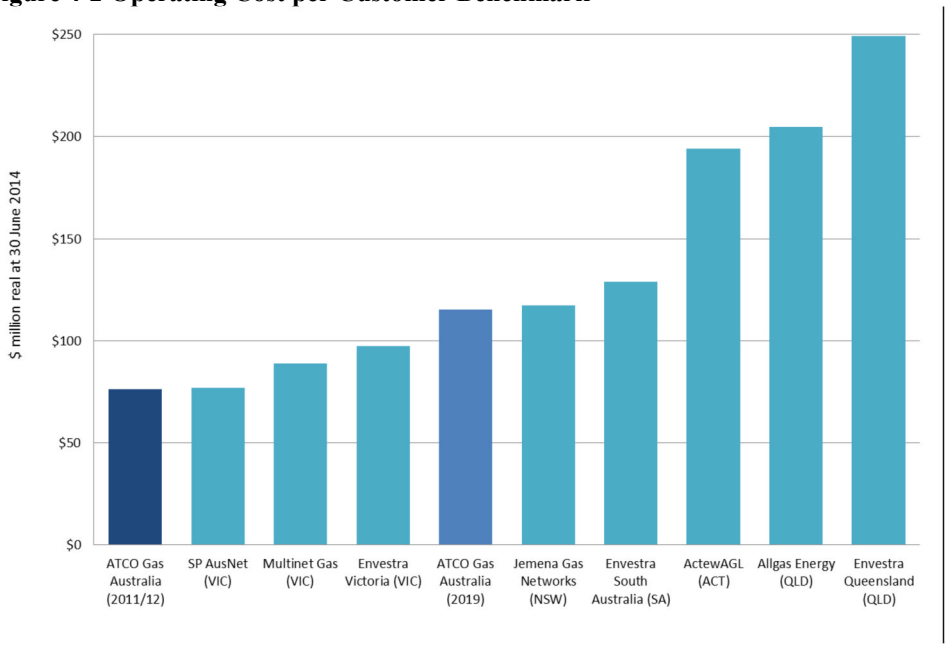
Operating Costs Forecasting

Network operating costs are forecast by identifying the inspection, operating and maintenance activities necessary to deliver the requirements of the Safety Case and AMP. Costs are developed using a combination of historical unit costs, market tested rates and forecast resource requirements to deliver the reference services to the growing customer base. The forecasts are developed using a bottom-up approach by the respective responsible managers, ensuring ownership and accountability for budgets and delivery. ATCO's operating cost per kilometre increased in 2012/13 and this higher level is forecast to continue into AA4. This reflects the increased investment required to deliver a safe and reliable service and to sustainably grow the provision of services. These drivers for investment are most likely to impact on the costs per kilometre. The costs per customer are forecast to increase until end 2015 before achieving sustainable levels for the remainder of AA4. Despite the forecast increases, the costs per customer are expected to continue to compare favourably with other gas distribution businesses.

Benchmarking

To consider the impact of the actual and forecast operating expenditure on performance compared with its peers, ATCO compared the data from the Economic Insights report with the forecast operating costs at the end of the AA4 period in 2019. The following chart shows that the forecast operating costs per customer at the end of the AA4 period in 2019 continue to compare favourably with other gas distribution network businesses.

Figure 4-2 Operating Cost per Customer Benchmark



Source: AAI Figure 30: Operating cost per customer benchmark

The AAI[14] provides further detailed descriptions of each of the Incremental Recurring Costs and One-off costs. Also additional information is provided in the email response to EMCa's question (EMCa 61).

Summary

Based on its experience, Zincara considers that the process described above are consistent with business process used by other gas distributors and is expected of a prudent service provider acting efficiently in accordance with good industry practice.

[14] AAI pages 93 – 103 and also Table 20

5. CAPITAL EXPENDITURE

5.1 BACKGROUND

AGA objectives for the AA4 period are essentially to invest in capital expenditure to ensure a safe, reliable and efficient service. Specifically ATCO has indicated that its capital investments are for the following[15]:

- Increase capital investment programme to deliver
- Sustainable economic growth
- Deliver on the requirements of the Safety Case
- Sustain level of customer service and value resulting from
- Increased level of business support to improve customer service and information
- Reductions in safety risk as a result of delivering on the safety case
- Encouraging the use of natural gas to reduce the costs to all customers over time.

Table 5-1 Forecast Capital Expenditure for the AA4 period

$million Real at 30 June 2014	July to Dec 2014	2015	2016	2017	2018	2019	Total
Asset Replacement	15.2	33.0	29.1	29.9	35.4	35.1	177.7
Asset Performance and Safety	2.5	9.0	22.4	34.3	27.9	37.5	133.6
Network Sustaining	**17.7**	**42.0**	**51.5**	**64.2**	**63.3**	**72.6**	**311.3**
Customer Initiated	15.7	28.7	27.8	27.7	28.2	28.2	156.3
Demand Related	3.0	10.5	24.0	14.9	13.3	6.5	72.2
Network Growth	**18.7**	**39.2**	**51.8**	**42.6**	**41.5**	**34.7**	**228.5**
Structures and Equipment	3.7	16.7	3.5	3.5	5.6	5.5	38.4
IT	2.4	5.8	5.3	4.5	5.1	4.5	27.4
Total	**42.5**	**103.7**	**112.1**	**114.8**	**115.4**	**117.3**	**605.7**

Source: AAI pg166

ATCO indicated that the above expenditure reflects the requirements of the Safety Case and the objectives and plans as set out in the Asset Management Plan. The section below covers Zincara's analysis on the network sustaining and network growth capital expenditure.

5.2 SUSTAINING CAPITAL EXPENDITURE

In its AAI, ATCO stated[16] that its sustaining capital expenditure is to maintain and improve the safety of services, maintain the integrity of services, comply with regulatory obligations and to maintain and secure the capacity to meet the current levels of demand for services. The capital expenditure is therefore justified under Rule 79(1) 9c).

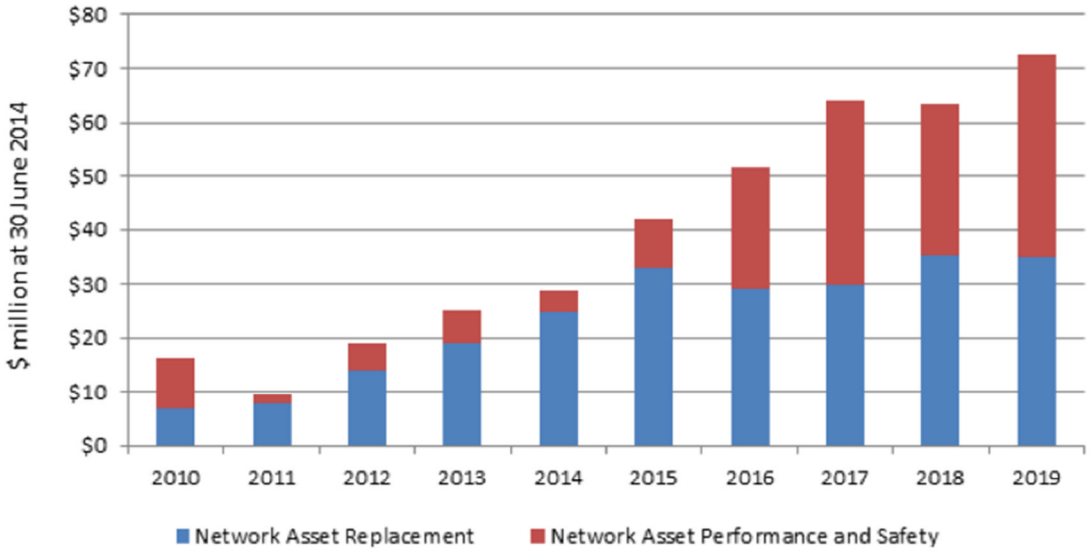
ATCO indicated that its network capital expenditure compared to the AA3 has increased due to the requirements of the Safety Case to reduce the risks associated with the various asset class to as low as reasonably practicable. The sustaining network capital expenditure can be divided into two categories:

[15] Overview of Expenditure : Business Planning and performance April 2014.
[16] AAI pg 160

- Asset replacement; and
- Asset performance and safety

The capital expenditure for each category is shown in Table 5-1 and the chart below shows the proportion of the capital expenditure that is attributed to each category.

Figure 5-1 Sustaining Capital Expenditure 2010 - 2019



Source: AAI pg170

5.2.1 Asset Replacement

ATCO proposes to forecast capital expenditure of $177.7m in asset replacement over the AA4 period. The projects comprise of:

- Unprotected metallic mains replacement;
- Asset replacement due to condition assessment and location; and
- Asset replacement as a result of scheduled life cycle replacement.

The capital expenditure for each category is shown in the table below.

Table 5-2 Forecast Asset Replacement Expenditure by Programme 2014 -2019

$million Real at 30 June 2014	July to Dec 2014	2015	2016	2017	2018	2019	Total
Unprotected metallic mains replacement	8.0	14.1	14.5	14.5	17.0	17.0	85.1
Condition based asset replacement	3.8	5.9	4.9	5.0	5.1	5.1	29.7
Other asset life cycle replacement	3.3	13.0	9.6	10.4	13.3	13.1	62.8
Total asset replacement capital expenditure	**15.2**	**33.0**	**29.1**	**29.9**	**35.4**	**35.1**	**177.7**

Source: AAI pg 171

Unprotected metallic mains replacement

The programme involves the replacement of unprotected steel mains, cast iron and galvanized iron mains and associated services with polyethylene pipes. The capital expenditure is broken up into the following[17]:

- Metallic mains – replace 133km of unprotected steel and galvanized iron mains plus associated services. ($50.6million);
- Odd size steel – replace 33km of odd size unprotected steel mains, galvanized iron mains and associated services ($10.1million); and
- Cast iron – replace 58km of cast iron mains, embedded unprotected steel mains plus galvanized iron and associated services in Frementle ($22.5million).

Asset Condition and location based asset replacement

This programme consists of replacing the assets in specific locations due to their location and asset condition. The assets include:

- Multi-storey buildings – replace above grounds and underground ATCO's infrastructure supplying approximately 3,900meter locations in multistorey buildings (20.0million); and
- Meters with plugs replacement – replace 45,000 meters that have faulty plugs (9.7million).

Other asset life cycle replacement

ATCO stated that over the AA4 period, there are a number of assets that will require replacement as a result of the planned asset replacement programme. The key projects that are to be replaced include:

- PVC mains replacement: 17 km of mains in high density community use areas within older suburbs showing highest fault rates plus galvanised iron and PVC services ($12 million).
- Routine meter replacement: 147,000 meters will be replaced under the routine domestic meter change programme to comply with Gas Standards (Gas Supply and System Safety) Regulations 2000 ($31.6 million).
- Service replacements: This programme includes the replacement of approximately 8,800 gas services, which based on a condition assessment have reached end of operational life, with a fully fused copper to Polyethylene (PE) solution. ($9.3 million).

- Replace high pressure pipeline HP017: The high pressure pipeline, HP017, Bibra Lake, is a 2.2km section of DN200mm steel pipeline. with a wall thickness of 3.1mm API5L Grade B material. In accordance with AS2885.1, residential, high density and sensitive location areas where pipeline failure would create potential for high consequence escalation, pipelines must be designed such that rupture is not a credible failure mode. To reduce the risk of operating this pipeline to ALARP, ATCO proposes to retire this under designed asset and replace it with a new pipeline which fully meets current AS2885 design, construction and operation safety standards. ($3.2 million).
- Smaller replacement projects (AMP): includes the replacement of End of Life Telemetry equipment, medium and high pressure regulators, isolation and service valves and cathodic protection equipment ($6.7 million).

