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ATCO Gas Australia Proposed Access Arrangement for the Mid-West and South-West Gas Distribution Systems

Review of Technical Aspects of the Revised Access Arrangement

Addendum Report to

Economic Regulation Authority of Western Australia

Energy Market Consulting associates

June 2015

This report has been prepared to assist the Economic Regulation Authority (ERA) with its assessment of ATCO Gas Australia's Access Arrangement for the Mid-West and South-West Gas Distribution Systems, for the period from 1st July 2014 to 31st December 2019 (AA4), which it is required to conducted in accordance with the National Gas Law (NGL) and the National Gas Rules (NGR).

This report relies on information provided to EMCa by the ERA and by ATCO Gas Australia up until 17 April 2015. EMCa disclaims liability for any errors or omissions, for the validity of information provided to EMCa by other parties, for the use of any information in this report by any party other than the ERA and for the use of this report for any purpose other than the intended purpose.

In particular, this report is not intended to be used to support business cases or business investment decisions nor is this report intended to be read as an interpretation of the application of the NGR or other legal instruments. EMCa's opinions in this report include considerations of materiality to the requirements of the ERA and opinions stated or inferred in this report should be read in relation to this over-arching purpose.

Some numbers in this report may differ from those shown in ATCO's Access Arrangement Information (AAI) or other documents due to rounding.

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About EMCa

Energy Market Consulting associates (EMCa) is a niche firm, established in 2002 and specialising in the policy, strategy, implementation and operation of energy markets and related network management, access and regulatory arrangements. EMCa combines senior energy economic and regulatory management consulting experience with the experience of senior managers with engineering/technical backgrounds in the electricity and gas sectors.

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1 Introduction

1.1 Purpose of this report

1. The Economic Regulation Authority (ERA), in accordance with its responsibilities under the National Gas Law (NGL) and the National Gas Rules (NGR), is currently reviewing ATCO Gas Australia's (ATCO) revised access arrangement (AA) proposal for the Mid-West and South-West distribution systems (the network) for the period 1 July 2014 – 31 December 2019 (AA4).

2. To assist with its assessment of ATCO's revised AA proposal, the ERA has engaged Energy Market Consulting associates (EMCa) to assess ATCO's amended revised proposal for this period (the 'amended proposal') in its response to the ERA's Draft Decision[1]. Our report is required to cover whether, and in what manner, any of the information provided by ATCO or third parties engaged by ATCO, changes conclusions that we drew in our Final Technical Report to the ERA[2] on ATCO's initial proposal[3]. The ERA has asked for our advice only in relation to certain matters, and these are listed in section 1.3.

3. In the current report, we provide our updated technical assessment and, where relevant, updated findings that result from the additional information that ATCO has provided.

[1] *Response to the ERA's Draft Decision on requirement amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System,* ATCO Gas, (27 November 2014). This incorporates reports from third parties whom ATCO engaged separately, and which are referenced separately in the remainder of our report. Note that amended version of ATCO's Response document was provided on 23 December and we relied on this version, however the document remained formally dated by ATCO as 27 November 29014

[2] *Review of Technical Aspects of the Proposed Access Arrangement, Report to the Economic Regulation Authority of Western Australia*, EMCa, (June 2014)

[3] *Access Arrangement Information 1 July 2014 – 31 December 2019 (AA4),* ATCO Gas, Submitted to the ERA, (March 2014). This includes reports from third parties whom ATCO engaged and which were part of ATCO's submission.

1.2 Regulatory framework

4. The provisions the ERA is required to have regard to when assessing ATCO's capex and opex proposals are set out in Part 9 of the NGR. In short, these rules require the ERA to accept ATCO's proposal if:
   - the capex complies with the conforming capex criteria in rule 79 of the NGR and any forecasts or estimates underpinning the capex proposal are arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances (r. 74(2)); and
   - the opex complies with the criteria set out in rule 91(1) of the NGR and any forecasts or estimates underpinning the opex proposal satisfy rule 74(2).

5. The ERA's discretion under rules 79 and 91(1) is limited, which means it may not withhold its approval, if it is satisfied the opex and capex proposals comply with the relevant rules and/or provisions in the NGL.

1.3 Scope of the review

6. . As advisers to the ERA, our role is to assess and provide advice to the ERA based on the information that ATCO has put forward in its proposal, its amended proposal, its supporting information and (where relevant) in response to information requests. The foundation framework is that ATCO's proposal (and amended proposal) claims justifications and provides evidence for its proposed expenditure by reference to relevant rules and we provide our assessment by reference to those same rules.

7. In carrying out this review, the ERA has asked us to evaluate a range of matters that can affect capex and opex, including:
   - Field Mobility IT project in the third access arrangement project;
   - Some elements of sustaining capital expenditure in the fourth access arrangement period that did not satisfy rule 79 of the NGR;
   - Some elements of growth capital expenditure in the fourth access arrangement period that did not satisfy rule 79 of the NGR;
   - Some elements of structures and equipment capital expenditure in the fourth access arrangement period that did not satisfy rule 79 of the NGR;
   - Some elements of IT capital expenditure in the fourth access arrangement period that did not satisfy rule 79 of the NGR;
   - The impact that the Addendum Report's conclusions on safety standards and thresholds in relation to sustaining capital expenditure in the fourth access arrangement period could have on network operating expenditure
   - ATCO's IT operating expenditure; and
   - ATCO's criticism of EMCa's application of the revealed cost approach.

1.4 Review framework

8. We have followed the same precepts in assessing the conformance of the relevant aspects of ATCO's amended revised proposal (November 2014) to the National Gas Law and the National Gas Rules, as we applied in our 2014 Report.[4]

1.5 EMCa's approach

9. In developing this Addendum to our 2014 Final Technical Report, we took into consideration:
   - the ERA's Draft Decision (and relevant attachments);
   - relevant content in ATCO's response to the ERA's Draft Decision (and relevant attachments);
   - relevant third party public submissions;
   - information provided by ATCO during an on-site meeting (held on 9th April 2015) and in response to our information requests, and
   - Energy*Safety's* correspondence to the ERA.

10. We wish to acknowledge the assistance that ATCO and Energy*Safety* have provided during this review.

11. Our approach was to consider the new information provided and to determine if the information was sufficiently compelling in the context of the requirements of the relevant aspects of the NGR, to change the relevant findings reported in our 2014 Final Technical Report.

12. We have outlined the reasoning applied in each of the areas of inquiry in reaching our conclusions. We have indicated where information is from confidential sources.

1.6 Structure of this report

13. The remainder of this report is structured as follows:
   - Section 2 provides an overview of our key findings and recommendations;
   - Section 3 outlines the results of our review of those elements of growth capex proposed by ATCO and which the ERA disallowed in its Draft Decision;
   - Section 4 outlines the results of our review of the elements of sustaining capex proposed by ATCO and which the ERA disallowed in its Draft Decision, and the impact of our findings in this regard on network opex;
   - Section 5 sets out the results of our assessment of other capital expenditure elements, including ATCO's AA3 Field mobility IT project, elements of AA4 IT capex, and AA4 structures and equipment capex;

[4] Refer to Section 3.1 of our Final Technical Report

- Section 6 sets out our consideration of claims in ATCO's amended proposal regarding EMCa's application of the revealed cost methodology in our initial report;
- Section 7 sets out the results of our review of elements of ATCO's proposed IT opex.

1.7 Our qualifications

14. To support our management-level approach, the review team is comprised of people with senior management, and senior advisory experience in both gas and electricity network businesses. The credentials of all but one of the authors and contributors to this report were summarised in Appendix C of the Final Technical Report (2014). The credentials of an additional contributor is provided in Appendix B of the current report.

2 Overview of findings and recommended adjustments

2.1 Introduction

15. In this section we provide an executive summary-style overview of our findings. Our specific findings, the supporting information for those findings and our recommended adjustments to the capex and opex that ATCO has proposed are contained in sections 3 to 7. This section does not contain all findings or all arguments relating to those findings. It is for information purposes only and does not replace or modify the specific findings described in the remainder of this report.

2.2 Proposed growth capex

Proposed growth capex not accepted

16. We consider that ATCO's proposed overall growth capex of $233.8m does not pass the incremental revenue test under rule 79(2)(b) and, further, that ATCO has not presented evidence that it is justified on an economic test basis (79(2)(a)).

Greenfields and reinforcement expenditure now accepted

17. For the components of growth capex that were disallowed or adjusted in the ERA's Draft Decision, we have reviewed the justifications that ATCO has now provided. In particular, ATCO has now provided incremental revenue test NPV analyses for key components of its proposed growth expenditure, and in aggregate. On the basis of these analyses, we are now satisfied that the greenfields capex of $143.8m that ATCO has proposed, is justified. This has a flow-on effect in also now justifying ATCO's proposed reinforcement expenditure of $11.5m.

Two rocks and Peel spur lines not accepted

18. ATCO has proposed two spur lines (Two Rocks and Peel), with proposed justification that they are required partly as 'sustaining' capex and partly to provide for growth. ATCO has proposed an apportionment of the costs of these projects between these two justifications, and which appears to be consistent with rule 79(2)(d). ATCO has proposed that $27.2m of the proposed Two Rocks project (out of a total of $45.3m) and $11.4m of the proposed Peel spur line (out of a total of $32.3m) is justified as growth capex.

19. Having reviewed ATCO's NPV models, we consider that the proposed growth expenditure for the Peel and Two Rocks projects is not justified. Our primary concerns with ATCO's analyses are that it has effectively modelled revenues as if they will occur in perpetuity and, for Peel, ATCO has excluded the Stage 1 expenditure of $5.4m from its analysis. When we correct for these factors, the NPV of both projects on an incremental revenue basis is negative.

Capel to Busselton and Baldivis spur line projects not accepted

20. Once corrected for the in perpetuity assumed terminal value, we find that the proposed Capel to Busselton reinforcement (of $5.3m) similarly has a negative NPV. Consistent with our previous review, we consider that the proposed Baldivis spur line ($5.4m) remains highly speculative given that the need for this line would depend on re-zoning and then firm indications of development in this area. On the balance of probability, we consider this unlikely to be required within the AA4 period.

ATCO's assumed growth can be met within AA4 without the four proposed spur lines

21. ATCO's information indicates that its greenfields and brownfields new connection growth forecasts for AA4 can be met without these projects.[5] Absent the proposed expenditures on these projects, we consider that the remaining growth expenditure of $184.5m meets a reasonably-applied incremental revenue test.

2.3 Proposed sustaining capex

Deficiencies with ATCO's application of risk assessment in justifying sustaining capex

22. We have considered ATCO's application of its risk assessment framework and commentary on the implications of that framework by its consultant, Zincara, and by Energy*Safety*. ATCO has relied on this risk framework to justify significant levels of proposed 'sustaining' capital expenditure.

[5] ATCO has provided additional information that its planned 2015 Peel reinforcement project was planned to meet the needs of an assumed additional 241 additional customers within the AA4 period, but it has not satisfactorily demonstrated that the addition of the customers would be materially detrimental to the network in the absence of the reinforcement

23. We consider that ATCO has principally misapplied this framework by failing to apply realistic probabilities to the consequences that it is considering and has, instead, applied the probabilities of events that may lead to such consequences. In this regard ATCO has been inconsistent with guidelines in the relevant Australian Standard (AS 4645). We consider that, by correctly applying the relevant standard, the risks on which ATCO seeks to justify these projects are more realistically classified as *Intermediate* and could even be considered to be *Low*.

24. The relevant Australian Standard requires Intermediate risk projects to be considered under the principles of ALARP, and which requires assessment to demonstrate that the costs of any further risk reduction would be grossly disproportionate to the benefit gained. ATCO has not undertaken such assessment.

25. We further note Energy*Safety*'s correspondence to the ERA and with ATCO. We understand that EnergySafety's jurisdiction relates specifically to safety risks and, consequently, we consider the points raised by Energy*Safety* only to the extent that they concern safety consequences. For the reasons described above, we do not accept EnergySafety's assumption that the standards-based assessment of the risk of having a single pipeline supply a region of more than 25,000 customers is *High* ***from a safety perspective***. Such an assumption has the undesirable effect of purporting to justify ATCO incurring significant expenditure without assessing the need for this expenditure in the manner required by the relevant Australian Standards (under an 'ALARP' test).

Lack of justification for spur line and interdependency projects

26. ATCO has relied on its assessment of the need for the Two Rocks and Peel spur lines (with $18.1m and $20.9m respectively allocated to 'sustaining' justification criteria) and interdependency projects of $34m, based on its claim that these projects are required to address what are otherwise *High* risks. As we find the risk rankings are no higher than *Intermediate* for the events nominated by ATCO it is required by AS 4645 to, among other things, demonstrate that its proposed investments are not grossly disproportionate to the benefit gained from the reduced risk that would result.

27. As ATCO has not undertaken the assessment required for *Intermediate* ranked risks, we have no basis for concluding that its proposed expenditure satisfies the ALARP test. The current situation in which significant numbers of WA gas customers are supplied from a single pipeline source is not uncommon elsewhere in Australia and has existed in WA for a number of years. Energy*Safety* has not found it necessary to intervene in this situation on safety grounds to date, nor do we consider that ATCO is or is likely to be under an obligation to construct such new pipelines on safety grounds, based on proper application of the applicable Australian Standard. We therefore conclude that for the two proposed spur line projects and the four proposed interdependency projects:

    (i) ATCO does not have a regulatory obligation to satisfy under the NGR (per r. 79(2)(c)(iii)); and

    (ii) The security of supply risk does not satisfy r. 79(2)(c)(i) of the NGR.

Acceptance of metallic mains replacement projects

28. We are now satisfied that ATCO is capable of delivering the amended revised proposed expenditure of $47.1m (a $3.4m reduction to its revised proposal) within the AA4 period. We also consider that the deferral of 11 km of unprotected metallic mains replacement

into the AA5 period is prudent. We therefore consider that the program of work satisfies NGR rule 79(2).

2.4 Other proposed capex elements

Field Mobility Project (AA3) now accepted

29. ATCO has provided additional information in its amended revised Proposal that provides evidence of (i) what was spent in the AA3 period, (ii) what it was spent on, (iii) why it was spent, and (iv) the procurement, change management and benefits realisation process it followed. We therefore conclude that the full $4.7m expenditure incurred in the AA3 period satisfies the requirements of the NGR.

AA4 Commercial operations now accepted

30. ATCO has reduced its proposed expenditure on the specified commercial operations improvement initiative from $1.8m to $1.2m in its revised proposal. Despite the lack of detailed information provided by ATCO, we are supportive of the proposed automation of manual systems which are likely to be unable to cope with forecast metering and information requirements. We are also satisfied that if the projects are undertaken in accordance with ATCO's project management, procurement, and governance processes, it is reasonable to assume that the cost of the work will be efficient. We therefore conclude that the proposed $1.2m expenditure incurred in the AA3 period satisfies the requirements of the NGR.

IT Hardware and Software now accepted

31. As ATCO has now provided sufficient detail to support its adjusted forecast expenditure of $0.3m over the AA4 period (a reduction from its revised proposal), we are now satisfied that it satisfies the requirements of the NGR.

Busselton Depot now accepted

32. In our 2014 report to the ERA we concluded that ATCO's driver for establishing a Busselton depot was inadequate to justify expenditure of $1.1m in the AA4 period. ATCO has submitted new information pertaining to population growth, which, in addition to its forecast network growth, satisfies us that without construction of the Busselton depot sometime within the AA4 period, its ability to respond to gas leaks within the prescribed 1 hour limit will be jeopardised. We are also satisfied that the forecast cost is reasonable based on our previous analysis and therefore we are now satisfied that the proposed project satisfies the requirements of the NGR.

Fleet, plant and equipment capex now accepted

33. ATCO proposes an increase in fleet, plant and equipment expenditure of $0.3m to $21.4m in its amended revised Proposal. We recommended a reduction of $1.0m of the initially proposed expenditure on the grounds that the extent of network growth assumed by ATCO was unsubstantiated. Based on our findings regarding growth investment (discussed in section 3) we now consider that the full amount of expenditure proposed by ATCO is reasonable.

2.5 Revealed cost methodology for Network Opex forecast

Concerns with ATCO's representation of a revealed cost approach

34. While ATCO has now presented a 'revealed cost' opex forecast that it claims supports its bottom-up forecast, we have significant concerns with many aspects of that forecast. This includes lack of definition of a base year, a growth rate that is derived from what appears to be a misapplication of selective information from a report undertaken by another party for another purpose, and ATCO's presentation of this assessment as relating to network opex when the expert's report presents its work as a forecast of overall opex. Moreover, the 'revealed cost' opex forecast that the expert has derived, and which ATCO presents to compare with its own bottom-up forecast, appears to simply include the incremental costs that ATCO has proposed. This component, which is one of the main matters in contention, is therefore not independently determined by the expert that ATCO has engaged.

Previous advice maintained in applying a revealed cost approach

35. Taking all factors into consideration, we consider that the advice we provided in our initial report[6] in regards to the revealed cost opex forecasting methodology remains valid. In applying this methodology, we consider that:

- It is appropriate to consider 2013 as an indication of a prudent and efficient base year revealed cost;
- The previously-allowed incremental step in expenditure for the second half of 2014 ($1.9m) should be reduced by $1.6m, consistent with ATCO's actual spend;
- It is appropriate to allow for the incremental step in expenditure that ATCO has proposed for 2015 ($3.6m) in recognition of safety case requirements;
- It is appropriate to allow for the one-off incremental costs that ATCO proposed (and which we accepted in our 2014 report);
- If for its final decision the ERA allows a greater amount of growth capital expenditure than it allowed in its Draft Decision, then some allowance for growth in the base level of network opex should be made. We have suggested a method for the ERA's consideration, in paragraph 295.

2.6 Proposed IT opex

Proposed IT opex now accepted

36. ATCO has provided new information in its revised submission that has mitigated the majority of the concerns that underpinned our recommended reduction in IT opex allowance in our original report to the ERA.

[6] EMCa op. cit. section 7.4 Network Opex AA4

37. In particular, the advent of a new commercial arrangement with WIPRO established via a competitive tender, which has led to an $8.4m (12.5%) reduction in overall IT opex from ATCO's original submission, offsets many of our concerns. This, in combination with the supplementary benchmarking information provided in the revised submission indicates that ATCO's IT opex forecast is likely to satisfy the requirements of rules 91(1) and 74(2) of the NGR.