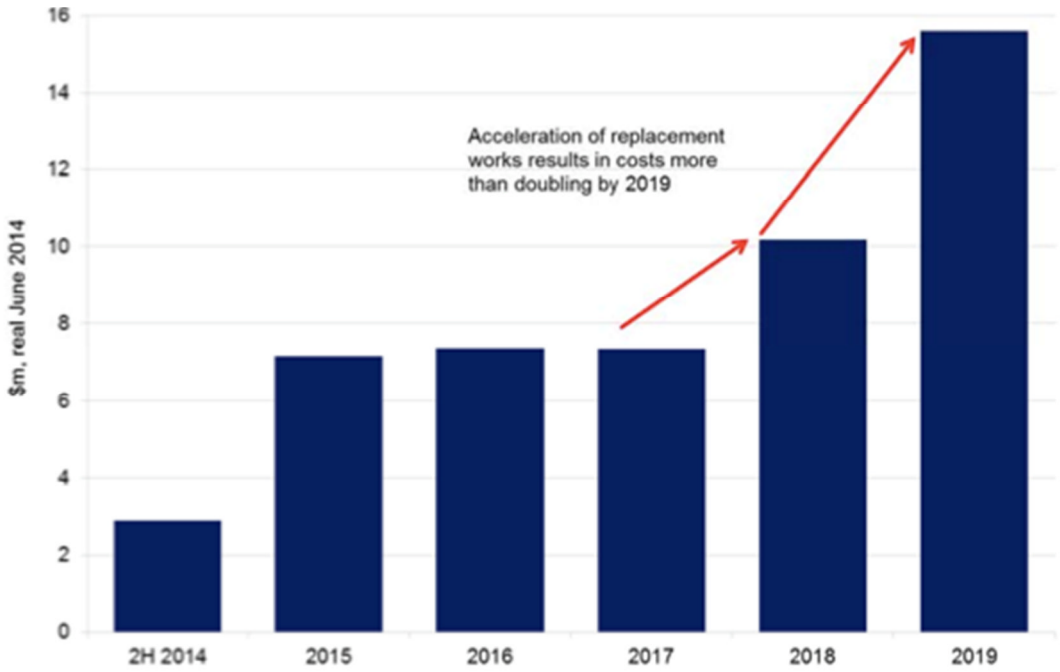
[17] AAI pg 171

5.2.1.1 ERA Draft Decision

In its Draft Decision, the ERA said that it agreed with EMCa's view that ATCO that ATCO appeared to have used the end of AA4 as an artificial deadline to complete the work of replacing end of life unprotected metallic mains.

EMCa in its report to the ERA said[18] that it is satisfied that the asset replacement, which is mix of new projects and a continuation of projects from AA3, are justified under one or more grounds set out in Rule 79(2) (c). However, it also stated that it is concerned that ATCO has used the end of the AA4 period as an artificial deadline to complete the work as shown in the figure below.

Figure 5-2 ATCO proposed expenditure on replacement of metallic mains



Source: EMCa's Report pg 108

As such, EMCa concluded that a prudent service provider would extend the programme into AA5 period as the risks associated with the works are relatively low.

5.2.1.2 Zincara's Analysis

Given the description of the work and the business case for metallic mains replacement, Zincara concurs with EMCa that the capital expenditure complies with Rule 79(c). ATCO has provided Zincara with a copy of its draft response to the ERA. ATCO said that it has assessed the risk of smoothing the replacement program and considers that the risk to be minimal. As such, ATCO proposes to extend the replacement program into AA5 period.

Given the above, Zincara considers that the revised expenditure complies with the Rules79(c).

[18] EMCa Report pg107

5.2.2 Asset Performance and Safety

ATCO indicated that this category is required to meet to upgrade and improve network assets and operations to meet safety, reliability or cost effective requirements. This expenditure is justified under Rule 79 (1) (c). The table below provides details of the capital expenditure:

Table 5-3 ATCO's Sustaining Capital Expenditure

$million Real at 30 June 2014	July to Dec 2014	2015	2016	2017	2018	2019	Total
Security of supply – independency	-	-	6.6	11.1	10.6	19.0	47.3
Security of supply – HP spur lines	-	2.1	8.3	12.6	10.5	10.5	44.0
Security of supply – transmission interconnections	-	-	3.3	7.1	3.4	4.1	17.9
Inline inspections of high pressure pipelines	-	2.9	0.9	0.5	0.8	1.7	6.8
Transmission gate stations upgrades	-	-	0.6	0.5	-	-	1.1
Meters compliance project	0.1	0.9	0.9	0.9	0.9	0.9	4.6
Facility upgrades – OPSO safety devices	1.0	1.1	-	-	-	-	2.1
Facility and capacity upgrades – others	1.1	0.7	0.5	0.5	0.6	0.6	4.0
Total asset performance and safety expenditure	**2.5**	**9.0**	**22.4**	**34.3**	**27.9**	**37.5**	**133.6**

Source: AAI pg 177

Security of supply – Interdependency

ATCO is proposing to construct 10 high pressure mains which affects 17 pressure regulating facilities to reduce the loss of loss of gas supply to greater than 25,000 consumers. ATCO said that in accordance with its risk matrix, the loss of supply to 25,000 customers is considered catastrophic which is consistent with AS/NZS4645.

Security of Supply – HP Spur Lines

This category consists of reinforcement related projects to reinforce the network. ATCO has apportioned of some projects between sustaining capital expenditure and demand related capital expenditure in new growth. The justification for demand related projects for new growth is discussed in Section 5.3.4.2. The table below shows the cost allocation between demand and sustaining capital expenditure.

Table 5-4 ATCO's Capital Expenditure for HP Spur Lines

HP Mains	Timing (Year)	Length (km)	Demand $m's	Sustaining $m's	Total Project Costs $m's
Two Rocks spur line	2016/17	44	27.2	18.1	45.3
Peel spur line	2018/19	26	11.4	20.9	32.3
Elizabeth Quay and Perth CBD risk reduction project	2014/16	5	9.3	4.9	14.2
Baldivis spur line	2018	4	5.4	-	5.4
Capel to Busselton Reinforcement	2019	5	5.2	-	5.2
Total		**84**	**58.5**	**43.9**	**102.4**

Source: AAI pg 185

Security of Supply – Transmission Interconnections

ATCO proposes to install an additional 6 gate station interconnects to the Parmelia Pipeline to ensure security of supply in accordance with AS/NZS4645.

Inline Inspections of high pressure pipelines

This project is associated with the requirement of AS2885.3. Under AS2885.3, a life review assessment of the pipeline must be conducted every 10 years. This inspection of the pipeline is carried out through in-line inspection (intelligent pigging). This project involves the upgrading of the in-line launcher and receiver facilities in the pipelines so that the pipeline inspection gauge (PIG) can be safely injected and withdrawn from the pipelines.

Transmission gate station upgrades

This project involves the upgrading of 5 under-capacity gate stations connected to the DBNGP pipelines to meet the network demand.

Meter compliance project

This project is related to 8,500 meters located in non-compliant locations such as cavities and cupboards. The meters have to removed or extra ventilation facilities provided to meet the safety standards.

Facility upgrade – OPSP safety devices

ATCO proposes to install over pressure shut off (OPSO) devices on high pressure regulating and metering equipment to protect the downstream gas distribution network from exceeding its maximum allowable operating pressure (MAOP).

Facility and capacity upgrade – other

This category relates to a group of miscellaneous projects for safety and reliability purposes.

5.2.2.1 ERA Draft Decision

The ERA said[19] that ATCO has relied on its application of the ALARP test to justify its forecast sustaining capital expenditure on security of supply projects under rule 79(2) (c) of the NGR. The ERA also commented that EMCa has assessed the Safety Case, FSA and the risk threshold that ATCO has adopted when applying the ALARP to security of supply projects. EMCa's concerns are quoted[20] below:

- *"ATCO has not conducted a cost benefit analysis.*
- *ATCO has adopted a risk threshold for catastrophic events that appears to be lower than the threshold employed by other gas distribution networks. EMC considers that the risk threshold that ATCO has adopted of 25,000 customers for loss of supply to be catastrophic is not prescribed in AS/NZS4645 and AS2885, nor mandated by EnergySafety, and is low by industry standards."*

Based on EMC's advice, the ERA has accepted the Asset Performance and Safety capital expenditure except for the security of supply – Spur lines project of:

- Two Rocks Spur line ($18.1million);
- Peel Spur line ($20.93million); and
- Interdependency projects ($47.29million)

5.2.2.2 Zincara's Analysis

Given that the ERA has accepted a number of projects, Zincara is only commenting on the projects that have been rejected.

Two Rock Spur Line

EMCa said[21] that even through the consequence of not proceeding with the project exceeds ATCO's risk threshold of 25,000 customers loss of supply, it considered that the cost associated with the loss of supply to 60,000 customers is disproportionate to the risks that would result from not building the spur line. It also said that it considered that ATCO has not fully justified the growth component of this project which amounts to 60% of the total project cost.

As discussed in Section 3.1.1, AS/NZS4645.1 requires that if the risk is assessed as extreme or high, ATCO is to take action that reduces the risk to low without any cost benefit analysis. However, if the action only reduces the risk to intermediate, then ATCO is required to investigate further action. If ATCO has to resolve to extreme measures to reduce the risk to low, it is required to carry out a cost benefit analysis and demonstrate that the cost is grossly disproportionate to the benefit.

ATCO, in its Draft Response[22] to the ERA said that the supply area which could be affected is a growth area and it is expected that there will be an additional 28,000customers connected in the next five years. This would increase the risk to the loss of supply to 88,000 customers. In addition, the loss of supply risk is assessed as low following the implementation of the project. This project is therefore justified under the risk guidance in AS/NZ4645.

EMCa has applied a value judgment that the cost of the project exceeds the customer benefit in terms of security of supply. Zincara, in Section 3.2.2, has concluded that

[19] ERA Draft Decision pg 106
[20] ERA Draft Decision pg 106
[21] ERA Draft Decision pg 105
[22] Capital Project Appendix pgiv

ATCO's definition of a catastrophic event of the loss of supply to 25,000 customers is consistent with industry standard. This means the loss of supply in this situation is over twice to that defined as a catastrophic event. The Health and Safety Executive in the UK said[23] "the greater the risk the more should be spent in reducing it and the greater the bias on the side of safety." In this case, Zincara considers that the consequence of carrying out the project is not grossly disproportional to the benefit.

In relation to ATCO sharing the cost between demand for greenfields development and sustaining capex for this project, Zincara considers that this approach to be reasonable and practical. The alternative is to have separate pipelines for each requirement which is impractical and also the costs of separate pipelines would exceed that of sharing the costs between the two requirements as discussed in ATCO's draft response to the ERA (pg 15).

In summary, Zincara considers that ATCO does not have to demonstrate ALARP as the project is considered high risk and as such, Zincara therefore considers the project to be consistent with rule 79(2)(c).

Peel Spur Line

EMCa said[24] that the cost of $20.9million of the total proposed expenditure of $26.9million is based loss of supply to 29,000 customer threshold. The cost of reducing the risk is in excess of $720 per customer which EMCa considers is disproportionate to the benefit.

As discussed in the above section on Two Rock and Section 3.1.3, Zincara considers that the catastrophic consequence of loss of supply to 25,000 customers is consistent to industry standard.

ATCO in its draft response to the ERA said that the residual risk following the project is low. Under the guidance of AS/NZ4645, the project would be considered as justified.

EMCa commented that the cost of the project is equivalent to $720 per customer which is disproportionate to the benefit. The Peel Spur Line project addresses a situation that is assessed as high risk which means that under AS/NZS4645.1, specific action must be taken regardless of any cost benefit. It is therefore irrelevant that the cost of the project is equivalent to $720 per customer.

Zincara comments in regard to the sharing of cost between demand and sustaining capex, is the same as above. The sharing of costs between the two requirements is the most practical option.

In summary, Zincara considers that ATCO does not have to demonstrate ALARP as the project is considered high risk and as such, Zincara therefore considers the project to be consistent with rule 79(2)(c).

Interdependency Projects

EMCa said that the projects are not justified under rule 79(2) as they are only being proposed to satisfy its 25,000 customer at risk threshold. In some cases, EMCa considers that the cost of carrying out individual projects also appear to be disproportionate to the reduced risk that would result.

ATCO in its Draft Response to the ERA (pg 15) said that it has revisited all independency projects as part of its annual Asset Management Plan review. As such, it has reduced its

[23] HSE website "Principles and guidelines to assist HSE in its judgement that duty holders have reduced risk as low as reasonably practicable"
[24] EMCa Report pg 106

requirements from $47.3million to $34.0million. Following the implementation of these projects, the residual risks have reduced from high to low.

In Section 3.2.2, Zincara has concluded that the threshold of 25,000 customers for catastrophic consequence is consistent with industry standard. As the interdependency projects are to address situations which have been classified as high risk, Zincara considers that the Interdependency projects are justified on the grounds that they reduce the risks to low.

In summary, Zincara considers that ATCO does not have to demonstrate ALARP as the project is considered high risk and as such, Zincara therefore considers the project to be consistent with rule 79(2)(c).

5.3 GROWTH CAPEX

Growth capital expenditure is essentially required to extend and expand the network to accommodate new connections. It is also the expenditure required to ensure that the network is sufficiently augmented to meet the requirements of the new loads. The growth capital expenditure has been categorised as:

- *Customer initiated capital expenditure,* which includes extensions to gas mains to pass new and existing customer premises and the construction of service pipes from the mains into those premises. It also includes customer initiated new developments, infill connections and new family/strata units.
- *Demand related capital expenditure,* which relates to construction of gas infrastructure to ensure that the Network maintains capacity to meet future growth. This category includes infrastructure such as high pressure pipelines and upgrades to pressure regulating facilities.

ATCO has submitted proposals totalling $228.5 million during AA4, which includes customer initiated expenditure ($156.3 million) and demand related expenditure ($72.2 million).

ATCO is preparing a response to the ERA's Draft Decision in which it provides further information relating to its approach and assumptions for greenfields developments[25]. It describes why it has used aggregate approach for greenfields connections and why it believes that its greenfields programme was arrived at on a reasonable basis and represented the best forecast possible in the circumstances, and was supported by the ECS independent expert report.

5.3.1 Demand Forecast

ATCO engaged Core Energy[26] to develop the gas demand forecast using the forecast number of connections by tariff class (A1 to B3) and determining the expected average consumption per connection in each tariff class. Core Energy's full methodology is provided in Parts 4 and 5 of its report.

With respect to residential customers (B3), the key components of the demand forecasts are forecast number of connections and demand per residential connection. ATCO commissioned Economics Consulting Services[27] (ECS) to prepare a report on the forecast number of new B3 Network connections over the AA4 period.

[25] Draft ATCO report – Capex – Greenfields developments page 35
[26] AAI Appendix 04
[27] AAI Appendix 03

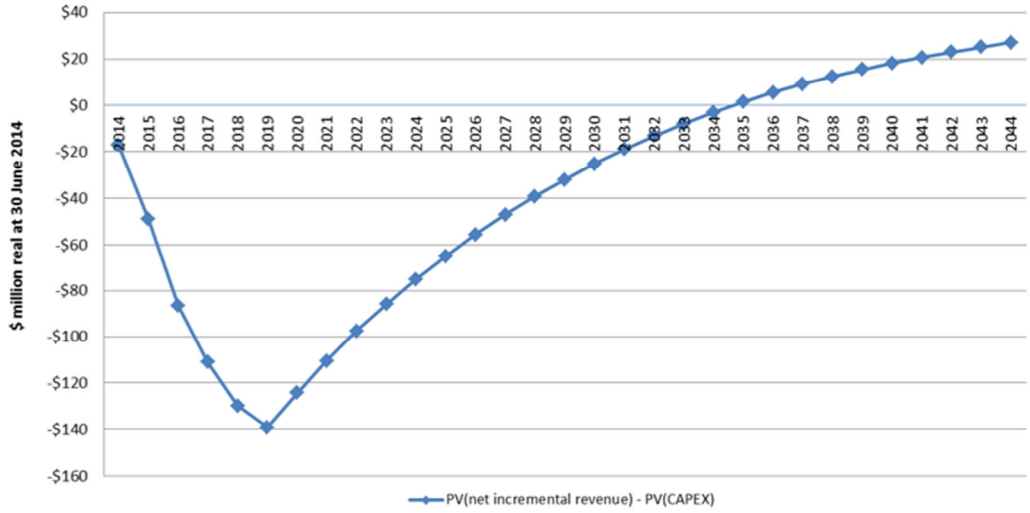
Core Energy has updated its Demand Forecast to further analyse consumption levels for newer greenfield connections and revised connection forecast information.

5.3.2 Financial Assessment

Network growth capital expenditure for AA4, is supported by the forecast incremental revenue expected from new connections over the longer term. Based on the number of new connections over the AA4 period and the assumed consumption per connection, ATCO have calculated that the NPV[28] of the investment over the expected 30 year life of forecast connections (including mains required to facilitate these connections) is $27.0 million (refer AAI Figure 65, page 161). The analysis has been undertaken using the same approach as the analysis undertaken for the growth capital expenditure for the AA3 period as presented in AAI chapter 7 (Past Conforming Capital Expenditure). The NPV[29] of the growth investment during AA3 is $29.1 million and the NPV of the investment is positive after 15.5 years.

As noted above, ATCO is preparing a response to ERA providing updated information and forecasts, leading to a revised NPV analysis. As Zincara has been able to review a draft of ATCO's report and not the final, it is not appropriate for Zincara to include the NPV results at this stage, apart from noting that the draft shows the NPV to be positive. ATCO is also conducting a range of NPV analyses as part of the updated response.

Figure 5-3 NPV of incremental revenue from growth capital investment in AA4



(Source: AAI Figure 65, Section 8.2.1)

All of the major projects are outlined in ATCO's AAI document[30] with some further detail available in Feasibility Study documents.

ATCO is providing further information in its response to ERA relating to the Demand Growth projects.

[28] AAI Figure 65, page 161
[29] AAI Table 31, page 132
[30] AAI section 8.5.2 from pg 185

5.3.3 ERA Draft Decision

ERA[31] has stated that it believes there are two assumptions which do not represent the best forecast or estimate possible to meet the requirements of rule 74(2) of the NGR, which renders ATCO's proposed justification under rule 79(2)(b) invalid.

The first assumption[32] relates to the annual consumption of ATCO's customer base. As the starting point for its assessment of future net revenues from new customers, ATCO has used the average annual consumption of existing customers rather than the average annual consumption of new customers. ERA technical adviser EMCa tested the sensitivity of its results to a change in the level of consumption for B3 customers of 11.5 GJ (3.5 GJ per annum lower than ATCO had assumed), which they suggest is around the level of annual customers connecting in 2011 and 2012, the most recent years for which ATCO provided data. NPV[33] analysis shows a breakeven point at about 26 years.

The second assumption[34] is regarding the rise in prices. ATCO has assumed increases of the order of 5.6 per cent per year through to 2019, though declining thereafter. ERA accepted the advice of EMCa that it did not consider it valid for ATCO to assume price rises that are based on the recovery of higher costs resulting from proposed high levels of capital expenditure, but rather that the NPV analysis should assume that prices would rise only by the inflation rate.

NPV sensitivity analysis[35] to the assumptions of average consumption (11.5 GJ per annum) and price rises (by inflation only) render the NPV negative meaning that ATCO's aggregated growth capital expenditure forecast for AA4 fails the incremental revenue test.

ERA[36] considered that ATCO had not provided any evidence that the large and relatively generic expansion initiative of greenfield customer initiated capital expenditure satisfied the incremental revenue test and therefore, was not satisfied that $146.24 million was justified under rule 79(2)(b) of the NGR.

ERA[37] accepted that ATCO is required under the terms of its licence to offer to connect any service that is on the line of gas main with up to 20 metres of service line. The ERA was satisfied that $9.02 million for brownfield customer initiated capital expenditure is justified under rule 79(2)(c)(iii) of the NGR.

ERA[38] was not satisfied that the following proposed demand spur line projects ($38.63 million) meet the incremental revenue test in rule 79(2)(b) of the NGR:

- Two Rocks (60 per cent of cost or $27.22 million);
- Baldivis ($5.42 million); and
- Peel (22 per cent of costs or $5.99 million).

ERA[39] stated that the feasibility studies that ATCO provided for Two Rocks, Baldivis and Peel did not contain a cost benefit analysis. Moreover, the feasibility study for the Peel project contained insufficient information on the underlying assumptions.

[31] ERA Draft Decision para 462, pg 108
[32] ERA Draft Decision para 463, pg 108
[33] EMCa Report para 414
[34] ERA Draft Decision para 464
[35] ERA Draft Decision para 465
[36] ERA Draft Decision para 471
[37] ERA Draft Decision para 472
[38] ERA Draft Decision para 473
[39] ERA Draft Decision para 474

ERA[40] was not satisfied that the following proposed reinforcement projects ($19.67 million) were justified under rule 79(2)(b) of the NGR:

- Capel to Busselton ($5.21 million)
- Other reinforcements ($11.55 million of ATCO's proposed $16.2 million)
- Volume related capital expenditure and regulating facilities ($2.91 million)

ERA[41] stated that ATCO had identified weak pressure areas that require reinforcement to enable the connection of new customers. As a result ATCO has proposed $16.2 million for 21 reinforcement projects. The $16.2 million consists of $5.3 million for the Pinjarra reinforcement and $10.9 million for 20 smaller reinforcement projects that are detailed in Table 31 of ATCO's AMP. ERA has accepted EMCa's advice that there was insufficient justification of these reinforcement projects and accepted a pro-rata adjustment to ATCO's proposed $16.2 million for these reinforcement projects.

ERA[42] stated that ATCO's proposed growth capital expenditure on volume related capital expenditure and regulating facility projects did not meet the incremental revenue test in rule 79(2)(b) of the NGR, because ATCO had not provided a cost benefit analysis to demonstrate that its proposed growth capital expenditure is justified.

ERA[43] decided that $24.0 million on growth capital expenditure for AA4 was conforming under rule 79 of the NGR. The expenditure covered the following projects:

- Elizabeth Quay and Perth CBD project;
- $4.7 million of the proposed reinforcement projects; and
- Brownfield customer initiated projects.

Note: ATCO subsequently advised Zincara that it had received confirmation from ERA in an email dated 6 November 2014, stating that ERA is "…satisfied that $10.09 million for brownfield customer initiated capital expenditure is justified under rule 79(2)(c)(iii) of the NGR not $9.02m as stated in paragraph 472."

Table 5-5 Greenfield Growth Capital Expenditure

$million Real at 30 June 2014	ATCO Proposed	ERA Approved	
		Approved	ERA reference
Customer Initiated			
Brownfields	10.09	10.09	Email[44]
Greenfields sub-divisions	146.24	Nil	Para 471
Customer Initiated Total	**156.31**	**10.02**	5.5
Demand			
Two Rocks	27.22	Nil	Para 473 & 474
Baldivis Spur	5.42	Nil	Para 473 & 474
Peel Spur	5.99	Nil	Para 473 & 474
Elizabeth Quay & CBD	9.3	9.3	Para 479
Capel-Busselton reinforcement	5.21	Nil	Para 475
Other reinforcements	16.2	4.7	Para 475
Volume related demand	2.91	Nil	Para 478

[40] ERA Draft Decision para 475
[41] ERA Draft Decision para 477
[42] ERA Draft Decision para 478
[43] ERA Draft Decision para 481
[44] ERA email to ATCO dated 6 November 2014

Demand Total	**72.22**	**14.0**	
Growth Capex Total	**228.53**	**24.00**	Para 481

Source: Zincara analysis based on information in the ERA's Draft Decision

5.3.4 Zincara's Analysis

Zincara's review of the ERA Draft Decision identified two key issues that were particularly dominant in ERA's draft decision not to approve a significant portion of ATCO's proposed greenfields growth capital investment:

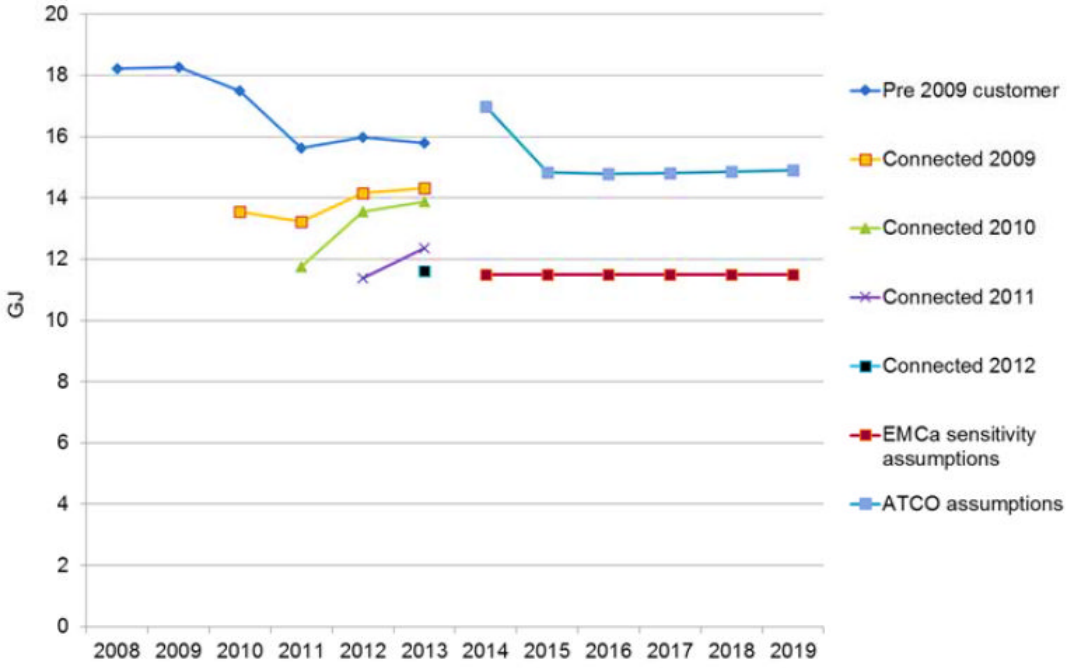
- Greenfields B3 customer initiated consumption forecasts, price increase forecast and related NPV analysis;
- Demand capex – project justifications

5.3.4.1 Greenfields B3 Customer Initiated Consumption Forecast and related NPV

New customer consumption levels

EMCa produced Figure 41 (reproduced below) which shows differing annual consumption between newly connected customers and existing customers. The graph also shows ATCO's assumption for forecast consumption and EMCa's forecast using its sensitivity assumptions.