38. We note that:

(i) a proportion of the IT opex reduction has been achieved through an increased capex charge ($3.0m) to account for transfer of ownership of applications from I-Tek to ATCO; and;

(ii) based on our assessment of ATCO's customer and network growth forecasts, we consider that two of ATCO's assumed drivers of increase IT opex may be diminished to the extent that an estimated $1m less (or 1.7% of total IT opex) will be required.

2.7 Capex and opex implications

39. In the current Addendum Report, EMCa has been asked to consider some particular matters. The following implications flow from our consideration of these matters. They should not be interpreted as a complete review of ATCO's amended proposal. Further, these implications may inter-relate with or be affected by other decisions that the ERA may make and which are not known to us or which are outside the scope of ERA's current brief to us.

40. In aggregate, our findings lead to the following expenditure allowance implications:

- For AA3 conforming capex, we recommend that the ERA accepts ATCO's incurred expenditure of $4.7m on the Field Mobility project. This represents an increase of $3.7m from the Draft Decision.
- For AA4 conforming capex, we recommend that the ERA:
  - (i) accepts $184.5m of ATCO's proposed growth capital expenditure of $233.8m;
  - (ii) does not accept $72.9m of ATCO's proposed sustaining capital expenditure;
  - (iii) notes that a relatively small increase in other network capital expenditure may be required if ATCO does not proceed with its major proposed sustain spur line and interdependency projects;
  - (iv) accepts ATCO's proposed $1.2m capital expenditure on its proposed commercial operations improvement initiative;
  - (v) accepts ATCO's proposed $0.3m on hardware and software;
  - (vi) accepts the proposed $1.1m expenditure on ATCO's proposed Busselton depot; and
  - (vii) accepts ATCO's proposed expenditure of $21.4m on fleet, plant and equipment.
- For AA4 opex, we recommend that the ERA:
  - (i) accepts ATCO's proposed $57.2m forecast IT operating expenditure; and

(ii) maintains application of a revealed cost approach for Network Opex based on most recent actual expenditure, with allowance for baseline opex growth, net of productivity factors, allowing for incremental recurring opex to 2015 as proposed by ATCO but not increasing further thereafter and allowing for one-off incremental opex as proposed by ATCO[7]; and

(iii) notes that a relatively small increase in network operating expenditure may be required if ATCO does not proceed with its proposed sustain projects and to allow for the now-accepted increases in the pipeline network.

[7] The net implication of applying this approach and assessing an adjusted forecast for network opex is not within our current scope

3 Review of elements of AA4 growth capex

3.1 Introduction

41. In accordance with the Terms of Reference, in this section we consider the justification for those elements of growth-related capital expenditure that are included in ATCO's amended Access Arrangement proposal but which the ERA did not allow in its Draft Decision. This primarily involves assessing the proposed expenditure by reference to relevant tests under the NGR, in particular Rule 79(2)(b) which requires that the proposed capex should be covered by incremental revenue (with the implication that it should not be subsidised through increased charges to existing customers).

42. We have not been asked to advise on ATCO's revised demand forecasts and so, for the purpose of the current assessment, we take these as proposed by ATCO. We also have not been asked to form an opinion on the total proposed growth capex level or on overall adjustments to this overall growth capex (if required) to meet the requirements of the Rules.

3.2 ATCO's amended proposal

3.2.1 Overview of AAI, Draft Decision and ATCO's Amended Proposal

43. In its revised AAI, ATCO proposed $228.5m of growth capex. This was comprised of:

- $156.3m of customer-initiated capex;[8] and

[8] In information that ATCO provided to the ERA subsequent to the preparation of our report, this was shown to be $146.2m for greenfields and $10.1m for brownfields connections.

- $72.2m of “Demand” driven capex, which was comprised of five major projects (Two Rocks and Peel spur lines, Elizabeth Quay, Baldivis and Capel to Busselton), “other” reinforcements of $16.2m and “other” capex of $2.9m.

44. The ERA accepted $24.0m of the expenditure that ATCO proposed. The ERA did not accept inclusion of the Two Rocks, Peel, Baldivis and Capel to Busselton pipelines or the ‘other” capex of $2.9m, and pro-rated the ‘other reinforcements’ to account for the assumed proportion to which they would contribute to greenfields supply, consistent with disallowing the proposed greenfields capex.

45. In its Amended proposal ATCO has increased its proposed growth capex to $233.8m, as shown below.

Table 1: ATCO's proposed growth expenditure in its Amended proposal

$ million real at 30 June 2014	July to Dec. 2014	2015	2016	2017	2018	2019	Total
Greenfield customer initiated	14.3	28.2	27.0	25.7	24.2	24.4	**143.8**
Brownfields customer initiated	2.4	3.7	3.2	3.2	3.0	3.0	**18.5**
Two Rocks spur line	0.0	0.0	13.6	13.6	0.0	0.0	**27.2**
Peel spur line	0.0	5.4	0.0	0.0	6.0	0.0	**11.4**
Baldivis spur line	0.0	0.0	0.0	0.0	5.4	0.0	**5.4**
Capel to Busselton reinforcement	0.0	0.0	0.0	0.0	0.0	5.3	**5.3**
Elizabeth Quay	0.0	3.6	5.0	0.0	0.0	0.0	**8.6**
Reinforcements	0.6	1.0	5.7	1.1	2.0	1.1	**11.5**
Other	0.9	1.4	0.0	0.0	0.0	0.0	**2.3**
Capital Contributions	-0.2	0.0	0.0	0.0	0.0	0.0	**-0.2**
Amended proposal	**18.0**	**43.3**	**54.5**	**43.6**	**40.6**	**33.8**	**233.8**

Source: ATCO Amended proposal, table 8-25

3.2.2 Matters ATCO has raised in its amended proposal

46. ATCO has responded to a number of aspects of the ERA’s Draft Decision, including EMCa’s findings from our assessment of its initially proposed Revised Access Arrangement. These are summarised as follows.

NPV analysis

47. EMCa’s findings on ATCO’s initial proposal were in part based on a lack of supporting analysis for separable components of the growth expenditure that ATCO had proposed. ATCO has responded to this by providing preliminary incremental revenue test NPV analyses for its proposed major demand projects, as well as in aggregate for its proposed overall growth capex.

48. EMCa also raised concerns with ATCO’s assumed average consumption per new connection and with ATCO’s use of increased tariffs in its incremental revenue test (and which resulted from its proposed growth capex), rather than current tariffs. ATCO has responded by reducing the average consumption per new connection and has also modelled sensitivity of its NPV analysis to still lower volumes. ATCO has not accepted that the incremental revenue test should be undertaken with current tariffs, but has modelled this as a sensitivity.

Greenfields customer initiated development

49. In its initial proposal, ATCO did not provide a stand-alone assessment of its proposed greenfields capital expenditure. In its amended proposal, ATCO has updated its new connections forecast and has provided an NPV analysis for the $143.8m of greenfields new connection capex that it proposes. ATCO submits that this has a positive NPV of $49.3m.

Demand related expenditure

50. ATCO has provided incremental revenue NPV analyses for the Two Rocks and Peel spur lines, based on an allocation of their costs between 'sustain' and 'growth' (as per its initial proposal). Under this method, ATCO has allocated a minimum amount to growth, to provide a neutral NPV in the incremental revenue test, with the balance allocated to 'sustain' justification.

51. ATCO has also submitted alternative analyses, in which the projects are considered as stand-alone "sustain' projects, with only the residual costs allocated to growth and therefore subject to the incremental revenue NPV test. This sensitivity analysis would reduce the growth component of Two Rocks from $27.2m to $5.4m and Peel from $11.4m to zero. Based on the significantly lower cost allocations to growth under this alternative method, ATCO submits that both would have positive NPVs in a growth-related incremental revenue test.

52. ATCO claims a positive NPV in its incremental revenue test for the Baldivis spur line. ATCO presents this solely as a growth-related project.

53. ATCO has claimed in its amended proposal that the Capel to Busselton reinforcement is required to meet brownfields connection obligations in this area[9] and is not subject to an incremental revenue test[10]. Nevertheless ATCO has submitted an incremental revenue NPV test analysis, which it claims to be positive ($0.5m).

Brownfields development

54. The ERA accepted inclusion of brownfields capex in ATCO's initial proposal. In its amended proposal, ATCO has increased its forecast brownfields connections and associated capex from $10.1m to $18.5m.

Reinforcements

55. In our assessment of ATCO's initial proposal, it was necessary to estimate the extent to which ATCO's proposed reinforcements were to meet greenfields connections (which we found not to meet the relevant test under the Rules) as opposed to brownfields new connections (which were accepted). ATCO has provided new information in which it claims that 92% of the reinforcement requirements relate to the connection of new brownfields customers.

[9] ATCO amended proposal, paragraph 753

[10] Ibid paragraph 752

Volume related demand capex and regulating facilities

56. EMCa recommended not to allow the initially-proposed expenditure on the basis that the overall growth capex proposed by ATCO did not meet the incremental revenue test. In its amended proposal, ATCO asserts that this expenditure is required to meet new brownfields customer connection requests.

3.3 EMCa assessment

3.3.1 Overview

57. In its initial AA proposal, ATCO did not provide satisfactory justification for significant components of its proposed expenditure. Without such justification, EMCa was unable to recommend that these amounts should be included in its capex allowance. With ATCO's provision of specific-purpose regulatory tests for the major components of its proposed expenditure, EMCa is now able to assess these components for compliance with the Rules.

58. In response to our report, ATCO has now reduced its assumed consumption values per new connection and has undertaken sensitivity analysis on matters that we raised in in our report on its initial proposal.

59. ATCO has also now provided further information on the extent to which certain proposed expenditure is driven by brownfields connection requirements and this assists us with our assessment.

60. In the subsections which follow, we first present matters relevant to the relevant expenditure tests under the NGR, then our assessment focuses on the following matters:

- ATCO's incremental revenue test for overall growth capex;
- ATCO's incremental revenue test for greenfields development;
- ATCO's incremental revenue test for two Rocks and Peel spur lines, and the associated matter of allocation of costs between growth and 'sustain' drivers;
- ATCO's case for the Baldivis and Capel to Busselton pipelines; and
- ATCO's case for reinforcements and for volume-related demand capex and regulating facilities.

61. After reviewing ATCO's proposed tests by major expenditure component, we then return to our assessment of the proposed growth capex by reference to the incremental revenue test in Rule 79(2)(b).

3.3.2 Relevant expenditure tests under the NGR

Relevant rules

62. NGR 79(2) states that, in addition to being prudent, in accordance with good industry practice and providing the lowest sustainable cost of providing services, it must be

justifiable on one of three grounds (79(2) (a), (b) or (c))[11]. Part (c) refers to drivers that ATCO categorises as "sustain' while rules (a) and (b) can be used to justify growth capex. These two rules are as follows:

> *79(2): Capital expenditure is justified if*
>
> *(a) The overall economic value of the expenditure is positive*
>
> *(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*

63. The NGR further qualifies the incremental revenue test that:

> *79(4): In determining the present value of expected incremental revenue:*
>
> *(a) a tariff will be assumed for incremental services based on (or extrapolated from) prevailing reference tariffs or an estimate of the reference tariffs that would have been set for comparable services if those services had been reference services; and*
>
> *(b) incremental revenue will be taken to be the gross revenue to be derived from the incremental services less incremental operating expenditure for the incremental services; and*
>
> *(c) a discount rate is to be used equal to the rate of return implicit in the reference tariff.*

Economic test or incremental revenue test

64. While ATCO refers to the concept of an economic value test (79(2)(a)) in its amended proposal, it does not provide any evidence for such a test in that proposal and consequently the only reasonable inference for us to draw from the amended proposal itself is that ATCO has not claimed conformance under this rule[12].

65. In a letter to the ERA which followed discussion at our on-site meeting with ATCO on 9th April in which we sought to clarify the basis on which ATCO is claiming that its growth capex is conforming capex, ATCO asserts the following[13]:

> *However for the avoidance of doubt, it is AGA's position that pursuant to NGR rule 79, the ERA is required to consider AGA's growth capital expenditure submission under the entirely of NGR rule 79. It is not open to the ERA to exercise a discretion to choose whether or not particular rules apply, whether or not particular rules have been referred to by AGA.*

[11] Clause 79(d) allows for expenditure to be divided such that incremental services can be justified under part (b) and the remainder under part (c).

[12] For example, all of the NPV tests that ATCO presents in table 8-19 of its amended proposal, are variants of incremental revenue tests. The only NPV analysis spreadsheets provided to the ERA along with the amended proposal are incremental revenue tests and are specifically labelled with reference to rule 79(2)(b)

[13] Letter of 10th April 2015 from Sally McMahon of ATCO to Tyson Self of ERA

66. We agree with ATCO's statements in this paragraph, with a qualification on the last phrase as we indicate further below.

67. ATCO also quotes from its submission in this letter that "*It is standard practice for a regulated business to* [undertake an NPV assessment] *to demonstrate the economic value of the investment as provided for under rule 79(2)(a) of the NGR and the incremental revenue under rule 79(2)(b) of the NGR.*[14]" ATCO then asserts that the quoted paragraphs (684 and 685) "*establish that AGA considers that its growth capital expenditure program has been assessed against 79(2)(a) (the economic value test) as well as 79(2)(b) (the incremental revenue test*.

68. As technical advisers to the ERA, we emphasise that our role in this instance is to consider the *'growth capital expenditure submission*' that ATCO has made to the ERA, as ATCO states. Under a propose-respond regulatory regime, we take the view that where a submission asserts that certain expenditure conforms, but provides no evidence or insufficient evidence that this is the case, then it is not our role as reviewers of the proposal to develop such evidence on the proposer's behalf. Similarly, where the regulated entity chooses to provide evidence of conformance under a particular rule, then it is reasonable to assume that this is the rule under which the regulated entity considers the expenditure conforms and it is not our obligation to consider more widely what other rules may have been claimed (but were not) or to develop evidence in relation to any such unclaimed rules, in the absence of any such evidence being provided by the regulated entity.

69. ATCO did not provide an NPV assessment under rule 79(2)(a) in its amended proposal. On 15th April 2015, in response to clarifications that we sought at our on-site meeting with ATCO on 9th April, ATCO provided what it has claimed to be an economic value test model and we report on our consideration of this model in section 3.3.3 below. We consider that ATCO's apparent claim that its amended proposal presented its proposed growth expenditure with justification for assessment under rule 79(2)(a), because it is common for regulatory entities to do so, is not credible. ATCO did not provide any such evidence or claim in its amended proposal.

70. ATCO's claims in regards to the rules tests remain unclear to us. The rules do not require growth expenditure to pass an economic test, if they pass the incremental revenue test, which ATCO claims to be the case. Our primary findings on ATCO's growth capex are therefore based on application of the incremental revenue test, which ATCO clearly proposes in its amended proposal and for which it did provide the relevant supporting assessments. Nevertheless we have in section 3.3.3 provided some observations on the economic value arguments in support of growth expenditures, that ATCO has claimed subsequent to providing its proposal and subsequent to our meeting seeking clarification from ATCO on this matter.

Analysis period considerations in economic or incremental value tests

71. In its initial revised AA proposal, ATCO states '*Network growth capital expenditure is supported by the forecast incremental revenue from new connections over the longer term*'. And that: '*Based on the number of new connections over the AA4 period and the*

[14] ATCO op. cit. paragraph 684

assumed consumption per connection, the NPV of the investment over the expected 30 year life of forecast connections (including mains required to facilitate these connections) is $27.0m.'[15]

72. In our report on ATCO's initial revised AA proposal, we noted that ' *we consider that a projected positive small NPV after 30 years, given over $140m of net investment….is not sufficiently robust justification to support its inclusion in the regulated asset base*. We made this statement in the context of describing assumptions inherent in that result which we considered to be optimistic and therefore in the context of the risks of not achieving even a 30-year payback. In our report, we then went on to adjust for these factors, and found that, after such adjustments, the incremental revenue test was negative at 30 years.

73. In its amended proposal, ATCO claims that proposed growth expenditure is NPV-positive after 31 years. ATCO now states that '*30 years is a conservative estimation for assets that can have an economic life of up to 80 years and on average 38 years.*'[16]

74. We do not have an a priori view on a specific time period over which to test for a positive NPV, except that in principle it needs to be consistent with the life of the relevant services. In turn this may be driven by the economic life of the assets providing those services, but may be shorter. ATCO appears to have modified its view of the 'economic life of the forecast connections' from 30 years to some view on the weighted economic life of the assets providing that service, which it asserts to be 38 years.

75. We note that the economic life that ATCO uses for depreciation purposes for the 'meters and services' that comprise the connections to these customers, is 25 years; however the mains and other upstream network assets are given a much longer economic life of 60 to 80 years.

76. We further consider the relevant time-period in our assessment of ATCO's incremental revenue test, which follows.

3.3.3 Pricing, willingness to pay and assessment of economic value

Claims made in ATCO's amended proposal

77. ATCO makes a number of assertions in its amended proposal that relate to the assessment of economic value. For example:

> *Rule 79(2)(a) of the NGR requires the overall economic value of the expenditure to be positive, whereas rule 79(2)(b) of the NGR requires the incremental revenue to be greater than the incremental cost[17].*
>
> *The economic purpose of the NPV assessment applied, which considers whether incremental revenues exceed incremental costs, is to ascertain whether it is likely*

[15] ATCO, Initial revised AA, page 162

[16] ATCO, *Response to ERA Draft Decision – 23 December 2014*, page 146

[17] *Ibid*, page 145, paragraph 700

that the revenue that is expected from customers of the relevant services will exceed the capital costs of the project. Where this is the case it can be implied that customers value the service more than its costs.[18]

78. In arguing for the use an analysis period consistent with the economic lives of the relevant assets, ATCO states that:

In any event, the alternative [to connecting the relevant customers] would be to not undertake investment that delivers benefits to customers.[19]

79. In arguing for the economic test to assume current tariffs, ATCO states that:

As can be seen from the analysis, a lower tariff delivers a lower NPV. To the extent that the tariff falls further than that proposed by AGA, the NPV will deteriorate. However, this does not mean that new customers would not be willing to connect at a higher tariff. For those customers, access to gas supply will no longer be available despite those customers placing a higher value on the service than the regulated reference tariff. This results in a loss of economic efficiency.[20]

80. Following on from reference to the economic value of growth, ATCO states:

An additional consideration for AGA is the application of postage stamp pricing obligations. Even if AGA wished to price new growth investment sufficiently high to cover all costs the Regulations prevent AGA from doing so. This obligation is a relevant consideration in the assessment of proposed expenditure.[21]

81. We have considered each of these statements to the extent that they appear to claim that there is an economic benefit that is obtained from connecting customers to gas.