Figure 5-4 New B3 customer annual consumption levels:



Source: EMCa's Report: Figure 41

The consumption rate proposed by ATCO in the AAI had been based on the average consumption across the whole network and adjusted for changed impacts such as 6-star housing, solar, electric split air conditioning systems and weather patterns. Because there is a material difference in consumption levels between the average existing customers and connections made in recent years, as depicted in the above graph, it is Zincara's opinion that ATCO's AAI assumption to apply average consumption of network customers rather

than forecast based on newer customer connections results in the forecast being overstated and as such does not satisfy rule 74.

However, Zincara has also reviewed ATCO's draft response[45] to ERA, whereby ATCO has accepted that the average consumption of new customers is the relevant consumption for assessing the NPV for growth investment and has developed updated modelling to assess consumption, connection numbers and incremental revenue enabling an improved accuracy for the forecast and the NPV analysis. In respect to the average consumption per new customer, Zincara considers that the methodology adopted by ATCO is reasonable. On this basis Zincara believes that this approach and assumptions satisfy 79(1) and 74.

In updating its forecast consumption levels and connections, ATCO has engaged Core Energy to update its Demand Forecast and also provide forecast for new greenfields customers.

Revenue assumptions[46]

ATCO has assumed increases of the order of 5.6 per cent per year through to 2019, though declining thereafter. ERA has accepted EMCa's advice that it is not considered valid for ATCO to assume price rises that are based on the recovery of higher costs resulting from proposed high levels of capital expenditure. EMCa considers that the NPV analysis should assume that prices would rise only by the inflation rate.

ATCO's draft response report[47] provides further information in support of its revised approach considering two test scenarios, being economic value test and the incremental revenue test. Zincara agrees with ATCO's approach to pricing on the basis that they are reasonable and apply tariffs as determined, using current tariffs or reference tariffs and therefore complies with rule 79(2).

With respect to the graph prepared by EMCa (reproduced in Figure 5-4), EMCa has chosen a level of 11.5 GJ[48], which it says is around the level of annual customers connecting in 2011 and 2012, the most recent years for which ATCO provided data. Based on the information in Figure 5-4, Zincara believes that this level is at the lower end of consumption and hence is conservative (low) for new connections. Using the first year of connection does not allow for customers connecting at various times during the year. Even using the second year data is questionable as there may not be critical mass to wash the effect of connection timing. Effectively the third year would give a more realistic figure.

Zincara has also reviewed ATCO's approach and assumptions outlined in the draft response to ERA, specifically sections titled "Greenfield development" (page 35), Proposed greenfield's activity – locations" (page 39) and "Timing and "Amended NPV analysis for greenfields" (page 39-40). In Zincara's opinion these form a reasonable basis for the forecasts and with a positive NPV, complies with rules 74, 79(1)(b) and 79(2).

[45] Projected Capital Expenditure Chapter (draft) emailed to Zincara 19 November 2014 – Average consumption of new customers, page 20
[46] ERA Draft Decision para 464
[47] Projected Capital Expenditure Chapter (draft) emailed to Zincara 19 November 2014 – Appropriate price, page 23
[48] EMCa Report para 411

5.3.4.2 Demand capex – project justifications

In relation to the project justifications for the demand capex projects, the ERA has said (discussed in Section 5.3.3) that there is insufficient information to justify the projects.

ATCO's updated response document provides a cohesive and reasoned justification for the demand projects which goes to address concerns relating to the initial submission. While Zincara has seen a draft of this response document, rather than a final version, due to timing constraints, there is clear evidence that projects have more robust justifications to comply with rule 79(1) and 79(2).

6. NETWORK OPERATING EXPENDITURE

6.1 BACKGROUND

Network operating expenditure is the expenditure required to operate the Network based on the AMP and asset class strategies designed to reduce the life cycle costs of assets whilst maximising asset performance and reducing risk to *as low as reasonably practicable* in accordance with the Safety Case. Rule 91 provides that "Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently in accordance with accepted industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

ATCO[49] states that its key drivers for the forecast increase in incremental recurring and one off expenditure in network operational expenditure are as follows:

- The implementation of the Safety Case
- New and amended obligations, legislation, rules, regulations and functions
- Business improvements and support through the utilisation of IT
- Growth in gas connections and network augmentation

Incorporating these new recurrent and one off costs results in the overall network operating costs per customer increasing until 2016 and then remaining constant for the remainder of AA4.

This report focuses on the expenditure increases in network operating expenditure over time.

6.2 NETWORK OPERATING COSTS

Forecast network operating costs by category: 2014 to 2019

Table 6-1 Forecast Network Operating Costs. 2014 – 2019

$million Real at 30 June 2014	July to Dec 2014	2015	2016	2017	2018	2019	Total
Network Maint – Variable Vol	4.4	8.5	8.8	9.4	9.6	9.8	50.5
Network Maint - Projects	1.0	2.1	1.9	1.9	1.8	2.1	10.9
Network Maintenance	3.0	6.6	7.8	7.6	8.1	8.5	41.6
Network Control	2.6	5.3	5.5	5.6	5.8	6.0	30.8
Network Operations Support	3.6	8.0	8.1	8.3	8.4	8.5	44.8
Network Construction	0.4	0.8	0.8	0.8	0.8	0.8	4.4
Network Total	**15.0**	**31.3**	**32.9**	**33.6**	**34.5**	**35.7**	**183.1**

Source: AAI Table 17, page 84

ATCO has attributed much of the proposed increase in network operating costs to the finalisation and implementation of the Safety Case, which underpins the Asset Management Plan and associated programmes of work. The initiatives associated with these programmes have been predominantly categorised as "incremental recurring costs" and "one-off costs" and are required to ensure the Network is reliable and to reduce

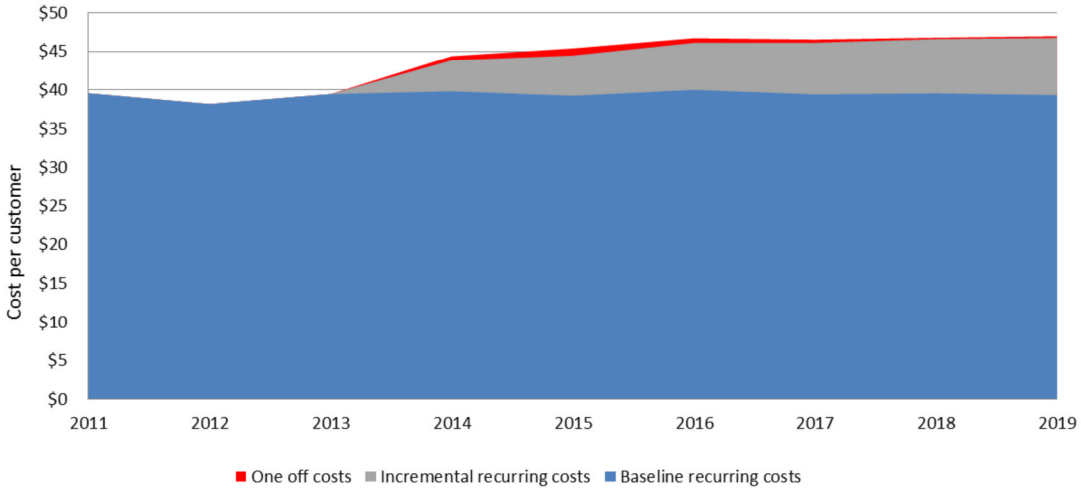
[49] AAI section 6.8.2

network risks to as low as reasonably practicable. In AAI Section 6.8.2, ATCO has assessed the drivers of changes to network operating costs by considering:

- *Baseline recurring costs* that will continue into AA4, which include recurring costs required to operate and maintain the growing customer base and footprint of the Network (proposed expenditure of $156.3m during AA4).
- *Incremental recurring costs* that relate to new requirements or activities predominantly required to comply with the Safety Case, in AA4 but are expected to continue (proposed expenditure of $24.9m during AA4).
- *One off costs* that relate to new requirements or activities predominantly required to comply with the Safety Case, in AA4 but are not expected to continue (proposed expenditure of $1.8m).

The following figure shows that baseline recurring network operating costs per customer are expected to decline during the AA4 period, while the increases in one-off and new incremental recurring costs result in Network operating costs per customer increasing until the end of 2016 and then remain constant in 2017 and for the remainder of the AA4 period. These increasing costs are the result of new requirements or regulations.

Figure 6-1 Actual and Forecast Network Operation Costs per Customer 2011 - 2019



Source: AAI Figure 43, page 91

6.2.1 Incremental Recurring and One Off costs

Based on the above information, the baseline recurring costs are not expected to be materially different from the costs incurred in AA3 (approximately $28.4m p.a.) and one-off costs are immaterial (approximately $0.3m p.a.). The expected increase in network opex is largely driven by the inclusion of incremental recurring costs (approximately $4.5m p.a.). Incremental recurring and One-off network operating costs 2014 to 2019 are summarised in the following table:

Table 6-2 Network Operating Costs 2014 -2019

$million Real at 30 June 2014	2014	2015	2016	2017	2018	2019
Baseline recurring costs	**26.9**	**27.1**	**28.3**	**28.5**	**29.2**	**29.6**
Incremental recurring costs						
Leak Survey	0.5	0.5	0.6	0.6	0.6	0.6
Facilities Maintenance Cathodic Protection	0.2	0.3	0.3	0.4	0.4	0.5
Commercial Meter Change	0.2	0.2	0.3	0.5	0.4	0.3
Systems Monitoring	0.1	0.1	0.2	0.2	0.2	0.3

Inspections of Gas Fitters	0.4	0.4	0.7	0.7	0.8	1.0
Proving gas mains location	0.1	0.1	0.1	0.1	0.1	0.1
Safety Awareness	0.5	0.5	0.5	0.5	0.5	0.5
Dial Before You Dig	0.0	0.1	0.2	0.2	0.3	0.3
Technical Compliance Inspectors	0.5	0.6	0.6	0.7	0.7	0.8
HSE	0.1	0.3	0.3	0.3	0.3	0.3
Asset Services	0.0	0.2	0.2	0.3	0.3	0.3
Market Services	0.0	0.2	0.4	0.5	0.5	0.6
Total Incremental recurring costs	**2.7**	**3.6**	**4.3**	**4.8**	**5.2**	**5.6**
One off costs						
In-Line inspections	0.4	0.4	0.1	0.1	0.1	0.2
PVC Studies	0.0	0.1	0.1	0.0	0.0	0.0
Pressure Vessel Inspection at PRSs	0.0	0.2	0.2	0.2	0.0	0.0
Total one off costs	**0.4**	**0.6**	**0.4**	**0.3**	**0.1**	**0.2**
Total network operating expenditure	**30.0**	**31.4**	**33.0**	**33.6**	**34.5**	**35.3**

Source: ATCO's AAI Table 20, page 93
Note: 2014 is a full year – for the AA4 period, 2014 is only half year

The Incremental Recurring expenditures and also the One-off expenditures proposed by ATCO are detailed in the AAI[50] with additional information is provided in the email response to question EMCa 61.

6.3 ERA DRAFT DECISION

ERA[51] advised that its assessment of network operating expenditure has been focussed on incremental recurring costs and their interrelationship with the baseline recurring costs. This is because most of the forecast increase in expenditure is covered by this group.

ERA's approved expenditure compared to ATCO's proposed expenditure is shown in the table below.

Table 6-3 Network Opex Forecast - ATCO Proposed and ERA's Approved (AA4)

$million Real at 30 June 2014	July to Dec 2014	2015	2016	2017	2018	2019	Total
ATCO Proposed							
Baseline Recurring	13.6	27.1	28.3	28.5	29.2	29.6	156.3
Incremental Recurring	1.2	3.6	4.3	4.8	5.2	5.6	24.7
One-off	0.2	0.6	0.4	0.3	0.1	0.2	1.8
ATCO Proposed Network Operating Expenditure	**15.0**	**31.3**	**33.0**	**33.6**	**34.5**	**35.4**	**182.8**
ERA Approved							
Baseline Recurring	13.6	27.1	27.1	27.1	27.1	27.1	149.1
Incremental Recurring	1.2	3.6	3.6	3.6	3.6	3.6	19.2
One-off	0.2	0.6	0.4	0.3	0.1	0.2	1.8
Sub-total Approved	**15.0**	**31.3**	**31.1**	**31.1**	**31.1**	**31.1**	**170.1**
Labour Cost De-escalation		*(0.4)*					
IT Efficiency Gain	*(0.55)*	*(1.1)*	*(1.1)*	*(1.1)*	*(1.1)*	*(1.1)*	*(6.05)*
ERA Approved Network Operating Expenditure	***14.45***	***29.8***	***30.0***	***29.9***	***29.7***	***29.8***	***163.65***

Source: Table 12, ERA Draft Decision, page 58
Note: Labour De-escalation and IT Efficiency Gain deductions have been included in this table for completeness, but are not covered by this Zincara report.

[50] AAI pages section 6.8.2, pages 93-103
[51] ERA Draft Decision para: 219

ERA's[52] gave the following reasons for its decision:

1. ATCO's approach in forecasting baseline recurring and incremental recurring network operating expenditure leads to a significant overstatement of forecast expenditure; and
2. ATCO's proposed risk thresholds for forecast baseline recurring and incremental recurring network operating expenditure, have not been assessed in the manner required by the relevant standards AS/NZS4645 and AS2885.

ERA has assessed that ATCO's one-off network operating expenditure of $1.80 million satisfies rule91 of the NGR.

ERA's two concerns are discussed in the following sections:

6.3.1 ATCO's Forecasting Approach.

ERA[53] stated that ATCO's operating expenditure is based on the relevant managers manually forecasting future maintenance at an activity level which ATCO then consolidates into its total forecast. ERA is concerned that this approach results in a significant overstatement of forecast expenditure.

Therefore ERA's view is that ATCO's proposed allowance for baseline and incremental recurring opex is not consistent with the principles in rule 74(2) (i.e. the forecast does not represent the best estimate arrived at on a reasonable basis). The ERA is also not satisfied that the proposed expenditure is consistent with the prudent service provider test in rule 91(1). The ERA believes that a prudent service provider acting in the manner prescribed in this rule would:

- consider the baseline and incremental recurring activities in an integrated manner, rather than just accepting the baseline activities and costs as a given and adding on the costs associated with the incremental activities;
- explicitly take into account the factors listed in EMCa's report, when working out its work plan and projected costs; and
- continuously seek out ways to optimise its monitoring and maintenance activities (or at a minimum conduct an annual review as part of an asset management review process), with a view to trying to achieve the lowest sustainable cost of service delivery.

6.3.2 ATCO's Risk Thresholds

ATCO has said that its incremental recurring expenditure is driven by the need to "comply with Safety Case". However, ERA[54] believes that the incremental recurring expenditure is largely driven by the risk thresholds that ATCO has applied when conducting Formal Safety Assessment (FSA).

ERA[55] states that, according to EMCa, the risk thresholds that ATCO has adopted are not prescribed in the relevant safety standards (AS/NZS4645 and AS2885), nor are they mandated by EnergySafety. The risk thresholds are predominantly based on ATCO's own risk appetite, and are low by industry standards. Furthermore, ATCO has not justified these thresholds in the manner required by the relevant standards AS/NZS4645 and

[52] ERA Draft Decision: para 236
[53] ERA Draft Decision: para 222
[54] ERA Draft Decision para: 225 and also EMCa Report para 508, page 149
[55] ERA Draft Decision para: 226

AS2885. ERA considers that these risk thresholds would give rise to inefficiently high levels of incremental recurring network operating expenditure.

6.3.3 ERA's "Revealed Cost Approach"

ERA[56] stated that EMCa considers that a revealed cost approach provides a reasonable means of determining a prudent and efficient forecast for network operating expenditure and that the actual costs incurred by ATCO in 2013 form a reasonable basis for forecasting ATCO's recurring operating expenditure.

Using ATCO's[57] recurring network operating expenditure in 2013 as a baseline for determining forecast expenditure in AA4, EMCa has then considered whether there is a reasonable justification to increase or decrease the forecast expenditure to reflect:

- costs of complying with new regulatory obligations in the fourth access arrangement period , including Safety Case requirements that were not part of incurred operating expenditure in the third access arrangement period;
- forecast increase in demand in the fourth access arrangement period, noting that EMCa has found that a significant proportion of ATCO's proposed expenditure on growth capital expenditure has not been justified under rule 79 and so the effect will not be as significant as ATCO may otherwise have assumed;
- productivity improvements in the fourth access arrangement period, when accounting for efficiencies associated with the new recurring activities; and/or
- unit cost increases in the fourth access arrangement period, which in aggregate increase the cost forecast by around five per cent.

ERA[58] is of the view that ATCO's allowance for baseline and incremental recurring expenditure should be based on ATCO's proposed level in 2014 and 2015, but capped for the remainder of AA4 for the reasons:

- ATCO will carry out some incremental activities in AA4 to comply with Safety Case which will result in a step increase from 2013 up to the 2015 level
- By 2015, ATCO would be in a position to realise efficiencies as outlined in para 224 of the Draft Decision.
- The majority of the proposed investment in the Two Rocks, Peel and Baldivis spur lines and the greenfield subdivision developments is expected to occur post 2015, so there is little need to make a downward revision from the 2015 level to reflect ERA's draft decision with respect to these projects.

ERA has rejected the labour escalation[59] and as a result has removed the amount of labour escalation included in ATCO's proposed baseline and incremental recurring operating expenditure in 2015. ATCO did not apply a labour escalation in 2014.

ERA[60] also notes that most of ATCO's business cases refer to productivity and efficiency gains from proposed Capex but ATCO has not provided evidence that it has quantified these gains or accounted for them in the proposed AA4 Opex.

[56] ERA Draft Decision para: 227
[57] ERA Draft Decision: para 228
[58] ERA Draft Decision: para:229; also EMCa para 514, page 151
[59] ERA Draft Decision: para 214
[60] ERA Draft Decision: para 232

6.4 ZINCARA'S ANALYSIS

Zincara's findings and opinions focus on the incremental recurring costs and their interrelationship with the baseline recurring costs along with the reasons stated by ERA for capping the network operating expenditure.

6.4.1 ATCO's Forecasting approach

ERA[61] stated that ATCO's proposed allowance for baseline and incremental recurring costs does not satisfy:

- Rule 91(1): "*Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.*"
- or the principles in rule 74(2): "A Forecast or estimate:
  - Must be arrived at on a reasonable basis; and
  - Must represent the best forecast or estimate possible in the circumstances"

There are several references throughout the ERA Draft Decision report and EMCA's "Review of Technical aspects of the proposed access arrangement" report that indicate ATCO's proposal, in ERA's opinion, is based on a *bottom up activity based cost build* in which ATCO has provided *insufficient evidence* of the *cost efficiencies* that may be associated with carrying out new and existing activities in an *optimised and integrated manner* (eg economies of scale and other efficiencies). The required timing of some of the proposed activities is also questioned, suggesting that some may not be required until AA5 due to the extensive Sustaining Capex programme.

In particular, there are concerns regarding ATCO's approach in forecasting incremental recurring costs which ERA believes results in a significant overstatement of forecast expenditure, together with insufficient governance of and challenge to this aspect of the forecasting process and the assumptions made.

ATCO[62] has developed the revisions in this access arrangement proposal, particularly the operating and capital expenditure forecasts, using information generated via its annual business planning process. ATCO's annual business planning takes into account risk, historical and forecast performance, the external environment and future demand. Action plans are then developed to set out the plans, programmes and strategies to meet the objectives. Measureable performance indicators and targets are established to monitor the organisation's performance.

ATCO's stated corporate objectives include growing connections and throughput growth whilst maintaining operational excellence and efficiency, and achievement of these objectives is supported by ATCO's AMP, which is developed as part of the network planning process. An overview of ATCO's business planning process is shown in this report (see Section 4).

ATCO's presentation to ERA and EMCa in April 2014 "Overview of expenditure: Business planning and performance" outlines ATCO's business planning process, including inputs to the plan from Business Units. The presentation also includes "investment governance" which shows the process flow from "5 year plan" to "investment management framework" to "project management framework" and then "performance management framework". Within the same presentation "asset management objectives" include promoting continuous improvement, proactive risk management, ensuring prudent and efficient investment, and basing decisions on reliable asset information. Finally, "business

[61] via EMCa report Table 29 (page 141)
[62] AAI 3.3

planning and asset management framework" outlines the various asset strategy and planning functions.

In review of these frameworks and processes it is Zincara's opinion that the range of functions and activities established by ATCO for the management of the distribution business align with rule 91(1) and the principles in rule 74(2) and compares favourably with good industry practice among Australian gas distribution businesses. Based on review of ATCO's operational performance, as judged by the wide range of KPIs and benchmarking results, Zincara believes that ATCO is a prudent and efficient service provider.

In Zincara's experience, ATCO's current business practices represent a good demonstration of its management governance and approach in reviewing improvement proposals developed by line managers. This is further illustrated by the clarifications in email responses, such as EMCa31 describes the "top-down" challenge process applied by ATCO executives. It notes four levels of challenge and review:

- ATCO Executive Management review;
- AA4 Steering Committee
- ATCO Board
- ATCO Office of the Chair

Zincara has reviewed a number of the responses to email questions that were submitted during the ERA review process. As an example, email response EMCa20 (a) to (d) which outlines the process for project management estimates and also the process for forecasting variance volume opex.

With respect to ATCO using a bottom up approach for the development of incremental recurring proposals for AA4, it is Zincara's opinion that this is appropriate and essential for ensuring ownership and accountability by operating line managers. It demonstrates a mature, effective and good industry practice. In Zincara's view, evidence of governance and challenge processes by senior managers is evident in the business frameworks ATCO has in place. ATCO's performance against its operational KPIs is generally of a good to high standard when compared to gas industry peers. Reference is made to the Australian distribution businesses benchmarking studies and KPI reports (e.g. email response EMCa58).

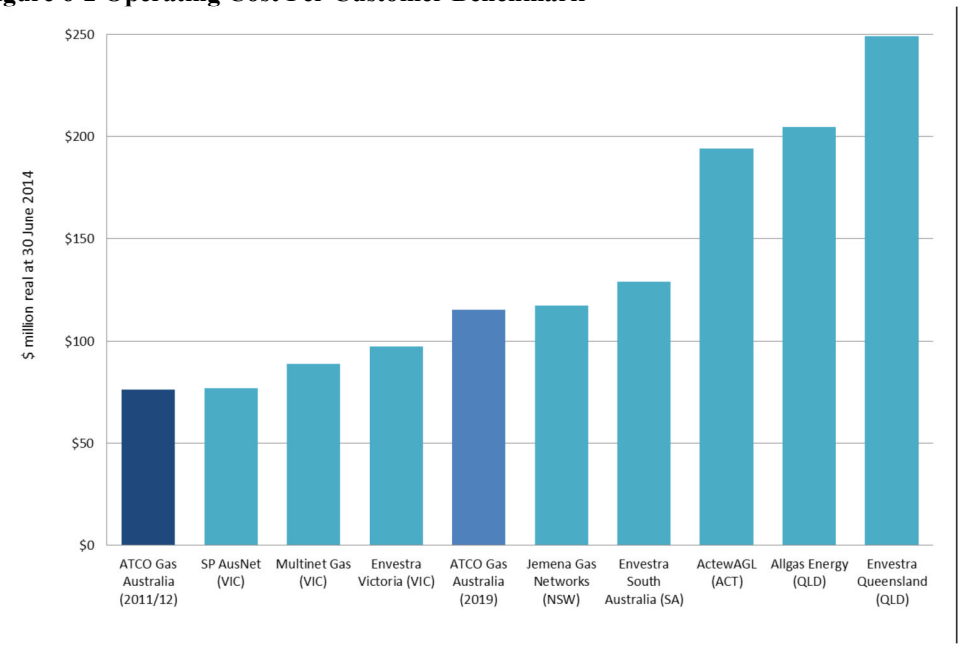
Zincara therefore believes that expenditure forecasts built-up using a combination of historical unit costs, market tested rates and forecast resource requirements is in accordance with rule 74 (1) and (2). Market tested rates will provide the lowest sustainable cost for delivering services, whether the resources are external or internal.