82. Firstly, we consider it reasonable to infer that to the extent that new customers are willing to pay for gas connection, then those customers place an economic value on connection that exceeds the charges to them (or at least their perception of those charges). ATCO's models run to 2073, but we would consider it most unlikely that customers have any accurate perception of their likely gas charges for the next 60 years, therefore we consider it reasonable that the economic test uses current charges as a proxy for the (lower bound of) willingness to pay. While ATCO claims a distinction between tariff assumptions for an incremental revenue test (under 79(2)(b)) compared with an economic value test (under 79(2)(a)) our reading of the rules is that they apply the same requirements for both tests[22].

83. We consider that the purpose of the economic value test is to test that customers are not connected where the value of the service is less than its cost. The rules envisage this as a test involving consideration of '*economic value directly accruing to the service provider, gas producers, users and end users.*'[23] As stated above, ATCO's recently provided economic value test model is much narrower in scope and considers only

[18] *Ibid*, page 145, paragraph 701

[19] *Ibid, page 146, paragraph 707*

[20] *Ibid, page 147, paragraph 710*

[21] *Ibid, page 141, paragraph 685*

[22] NGR 79(4)(a), as referenced above

[23] NGR 79(3)

incremental pipeline revenues and pipeline costs. If we were to assess growth capex using an economic value test, then we would not consider that this newly-provided model is sufficient. Moreover, being largely the same as ATCO's incremental revenue test model, it suffers from the same assumptions that we consider to be 'not reasonable' in that test mode, and which we describe subsequently in this section.

84. Taking ATCO's statements in its paragraphs 707, 710 and 685 together[24], it would appear that ATCO contends that by not connecting customers who are willing to pay for connection (possibly at a higher tariff), those customers are being denied a benefit and there is a loss of economic efficiency. As a result of postage stamp pricing, ATCO notes that it cannot differentially charge new customers more than existing customers. This leads us to consideration of what customers **are** willing to pay, and whether ATCO has made a case in its amended proposal for the economic benefits of connecting new customers in its region.

Customers' unwillingness to pay connection costs and ATCO's unwillingness to invest in new connections on a commercial basis

85. At our on-site visit[25], when we asked ATCO if it considered that customers would connect if required to pay the up-front cost of that connection, ATCO responded with words to the effect that they would not and that therefore the demand for gas would be lower as a result. ATCO also stated words to the effect that it would not consider new connections as a worthwhile investment for ATCO to make if the ERA did not accept the proposed capital expenditure in its revenue allowance at this time, as the payback period was too long as evidenced by the long allowable depreciation periods and that the return on that investment was too uncertain to be bankable. ATCO makes a similar point in its amended proposal where it states that:

> *As a privately owned business, AGA is required to secure funding for investment from banks (via the ATCO Group of companies). A lower price and no provision for finance costs for this investment would make any further connections non-commercial and constrained by an inability to secure funds. Should the ERA continue to rely on EMCa's assessment of the NPV analysis, and therefore disallow the proposed growth investment, AGA will not be in a position to provide any new connections in the AA4 period above those included in the final decision's capital expenditure forecast*.[26]

86. We further note that ATCO is seeking to financially subsidise the cost of new connections, by providing $6.3m of 'incentive payments' to customers to connect,[27] in addition to mounting a significant advertising campaign targeting those new customers. Whilst it is outside of our scope in the current report to form an opinion on the amended proposal business case for this Business Development and Marketing operating expenditure, it is further evidence that the economics of new connection are not strong either to customers or to ATCO itself. Our opinion is that it is for this reason that ATCO is seeking to have the existing customer base underwrite the investment in new

[24] See footnoted references on previous page

[25] 9th April 2015

[26] *Ibid, page 140*

[27] ATCO amended proposal, page 86 Table 6-20 NPV analysis of incentive program

connections, and which is allowable under the rules provided the relevant tests are satisfied. This makes it imperative that rule 79(2)(b) is applied diligently, for the purpose for which it is intended, which is to ensure that the existing customer base that effectively would underwrite any conforming investment in growth capex[28] is not harmed by there being a net cost to connecting those new customers, and which would result in higher tariffs to existing gas customers.

ATCO's recently proposed economic value assessment model and associated analysis

87. On 15th April 2015, ATCO provided what it has presented as being an Economic Value test model. This appears to be identical in structure to the Incremental Revenue test model that ATCO provided with its amended proposal, but with the relevant tab labelled as "2014-2019 Rule 79(2)(a) test. From its amended proposal, ATCO states that it considers '….*that it is appropriate…. under…. (the incremental revenue test) to adopt the price that will actually apply during the period*' whereas in an economic value test *'the price customers would be willing to pay is at least the price they are currently paying*'.[29] We have compared this model with the incremental revenue test model provided with its amended proposal and it would appear that only two changes have been made:

- Tariffs have been maintained constant in real terms (i.e. increasing only with inflation), and
- ATCO has removed the assumed 2% per annum tariff decline from 2020.

88. Since the model is the same, we therefore consider these changed assumptions as simply sensitivity analysis of the incremental revenue model.

89. In any case, we note that growth capex can be considered conforming if it meets one of the two tests (79(2)(a) and 79(2)(b)) and, since ATCO has provided evidence in its amended proposal in support of its case that the expenditure meets the incremental revenue test 79(2)(b), we have assessed it on this basis.

90. In Attachment 1 to its 10th April 2015 letter to ERA, ATCO has also provided a rudimentary estimate of the claimed loss of economic value to greenfields customers, if they were not supplied with gas. This information lacks any tie-back to the customer usage assumptions in ATCO's greenfields assessment model, does not take into account the more-than-doubling of network fixed charges that ATCO is proposing and does not take into account differential appliance costs (for example) which would factor into a customer's assessment of economic value. ATCO's assessment is of consumer economics only, and does not take account of "*the service provider, gas producers, users and end users*" as is required under rule 79(3). From our experience, we are aware of assumptions that would be inherent in ATCO's purported assessment, and which would need to be assessed and validated, but which ATCO has not disclosed. We do not consider that the "supporting analysis" provided in ATCO's letter represents an economic value test such as would be required under the Rules and it is also unclear whether ATCO considers this, or the quite different model provided on 15th April, to be

[28] through its inclusion in the RAB as 'conforming capex'

[29] ATCO, *Response to ERA Draft Decision – 23 December 2014,* page 145

the basis on which it claims that its proposed growth expenditure satisfies the Economic Value test under Rule 79(2)(a).

Conclusions on claimed economic value on growth expenditure

91. In conclusion, we consider that ATCO did not in its amended proposal provide either a clearly-expressed claim that its growth expenditure meets an economic value test, nor any evidence of such assessment. We consider that the information that ATCO has provided subsequently provides only incomplete and unsupported information that does not support its assertion that its proposed growth expenditure meets an economic value test.

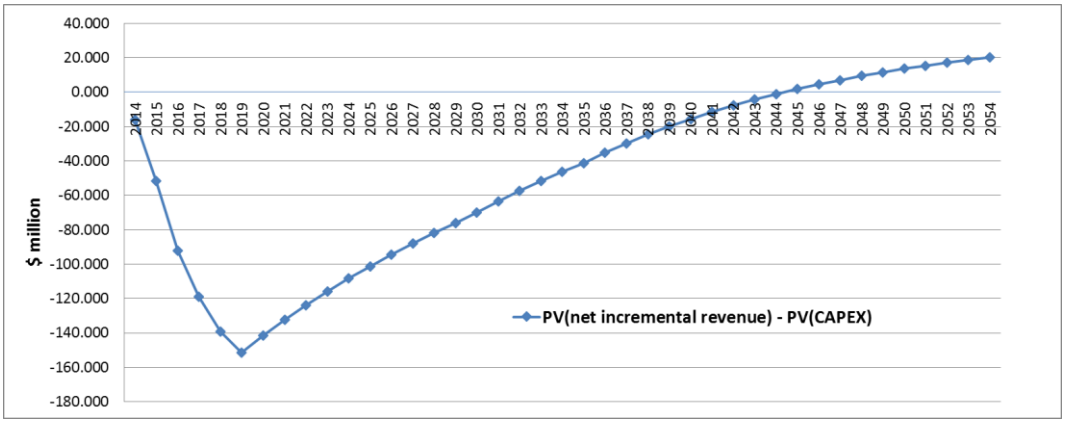
92. Noting that the rules require ATCO to demonstrate only that its expenditure meets either the economic value test or the incremental revenue test, and that ATCO did in its amended proposal provide clearly-expressed claims that its proposed expenditure meets the incremental revenue test, and supporting evidence for these claims, we have made our assessment on the basis of that information.

3.3.4 ATCO's amended incremental revenue test for growth capex

ATCO's submitted incremental revenue test results

93. ATCO has presented an NPV analysis of incremental revenue which shows (for its proposed assumptions) a positive NPV after 31 years, an NPV of negative $2.6m after 30 years and positive NPV of $18.7m after 40 years. The NPV profile is shown in the graph below and it can be seen that, with ATCO's amended proposal assumptions, it would not be positive until 2045. This compares with its initial proposal, in which it claimed that growth capex would be positive by 2035[30]. The extended payback appears to result largely from more conservative assumptions that ATCO has made following our 2014 assessment of its initial proposal.

Figure 1: Results of ATCO incremental revenue test for overall growth capex



Source: ATCO model D132089, tab '2014-2019 Rule 79(2)(b) test

[30] Figure 65 in ATCO's initial AAI proposal

94. We have reviewed the model that ATCO has provided in support of its assessment and we observe the following matters of concern:

- The ATCO incremental revenue model assumes the considerably-modified tariff structure and tariff levels that ATCO has proposed. From 2020 it assumes a 2% per annum decline in those tariffs (in real terms). Rule 79(4)(a), unequivocally in our view, requires that the test uses 'prevailing tariffs'.
- While ATCO has reduced assumed consumption by new connections from the value assumed in its initial proposal (17 GJ and declining to 14.9GJ) to 13.2 GJ, this value still appears high from evidence ATCO has provided to us (see below).
- The model includes continuing customer growth beyond the AA period to 2036 (with associated ongoing capital expenditure). Whilst this could be considered to be a valid inclusion in the test, we found that excluding the additional new customers (from 2020) and associated capex) from 2020 did not materially alter the NPV. In other words, the growth beyond the AA period appears to be close to NPV-neutral. For pragmatic reasons we have reassessed the analysis excluding the customer growth and capex beyond the end of the next AA period. As well as having minimal effect on the analysis, this avoids the challenge of (a) assessing the validity of forecast new connections for sixteen years beyond the end of the AA period, and (b) assessing the validity of the capital expenditure assumptions for that same extended period that is not within the AA that is under consideration.
- While the model extends for 60 years (to 2073), no allowance has been made for replacement of the capital investment that is proposed for the next AA period. This is despite ATCO showing a 25 year economic life for regulatory depreciation purposes, for the main connection expenditure, comprising 'meters and service pipes'. In an analysis that does not become positive now for 31 years (under ATCO's assumptions), it is necessary to allow for the replacement of meters and service pipes at the end of their economic lives.
- The growth forecast to some extent relies on the advertising campaign and connection incentives program that ATCO proposes. The rules require that 'incremental operating expenditure for the incremental services' is deducted. ATCO has deducted some incremental opex, including incremental UAFG, but has not deducted any of the Business Development and Marketing expenditure without which, ATCO asserts, the incremental revenue growth would be less. We hold that these assumptions need to be internally consistent. For the purpose of better assessing the test, we have deducted half of the proposed Business Development and Marketing opex as a cost of growth[31].

95. In our 2014 report, we disagreed with ATCO's assumption that new connections would have the same consumption as existing customers, on evidence that ATCO provided. In its amended proposal, ATCO reduced its assumption accordingly. ATCO also provided this data on a weather-corrected basis, which it had not provided in 2014, and proposed

[31] It is not within the scope of our current assignment to review the level of BD and marketing opex that ATCO has proposed. We observe however that a reduction of around 50% would reduce the proposed amount to around the base level that it has incurred to date, and would treat as 'incremental' the proposed incentive payments and a portion of the proposed increase in advertising.

that the most suitable data would be that for the third year after connection, once usage has stabilised.

96. We sought an update to ATCO's data to now include 2014, and on a weather corrected basis, and which is provided in Table 2 below.

Table 2: Weather adjusted average consumption of newly connected B3 customers (GJ)

Year customer connected	2009	2010	2011	2012	2013	2014
Pre 2009	18.2	17.4	16.1	16.2	16.1	15.5
2009		13.4	13.6	14.3	14.6	14.4
2010			12.1	13.7	14.1	14.1
2011				11.5	12.6	12.6
2012					11.8	12.5
2013						10.6

Sources: ATCO's response to EMCa95

97. We read this data as evidencing a further decline in usage by new customers. With one exception (in 2013), first-year consumption by newly-connected customers has declined every year and, with a slight exception in 2012, so has second-year consumption. Third-year consumption, which could be considered a 'stable' value, has declined in each successive year and the most recent data, being 2014 consumption of consumers connected in 2011, is 12.6 GJ, down from 14.1GJ for the cohort connected one year earlier.

98. Despite this evidence of a continuing decline in usage per new connection since 2010, in its incremental revenue model ATCO has assumed no further decline, and holds this value at 13.2GJ through to the end of the model (2073). ATCO's consultant, Core Energy, appears to have determined this value based on modelling. However we consider actual data to be more credible evidence than modelling; further, ATCO's data does not provide support for a view that the decline in consumption that was evidenced in last year's data, has now bottomed-out.

99. For the purpose of applying the incremental revenue test, we consider that a more reasonable starting value is 12.6GJ per new customer, this being the third-year value for the cohort connected in 2011 and 0.1GJ higher than the second-year value for the cohort connected in 2012. Inspection of the data above also shows that the maximum difference between a first-year and a third-year consumption value is 2GJ, and occurred for the cohort connected in 2010 (14.1GJ – 12.1GJ). A 2 GJ increment on the first-year value of 10.6GJ for those connected in 2013, would also give a third-year estimate of 12.6GJ for this cohort.

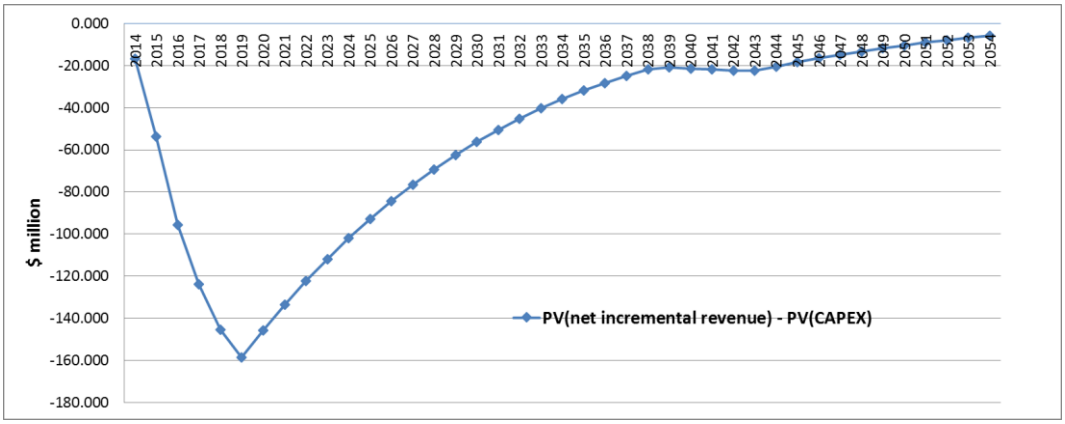
100. For simplicity, and as an assumption that slightly favours ATCO's case, we have retained this value of 12.6GJ for the period to 2019, but have allowed it to decline further from 2020, as stated below.

101. We have modified ATCO's model to take account of the factors above. In doing so, we have retained the 2% real-terms decline in revenue from 2020 that ATCO has proposed, though for different reasons:

- We remain concerned with ATCO's assumption that consumption per connection will not decline further for the next 60 years, despite the significant decline in the past 5 years. We consider that the better view is to allow for some further decline;
- There is a proportion of customers that disconnect and will continue to disconnect, including some of those customers who ATCO will connect in the next AA period. Disconnection information that we previously referred to in our 2014 report would suggest that up to around 30% of customers could disconnect over a 60 year period and a significant proportion of them could eventually be those that are currently connecting. Further, ATCO is looking to almost double its fixed charges over AA4 and we would expect this to precipitate a higher disconnection rate. Yet ATCO does not allow for any disconnections and assumes that every new customer remains connected and continues to use the same assumed amount of gas over the 60 years of its analysis. .

102. The result of modifying ATCO's growth NPV model to take account of the factors above, is shown in the graph below.

Figure 2: EMCa re-assessment of incremental test for overall growth capex after correction for factors identified above



Source: EMCa analysis

103. We conclude that, under more realistic assumptions than ATCO has applied, the overall growth capex that ATCO proposes does not pass the incremental revenue test. In other words, the analysis shows that the proposed new connections will cost more (in NPV terms) than the incremental revenue they would bring and that, if the connections were to proceed, then existing customers would subsidise those new connections through the imposition of higher tariffs than they would otherwise pay.

3.3.5 ATCO's proposed incremental revenue test for greenfields investment

104. In its amended proposal, ATCO has provided an NPV test for greenfields customer connections. This is a helpful addition since its initial proposal, and which now allows for a dedicated assessment of this important component of ATCO's proposed growth expenditure.

105. We note some discrepancies in comparing this model with the overall growth capex model: for example, as shown in Table 3 below, the assumed number of greenfields new B3 connections in the greenfields model slightly exceeds the total number of new B3 connections (and which includes brownfields connections) in the overall growth model. We also note that the greenfields model assumes a continuously declining consumption per new connection, as opposed to what we consider to be the less realistic assumption in ATCO's overall growth model (as described above) that there will be no further decline in the consumption of new customers. The greenfields model assumes new consumption of 13.3 GJ in 2015, falling to 12.3GJ by 2043 (the last year of ATCO's greenfields NPV analysis) and, for the reasons described earlier, we consider that more realistic values would be less than this.

Table 3: Forecast new connections - overall growth vs greenfield only growth

	Jul-Dec 2014	2015	2016	2017	2018	2019
	New connections from overall growth					
Tariff class B2	290	337	326	314	300	286
Tariff class B3	7,970	16,115	16,460	16,456	13,559	13,289
	New connection from greenfield only					
Tariff class B2	252	295	285	274	262	250
Tariff class B3	8,091	16,602	17,208	17,261	14,588	14,381

Sources: D132089 GDS - ATCO - AA4 - CONFIDENTIAL - ATCO Rule 79_2_b test AA4 DD Response & D133986 GDS-ATCO-AA4-CONFIDENTIAL-FET Greenfields NPV - AA4

106. ATCO's assessment is over 30 years and, strictly speaking, there would be a cycle of replacement of meters and services just before the end of that period. However if such replacement expenditure was included, then the appropriate means of modelling this would be to also include a residual value which, in our view, would largely offset the expenditure.