6.4.2 Benchmarking

Benchmarking provides a useful guide to the performance of the distribution business when compared to its peers. ATCO has provided a number of charts in its AAI and other supporting information. Zincara has reproduced below the graph showing operating costs per customer at the end of AA4[63]. In Zincara's view ATCO's group of peers, given their relative size includes, SP Ausnet, Mulinet Gas, Envestra Victoria, Jemena Gas Networks (NSW), and Envestra South Australia. The graph shows ATCO's operating costs per customer at 2011/12 and as forecast in 2019. While the increasing cost per customer changes ATCO's "position" in the graph, it still confirms that its costs forecast for 2019 are within the range of its peers, supporting the view that its performance aligns with rule 91(1).

[63] AAI Figure 30

Figure 6-2 Operating Cost Per Customer Benchmark



Source: AAI Figure 30: Operating cost per customer benchmark

6.4.3 Cost-benefits

In its response to email EMCa39, ATCO stated that there is a reliance on the ongoing commitment of its workforce to carry out the following:

1. implement improvement initiatives on the job;
2. incorporate savings and lessons in forward planning and estimation processes;
3. follow probity and procurement policies and competitive tender guidelines; and
4. engage in and encourage testing of options; and
5. execution through managerial and peer review processes.

Further, response to email EMCa35 advises that as a result of proposed capital works programmes, ATCO is forecasting a 2.5% saving in Network operating expenditure during AA4 which is approximately $4.8m, against forecast of $183m outlined in Section 6.3 of the AAI. A table in this email details the capital works programme (including mains replacement) and the savings effect in opex variable volume. Specifically the table stated that the mains replacement programme will result in Class 2 leak repair savings of approximately $730k and Class 3 leak repair savings of approximately $950k over the AA4 period which are included in the overall saving noted above. The email states that these savings have been incorporated into the AA4 forecasts. Response emails EMCa03 and EMCa57 also discuss benefits arising in network operating expenditure.

While accepting that this information has not been explicitly demonstrated in the AAI, Zincara believes these provide evidence that benefits are incorporated in its budgets and forecasts and that ATCO has prepared a cost efficient forecast using the best available information in compliance with rule 74.

6.4.4 Risk Assessment

ERA (per EMCa report) believes that the risk thresholds ATCO has applied when identifying ALARP related recurring opex are low by industry standards and contrary to

AS/NZS4645 or AS2885 and no cost benefit assessment of this work has been undertaken.

Zincara has provided analysis and opinion regarding risk assessment and thresholds applied by ATCO. Refer to Section 3 of this report. In summary, it is Zincara's opinion that ATCO's risk thresholds are in accordance with Standards and hence comply with NGR and that they also compare with those of its gas industry peers.

ATCO has advised that it will be providing further explanation regarding its compliance with AS/NZS4645 and AS2885 with respect to its risk model and thresholds. Zincara understands that this response will also include a "Network Risk Management Flowchart" which outlines the process in place.

Field Inspections – risk assessment[64]

By way of example, Zincara has reviewed the risk assessment undertaken by ATCO for Field Inspections. These inspections are included in Incremental Recurring activity of "Technical compliance & field inspections"[65]. It is Zincara's opinion, based on extensive operational and risk assessment experience in the gas industry, that the methodology and process applied for the risk assessment is logical and thorough, and as would be performed by a prudent gas distribution business. Conducting audits on a sample of field activities, based on their risk profile, leads to a cost effective and efficient outcome and one that can be reviewed in line with faults found or incidents arising either with individual field operatives or field activity type. The risk assessment covers all field operations to determine the risk ranking for each activity. Applying the number of tasks performed in a year and then calculating the number of inspections for each field activity based on risk and nominated sample size, leading to an overall calculation of field audits required. The outcome enables calculation of resource requirements.

In Zincara's opinion the risk thresholds applied for this risk assessment and the approach to calculation of resources, represent good industry practice among Australian gas distribution businesses and are in accordance with AS/NZS4645 which is the predominant standard for much of ATCO's Opex activities.

6.4.5 Incremental recurring Expenditure activities

Zincara has reviewed each of the incremental recurring initiatives outlined in the AAI and provides the following comment on findings regarding assumptions and approach. It is Zincara's opinion, supported by many years of operational experience, that these activities will be incorporated into the baseline recurring activities with operational managers revising their work programmes accordingly. Unit rates and volumes reflect the overall costs for the programmes. Once incorporated into work programmes managers will plan and issue work to achieve maximum productivity from the workforce, as would be expected with a prudent service provider. Zincara's review of business planning and performance management frameworks, along with KPI performance results provides assurance that ATCO management and staff have been operating effectively and Zincara does not see any reason to suggest that this approach will change in the future. For these reasons, Zincara believes that ATCO complies with rule 91(1) and that its forecast estimates represent the best estimates possible, in accordance with rule 74.

The incremental recurring initiatives have been described in AAI[66] and summarised in Zincara's report, see Section 6.2.1 above. Email response to EMCa61 also provides further supporting information. Zincara's findings and opinions relating to each of the Incremental Recurring initiatives are as follows:

[64] Email response EMCa12
[65] AAI page 99
[66] AAI page 93-103 and also Table 20

Leak Survey

Undertaking an FSA for this critical activity is prudent. The resulting increase in annual leak surveys for high risk locations, high risk pipelines and CBD streets is in line with addressing high risk areas and the risk assessment does not, in Zincara's opinion represent a low threshold, as it aligns with practices implemented by other distribution businesses. ATCO notes that there are additional costs also included to enhance process compliance required by Energy Safety. Zincara's direct experience with such targeted leak surveys supports ATCO's assertion that it will experience an increase in leak repairs. There are safety and security of supply benefit arising from rectifying these leaks in high risk areas (particularly where there are higher population densities and community sensitive locations) before they escalate to a public reported leak requiring unplanned action. Additional effort required for data processing to address Energy Safety requirements would be ongoing.

Zincara believes that this incremental activity will be incorporated into ATCO's baseline planned survey programmes and similarly repairs will be subject to ATCO's ongoing planned leak repair programme. Zincara also notes that ATCO's forecast shows costs stabilise from 2016 onwards.

EMCa made comment that these leak surveys could be reduced where mains replacement is scheduled. It is Zincara's opinion that such an approach would nullify the risk assessment that initiated the requirement and hence increase the risk profile which is contrary to good operating practice.

EMCa also made a comment that the need for high frequency leak survey would not be required once mains are replaced. While it is expected that leaks should be significantly reduced for these new mains, it does not change the risk consequence presented by leaks in high risk locations. It is Zincara's view, based on operational experience, that the survey programmes will need to continue but there should be a reduction in planned leak repairs in these areas.

Facilities Maintenance Cathodic Protection

There are multiple components within this incremental recurring activity, being maintenance of regulating stations and metering installations (expanded in 2011 to include commercial meters up to $40m^3$ per hour), cathodic protection maintenance, pipeline patrol and HP pipeline location requests. Most of the proportional increase relates to growth of the network activities, noting that some activities are experiencing high increases. Zincara notes that the frequency cycle for maintenance of regulating and metering installations has been shortened to ensure reliable service, but the key impact of expenditure increase will occur by 2015 and then proportionately in line with network growth ongoing.

Zincara considers these activities to be essential for the safe and prudent management of the network, so capping expenditure at 2015 level is not appropriate, subject to the level of network growth over AA4. The activities included in this incremental recurring initiative are performed by specialist skilled field personnel and the work volumes would be incorporated into their baseline work programmes. Zincara does not envisage any other "integration" benefits and given the comments above, believes that this activity satisfies rule 74 and 91(1)

Commercial Meter Change

This activity is subject to the lifecycle of the commercial meter families and is required to comply with GSSS Regulations. Expenditure variations reflect the number of meters forecast for replacement during the years of AA4. Zincara agrees with this incremental recurring activity and it is not appropriate to cap expenditure at 2015 level. This incremental recurring activity will be incorporated into ATCO's meter change programme and Zincara does not envisage any other "integration" benefits. In Zincara's opinion, this activity satisfies rule 74 and 91(1).

Systems Monitoring

Apart from some specific initiatives such as increasing the number of devices being installed and monitoring all regulator stations, Zincara considers that the expenditure increase over AA4 is largely network growth related from 2015 onwards and hence subject to approved growth levels. However, if growth is in line with ATCO forecast then expenditure needs to increase throughout AA4 accordingly. Zincara considers that the maintenance of these assets and effective monitoring of the network are critical to the safe and reliable operation of the network. Zincara believes that these activities will be incorporated into the baseline activities and managed as a programme of works. Benefits arising from this initiative are the reduced likelihood of component failures and associated reactive fault repairs along with the enhanced reliability of network operation. EMCa made a comment that the telemetry should reduce the need for as much on site attendance. In Zincara's opinion this is correct if the "fault" could be identified as a false alarm by the monitoring controller. Otherwise response to faults does not change. Given the above comments, in Zincara's opinion, this activity satisfies rule 74 and 91(1).

Inspections of Gas Fitters

Zincara considers that this programme is important in ensuring the safety of consumer gas installations. It also provides a cost effective approach by way of sampling rather than inspection of all gas installation work. ATCO has forecast an ongoing increase in expenditure to support the programme. Zincara considers that the ongoing increase is related to network growth and should not be capped at 2015 level, subject to ongoing growth forecast. ATCO advises that the work is typically performed by Customer Service operatives and hence volumes would be incorporated into their baseline recurring programmes. Given the above comments, in Zincara's opinion, this activity satisfies rule 74 and 91(1).

Proving gas mains location

ATCO forecasts this incremental activity expenditure as being steady throughout AA4. Zincara confirms that it is an important activity and is dependent on the number of requests by building contractors etc to locate the gas mains following an increase in DBYD requests. Zincara therefore, considers it appropriate to forecast an increase in expenditure and considers that this activity satisfies rule 74 and 91(1).

Safety Awareness

Public awareness campaigns play a vital role in informing the public in the safe use of natural gas and particularly ensuring proper maintenance of appliances. In other states, this role may be performed by the Safety Regulator on behalf of the industry. Zincara agrees that this initiative is important to the safe use of natural gas. The expenditure forecast per annum is steady throughout the AA4 period. In Zincara's opinion, based on the above comments, this activity satisfies rule 74 and 91(1) .

Dial Before You Dig

Zincara confirms that this activity is such that would be incurred by a prudent service provider and important to the safe operation of the network and a vital service to the construction industry in particular. From its observation in other states, increasing awareness of the service will result in a significant growth in DBYD requests.

ATCO is also proposing technology improvements to facilitate quick access to information which Zincara believes that the improvements will provide financial benefits in reducing the cost per request. This will result in only a moderate expenditure increase during the AA4 period and ATCO advises that it will not need to increase FTE operating costs[67] to

[67] Refer email response EMCa 03

manage the increased volume of requests. Email response EMCa57 states that the benefit is a cost avoidance saving of approximately $400k over the AA4 period.

While there is an element of increase in line with network growth, the programme is more subject to request activity as awareness becomes even more prevalent. As such, Zincara does not believe that capping expenditure for this programme at 2015 level is prudent or appropriate. The increasing volume of requests and associated requests for field proving are incorporated into ATCO's baseline recurring programme. On the basis of the above comments, Zincara believes that this activity complies with rule 74 and 91(1).