107. ATCO's model shows a positive NPV of $49m and it achieves this positive NPV in 9 years. Notwithstanding the concerns above, we consider that ATCO has now provided satisfactory evidence that the greenfields development component of its proposed growth expenditure satisfies an incremental revenue NPV test.

3.3.6 ATCO's proposed NPV test for Peel, Two Rocks, Capel to Busselton and Baldivis

Background

108. In aggregate, these four demand projects (or in, in the case of Peel and Two Rocks, the amounts that ATCO proposes as being growth driven[32]) total $49.3m, as is shown in table 4 below. In our 2014 advice, our finding was that ATCO had not provided compelling information that these projects were justified and we found that they could therefore not be accepted as conforming capex. As part of its amended proposal, ATCO

[32] ATCO proposes that Two Rocks and Peel are also justified partly by 'sustain' criteria.

has now provided dedicated NPV tests for these projects and we have assessed the justifications that ATCO has now proffered.

NPV modelling concerns

109. We consider that the NPV models that ATCO has supplied for these projects do not provide an acceptable application of an incremental revenue test.

110. Our first observation is that each of ATCO's models calculates NPV for 60 years, to 2073. Unlike the overall growth NPV model, these models include a 'refresh' of meters and services capex every 25 years, consistent with ATCO's economic life assumptions and utilise different new customer usage assumptions.

111. Of primary concern is that the models as provided (and with the NPVs as reported in ATCO's amended proposal)[33] contain a large 'terminal value' which, as far as we can tell, is a calculation of an in-perpetuity assumed net cash flow based on the last year of the model (year 60). For Two-Rocks, for example, the terminal value in ATCO's model is $505m and we have confirmed by inspection of the model that this net cash flow is included in its NPV.

112. Notwithstanding the relatively long physical lives of these assets, for provision of a discretionary fuel we consider it ambitious to attempt to justify these projects based on assumed 60 year cashflows within the model and which are then assumed to continue in perpetuity thereafter. In particular, we do not consider it a realistic assumption that the final year cashflows will continue in perpetuity. We consider that a more realistic assessment period would assume a finite economic life for the proposed investment that is no longer than the life of the longest-lived assets. In the absence of such assumptions from ATCO, we consider that a reasonable adjustment is to remove the assumed terminal value (which represents the in-perpetuity cashflows) and, when we do so, the NPV for Two Rocks and Capel to Busselton become negative, Peel becomes effectively zero NPV and the NPV for Baldivis approximately halves to $1.3m.

Concerns with ATCO's proffered justification of Peel and Two Rocks spur lines

113. In response to our information request, ATCO has also now provided information that its planned 2015 Stage 1 of the Peel project (sometimes referred to in its documentation as the Pinjarra reinforcement) would only be required to meet the needs of an assumed 241 additional connections within AA4, with the remainder of its projected new connections occurring from 2020 onwards. ATCO has not satisfactorily demonstrated that an additional 241 customers would be materially detrimental to the network or to services to existing customers. This is a significant qualification of the information that we relied on in our 2014 assessment, which was that this part of the project was required to provide reinforcement to meet brownfields obligations (with ATCO not at that time defining the timing of these obligations)[34]. In its amended proposal, ATCO has not

[33] ATCO, Response to ERA Draft Decision – 23 December 2014, page 149, table 8-21

[34] It would appear that ATCO has realised the timing significance of this new information: On 24/04/2015 ATCO provided a response to EMCa097A which provided the information relied on here. Subsequently, ATCO sought to withdraw its response and provided more limited information that did not distinguish between new connections in the AA4 period and the subsequent period. ATCO has not distinguished between greenfields and brownfields connections in this information but in any case the proposed number within AA4 is small.

referred to Peel stage 1 under the category "reinforcements" and it is clear from inspection of the proposed reinforcement expenditure, that it is not included under this category.

114. On the new information provided, we do not consider that it is appropriate to consider Peel stage 1 as a reinforcement project, nor does it appear that ATCO has proposed it as such. A reasonable reading of ATCO's amended proposal would suggest that stages 1 and 2 of the Peel spur line (i.e. $11.4m[35]) have been assessed on an NPV basis. However in its incremental revenue test model, we find that ATCO has excluded the cost for stage 1 in its NPV analysis. Including this cost, and excluding the terminal value (as discussed above) leads to a negative NPV of $4.4m for Peel[36].

115. In summary therefore, while ATCO has allocated only a portion of its proposed expenditure on the Peel and Two Rocks spur lines to 'growth', we consider that this does not pass a reasonable application of the required incremental revenue test. For reasons that we describe in section 4, we also do not accept ATCO's contention that the Two Rocks and Peel spur lines are required to 'sustain' the system and, on these bases, we consider that ATCO has not justified them as conforming capex.

Concerns with ATCO's proffered justification of the proposed Baldivis spur line and Capel to Busselton reinforcement

116. For reasons that we described in our 2014 report, we do not consider that the proposed Baldivis and Capel to Busselton pipelines are justified and we consider that on a reasonable application of the incremental revenue test, the proposed Capel to Busselton reinforcement has a negative NPV.

117. Other than its NPV analysis, ATCO has not provided further information on the justification for the Baldivis pipeline. ATCO has proposed this pipeline for inclusion in the last years of the AA period. We understand that the development of this currently rural areas is still subject to re-zoning and we note the time lag that would occur, if and when it is re-zoned, to reach the stage of subdivision and housing development. ATCO's proposal information does not seem to accurately reflect this current status and does not provide information to convince us that this requirement is likely to occur within AA4. Even if the land development that it is predicated on was to proceed, on a reasonable application of the incremental revenue test, taking account of lower customer volumes most likely declining at a greater rate, allowing for a proportion of disconnections over the 60 year analysis period and after addressing issues that we have raised above with assumed terminal values, we consider that the NPV would be significantly lower than ATCO has presented.

Lack of justification for the four major demand projects previously disallowed

118. The information that ATCO has now provided has allowed us to assess the justification that ATCO has claimed for these four projects. Our view is that in accordance with the

[35] As shown in Table 8-12, and paragraph 663 above it which includes the words *"….with the allocation to growth reflecting the NPV neutral position of project costs…"*

[36] Including the cost of stage 1 alone drives the NPV negative

rules, the new information does not support the inclusion of the growth expenditure that ATCO has proposed for them.

119. From inspection of the various NPV models provided (and which show incremental customers only from 2020) our understanding is that the four projects are not required to meet growth forecasts within the AA period. Our understanding, therefore, is that the levels of greenfields and brownfields growth that ATCO has projected within AA4 will not be affected if none of these four demand projects was to proceed.

120. The following table shows the expenditure amounts that ATCO has proposed for assessment on growth justification, for these projects, the NPVs that ATCO has claimed and the NPVs that we consider to result from more reasonable applications of the incremental revenue test.

Table 4: ATCO proposed demand projects, proposed growth NPVs and EMCa adjusted NPVs - $m, real June 2014

Growth capital expenditure	Jul to Dec 2014	2015	2016	2017	2018	2019	Growth Total	ATCO's NPV models	EMCa adjusted NPV
Two Rocks spur line *			13.6	13.6			**27.2**	4.1	-1.50
Peel spur line *		5.4			6.0		**11.4**	1.2	-4.40
Baldivis spur line					5.4		**5.4**	2.6	1.30
Capel to Busselton reinforcement					-	5.3	**5.3**	0.5	-0.80
Total	0.0	5.4	13.6	13.6	11.4	5.3	49.3		

Sources: EMCa analysis from ATCO Amended proposal Table 8–21, p.149 and ATCO capex NPV Models

3.3.7 ATCO's case for reinforcements and regulating facilities

121. In our 2014 report, we recommended excluding a proportion of ATCO's proposed 'other reinforcement' expenditure, on the basis that it was associated with greenfields growth, which (due to lack of supporting evidence from ATCO) we found to be not justified.

122. As described above, ATCO has now provided a justification for the proposed greenfields expenditure, which we accept as reasonable. Further, the NPV of greenfields development is sufficiently positive to absorb related reinforcements (to the extent that they are not included). We propose therefore that all proposed reinforcement expenditure is accepted.

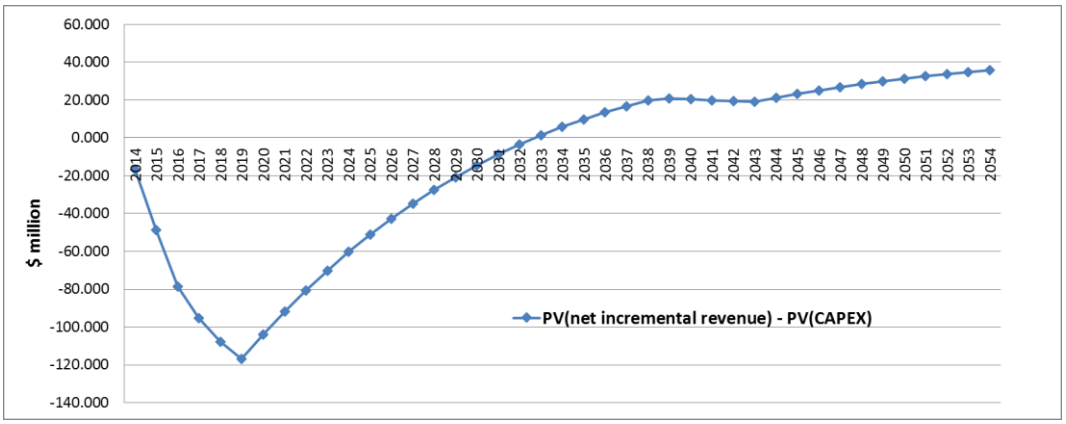
123. We also now accept ATCO's proposed expenditure on volume-related demand and regulating facilities capex, based on information ATCO has provided in its amended proposal that this is largely required to meet brownfields obligations[37]. We note also that this expenditure is currently underway and which we consider to be a further and reasonable demonstration that ATCO has decided that it is required.

[37] ATCO, *Response to ERA Draft Decision – 23 December 2014,* page 158 and figures 8-14 and 8-15

3.3.8 EMCa's assessment of a level of conforming growth capex

124. Using ATCO's overall growth incremental revenue test model, we have first modified the assumptions as described in section 3.3..4 . We have then re-applied the test, modifying the growth expenditure so that it does not include the four demand projects that we consider not to be justified based on their individual NPV tests (as described in section 3.3.6) and the resulting NPV profile is shown in Figure 3.

Figure 3: EMCa re-assessment of incremental revenue test for overall growth capex after removal of non-conforming demand projects



Source: EMCa analysis

125. As the graph shows, the resulting growth capital expenditure would be NPV positive by 2033, that is, within 19 years of the start of the next AA and 13 years from the end of this AA. We consider this to be a reasonable demonstration that this (reduced) level of growth capital expenditure meets the incremental revenue test 79(2)(b), and therefore should be included in ATCO's capital expenditure allowance for tariff determination purposes.

3.4 Quantified implications

126. As is shown in Table 5, ATCO has proposed $233.8m of growth capex in its amended proposal. We deduct from this the four demand projects, as is shown.

Table 5: EMCa adjusted growth capex - $m, real June 2014

$ million real at 30 June 2014	July to Dec. 2014	2015	2016	2017	2018	2019	Total	EMCa adjustment	EMCa adjusted
Greenfield customer initiated	14.3	28.2	27.0	25.7	24.2	24.4	**143.8**		**143.8**
Brownfields customer initiated	2.4	3.7	3.2	3.2	3.0	3.0	**18.5**		**18.5**
Two Rocks spur line	0.0	0.0	13.6	13.6	0.0	0.0	**27.2**	**-27.2**	**0.0**
Peel spur line	0.0	5.4	0.0	0.0	6.0	0.0	**11.4**	**-11.4**	**0.0**
Baldivis spur line	0.0	0.0	0.0	0.0	5.4	0.0	**5.4**	**-5.4**	**0.0**
Capel to Busselton reinforcement	0.0	0.0	0.0	0.0	0.0	5.3	**5.3**	**-5.3**	**0.0**
Elizabeth Quay	0.0	3.6	5.0	0.0	0.0	0.0	**8.6**		**8.6**
Reinforcements	0.6	1.0	5.7	1.1	2.0	1.1	**11.5**		**11.5**
Other	0.9	1.4	0.0	0.0	0.0	0.0	**2.3**		**2.3**
Capital Contributions	-0.2	0.0	0.0	0.0	0.0	0.0	**-0.2**		**-0.2**
Amended proposal	**18.0**	**43.3**	**54.5**	**43.6**	**40.6**	**33.8**	**233.8**	**-49.3**	**184.5**

Sources: EMCa analysis and ATCO Amended proposal table 8-25, p.162

127. We consider that the remaining $184.5m of proposed growth capex meets the relevant tests under the NGR[38].

[38] We note that in our scope for assessing the amended proposal, we were asked only to asses those elements of proposed growth capex that had been previously disallowed.

4 Review of elements of AA4 sustaining capex

4.1 Introduction

128. This section contains the results of our review of information provided by ATCO in response to the ERA's Draft Decision pertaining to the following elements of sustaining capital expenditure in the AA4 period that were assessed as not satisfying rule 79 of the NGR:

- two metallic mains spur line projects: Two Rocks and Peel;
- interdependency projects; and
- metallic mains replacement projects.

129. With respect to the spur line and interdependency projects, the ERA has asked us specifically to address ATCO's and Energy*Safety's* comments regarding the application of the ALARP tests, ATCO's catastrophic risk threshold for loss of supply, ATCO's claims with regards to capex compliance with the Safety Case and ATCO's application of the relevant Australian Standards in its claimed justification of the proposed expenditure.

130. The results of our review and our overall assessment of whether this capex can be considered conforming capex (r. 79) for the purposes of rule 77(2) are set out below. Unless otherwise stated all references to dollar values are expressed in 30 June 2014 dollars.

4.2 Interpretation of AS/NZS 4645.1:2008

4.2.1 ATCO's revised proposal

131. ATCO advises that its Safety Case has been developed to reduce the risk of operating the gas network to low or as low as reasonably practicable (ALARP) and that its Safety Case complies with Australian Standards, including AS4645.1:2008 (AS 4645).[39]

132. ATCO identifies three possible failure events[40] that it considers may potentially lead to interruption of supply affecting greater than 25,000 customers. It further advises that:[41]

(i) '*Managing the loss of gas supply in network mains and to end use consumers, especially when positive pressure is not maintained, is technically challenging, potentially hazardous, resource intensive and can take a significant amount of time to safely restore supplies to customers;' and*

(ii) *'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 that will take a considerable time and resources.'*

133. With respect to its risk assessment outlined in its Safety Case, ATCO maintains that:

(i) its security of supply risk thresholds are: (a) consistent with good industry practice, (b) consistent with the requisite standards, (c) are supported by Energy*Safety,* and (d) are supported by Zincara[42]. Specifically, ATCO advises that there is consensus from Zincara and Energy*Safety*, that '*the loss of 25,000 customers is a catastrophic event and constitutes a high risk and requires action to reduce the risk in accordance with AS/NZS 4645';*[43]

(ii) as the risk is ranked high, under both its own risk framework and through its interpretation of the application of AS4645, ATCO considers that it must '*implement a risk treatment action that reduces the risk to intermediate or lower without a requirement to conduct a cost benefit analysis';*[44] and

(iii) Energy*Safety* has advised that if ATCO conforms to the draft decision it will be in breach of the Gas Standards Act 1972 immediately when such access arrangement becomes effective.[45]

134. ATCO now identifies six cases in which high risks to supply to its customers exist based on its definitions of incident severity and frequency in accordance with its Safety Case. It proposes to address these through two 'spur line' projects and four 'interdependency' projects.

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[39] ATCO, Response to ERA Draft Decision, p. 4

[40] Failure of pressure reduction station or high pressure pipeline or high pressure regulator (Table 1-2, Appendix 8.2)

[41] ATCO, Appendix 8.2, p. ii

[42] Zincara, *Appendix 8.3* Review of ATCO Gas Australia Capital and Operating Expenditure, Nov 2014

[43] ATCO, Response to Draft Decision – 23 December 2014, p. 131

[44] *Ibid,* p. 132

[45] ATCO, Appendix 8.1, *Page 3*

135. The two metallic mains spur line projects are the same as proposed in the original proposal: Two Rocks and Peel. In its original proposal, ATCO identified nine 'interdependency' projects. It has reassessed the restoration time to be 'below long term' for five of them and states that it will further assess them "*as required by AS/NZS4645, through ALARP assessments during the AA4 period."*[46]

136. ATCO states that its proposed security of supply projects all reduce the risk ranking to 'negligible'. The two spur line projects are designed by ATCO to also provide for forecast growth in the Two Rocks and Peel regions. ATCO has apportioned the cost of the projects between growth and security, as shown in the table below[47]. The table also shows ATCO's assessment of the cost of the spur line projects if they were only to address security of supply risk. It can be seen that this is the same as the total cost for all projects except for Two Rocks, where its allowance for growth would add an additional $5.4m.

Table 6: ATCO's revised security of supply projects ($m, real June 2014)

Project	Project type	Number of Customers at risk	Apportioned cost			Cost to address supply risk only
			Security	Growth	Total	
Two Rocks	Spur line	60,000	18.1	27.2	45.3	39.9
Peel	Spur line	34,000[48]	20.9	11.4	32.3	32.3
Hillarys	Interdependency	50,400	16.5	n/a	16.5	16.5
Canning Vale	Interdependency	42,000	9.5	n/a	9.5	9.5
Fremantle	Interdependency	28,000	0.9	n/a	0.9	0.9
Lathlain	Interdependency	40,000	7.0	n/a	7.0	7.0
TOTAL			**72.9**	**38.6**	**111.5**	**106.1**

Source: Tables 8-12, 8-13; ATCO Response to Draft Decision – 23 December 2014

137. ATCO advises that: '*[T]he lower expenditure outlined in the Draft Decision seriously affects its ability to fully comply with its regulatory obligations under its approved Safety Case.'*[49]

[46] ATCO, Appendix 8.2, page 27

[47] The basis on which ATCO apportioned these costs, and our consideration of the growth components of the proposed two Rocks and Peel projects, is described in Section 3.

[48] In ATCO's Table 8-12, the number of customers is shown as 4,000; as this is inconsistent with the 34,000 customers identified on p. xv of Appendix 8.2 and the thrust of ATCO's risk assessment, we have assumed it is a typographical error

[49] ATCO, Response to Draft Decision – 23 December 2014, p. 4

4.2.2 EMCa's assessment

138. In our original assessment, we commented that we would expect that ATCO's response to our findings pertaining to its justification of sustaining capex projects would be conducted in accordance with good industry practice and that this should include:

- distinguishing between events that have a direct safety consequence for employees, customers and/or the wider public and events that primarily have a potential loss of supply impact;
- evidence-based assessment of risk likelihood;
- evidence of consideration of risk mitigation measures; and
- the assessment of proposed projects by reference to consideration of costs and benefits as is required by the aforementioned standards.[50]

139. In assessing ATCO's response we have sought information consistent with this approach and sufficient information to demonstrate that ATCO's proposed expenditure is justified in accordance with the requirements of the NGR.

Application of AS/NZS 4646.1:2008

140. One of ATCO's fundamental positions is that its expenditure is required to comply with its own Safety Case, which is in turn designed to ensure it complies with, among other things, AS 4645. We therefore present the requirements of AS 4645 as a foundation for assessment of ATCO's proposed security of supply related sustaining capex expenditure. Appendix A contains extracts from AS 4645, Appendix C, which provides guidance to qualitative risk assessment.

141. AS 4645 Appendix C, part C1, provides the following guidance for the evaluation of a failure event:

> *'Where a failure event may have several outcomes, the consequence and frequency of each outcome shall be considered. Full evaluation of every outcome may not be necessary, but sufficient outcomes shall be evaluated to identify the outcome with the highest risk ranking.'*

142. Importantly, this guidance links the failure event to the outcome. It is the consequence and frequency of the outcome (eg. loss of supply to customers for an extended period), not the event (eg. pipeline failure) that must be considered, with the focus being on the outcome with the highest risk ranking.

143. The sequence of risk assessment is:

(i) Consequence analysis (Table C1) – in which a severity class is assigned to each failure event, with consequences including the potential for:

- human injury or fatality;
- interruption to the continuity of supply with economic impact; and/or
- environmental damage.

[50] EMCa, *Report to ERA on ATCO Gas AA4,* page 106

(ii) Frequency analysis (Table C2) – in which the frequency of occurrence of each threat is assigned for each location where risk estimation is required. The contribution of operations and maintenance practices and procedures to the occurrence or prevention of failure events are to be considered in assigning the frequency of occurrence;

(iii) Risk ranking (Table C3) – in which the results of the frequency analysis and consequence analysis are combined. Risks determined to be *Low* or *Negligible,* or which are determined to be *Intermediate* and as low as reasonably practicable *(ALARP),* are considered to be acceptable risks.

(iv) Risk treatment (Table C4) – actions to reduce risks are to be taken based on the risk rank.

144. ATCO has identified the potential for interruption to the continuity of supply (with economic impact) as the highest risk to be treated. Energy*Safety* has identified that the interruption to the continuity of supply of the magnitude considered by ATCO also poses a risk to people's safety, and it has provided advice on this basis.

145. In the following sub-sections, we step through the risk assessment sequence, considering both the continuity of supply and then the human injury/fatality dimension in each case. We compare both ATCO's and Energy*Safety's* interpretation of AS 4645 with our own and then, in sections 4.4 – 4.7, we consider the application of ATCO's approach.

Consequence analysis – interruption to the continuity of supply

146. ATCO's consequence analysis has identified six areas of the networks that currently are exposed to outcomes it rates as either *Catastrophic* or *Major* severity based on events[51] that may potentially result in long term interruption of gas supply to customers.

147. ATCO defines *Catastrophic* severity as 'Interruption of supply affecting > 25,000 customers', whereas AS 4645 defines it as 'long term interruption of supply.' The latter does not provide guidance as to the interpretation of 'long term'. ATCO draws the link between its definition and AS 4645 by reference to its estimate that loss of supply to 25,000 customers will take an average of four weeks per customer to restore (ie. loss of supply of 100,000 customer-weeks in aggregate).

148. Zincara supports ATCO's estimated average restoration time of four weeks: '*Based on its experience, Zincara considers that ATCO's estimate of the length of time for long term interruption is realistic.'*[52]

149. ATCO defines the *Major* severity class as '*Interruption or restriction of supply affecting > 5,000 customers'* whereas AS 4645 defines it as '*prolonged interruption; long term restriction of supply'*. Again, AS 4645 provides no guidance to assist with interpretation of its definition.

[51] Pressure reduction station failure, High pressure pipeline failure; High pressure regulator failure

[52] Zincara, *Appendix 8.3, Review of ATCO Gas Australia Capital and Operating Expenditure, November 2014,* page 20

150. The risk thresholds that ATCO has adopted have not been mandated by Energy*Safety*, however it has accepted ATCO's 2011 Safety Case in which these definitions are nominated. The thresholds are therefore based largely on ATCO's own risk management policy and guidelines.

151. In response to the finding in our 2014 Report that this risk threshold definition was conservative based on our comparison with the definitions of four other utilities,[53] ATCO asserts that the risk definitions applied by Multinet, Envestra, and Allgas are similar to its own. ATCO's position is supported by Zincara, which dismisses the SP AusNet definition[54] as it concludes '*it is not possible to compare ATCO's definition of a catastrophic event to that of SP AusNet.*'[55]

152. We are unaware of a distribution network failure event (as nominated by ATCO) in Australia leading to the loss of supply to more than 25,000 customers, or of the loss of supply of that magnitude that has taken more than two weeks to restore. Again, we note that gas supply was restored to more than 1 million customers following the Longford gas explosion incident in 1998 in less than three weeks. Significant Australian gas distribution supply interruptions that we are aware of and which were caused by other events (such as water ingress and bushfires) have resulted in loss of gas supply to between 2,500 (27 years ago) to 25,000 customers[56], with supply restored within a matter of days and up to a maximum of two weeks.

153. With a highly conservative interpretation of likely restoration times, the ATCO definition could be considered similar to that of Multinet, Envestra, and Allgas. Notwithstanding that we cannot find evidence of such restoration time, we acknowledge Zincara's expertise in assessing this as a realistic likelihood and its view that ATCO's thresholds are commensurate with industry standards. We note that neither Zincara nor ATCO can reconcile SP AusNet's definition.

154. As discussed in Section 4.3-4.7, in cases in which there is risk of interruption to continuity of supply to 25,000 customers or more, we have conservatively applied a consequence rating of *Catastrophic'.*

Consequence analysis – human injury or fatality

155. Energy*Safety*'s view is that ATCO's threshold of loss of supply to 25,000 customers is, '*if anything*, *too high contrary to the belief of EMCa',*[57] based on:

(i) the number of critical customers[58] dispersed within urban areas within the WA metropolitan area;

(ii) the safety risk to workers in undertaking the remedial work to restore supply; and

[53] SP AusNet, Multinet, Envestra, and Allgas

[54] > 200,000 customers or System Black or loss of supply to entire CBD

[55] Zincara, Capex and Opex Review, p. 20

[56] Clayton Victoria, 1988

[57] ATCO, Appendix 8.1 , p. 3

[58] Such as hospitals, NG bus depots and schools (ATCO, Appendix 8.1 , p. 1-2)

(iii) the safety risk to customers such as from the prospect of inappropriate use of LPG gas bottles (such as using barbeques within buildings).

156. Energy*Safety's* view is that loss of supply to 25,000 customers can lead to a *Catastrophic* safety outcome. According to the AS 4645 definition, this equates to multiple fatalities occurring.[59] We note that neither ATCO nor Zincara claim this to be the case.

157. From the expertise within our team, we understand and acknowledge the material risk to the safety of workers during the restoration process (and which needs to be properly controlled[60]). From the evidence that we have available to us, we consider that the likely safety consequence could be described as '***severe***', which AS 4645 describes as '*injury or illness requiring hospital treatment*' and, despite our understanding that this has never happened, that there is at least the possibility of '*few fatalities, or several people with life-threatening injuries*" which would lead to a more conservative risk consequence ranking of "***major***". Although the failure event was different to those nominated by ATCO, we note that the Longford gas explosion incident in 1998 resulted in the interruption of gas supply to over 1 million customers and supply was restored without any significant safety incidents.

158. We can find no evidence to support Energy*Safety*'s view that the appropriate safety consequence rating for such a loss of supply is "***catastrophic***', and which would imply a likely consequence of '*multiple fatalities*' under AS 4645.[61]

Frequency class – interruption to the continuity of supply

159. A comparison of ATCO's risk frequency definitions and those in table C2 of AS 4645 is provided in the table below. We conclude that ATCO's definitions are equivalent to AS 4645.

Table 7: Comparison of frequency classes

Frequency class	AS 4645 description	ATCO description[62]
Frequent	Expected to occur once per year or more	The event is expected to occur once per year or more
Occasional	May occur occasionally in the life of the gas distribution network	The event may occur occasionally in the life of the asset
Unlikely	Unlikely to occur in the life of the gas distribution network, but possible	The event is unlikely to occur within the life of the asset, but it is possible
Remote	Not anticipated for this gas distribution network at this location	The event is not anticipated to occur for the asset at this location

[59] ATCO, Appendix 8.1 , p. 1 - as our understanding is that Energy*Safety's* jurisdiction only extends to safety-related risk for distribution gas network (ie. not economic risks)

[60] Eg. through ensuring only licenced gas technicians are allowed to work on the restoration, following well-defined processes, media campaigns, and safety instructions to all affected households, etc

[61] ATCO, Appendix 8.1, p.1

[62] ATCO Risk Management Matrix, Network-related risk

Hypothetical	Theoretically possible but has never occurred on a similar gas distribution network	The event is theoretically possible, but has never occurred on a similar asset

160. ATCO appears to designate the frequency class based on the failure event occurring, concluding that the risk to loss of supply from existing spur lines[63] and from existing infrastructure servicing the four areas for which it recommends interdependency projects[64] as *Remote.* ATCO provides no new statistical information to support its risk frequency assessment, nor does its consultant, Zincara. In its letter to the ERA, Energy*Safety* advises that:[65]

(i) '*Plastic gas mains are inadvertently dug-up and damaged on a regular basis*' (referring to a recent incident affecting in excess of 700 customers) and therefore regards it as a *Frequent* event;

(ii) Steel mains can also be damaged, but the risk is lower due to the resilience of the material to penetration and the frequency of the vehicle patrols monitoring the class 150 distribution pipeline corridors; and

(iii) For steel pipelines a loss of supply event cannot be deemed hypothetical '*because it has been proven that a loss of supply event is indeed possible*.' It considers that a conservative frequency class '*between Unlikely and Occasional*' is applicable.

161. Notably, *EnergySafety* makes no reference to the occurrence of a *Catastrophic* safety outcome from the plastic gas mains failures that occur 'on a regular basis'.[66] Similarly Energy*Safety* does not provide information to demonstrate that a *Catastrophic* safety outcome has occurred on a steel pipeline. It would appear, therefore, that Energy*Safety* follows the same precept as ATCO in designating the frequency of occurrence to an event rather than to the consequence of the event.

162. In accordance with AS 4645, we consider that the appropriate approach to designating the frequency is to consider the likelihood of the assessed consequence actually occurring with the existing risk mitigation controls in place. Clearly, this is not the same as designating the frequency of the event which may trigger the consequence.

163. As discussed above, we have been unable to find any event on the public record where a distribution network in Australasia has been damaged to the extent that more than 5,000 customers have lost supply from the events nominated by ATCO[67]. We acknowledge that third party damage to distribution pipelines is possible and does occur from time to time, but we can find no information to support a finding that a rupture or other event sufficient to cause loss of supply to over 25,000 customers for over four weeks has occurred.

[63] Bullsbrook and Mandurah, per Figures 1-2 and 1-7, Appendix 8.2

[64] Hillarys, Canning Vale, Fremantle, Lathlain per Table 1-15, Appendix 8.2

[65] ATCO, Appendix 8.1, p. 3

[66] ATCO, Appendix 8.1, p. 3

[67] ATCO, Appendix 8.1, p. 3 advised the highest number of WA customers that have suffered interrupted supply is 700

164. We therefore conclude that whilst the consequence of the event (loss of supply to >25,000 customers) is theoretically possible, it has never occurred on a similar asset. Based on AS 4645, this equates to a *Hypothetical* frequency class[68].

165. Similarly, in some instances[69] ATCO rates the frequency of loss of supply due to high pressure failure/high pressure regulator failure as *Unlikely,* but it provides no new information in support of this frequency assessment. We have not been able to determine on what basis ATCO designates the risk frequency [likelihood] for causing a *Catastrophic* outcome as *Unlikely[70] as opposed to the lesser probability classifications of 'remote' or 'hypothetical'.* We understand that there have been some events which have led to interruption or restriction of supply to >500 customers (but less than 5000 customers) in Australia, which should be classed as a *Severe* consequence according to both ATCO's and AS 4645 definitions.

166. If we apply the conservative definition of the restoration times and therefore severity of the impact of loss of supply of >25,000 customers, as described earlier, then this would lead it to be classed as *Catastrophic* on supply grounds as it is a 'long term interruption of supply' as described in AS 46456. Applying a likelihood of *Hypothetical* to such a consequence would lead to this supply risk being rated as an *Intermediate* risk under AS 4645. If the consequence was considered *Major*, involving '*prolonged interruption or long-term restriction of supply*' then, with a hypothetical likelihood, the risk ranking on supply grounds under AS 4645 would be *Low.*

Frequency class and risk rating – human injury or fatality

167. With respect to the safety risk to people, we are not aware of fatalities (or several people suffering life-threatening injuries) associated with large scale gas supply restoration projects and none of ATCO, Zincara or Energy*Safety* has brought any to our attention. We consider the frequency class for consideration of the impact as a 'major' consequence is best described as *Hypothetical*. This would lead to the risk being classed as *Low* under the AS 4645 risk framework. If one considers the likely safety consequence of a supply interruption to more than 25,000 customers to have a *Severe* safety ranking, then we consider that the most appropriate likelihood to apply to this would be *Occasional* and this would lead to an *Intermediate* risk ranking on safety grounds. . In neither case does a considered application of AS 4645 lead to the conclusion that the risk of supply loss that ATCO is seeking to address by capex investment has a *High* rating on safety grounds.

Risk Ranking and required actions – interruption of the continuity of supply

168. The table below shows the 'required actions' under AS 4645 resulting from risk ranking definitions for *High* and *Intermediate* from AS 4645[71].

[68] AS 4645, Table C2: *Theoretically possible but has never occurred on a similar gas distribution network*

[69] Loss of supply to Two Rocks (Table 1-2); Loss of supply to Greenfields network (Table 1-9) in Appendix 8.2

[70] AS 4645 Table C2: Unlikely to occur within the life of the gas distribution network, but possible

[71] For low risks, the standards require a management plan to prevent occurrence, and monitoring

Table 8: AS 4645 - High and Intermediate risk treatment actions

Risk rank	Required action
High	Modify the threat, the frequency or the consequences to ensure that the risk is reduced to intermediate or lower For a gas distribution network in operation the risk must be reduced as soon as possible, typically within a timescale of not more than a few weeks.
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 cannot be reduced to Low or Negligible action shall be taken to (a) Remove threats, reduce frequencies and/or reduce the 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 demonstration of ALARP must be completed as soon as possible, typically within a timescale of not more than a few months.

169. As discussed in sections 4.4 – 4.7, driving each of the six sustain projects ATCO proposes to undertake in AA4 are risk rankings of *High* for supply interruption to >25,000 customers from one of several possible failure events. In each case, ATCO has recommended risk treatments that result in *Negligible* residual risk. The cost of the proposed risk treatments range from $0.9m to $39.9m with an average proposed expenditure of $21.5m p.a. over AA4 if an allocation of cost to support growth is not made.[72]

170. We have assessed the same risk events to have, at most, *Intermediate* risk rankings in each case. A prudent operator would undertake further analysis to determine if the risk already satisfies ALARP and, if not, what other risk reduction measures (ie. other than building new pipelines) are available and should be adopted. We base our interpretation on the following factors:

(i) ATCO itself confirms our interpretation of ALARP requirements: Following on from Zincara evidence[73] ATCO states that: *'AGA acknowledges that the use of this term [ALARP] to refer to a situation where the risk level is 'Low' or 'Negligible' – and therefore does not require the ALARP test to be applied – is not consistent with the correct use of the term under AS/NZS 4645 which is a test that is only applied to risks that have been assessed as 'intermediate';*[74] *and*

(ii) AS 4645 clearly contemplates risk treatments of relatively small scope and scale in requiring *High* risks to be reduced to at least *Intermediate* '*typically within a timescale of not more than a few weeks';* the required timeframe[75] is also relatively short for reducing *Intermediate* risks that are not ALARP. We consider that ATCO's

[72] As discussed in Section 3, we do not consider ATCO's analysis in support of growth to satisfy the requirements of the NGR

[73] ATCO Appendix 6.3 page 5

[74] ATCO, *Response to Draft* Decision – *23 December 2014,* page 143

[75] Sufficient to implement procedural control mitigations and/or perhaps pending longer term or physical mitigation.

actions in not having already taken such actions provides an indication that in its BAU decision-making, these are not considered to be high risks.

(iii) Energy*Safety* has similarly not taken action to require ATCO to remedy these risks within weeks, as would be required by the standard as it applies to high safety risks. We note that the standard does not require any particular solution (including building a back-up pipeline) but would require steps to be taken to mitigate the risk so that it is no longer considered *High*, if it was genuinely found to be so.