Technical Compliance Inspectors

ATCO's FSA of field activities has refined the level and type of inspections which has resulted in a significant increase requiring additional resources. ATCO has applied sampling based on the risk rating of the field activity. Zincara has reviewed the risk assessment and agrees with its methodology and outcome, being prudent and in line with good industry practice. Zincara's experience with field operations and field inspections acknowledges the critical benefit of this approach in addressing field skills and processes at the worksite. Feedback to field operatives provides an invaluable benefit in maintaining good field practices and opportunities to rectify sub-standard practices at the site. Zincara notes that while the majority of the expenditure increase occurs by 2015, it does not believe it prudent to cap expenditure at that time, as this will have the impact of limiting the sampling rate of field inspections. The incremental inspection activity will be incorporated into baseline recurring activity and programmed with existing inspections. For the above reasons, Zincara believes that this activity complies with rule 74 and 91(1).

HSE

ATCO's HSEQ system and certifications demonstrates a high standard of achievement and appropriate for the business given its field intensive workforce and associated contractors. Efforts to minimise workplace incidents and injuries is an essential management responsibility in cooperation with an active participation by the workforce. Programmes outlined with this incremental recurring initiative have merit and in Zincara's experience, a behavioural-based safety programme and targeted manual handling programme reflect prudent and effective approach to HSEQ, particularly in a business which has a relatively high field workforce (including contractors), and represents good industry practice. ATCO's forecast expenditure shows that it will be steady from 2015. This activity is one that would be incurred by a prudent service provider and initiatives as outlined are good industry practice, in accordance with rule 91(1).

Asset Services

As part of its Distribution Licence requirement, ATCO is required to maintain an Asset Management System (AMS). ATCO proposes to update its AMS which was developed in 2002 due to changes in its IT capabilities and asset management needs. ATCO proposes to use the International Standard ISO55001-Asset Management System – Requirements to define its general requirements.

Given that the AMS was developed in 2002, Zincara considers it prudent to update the AMS to current requirements. In Zincara's experience ongoing development of asset management systems enables more targeted analysis and management of the network assets. Zincara therefore believes that this activity complies with rule 74 and 91(1).
.

Market Services

While some of the incremental recurring expenditure is related to ongoing network growth (e.g. meter reading), there is a significant component required to manage customer transfer requests and improving data quality necessary to support information between the distribution business and the various retailers. In Zincara's experience and as noted with

other distribution businesses, the quality of information between industry participants is an ongoing challenge and there are ongoing efforts to improve the accuracy and timeliness of data. Zincara supports ATCO's approach and notes that most of the increasing expenditure does not occur until 2017, so capping it at 2015 level will inappropriately limit ATCO's efforts to meet its market services obligations. Zincara considers this activity provides support to the industry and is therefore prudent and in accordance with good industry practice, in compliance with rule 91(1).

Summary

As noted in the above activities, it is Zincara's view that the changed work volumes arising from the incremental recurring activities will be incorporated into baseline activities. Zincara makes this assessment based on its own experience in the management and review of distribution businesses and following review of ATCO's management methodologies and operational performance. The inclusion of line managers in the development of these proposals also provides added ownership for their successful delivery.

EMCa notes that the expenditure forecast estimates are not reasonable because there is no evidence, in its view, that incremental costs reflect efficient integration arriving at the lowest sustainable cost, but rather the costs are simply additive. It is Zincara's view that the approach previously outlined by ATCO as to its estimating process, is inherently incremental because additional volumes are estimated, unit costs determined (and market tested as appropriate) then incremental costs are calculated as an output. This approach is reasonable and represents typical industry practice for development of operational estimates. Zincara's assessment, based on its operational experience, is that the "separation" of baseline recurring and incremental recurring activities is for the purposes of describing and explaining the changes and new initiatives in a relatively clear manner, rather than the way in which they would be managed by the respective line managers.

In summary it is Zincara's assessment that the estimates are arrived at on a reasonable basis and represent the best forecast possible in the circumstances, in accordance with rule 74.

Zincara is also of the view that, on balance, the incremental recurring expenditure complies with rule 91 (1) on the basis that it would be incurred by a prudent service provider, acting efficiently, in accordance with accepted good industry practice to achieve the lowest sustainable cost of delivering pipeline services.

6.4.6 ERA's revealed cost approach

Restating ERA's decision[68]: "*The Authority is of the view that ATCO's allowance for baseline and incremental recurring expenditure should be based on ATCO's proposed level in 2014 and 2015, but capped for the remainder of AA4 for the reasons:*

- *ATCO will carry out some incremental activities in AA4 to comply with Safety Case which will result in a step increase from 2013 up to the 2015 level*
- *By 2015, ATCO would be in a position to realise efficiencies as outlined in para 224*
- *The majority of the proposed investment in the Two Rocks, Peel and Baldivis spur lines and the greenfield subdivision developments is expected to occur post 2015, so there is little need to make a downward revision from the 2015 level to reflect The Authority's draft decision with respect to these projects"*

Based on Zincara's review and assessment of the Incremental Recurring initiatives, it is concerned that capping the baseline and incremental recurring expenditure at 2015 level

[68] ERA Draft Decision: para 229; also EMCa Report: para 514

may in fact constrain ATCO's efforts to operate the networks in accordance with rule 91(1). As noted in Section 5.4.3 above, Zincara believes that a number of the incremental recurring activities will require additional expenditure beyond 2015 in order to support the activities.

Zincara's opinion is in line with EMCa's review in considering ATCO's operating performance in AA3 and its reason for nominating 2013 operating expenditure as an appropriate baseline. Zincara however extends this view to consider that good management practice in the present is a reasonable basis for assessment of ATCO's management of its AA4 forecasting. It would seem improbable that prudent management methodologies applied to the existing business would be ignored in preparing forecasts for AA4.

Having reviewed the assumptions and approach by ATCO in proposing the Incremental Recurring activities, Zincara is of the view that they represent good practice when compared with ATCO's peers across Australia and typical of a prudent and efficient service provider in compliance with rule 91(1).

The revealed cost approach should therefore only be used as a cross-check against a bottom-up approach.

Zincara also acknowledges that some of the incremental recurring expenditure forecasts are related to forecast network growth and this is subject to ERA's decision regarding growth capex. To the extent that this is reduced in the final decision and ERA determines that there is a proportionate reduction in some of Incremental Recurring expenditure, each activity needs to be judged on its merit and the extent that it relates to growth.

7. CONCLUSION

Based on the above analysis, Zincara has concluded the following:

ALARP

ATCO's risk management framework is consistent with the Australian Standards AS2885 and AS4645.1.(Standards) Its definitions of the risk consequences and risk frequencies are within the guidelines set by the Standards. Similarly, Its risk matrix is also consistent with the Standards.

In its Asset Management Plan and its Safety Case, ATCO has misused the word "ALARP". ATCO has used the term to mean "acceptable risk".

Zincara considers that ATCO's risk management practice is therefore consistent with that of a service provider acting efficiently in accordance with accepted industry practice.

Risk of Loss of Supply

ATCO definition of a catastrophic event is the loss of supply to 25,000 customers. Zincara considers that it is similar to the definitions used by other gas distributors (Envestra, Allgas and Multinet). Zincara therefore considers that the definition is not conservative but is consistent with the Australian gas industry.

Sustaining Capital Expenditure

Sustaining capital expenditure consists of two categories: asset replacement and asset performance and Safety. In regard to asset replacement, ATCO proposes to extend its metallic mains replacement to the fifth regulatory period consistent with the ERA's Draft Decision.

The Asset Performance and Safety Category has been accepted by the ERA except for the HP spur lines projects of:

- Two Rock Spur Line;
- Peel Spur Line; and
- Independency Projects

Zincara considers that the projects are consistent with rule 79(2) (c) as the projects have been justified on the basis they provide a solution to events considered as high risks and the residual risks following the implementation of the projects are low.

Growth Capital Expenditure

Zincara considers that EMCa's use of 11.5 GJ/annum for B3 customers for its NPV analysis is considered low. ATCO reviewed its initial assumption in its Access Arrangement Information and has revised its consumption for B3 customers to 13.6 GJ/annum for a 25 period. The result is a positive NPV.

Zincara therefore considers the greenfields customer initiated capital expenditure to comply with rule 74, 79(1) and 79(2) (b).

ATCO's draft response to the ERA provides a cohesive and reasoned justification for the demand projects. Whilst Zincara has only seen a draft response due to time constraints, Zincara considers the response has more robust justifications to comply with rule 79(1) and 79(2).

ATCO's Capital Expenditure

ATCO's capital expenditure consists of sustaining capital expenditure and growth capital expenditure. As discussed above, Zincara considers that both sustaining and growth capital expenditure meet the criteria in rule79. As such, Zincara considers that ATCO's total capital expenditure complies with rule79 of the NGR.

Network Operating Expenditure

Zincara considers that the bottom up approach for the development of incremental recurring expenditure is appropriate and essential to ensure ownership and accountability by operating line managers. Zincara also considers that ATCO governance structure ensures that the costs are critically reviewed.

Zincara also considers that the ATCO's methodology based on an estimate of additional volumes multiplied by market tested rates to determine the incremental recurring expenditure is typical of industry practice for developing operational estimates.

In relation to additional regulatory obligations such as the Safety Case, Zincara is of the view that the additional responsibility identified in the Safety Case is incremental to ATC's base activities and as such, the cost is therefore incremental to its base costs.

Zincara has analysed the impact of the expansion of the network on the operating expenditure and considers that there is justification for additional incremental costs for a number of activities (e.g. DBYD, preventative maintenance, leakage survey, market services etc). Zincara's analysis also showed that ATCO's estimate of the additional costs due to the expansion of the network to be reasonable and therefore complies with rule 91(1).

There is sufficient information to show that ATCO has incorporated a 2.5% savings into its network operating expenditure for the AA4 period.

In summary, Zincara therefore considers that the incremental recurring expenditure has been arrived at from a reasonable basis and represents the best forecast possible. The expenditure therefore complies with rule 91(1).

Appendix A

Retainer Letter

JOHNSON WINTER & SLATTERY
LAWYERS

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Our Ref: B1299
Doc ID: 66206156.2

6 November 2014

Mr Ed Teoh
Director
Zincara Pty Ltd
11 Alexandra Street
EAST ST KILDA VIC 3183

Dear Sir

ATCO Gas Australia Pty Ltd – ERA Price Determination

We act for ATCO Gas Australia Pty Ltd (**ATCO Gas**) in relation to the Economic Regulation Authority's (**ERA**) review of the Gas Access Arrangement for ATCO Gas under the National Gas Law and Rules for the period July 2014 to December 2019.

As you are aware, on 14 October 2014 the ERA published its Draft Decision on ATCO Gas' Access Arrangement Review Proposal. ATCO Gas wishes to engage you to prepare an expert report in connection with the ERA's Draft Decision.

This letter sets out the matters which ATCO Gas wishes you to address in your report and the requirements with which the report must comply.

Terms of Reference

Legal Framework

A fundamental aspect of the Access Arrangement review and the Draft Decision is the ERA's assessment of the efficiency of proposed expenditure.

In this context the following provisions of the National Gas Rules are of note:

Under Rule 79(1), to be Conforming Capital Expenditure, capital expenditure must, amongst other things:

> "*...be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of providing services*".

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Under Rule 79(1)(b), capital expenditure must also be justifiable. Capital expenditure is justifiable if it meets any of the criteria in Rule 79(2), namely if:

> "*(a) the overall economic value of the expenditure is positive; or*
>
> *(b) the present value of the expected incremental revenue to be generated as a result of the expenditure exceeds the present value of the capital expenditure; or*
>
> *(c) the capital expenditure is necessary:*
>
> *(i) to maintain and improve the safety of services; or*
>
> *(ii) to maintain the integrity of services; or*
>
> *(iii) to comply with a regulatory obligation or requirement; or*
>
> *(iv) to maintain the service provider's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred (as distinct from projected demand that is dependent on an expansion of pipeline capacity); or*
>
> *(d) the capital expenditure is an aggregate amount divisible into 2 parts, one referable to incremental services and the other referable to a purpose referred to in paragraph (c), and the former is justifiable under paragraph (b) and the latter under paragraph (c).*"

Rule 91(1) provides:

> "*Operating expenditure must be such as would be incurred by a prudent service provider acting efficiently, in accordance with accepted good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.*"

Rule 74 provides:

> "*(1) Information in the nature of a forecast or estimate must be supported by a statement of the basis of the forecast or estimate.*
>
> *(2) A forecast or estimate:*
>
> *(a) must be arrived at on a reasonable basis; and*
>
> *(b) must represent the best forecast or estimate possible in the circumstances.*"

Rule 75 provides:

> "*Information in the nature of an extrapolation or inference must be supported by the primary information on which the extrapolation or inference is based.*"

Capital expenditure is defined as:

> "*...costs and expenditure of a capital nature incurred to provide, or in providing, pipeline services.*"

Operating expenditure is defined as:

> "*...operating, maintenance and other costs and expenditure of a non-capital nature incurred in providing pipeline services and includes expenditure incurred in increasing long-term demand for pipeline services and otherwise developing the market for pipeline services.*"

Opinion

Your report is prepared in the context of assessing whether ATCO Gas is an efficient operator.