171. On this basis we consider ATCO has an obligation under the Safety Case to follow the steps prescribed in Table C4 of AS 4645 for an *Intermediate* ranked risk:

(i) *Repeat the threat identification and risk evaluation process to verify and, where possible, quantify the risk estimation;*

(ii) *Determine the accuracy and uncertainty of the estimation;*

(iii) *If confirmed as Intermediate, if possible modify the threat, the frequency or the consequence to reduce the risk rank to Low or Negligible; and*

(iv) *Where the risk cannot be reduced to Low or Negligible action shall be taken to (a) remove the threats, reduce frequencies and/or reduce severity of consequences to the extent practicable, and (b) demonstrate ALARP.*

Link between AS 4645, the Gas Standards Act and the NGR

172. Energy*Safety* has advised the ERA that:[76]

(i) ATCO is required to design, construct, operate and maintain its network under a Safety Case regime in accordance with AS/NZS 4645.1:2008;

(ii) ATCO is obliged to comply with the Gas Standards Act 1972 and the regulations that require meeting or exceeding AS/NZS4645.1:2008;

(iii) ATCO's Safety Case should include Formal Safety Assessment(s) (FSA) and a risk register; interruption to supply of gas with catastrophic consequences should feature in the risk register;

(iv) ATCO has not updated its FSA, its 2011 Safety case or its risk register, but it anticipates that ATCO will do so in 2015;

(v) It would appear (to Energy*Safety*) that the ERA's draft decision used the risk model of AS/NZS2885.1 and a Quantitative Risk Assessment but ATCO is not operating under AS/NZS2885.1; Energy*Safety* considers that the wrong risk model has been used to arrive at the draft decision in disallowing the ATCO proposed network reinforcement projects;

(vi) AS/NZS4645.1 does not cater for quantitative risk assessment (cost/benefit analysis);

(vii) If ATCO conforms to the draft decision then they will be in breach of the Gas Standards Act 1972 immediately the access arrangement becomes effective because ATCO is '*unquestionably obliged to mitigate to a lower, acceptable risk level';*

[76] ATCO, Appendix 8.1, page 1-2

(viii) The draft decision is therefore '*untenable from a technical and safety regulatory point of view.'*

173. We reject Energy*Safety's* conclusion that we relied upon AS 2885 in our assessment of ATCO's proposed AA4 sustaining capex projects. We referred only to that standard to assist in interpreting the guidelines in Appendix C of AS 4645, given that they do not appear to contemplate risk mitigation options of the scope, scale and cost proposed by ATCO. AS 2885 applies to high pressure gas transmission pipelines and risk treatments can often incur significant costs. Ultimately and primarily, ATCO must comply with AS 4645, not AS 2885[77].

174. We also note that ATCO has not provided an FSA (or FSAs) as part of its Safety Case relevant to Two Rocks spur line, Peel spur line & Interdependency projects. The detailed analysis typically contained in quality FSAs should include the statistical basis for the failure modes (per FMECA) and failure statistics to support the risk assessment and treatment analysis.

175. We consider that AS 4645 and the prudent service provider test (NGR r. 79(1)(a)) requires ATCO to diligently consider all options for reducing the risk ranking to *Intermediate* or lower, applying cost-benefit analysis test to determine if an *Intermediate* ranking is ALARP.

176. As we consider that the risk ratings for the failure modes nominated by ATCO and Energy*Safety are Intermediate* and not *High*, ATCO is required to demonstrate that the proposed expenditure is therefore require to satisfy the ALARP test[78].

177. We note that Energy*Safety* considers that *AS 4645 does not cater for this level of quantitative scrutiny*[79] and that ATCO considers that it satisfies the prudent service provider test (r. 79(1)(a)) because…. Zincara also concludes that '*ATCO's risk management practice is consistent with that of a prudent service provider.'*[80]

178. ATCO primarily relies on compliance with its regulatory obligation under the Gas Standards Act (per r. 79(2)(c)(iii)) to satisfy NGR r. 79(1)(b). It also draws a link (supported by Energy*Safety*) between loss of supply and maintaining and improving the safety of its services (r. 79(2)(c)(i)).

179. We have assessed ATCO's justification of the two spur line projects and four interdependency projects in sections 3.4-3.6 against the requirements of AS 4645 and the NGR and taking into account the new information provided by ATCO in its response to the ERA's draft decision. In doing so, we refer to Energy*Safety*'s letter to the ERA only inasmuch as it relates to safety consequences. We consider that it is misleading in

[77] EMCa note however that the Two Rocks feasibility document provided by ATCO, in response to requests for information in the initial review, has recommended an option involving a pipeline to AS2885 requirements. (ATCO Document Code: AST.2013.RP.002)

[78] With cost-benefit analysis as is incorporated in the definition in the standards

[79] Appendix 8.2, Energy*Safety*, p. 2

[80] Appendix 6.3, Zincara, Capex and Opex Review, Nov 2014, p. 17

regards to Energy*Safety*'s jurisdiction, to draw wider implications from the advice to ERA that it has given.

4.3 Two Rocks Spur line

4.3.1 ATCO's revised proposal

180. ATCO in its revised proposal identifies two loss of supply risks to customers in the 'northern network' that it proposes to treat by constructing a new steel mains spur line from the DBNGP at Muchea-Bore Rd gate station (GS003).

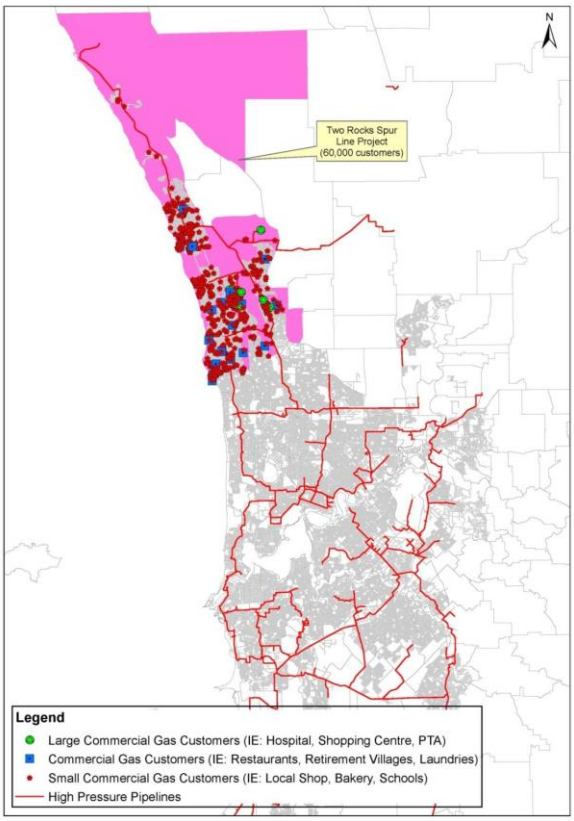
Loss of supply to the Northern Network

181. ATCO identifies 60,000 customers at risk of long term loss of supply due to failure of either a pressure reduction station on the Neaves road spur line or the high pressure pipeline itself.[81] The customers at risk include 635 small commercial customers and 29 large commercial customers.[82] As the total exceeds its risk threshold of 25,000 customers, ATCO concludes that the severity class is *Catastrophic.* It assesses the frequency class to be *Remote* but does not provide the details of its risk frequency analysis to support this frequency rating. The figure below shows the area in which customers are at risk.

[81] We assume that this is the highest inherent risk posed by the existing infrastructure as no reference is made to people or environmental risk

[82] including the Joondalup Police Academy, Whitfords and Ocean Keys shopping centre and the Belgrade Aged Persons Home.

Figure 4: Area to be reinforced by ATCO's proposed Two Rocks spur project



Source: Figure 1-1, Appendix 8.2 ATCO Security of Supply Projects, p. vi

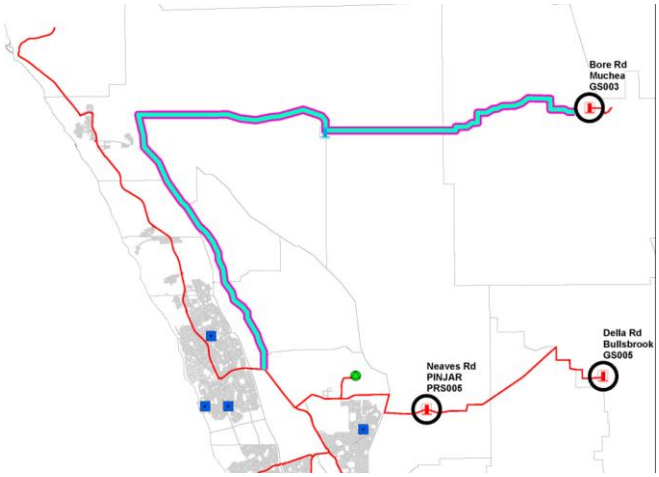
182. ATCO presents only one stand-alone option for addressing the security of supply risk[83]: construction of a 44km high pressure DN200 steel pipeline from the Muchea gate station at a standalone cost of $39.9m[84] (or ~$665/per customer), as shown in the figure below. With this risk treatment action ATCO concludes that the risk would be reduced to *Negligible.*[85]

[83] It also presents a do nothing option, a growth-only option and a combined growth/security option

[84] if the project cost allocation is divided as proposed by ATCO between growth and sustain, the cost is $18.1m and the average cost per customer is reduced to $302

[85] Table 1-3, Appendix 8.2, p. vii

Figure 5: ATCO's proposed treatment to mitigate supply risk to the northern network

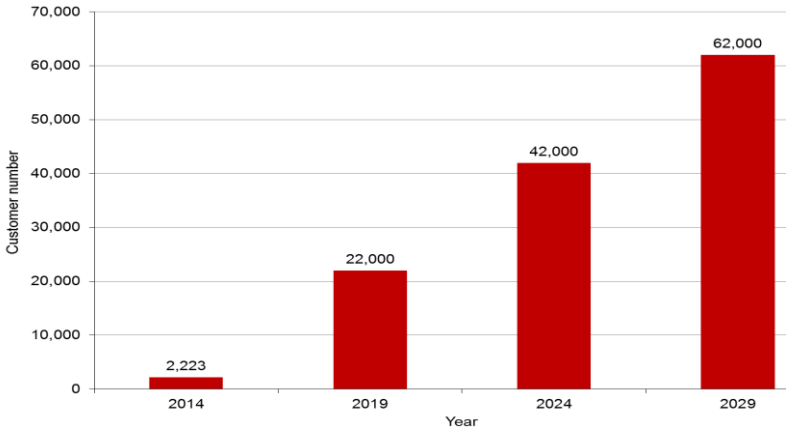


Source: Figure 1-2, Appendix 8.2 ATCO Security of Supply Projects, p. viii

Loss of supply to Two Rocks

183. The figure below shows the number of customers ATCO has identified as being at risk of long term loss of supply in the Two Rocks area due to high pressure regulator failure or 'high pressure failure' over the period 2014-2029.[86]

Figure 6: ATCO's forecast customers at risk of loss of supply (Two Rocks)



Source: Table 1-2, Appendix 8.2 ATCO Security of Supply Projects, p. vii

184. The table below summarises ATCO's supply risk assessment and risk treatment options. Based on its forecast of the number of customers at risk, ATCO assert that its risk ranking by the end of the AA4 period is *High* (and remains so through to 2029), if not treated according to its preferred option 3.

[86] Table 1-2, Appendix 8.2, p. vii - we assume ATCO meant a high pressure *pipeline* failure

Table 9: ATCO options for treating Two Rocks supply risk ($m, real June 2014)

Option	Project	Scope	Capital cost ($m)	Residual risk (Two Rocks)		
				2014	2019	2029
1	Northern suburbs	44km HP steel – 200mm	$39.9	Intermediate	High	High
2	Reinforce the Two Rocks network for new growth customers only	17km HP steel – 200mm	$19.9	Intermediate	Intermediate	High
3	Address security of supply and future growth as single project	44km HP steel – 300 mm	$45.3	Negligible	Negligible	Negligible
4	Do nothing		$0	Intermediate	High	High

185. Option 3 includes addition of a 5km 200mm reinforcement in AA5. The option is selected by ATCO because it reduces both the risk of supply loss to the northern networks and the future risk of loss of supply to Two Rocks to *Negligible*.

4.3.2 EMCa's assessment

Loss of supply to northern networks

186. We are unable to independently verify that 60,000 customers in the northern suburbs are at risk without assessing ATCO's detailed modelling, which is outside of the scope of our review. However, for a single point failure on the Bullsbrook/Neaves Road spur line, we would expect that the level of interconnection further south would not maintain safe pressures within the northern parts of this distribution system without significant load shedding.

187. Assuming that ATCO's analysis is correct and that 60,000 customers are at risk of loss of supply for failure of either the existing Neaves Rd spur line or the existing pressure reduction station at the Bullsbrook gate station, for the reasons outlined in section 4.2.2, we accept that this could be considered to constitute a *Catastrophic* consequence.

188. However, for reasons outlined above, we consider that the frequency risk for loss of supply to 60,000 customers is more realistically classed as *Hypothetical* rather ATCO's assessment of *Remote.* This leads us to conclude that the risk ranking for the designated failure scenarios is *Intermediate.*

189. On this basis we consider ATCO has an obligation under Safety Case to follow the steps prescribed in table C4 of AS 4645, but it has not done so.

190. ATCO has presented only one option for mitigating the supply risk. We consider that there are number of other pipeline options it could have considered, such as a new shorter pipeline from Bullsbrook GS005 to the southern nominated interconnection point as shown in ATCO Figure 1-4 Appendix 8.2 at notionally half the length of that proposed

and therefore notionally, half the cost. We also consider that ATCO should have examined other capital and operational measures to reduce risk, including the options designated in section C5.2 of AS 4645, but has provided no evidence that it has done so.

191. While noting the very high cost per customer of the mitigation that ATCO has proposed, it is not within our scope to undertake, on ATCO's behalf, the depth of analysis that correct interpretation of AS 4645 requires. In the absence of this analysis, we conclude that:

(i) ATCO may not have an obligation to satisfy under the NGR (per r. 79(2)(c)(iii)); and

(ii) The expenditure that ATCO has proposed to reduce its considered security of supply risk does not satisfy r. 79(2)(c)(i) of the NGR.

Loss of supply to Two Rocks

192. We are unable to independently verify that between 20,000 and 22,000 customers in the Two Rocks area will be at risk in the future without assessing both ATCO's detailed modelling[87] and its demand forecast, both of which are outside of the scope of our review.

193. However, for a single point failure on the Bullsbrook/Neaves Road spur line, we would expect that the level of interconnection further south would not maintain safe pressures within the area without an increasing amount of load shedding if load continues to grow through the AA4 period.

194. Assuming that ATCO's analysis is correct and that ~80,000 customers are at risk of loss of supply for failure of either the existing Neaves Rd spur line or the existing pressure reduction station at the Bullsbrook gate station[88], we consider that this constitutes a *Major* consequence, not a *Catastrophic* consequence as determined by ATCO. This is because ATCO's 25,000 customer risk threshold is not forecast to be exceeded within the AA4 period.

195. For reasons outlined in Section 4.3, we consider that the frequency risk for loss of supply to 80,000 customers is *Hypothetical* rather ATCO's assessment of *Remote.* This leads us to conclude that the risk ranking for the designated failure scenarios is *Low* rather than ATCO's risk ranking of *High.*

196. On this basis we do not consider that ATCO has an obligation under its Safety Case (or AS 4645) to do anything more than to '*determine the management plan for the threat to prevent occurrence and to monitor changes which could affect the classification.*'[89]

197. We also consider that for Northern Networks and Two Rocks:

[87] Which is out of scope

[88] 20,000 customers in Two Rocks and 60,000 for North Metro are at risk of loss of supply if Neave road spur line fails

[89] Table C4, AS 4645

(i) ATCO's option 2 ($19.9m) is unjustified as it does not resolve short term or long term supply risks;

(ii) Based on our analysis of ATCO's growth related expenditure in Section 4, and in the absence of information in its revised proposal about the supply capacity of the proposed 5km 200mm reinforcement, ATCO's option 3 is unjustified; and

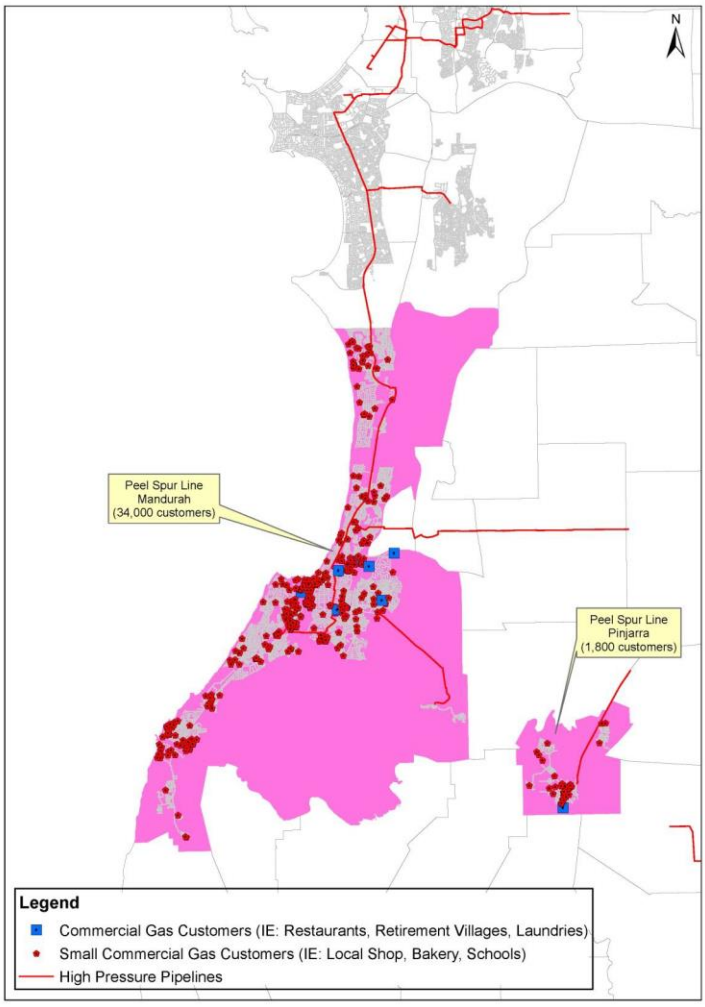
(iii) Option 4 (do nothing) is unjustified as it does not resolve the existing (*Intermediate*) supply risk.

4.4 Peel Spur line

4.4.1 ATCO's revised proposal

198. ATCO identifies three events which would cause significant loss of gas supply to customers in the Peel region. It proposes to treat the risks by constructing a new steel mains spur line from the DBNGP gate station at Fairbridge (GS011). The figure below illustrates the potential area for loss of supply.