ATCO Gas wishes to engage you to prepare an expert report:

1 reviewing ATCO Gas' approach to, and the ERA's Draft Decision in relation to, Sustaining Capital Expenditure forecasting;

2 reviewing ATCO Gas' interpretation of and approach to, and the ERA's Draft Decision in relation to, the As Low as Reasonably Practicable (ALARP) test;

3 reviewing ATCO Gas' approach to, and the ERA's Draft Decision in relation to, the risk of loss of supply in the context of applicable regulations and industry standards;

4 reviewing ATCO Gas' approach and assumptions, and the ERA's Draft Decision, in relation to greenfields growth investment;

5 in relation to forecast operating expenditure, reviewing ATCO Gas' assumptions as to increases in network operating expenditure over time, and the ERA's Draft Decision, including in relation to:

   (a) additional regulatory obligations;

   (b) expansion of the network (and its impact on maintenance requirements, meter reading and emergency response capabilities); and

   (c) offsets available through improved asset condition achieved through capital expenditure (such as mains renewal); and

6 providing your opinion, based on the above considerations, as to whether ATCO Gas' proposed capital expenditure forecasts meet the criteria in Rule 79 of the National Gas Rules.

It is intended that your report will be submitted by ATCO Gas to the ERA with its response to the Draft Decision. The report may be provided by the ERA to its own advisers. The report must be expressed so that it may be relied upon both by ATCO Gas and by the ERA.

The ERA may ask queries in respect of the report and you will be required to assist in answering these queries. The ERA may choose to interview you and if so, you will be required to participate in any such interviews.

The report will be reviewed by ATCO Gas' legal advisers and will be used by them to provide legal advice as to its respective rights and obligations under the National Gas Law and National Gas Rules.

If ATCO Gas was to challenge any decision ultimately made by the ERA, that appeal will be made to the Australian Competition Tribunal and your report will be considered by the Tribunal. ATCO Gas may also seek review by a court and the report would be subject to consideration by such court. You should therefore be conscious that the report may be used in the resolution of a dispute between the ERA and ATCO Gas. Due to this, the report will need to comply with the Federal Court requirements for expert reports, which are outlined below.

Timeframe

ATCO Gas' response to the Draft Decision must be submitted by **25 November 2014**. Your report will need to be finalised by 20 November 2014.

Compliance with the Code of Conduct for Expert Witnesses

Attached is a copy of the Federal Court's Practice Note CM 7, entitled "*Expert Witnesses in Proceedings in the Federal Court of Australia*", which comprises the guidelines for expert witnesses in the Federal Court of Australia (**Expert Witness Guidelines**).

Please read and familiarise yourself with the Expert Witness Guidelines and comply with them at all times in the course of your engagement by ATCO Gas.

In particular, your report should contain a statement at the beginning of the report to the effect that the author of the report has read, understood and complied with the Expert Witness Guidelines.

Your report must also:

1 contain particulars of the training, study or experience by which the expert has acquired specialised knowledge;

2 identify the questions that the expert has been asked to address;

3 set out separately each of the factual findings or assumptions on which the expert's opinion is based;

4 set out each of the expert's opinions separately from the factual findings or assumptions;

5 set out the reasons for each of the expert's opinions; and

6 otherwise comply with the Expert Witness Guidelines.

The expert is also required to state that each of the expert's opinions is wholly or substantially based on the expert's specialised knowledge.

It is also a requirement that the report be signed by the expert and include a declaration that "*[the expert] has made all the inquiries that [the expert] believes are desirable and appropriate and that no matters of significance that [the expert] regards as relevant have, to [the expert's] knowledge, been withheld from the report*".

Please also attach a copy of these terms of reference to the report.

Terms of Engagement

Your contract for the provision of the report will be directly with Johnson Winter & Slattery. Please forward us any terms you propose govern that contract.

We note that you have advised previously that your fees for carrying out this work will by $67,815 (inclusive of GST), plus any travelling and living expenses to be charged at cost.

Please sign a counterpart of this letter and return it to us to confirm your acceptance of the engagement.

Yours faithfully

Johnson Winter & Slattery

Enc: Federal Court of Australia Practice Note CM 7, "Expert Witnesses in Proceedings in the Federal Court of Australia"

Ed Teoh

.....
Signed and acknowledged by Ed Teoh

Date: 15 November 2014

Appendix B

Declaration

I, Edward Teoh, have made all the inquires that I believe are desirable and appropriate, that no matters of significance that I regard as relevant have, to my knowledge, been withheld from the report.

Signed

Date: 23/11/2014

Appendix C

Summary of Experience

Ed Teoh

Ed Teoh is an engineer with more than 35 years' experience in the energy sector. He has provided strategic and management advice to the utilities sector in Australia and overseas. He has worked on projects leading to the opening of the gas and electricity markets for full retail competition, privatisation of utilities businesses, structural reforms to the energy industry, tariff reviews, due diligence and setting up of new business venture in the utilities sector.

Ed has also carried out total cost studies for the Australian Energy Regulator (AER) and state energy regulators on the gas transmission and distribution businesses' Access Arrangement submissions. In addition, Ed has also advised Malaysian Government on energy safety and the Mongolian Government on utilities practices and privatisation in the water and sewage sector. He has worked in the utilities and government sectors.

He has carried out a technical due diligence on a number of gas transmission and gas distribution assets in Australia and New Zealand.

Prior to consulting, Ed was a seasoned executive in strategic and operational management. During the major Longford gas crisis in 1998, Ed was the emergency manager responsible for the restoration of gas supply to the western suburbs of Melbourne and western Victoria. Ed was also involved in the organisational restructure of the Gas and Fuel Corporation of Victoria, the outsourcing of non-core business activities, the design of the current gas industry structure, the privatisation of a gas utility and the merger of both gas and electricity businesses.

Ed specialises in business planning, implementation of utilities reforms, establishing organizations for privatisation, merger of new businesses, outsourcing of business activities, contracts and change management, operating and capital cost reviews.

Brian Fitzgerald

Brian is an engineer with more than 28years experience in the gas industry. Brian has provided management consulting services to government and gas industry businesses particularly related to strategic and operational management, technical regulation and Access Arrangement submissions. Brian has also carried out technical due diligence for the sale and acquisition of gas businesses.

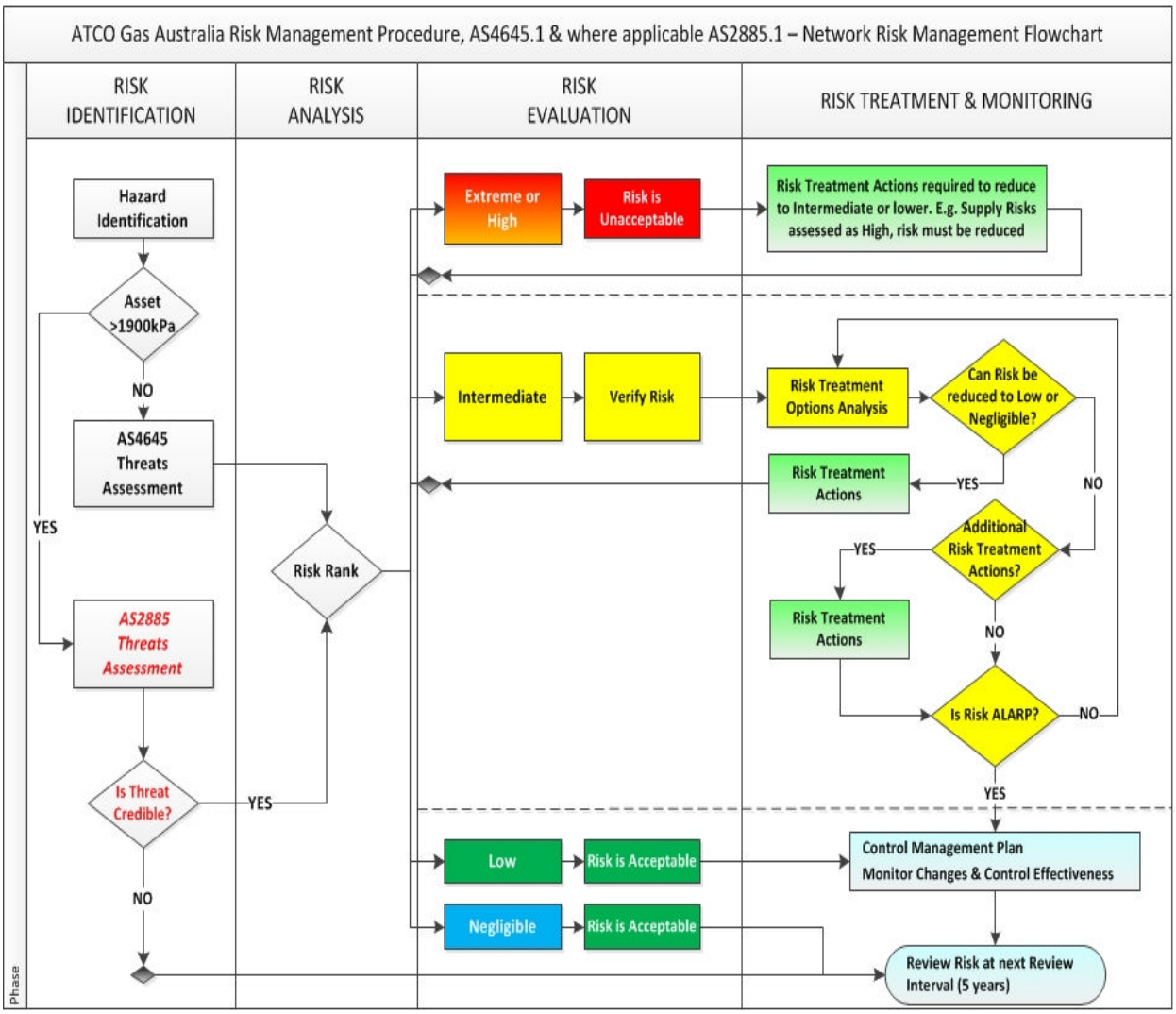
Prior to consulting, Brian was the APA Group Manager for the Victorian Gas Networks. During that period, Brian was involved in Envestra's submission for the Victorian Access Arrangement. Brian provided operational, engineering and asset management advice to Envestra for its submission. He was also part of Envestra's acquisition team for Country Energy Gas.

Prior to this, Brian held the following positions:

2003 – 2006	National Manager, Technical Services (OEAM)
2000 – 2003	Project Manager Asset Management System (OEAM)
1999 – 2003	Manager, Technical Standards and Compliance (OEAM)
Prior to 1999	Various senior management roles in the technical and operational areas

Appendix D

ATCO Risk Evaluation Flowchart



Appendix E

References

ATCO Access Arrangement Information
Appendix 09 – ATCO Gas Distribution Benchmarking
ATCO Safety Case
ERA Draft Decision
ATCO Asset Management Plan
AllGas Asset Management Plan
Envestra Asset Management Plan
Multinet Asset Management Plan
SP AusNet Access Arrangement Information
EMCa Report to the ERA
ATCO Risk Register Comparison
AS2885 Pipeline Gas and Liquid Petroleum
AS/NZS4645 Gas Distribution Network Management
AS/NZS ISO 31000 Risk Management Principles and guidelines
Gas Standards (Gas Supply and System Safety) Regulations 2000
National Gas Rules
Various ATCO's draft responses to the ERA
Various Formal Safety Assessment and Business Cases