Figure 7: Potential loss of supply areas - Peel region



Source: Figure 1-5, ATCO, Appendix 8.2, p. xv

199. The table below shows ATCO's risk assessment for the various loss of supply scenarios identified.

Table 10: Risk assessment for the Peel region

Risk	Cause	Impact	Current risk assessment		
			Consequence rating	Frequency rating	Risk ranking
Loss of supply to Mandurah network	Pressure reduction station failure or HP pipeline failure	2014 – 34,000 customers lost	Catastrophic	Hypothetical	Intermediate
		2031 – 58,200 customers lost	Catastrophic	Hypothetical	Intermediate
Loss of supply to Pinjarra network	High pressure failure HP regulator failure	2014 – 1800 customers lost	Severe	Hypothetical	Negligible
		2019 – 14,300 customer lost	Major	Hypothetical	Low
Loss of supply to Greenfields network	High pressure failure HP regulator failure	2014 – 0 customers lost	-	-	-
		2019 – 3,500 customers lost	Severe	Hypothetical	Negligible
		2031 – 13,750 customers lost	Major	Hypothetical	Low

Source: Derived by EMCa from Table 1-9, ATCO Appendix 8.2, p. xvi

200. ATCO has identified three options to address the supply risk:[90]

(i) Option 1 - construct 22.7km of 150mm steel pipeline at a cost of $26.9m connecting the Pinjarra HP to the Rockingham HP; ATCO assess that this would reduce the risk ranking to *Negligible* for both the current customers at risk and for forecast growth (Figure 8);

(ii) Option 2 – construct 2.2 km reinforcement pipeline and two HP regulators at a cost of $1.0m to increase the operating pressure of existing PE pipeline to allow for connection of 13,780[91] new customers; ATCO assess that this would not reduce the loss of supply risk to the Mandurah customer base or to the Pinjarra customer base; and

(iii) Option 3 – do nothing, which does not address the existing supply risk in Mandurah or Pinjarra and provides only limit growth capacity.

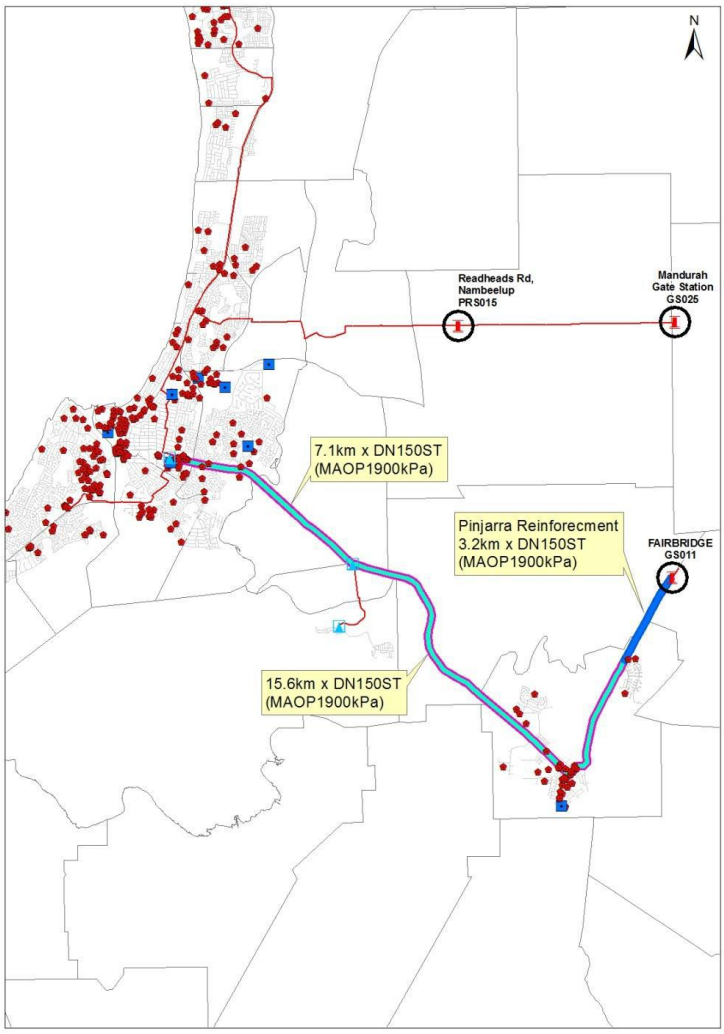
201. ATCO therefore proposes Option 1, which is supported by both Zincara and Energy*Safety.* Zincara disagree with our original finding that the project cost of $720/customer is disproportionate to the benefit because (i) the project has exceeded the catastrophic consequence '*which means that appropriate action must be taken,* and

[90] Table 1-10, ATCO Appendix 8.2, p. 18

[91] Elsewhere 12,280 new customers is referred to

(ii) Using the Health and Safety Executive in the UK guidelines that we should err in favour of safety.' [92]

Figure 8: Proposed Pinjarra reinforcement (Option 1)



Source: Figure 1-6 ATCO, Appendix 8.2, p. xvii

4.4.2 EMCa's assessment

202. We are unable to independently verify that 34,000 customers in the Mandurah and 1800 customers in Pinjarra are currently at risk without assessing ATCO's detailed modelling, which is out of the scope of work for our review. However, for a single point failure on the Readheads Rd spur line, we would expect that the level of interconnection further north would not maintain safe pressures within the Peel area without significant load shedding.

203. Assuming that ATCO's analysis is correct and that 35,800 customers are at risk of loss of supply for failure of the high pressure from Rockingham or the Readheads Rd spur line or the existing pressure reduction station at the Mandurah gate station, for the

[92] ATCO, Appendix 8.2, p. 25

reasons outlined in Section 4.2 we accept for the purpose of this assessment that this could be considered to constitute a *Catastrophic* consequence.

204. However, for reasons outlined in Section 4.2, we consider that the frequency risk for loss of supply to 35,800 customers is *Hypothetical* rather ATCO's assessment of *Remote.* Tthis leads us to conclude that the risk ranking for the designated failure scenarios is *Intermediate* for the Mandurah network and *Low* or *Negligible* for the Pinjarra and greenfields networks.

205. On this basis we consider ATCO has an obligation under its Safety Case to follow the steps prescribed in table C4 of AS 4645 for *Intermediate* ranked-risks for the Mandurah customers only. As ATCO assessed the risk as *High*, it has not followed the prescribed steps.

206. ATCO has presented only one option for mitigating the risk, although it does mention that it considered a smaller pipeline diameter of 100mm, but that this does not meet the security of supply requirements.[93] We believe other options exist, including procedural controls or, if economically justified, a new shorter pipeline option from Fairbridge GS011 to the nominated interconnection point in the Mandurah distribution system, as shown in ATCO's Appendix 8.2, Figure 1 –6.

207. While noting the high costs per customer of the option that ATCO has proposed, it is not within our scope to undertake the depth of analysis required on ATCO's behalf that we believe correct interpretation of AS 4645 leads to. Further, we consider that the guidelines of the UK Health and Safety executive regarding erring on the side of safety, applies specifically in employing an ALARP assessment for Intermediate risks and in regards to safety-related risks only, and should not be conflated with assessment of and solutions to mitigate other risks. In the absence of the analysis and the lack of evidence that the cost of ATCO's risk reduction measures is not grossly disproportionate to the benefit gained, we find that:

(i) ATCO may not have an obligation to satisfy under the NGR (per r. 79(2)(c)(iii)); and

(ii) The security of supply risk does not satisfy r. 79(2)(c)(i) of the NGR.

4.5 Interdependency projects

4.5.1 ATCO's revised proposal

208. ATCO has revisited the justification for the nine interdependency projects and has identified "options to isolate" in the event of interruption to supply, reducing the time period required to restore customers below 'long term' for five projects. As ATCO states that '*these projects will be further assessed, as required by AS/NZS4645, through ALARP assessments',*[94] we assume that the reassessment has led it to rank the risk in each case as *Intermediate*.

[93] ATCO Appendix 8.2, p. 25

[94] ATCO, Appendix 8.2, p. 27

209. The table below summarises ATCO's risk assessment for the remaining four interdependency projects proposed during the AA4 period.

Table 11: ATCO's risk assessment

Project name	Customers affected	Likelihood	Consequence	Risk
Hillarys	50,400	Remote	Catastrophic	High
Canning Vale	42,000	Remote	Catastrophic	High
Fremantle	28,000	Remote	Catastrophic	High
Lathlain	40,000	Remote	Catastrophic	High

Source: Derived from Table 1-14, ATCO Appendix 8.2, p. 27

210. ATCO identifies a total of 55 large commercial customers and 1,623 small commercial customers in the four regions and proposes that *'the key benefits to providing a reliable service to customers mitigates the potential impact to society of a long term interruption to supply which could impact the provision of essential services to the vulnerable within our society.'*

211. ATCO offers three options for addressing its assessed *High* risk:[95]

(i) Option 1: install interdependency infrastructure to reinforce isolated networks with two independent high pressure feeds at a total cost of $34.0m – ATCO assess that this will reduce the loss of supply risk ranking in each case to *Negligible*;

(ii) Option 2: Increase maintenance of assets and patrols against 3rd party strikes; no cost is provided for this option; ATCO dismiss this option because '*the procedural controls will not reduce the likelihood from remote to hypothetical, which is required to reduce the risk from High.'*

(iii) Option 3: do nothing, which is also rejected by ATCO as it does not mitigate the *High* supply risks.

212. ATCO concludes that '*by not allowing the forecast expenditure for the Interdependency projects, AGA would be in non-compliance with its governing standard AS/NZS 4645*.'[96]

213. ATCO also states that Zincara reviewed the amended projects and concluded that '[A]*s 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. Zincara therefore considers the project to be consistent with rule 79(2)(c).*[97]

4.5.2 EMCa assessment

214. We are unable to independently verify that 160,000 customers across the four areas nominated by ATCO are currently at risk without assessing ATCO's detailed modelling, which is out of the scope of our review.

[95] ATCO, Appendix 8.2, pp. 29-30

[96] *Ibid, p. 30*

[97] *Ibid, p. 27*

215. Assuming that ATCO's analysis is correct and that more than 25,000 customers are at risk of loss of supply for a prolonged period for failure of the existing high pressure feed into the four designated areas, for the reasons outlined in Section 4.2, we accept that this could be considered to constitute a *Catastrophic* consequence.

216. However, for reasons outlined in Section 4.2.2, we consider that the frequency risk for loss of supply to >25,000 customers is *Hypothetical* rather ATCO's assessment of *Remote.* This leads us to conclude that the risk ranking for the designated failure scenarios is *Intermediate* in each case.

217. On this basis we consider ATCO has an obligation under its Safety Case to follow the steps prescribed in table C4 of AS 4645 for each of the four regions. As ATCO assessed the risk as *High*, it has not followed the prescribed steps.

218. ATCO has chosen to present only two options for mitigating the risk. It dismisses the procedural controls approach because it considers that it would not reduce the risk below *High*. We consider that there are number of other options it could have considered, such as development of incident pre-plans to minimise the consequences and extent of low pressure and/or remote activation of network sector valves to quickly limit the extent of low pressure areas. We also conclude that ATCO is required by AS 4645 to assess the capital and operating options designated in section C5.2.

219. It is not within the scope of our review to undertake the depth of analysis required on ATCO's behalf that we believe correct interpretation of AS 4645 leads to. In the absence of the analysis and the lack of evidence that the cost of ATCO's risk reduction measures are not grossly disproportionate to the benefit gained, we find that:

(i) ATCO does not have a regulatory obligation to satisfy under the NGR (per r. 79(2)(c)(iii)); and

(ii) The security of supply risk does not satisfy r. 79(2)(c)(i) of the NGR.

4.6 Impact on network operating expenditure

220. Based on our analysis, we consider that ATCO is required to formally reassess its six proposed reinforcement projects in accordance with the requirements of its Safety Case and AS 4645.

221. We further consider that in doing so it would examine alternative means to reduce risk rather than building new pipelines and that it would do so in accordance with the ALARP test. AS 4645 nominates a number of options that should be considered.[98] In addition to options involving relatively low cost capital expenditure, modification or enhancement of specific operations or maintenance procedures is a prescribed option that should be assessed. Examples of operational procedures that could be implemented include:

- Increased frequency of pipeline patrols;
- Enhanced contingency planning (eg. rapid implementation of an awareness campaign; drills; load shedding and curtailment);

[98] AS 4645, *Section C5.2 ALARP*

- Improved maintenance on gate stations and regulators; and
- Improved SCADA monitoring.

222. If adopted, enhancement of operations or maintenance procedures would increase ATCO's network opex (other things being equal). The cost and benefit of these measures along with other risk treatment alternatives is beyond the scope of our review.

4.7 Metallic main replacement projects

4.7.1 ATCO's revised proposal

223. In responses to our finding in our Final Technical Report to the ERA that $11.0m of ATCO's proposed $50.57m expenditure could prudently be deferred to the AA5 period, ATCO has proposed deferring 11km of unprotected metallic mains, reducing the proposed AA4 expenditure by $3.4m.

224. ATCO's amended revised proposal allows for 40km of pipeline to be replaced from 2016 to 2019 inclusive. ATCO considers that this addresses EMCa' main concerns that:

(i) The program was profiled to an artificial deadline (i.e. the end of the AA4 period), and

(ii) ATCO would not be able to deliver the proposed 238km of replacement pipeline within the period.

4.7.2 EMCa assessment

225. In our original assessment, we were satisfied that the end-of-life metallic mains replacement projects are justified under one or more of rule 79(2)(c)(i) – (iii). However, we were unconvinced that ATCO would deliver the volume of work that we assumed underpinned an almost doubling of expenditure over the last two years of the AA4 period.

226. ATCO has now provided information that shows that it will replace a steady 40 km per annum from 2016 after ramping up from an annual rate of 36 km in 2014[99] to 38km in 2015. We are satisfied that ATCO is capable of undertaking this level of replacement volume.

227. In our original assessment, we noted that ATCO was prioritising its metallic mains replacement work to address the highest risk work first. Assuming that ATCO continues with this strategy, we are also satisfied that the deferral of the remaining 11km of unprotected metallic mains replacement work into AA5 represents a prudent balance between risk reduction and efficient delivery.

228. In summary, we are now satisfied that ATCO's amended forecast expenditure on replacement of end-of-life metallic mains is consistent with the best estimate arrived at on a reasonable basis in accordance with rule 74(2) of the NGR.

[99] Based on extrapolation of ATCO's 2014 half-year performance in Table 8-8 (Response to the Draft Decision)

5 Review of other elements of capital expenditure

5.1 Introduction

229. The ERA has asked us to assess certain other aspects of ATCO's amended revised AA proposal which were found not to satisfy rule 79 of the NGR in its draft decision. We consider each of the capex elements in sections 5.2 to 5.6

5.2 AA3 Field mobility project

5.2.1 ATCO's revised proposal

230. In response to the finding that the expenditure on this AA3 project was not fully justified due to '*lack of evidence of (i) what was spent; (ii) what it was spent on; (iii) why it was spent,*[100] ATCO has advised that it inadvertently omitted the business case for phase 1, which has now been provided, as has the following information:

(i) A table reconciling the business case budget for each of the four phases of the projects against the actual expenditure, which shows the budget was underspent by $0.9m (16%);

(ii) An explanation of the expenditure in each phase, what it was spent on and what it achieved, including an explanation of why there were two Phase 2 projects in AA3, one which was completed at a cost of $3.7m, and another which has been deferred to AA4 (and has been considered separately);

[100] EMCa, Review of Technical Aspects of the Proposed Access Arrangement, June 2014, page 91.

(iii) An assessment of the compliance of the capex associated with each project phase with rules 79(1) and (2) of the NGR, including returning a positive NPV of $1.0m (over 10 years); and

(iv) A description of the procurement, change management, and benefits realisation processes.

5.2.2 EMCa assessment

Prudent service provider test (r. 79(1)(a))

231. ATCO has provided responses to each of our concerns expressed in our Technical Report. The confusion surrounding the integration of the incomplete Phase 1 project and the two Phase 2 projects has been satisfactorily explained. We are now satisfied that the expenditure through the four stages of work that were completed in the AA3 period satisfy one or more of r.79(2)(c)(i) – (iii) of the NGR.

232. ATCO has also provided information to demonstrate that the cost was efficient:

- A competitive tender approach was undertaken by WAGN;
- Project management was undertaken in accordance with PRINCE2, with appropriate change management and a net project underspend against budget; and
- Benefits of at least $2m were realised and incorporated into the AA4 forecast.

Compliance with the conforming capex criteria

233. On the basis of the assessment set out above, we are of the opinion that the $4.7m expenditure ATCO incurred on the Field Mobility project in AA3 satisfies the prudent service provider test in rule 79(1)(a) and can be considered as conforming capex under r. 77(2) of the NGR.

5.3 AA4 IT commercial operations

5.3.1 ATCO's revised proposal

234. In its original submission, ATCO proposed expenditure of $1.8m for its commercial operations continuous improvement project. We considered that as it was not linked to a requirement from REMCo, it was a speculative requirement.

235. ATCO has now reduced its expenditure forecast to $1.2m to reflect different expenditure drivers: the requirement to support, primarily, metering accuracy, and the volume of information it is required to manage. ATCO also advises that some of the initiatives are related to the introduction of new retailers.

Meter accuracy

236. ATCO advises that it implemented a manual system in AA3 to manage the pressure correction factor (PCF) conversion '*for billing purposes and provide more accurate meter reading to retailers…it requires a significant amount of manual intervention,*

introducing the potential for error and/or inaccuracy."[101] Its proposed initiative in AA4 is based on a staged approach to automate the process with the objective of improving accuracy.

Information management

237. ATCO advises that since Kleenheat Gas commenced activities in the retail market in 2013, the limitations of ATCO's manual system for managing customer transfers have been apparent.

238. ATCO provides information to support its forecast for continued growth in customer transfers transaction and related issues (eg. billing issues, disconnections and reconnections, meter data requests, ad hoc demands for haulage pricing). It proposes investing an unspecified amount to automate its procedures to overcome the limitations of its manual system.

5.3.2 EMCa assessment

239. We have no visibility of the retailer-related initiatives within the $1.2m proposed by ATCO in its revised submission other than the impact of Kleenheat referred to above. We therefore respond to ATCO's new information provided in relation to improving metering accuracy and managing the volume of information.

Meter accuracy

240. ATCO advises that '*the retail market rules require that meter readings are provided as a reading of energy consumed.*'[102] We acknowledge that (i) ATCO has an obligation to provide sufficiently accurate energy consumption data to its customers, and (ii) the quantum of expenditure required to ensure the consumption data is sufficiently adequate is likely to be relatively small.

241. ATCO has not provided any information about its current error rate and the expected improvement nor an estimate of the efficiency savings from moving to an automated system. Nonetheless, we are generally supportive of automation of manual systems, as there is less risk of error and they are typically more productive than manual systems. We expect that ATCO will develop and approve a business case for the initiative that provides justification for the investment based on eliminating errors and improving efficiency. The robustness of the case in the context of the NGR can be reviewed by the ERA ex-post as part of the AA5 review process.

Information management

242. We consider that ATCO's new information supports its contention that there has been a dramatic increase in customer transfers (from 2-3 per month to an average of 2,300) and that this trend is likely to continue.

[101] ATCO, Response to Draft Decision, p. 166

[102] ATCO, Response to Draft Decision, p. 163

243. We accept in principle that a manual system is unlikely to be able to efficiently and effectively manage such an increase.

244. ATCO has not provided any information about its current error rate and the expected improvement nor an estimate of the efficiency savings from moving to an automated system. Nonetheless, we expect that ATCO will develop and approve a business case for the initiative that provides justification for the investment based on eliminating errors and improving efficiency. The robustness of the case in the context of the NGR can be reviewed by the ERA ex-post as part of the AA5 review process.

Compliance with the conforming capex criteria

245. On the basis of the assessment set out above, we are of the opinion that the reduced forecast of $1.2m expenditure ATCO proposes for IT commercial operations improvement satisfies one or more of the criteria in rule 79(2)(c) and that the forecast is a reasonable estimate, satisfying rule 74(2).

5.4 AA4 IT hardware and software

5.4.1 ATCO's revised proposal

246. ATCO's original submission forecast capital expenditure of $0.76m on IT Hardware and Software over the AA4 period. It has reduced this forecast to $0.3m to cater for progressive replacement of its mobile phone fleet only. The balance of the forecast expenditure was for the purchase of desktop computers, laptops, and peripheral devices which is now incorporated into its contract with WIPRO.[103]

5.4.2 EMCa assessment

247. In its original submission, ATCO provided no information to support the expenditure on IT hardware and software. It has now adjusted its forecast expenditure and explained the remaining expenditure of $0.3m.

248. Given ATCO's 233 unit mobile phone fleet, the proposed replacement cost of $0.3m over 5 years seems reasonable based on the typical average asset life of two-three years for such devices. On this basis, we are of the opinion that the forecast $0.3m expenditure ATCO forecasts for IT hardware and software satisfies one or more of the criteria in rule 79(2)(c) and that the forecast is a reasonable estimate, satisfying rule 74(2).

[103] WIPRO replaced I-Tek as ATCO's IT service provider in 2014 subsequent to submission of EMCa's Final Technical Report to the ERA

5.5 AA4 Busselton depot

5.5.1 ATCO's revised proposal

249. EMCa's finding in our Final Technical Report to the ERA was that the establishment of the Busselton depot could be prudently deferred to the AA5 period because (i) the primary driver for depot relocation was network growth, and (ii) ATCO's network growth projections were overstated.

250. ATCO now submits that the depot requirement is not contingent on greenfields growth in the region:[104]

(i) it has addressed EMCa's concerns with the network growth projections in the region (in section 8.2.3 of its Response to the ERA); and

(ii) it considers population growth and increasing traffic congestion in the region will result in it being unable to meet its obligations and KPIs to attend a site within 1 hour of the event of a Class 1 leak.

251. Specifically, in relation to the travel time risk, ATCO advises that:

- The City of Busselton has experienced average annual population growth of 4.1% pa for the last 20 years, impacting on traffic congestion; and
- The travel time between the Bunbury and Busselton CBDs in traffic-free conditions is more than 53 min.

5.5.2 EMCa assessment

252. In its original submission, ATCO proposed establishing a new Busselton depot in 2016 to assist with operations productivity and to meet its Class 1 leak response time KPI of 1 hour. ATCO identified the main driver of the timing of the new depot as network growth. It provided no information to support the timing of the expenditure and we were not convinced by its network growth projections.

253. As discussed elsewhere in this report, we now support the majority of ATCO's growth-related capex. This finding indirectly supports ATCO's contention that more network operational activity will be required in the Busselton region over time. However, ATCO does not support the timing of requirement of 2016 with any network growth related statistics to demonstrate that an operational activity threshold will be 'crossed' by 2016.

254. Whilst the travel time between the Busselton and Bunbury CBDs provided by ATCO is not directly relevant to operational activities, it does indicate that the distances involved in traveling from the depot to the Busselton areas are significant. We also recognise that traffic congestion is broadly related to population growth. The 2012 review by the Department of Planning resulted in an increase to its previous population growth projections for the Busselton region, which are already strong at an average of 4% pa. When coupled with the increase in traffic during public and school holidays, we

[104] *Ibid,* p. 163

acknowledge that traffic congestion is likely to be an increasing impediment to operational efficiency and effectiveness.[105]

255. Whilst we have not been provided with compelling information by ATCO to confirm that the new Busselton depot will be required in 2016,[106] based on the new information provided it is reasonable to assume that a new Busselton depot will be required in the AA4 period.

256. Based on ATCO's governance procedures, we expect that it will develop a business case to justify the level and efficiency of the expenditure and timing of the proposed Busselton depot that will need to satisfy ATCO's management. We would expect that this business case will identify the operational efficiency gain from the investment. It will also provide the basis for an ex-post review for the expenditure in the AA5 period.

257. We conclude that the proposed expenditure of $1.2m conforms with rule 79(2)(c) of the NGR and that the estimated cost satisfies rule 74(2).

5.6 AA4 Fleet, plant and equipment capex

5.6.1 ATCO's revised proposal

258. In its original submission, ATCO proposed capital expenditure of:

- $14.5m on its fleet of vehicles, having implemented an own-not-lease strategy in 2013; and
- $6.6m to purchase a variety of equipment to support safe operational activities.

259. ATCO now considers that it has addressed EMCa's concerns with its growth forecasts. In its amended proposal, ATCO now forecasts an overall increase of $0.3m on fleet, plant & equipment relative to its initial proposal, with the amended totals now being:[107]

- $14.9m capex on fleet purchases – the increase is not explained but the capex total is required to '*ensure the business can manage the works maintenance program, respond to emergencies and undertake activities in compliance to the Safety Case*.' ATCO therefore maintains that its proposed expenditure is justified under rule 79(2)(c) of the NGR.
- An unspecified amount on plant and equipment – however, to achieve a net increase of $0.3m, AA4 plant and equipment expenditure must now be forecast at $6.5m (ie. a $0.1m reduction).

[105] Which may be relieved by new transport infrastructure, in which case we would expect ATCO to defer its planned Busselton depot timing

[106] Eg. ATCO should be able to present more direct operational KPI measures to demonstrate the increasing response times and threat to productivity from the Bunbury depot

[107] Table 8-26, ATCO Response, p. 162

260. Elsewhere in ATCO's Response to the Draft Decision, ATCO states that '*[T]here was also an underspend in fleet ($2.9million) and associated operational equipment ($0.5m), of which $1.5million is carried forward to AA4.'*[108]

5.6.2 EMCa assessment

261. The primary reason for our 2014 recommendation to the ERA to not approve the full amount of ATCO's initially proposed fleet, plant and equipment capex allowance was our initial finding that ATCO's growth projections could not be supported.

262. As discussed in Section 3, we have now assessed that the majority of ATCO's proposed expenditure on assets to meet projected greenfields and brownfields growth is justified.

263. Given that we consider there is a proportional relationship between network growth and the requirement for fleet, plant and equipment, we now accept that ATCO's proposed increase is reasonable and satisfies rule 79(2)(c) and rule 74(2).

[108] ATCO Response, p. 118

6 Revealed cost methodology

6.1 Introduction

265. In this section, we respond to ATCO's claims regarding the revealed cost methodology that EMCa used in assessing the network operating expenditure that ATCO proposed in its initial revised Access Arrangement proposal. This includes our response to relevant matters described in two reports commissioned by ATCO in support of its amended proposal[109].

266. The claims that we have reviewed in this section are covered in ATCO's amended proposal, from paragraphs 298 to 321 of that document.

6.2 ATCO's position

267. ATCO's (largely unchanged) amended proposal represents a significant increase of the order of 19% over ATCO's 2013 actual network opex, as we noted in our 2014 report[110].

268. ATCO's network opex forecast in its initial proposal was based on a bottom-up forecasting process. In its amended proposal, ATCO has accepted the merit of undertaking a revealed cost-based forecast[111], which would be a top-down assessment that in principle could assist with corroborating the bottom-up forecast. ATCO engaged ACIL Allen to undertake such a forecast, which it has done using a method that it

[109] *Operating Expenditure: Forecasting using the Revealed Cost Approach*, ACIL Allen (presented as Appendix 6.2 of ATCO's response) and *Review of ATCO Gas Australia Capital and Operating Expenditure*, Zincara (presented as Appendix 6.3 of ATCO's response)

[110] EMCa report to ERA, Review of Technical Aspects of the Proposed Access Arrangement (June 2014), paragraph 496

[111] Which ATCO terms an 'inferential' network operating cost forecast

references to work done by Economic Insights in another regulatory context[112]. ATCO also engaged Zincara to review its proposed capital and operating expenditure and this report includes commentary on ATCO's forecasting approach[113] and of the ERA's and EMCa's assessments of this approach.

269. In its amended proposal, ATCO has decreased its proposed network opex from $183.1m to $181.8m. However this $1.3m decrease all arises from ATCO having spent $1.6m less in the six months actual to December 2014 than it had forecast in its initial proposal. Its forecast for the remainder of AA4 is $0.3m higher that in its initial proposal.

270. For the most part, ATCO's amended proposal focuses on the revealed cost approach that it has now commissioned and which it claims validates its bottom-up forecast. In its response, ATCO:

- Asserts that a 'scale growth' rate should be applied to base year expenditure and proposes such a growth rate (which varies year to year);
- 'Does not accept the ERA's assumption that growth beyond 2015 will be offset by productivity'[114];
- Re-asserts (as per its initial proposal) that its proposed continuing increase in incremental recurring costs (i.e. from 2016 to 2019), which the ERA disallowed, are driven by continuing increases in safety case requirements and continuing increases from 2016 to requirements under current legislation;

6.3 EMCa's assessment

6.3.1 Base year

271. In its amended proposal ATCO does not directly comment on EMCa's choice of 2013 as a base year for the purpose of projecting network opex[115]. Zincara endorses EMCa's use of a 2013 base year[116].

272. ACIL Allen claims that the ERA *'has not used ATCO Gas's most recent actual operating expenditure as the baseline*', however it is unclear what year ACIL Allen has used in its alternative forecast and this does not appear to be discussed further in its report[117]. Further, we respond that at the time our report was prepared (in June 2014), 2013 was the most recent year for which actual operating expenditure was available. ACIL Allen

[112] *Relative Opex Efficiency and Forecast Opex Productivity Growth of Jemena Gas Networks*, Economic Insights, (April 2014). Report prepared for Jemena Gas Networks.

[113] Zincara op. cit. section 6.4.1

[114] ATCO op. cit. paragraph 307

[115] ATCO does however disagree with the ERA's use of a 2013 base year for Corporate costs. ATCO op. cit. paragraph 329

[116] Zincara op. cit. page 53 '*Zincara's opinion is in line with EMCa's review in…..nominating 2013 operating expenditure as an appropriate baseline.*'

[117] In any case ACIL Allen proposes only an alternative total opex forecast, and which is not within the scope of our current review; it does not propose an alternative forecast for network opex.

considers that, by accepting the incremental network opex that ATCO itself put forward for 2014 and 2015, the ERA has not properly applied the revealed cost approach.

273. We consider that 2013 remains a reasonable and valid year to consider in applying a revealed cost approach. Moreover we find difficulty in accepting ACIL's assertion that accepting a portion of ATCO's proposed incremental network opex in subsequent years equates to not using this base year. Our reasoning for the increases in network opex that we accepted from this base year revealed cost amount, is contained in paragraphs 513 and 514 of our 2014 report.

6.3.2 Growth

274. In our June 2014 report, we advised our opinion that the majority of growth capex that ATCO had proposed had not been adequately justified in accordance with the rules. Our consideration of network opex growth was therefore made in the context of very low growth in the network. For the avoidance of doubt, we are of the view that growth in a network (other factors being equal) is likely to require an increase in network opex to support it[118]. The matter at hand is one of quantum and involves consideration of the extent of network growth, its timing, the relationship between network growth and growth in requirements for network opex and other factors that may (potentially) either offset or exacerbate the underlying factors.

275. For a network opex growth factor in a revealed cost forecasting method, ATCO proposes values that ACIL Allen has developed[119]. ACIL Allen devotes a considerable portion of its report to developing these growth factors, which it does making use of material contained in a report by Economic Insights[120].

276. We are troubled by much of ACIL Allen's report, and the use that ATCO makes of it.

277. First, we note that ACIL Allen has not developed a growth factor for network opex, but for overall opex. In the context in which ATCO has presented these growth rates, it would appear that they have been taken as network opex growth rates[121].

278. Secondly, we are concerned that, whilst presenting as an expert on opex forecasting methods in gas utilities, the ACIL Tasman report author has relied directly and without any apparent due diligence on the work of another party. There is no reference in its report to the author having made contact with Economic Insights to verify that its use of this work is valid.

279. The Economic Insights report analyses productivity growth, undertakes a comparative productivity analysis between Jemena and other gas networks, and uses an opex cost function to forecast future opex ***productivity*** growth. It would appear that ACIL Tasman

[118] Zincara appears to be of the same view and states (op. cit. page 53): '*Zincara also acknowledges that some of the incremental recurring expenditure forecasts are related to forecast network growth and this is subject to the ERA's decision regarding growth capex'*

[119] ATCO op. cit. table 6-9

[120] Economic Insights op. cit.

[121] ATCO op. cit. page 64

has attempted to use this work for what, in our view, is a different purpose, namely, forecasting growth in opex itself.

280. It is not apparent to us that the work by Economic Insights indicates an opex function determined by the simple weighting of a customer growth rate and a throughput growth rate to derive an applicable network opex growth rate, as has been proposed by ACIL Allen[122]. We note that the derived composite growth rates given in the ACIL Allen report are little different from customer-driven or throughput-driven growth rates and that the weightings of 49.9% to customers and 50.1% to gas volume throughput give a distorted perception of precision. Moreover, from our knowledge and understanding of gas network operating costs, we consider that gas throughput is not a material driver of network operating costs which largely involve the inspection, maintenance and repair of the pipeline network. In our view, the extent of the pipeline network itself would be the main network opex cost driver[123] and (other factors being equal) it is growth in the network that ultimately leads to greater network opex requirements.

281. We also note that the Economic Insights formula includes a term to allow for the extent of cast iron and unprotected steel pipe, which we consider is reasonable and we took into account ATCO's program to replace these old and leaky assets in forming our view of network opex requirements in our 2014 report. ACIL Allen has not taken such factors into account.

282. Thirdly, in its report ACIL Allen refers to scale economies and their application by the ERA[124]. This comes immediately following mention of productivity and it is unclear whether ACIL Allen conflates the concept of productivity with scale economy. Nevertheless it would appear that ACIL Allen considers that it is reasonable to allow for scale economies.

283. Fourthly, ACIL Allen proposes a '*rate of change*' approach that it claims is '*a more sophisticated approach than using scale escalators and economies of scale factors*'.[125] This 'approach' is simply the application of a percentage increase to the previous year's opex. ACIL Allen describes the 'rate of change' itself as a function of real increases in input costs, increases in output and expected productivity improvement, with the last of these qualified as incorporating technology change, economies of scale and operating environment factors. This appears to be a simple restatement of the essence of a revealed cost base-step-trend approach and it is difficult to discern any insight that it brings to the matter at hand.

[122] ACIL Allen op. cit. Table 9

[123] The ACIL Allen report appears to ignore a number of other terms in the Economic Insights opex cost equation, including customer density, proportions of cast iron / unprotected steel pipes, numbers of gate stations and the constant price asset value. See numerous mentions in Economic Insights op. cit. including the opex cost function specification (equation 5.9) on page 46. It can be seen there also that the Economic Insights cost function is logarithmic, which appears not to have been taken into account in the ACIL Allen report.

[124] ACIL Allen op. cit. page 5. ACIL Allen references a 30% scale factor applied to network operations expenditure in an ERA decision on Western Power

[125] ACIL Allen op. cit. page 6 (equation)

284. Fifthly, we draw attention to the poor forecasting ability of ACIL Allen's model, as evidenced by Figure 2 in its report[126]. ACIL Allen's formula back-casts at a level that appears to be $15m to $18m higher than ATCO's actual opex, fails to indicate any of the same turning points and has a lower growth rate than ATCO has proposed.

285. While growth in the network will tend to lead to an increase in network opex requirements, other things being equal, in our initial report we identified a range of factors that we considered would offset the small degree of assumed network growth that would be consistent with our then-advice on growth capex[127]. Although ATCO has asserted that these factors are not valid, ATCO has not presented its consideration of these factors nor has it provided evidence in response to the descriptions that we provided in our 2014 report. Moreover advice from its consultants, referring to reasonable levels of expected productivity improvement and allowances for scale economies, is consistent with our view that ATCO has not taken such offsets to a growth forecast into account.

6.3.3 Incremental step changes in recurring expenditure

286. In our report on ATCO's initial proposal, we recommended accepting the significant incremental step change opex that ATCO proposed for 2014 and 2015, largely on the basis that we accepted as reasonable that it was required by its safety case. This led to us supporting a step increase of $3.6m per year from the base year.

287. We did not accept the further increases in incremental expenditure that ATCO proposed from 2016 to 2020. In paragraph 502 of our report, we stated our opinion that there had been insufficient challenge of the bottom-up build of ATCO's forecast and that ATCO had provided no evidence that it had considered a range of factors that could potentially offset the proposed increments. In other words, we considered that ATCO had presented only factors that it considered would drive up expenditure and its proposal did not present consideration of factors that might act in the opposite direction. We described these factors in this paragraph of our 2014 report.

288. In its amended proposal, ATCO has not responded with its consideration of the offsetting factors that we identified.

289. Other new information that ATCO (or its advisors) has provided, and our responses, are given below:

- ACIL Allen has suggested that it would be reasonable for a business such as ATCO to achieve efficiency gains of 0.86% per year[128]. We note that this would equate to an (approximately) 5% aggregate downwards effect on opex over a six year period (i.e. from a 2013 base year to 2019);
- In the six months July to December 2014, ATCO underspent the network opex that it had proposed in its revised Access Arrangement ($15.3m), by $1.6m, i.e. more than 10%. This most-recent revealed cost information seems inconsistent with

[126] ACIL Allen op. cit. page 17

[127] EMCa 2014 report, in particular paragraphs 502, and the summaries in paragraphs 513 and 514

[128] ACIL Allen op. cit. page 23

ATCO's assertions regarding the importance of spending additional network opex to meet ATCO's safety case requirements;

- ATCO asserts that '*the increase in AGA's forecasts [over the AA4 period] reflects the phasing of AGA's implementation of the Safety Case*' and that '*…a reduction of such magnitude would see compliance to AGA's safety case jeopardised and increase safety risks associated with operating and maintaining the network*.' We consider this to be a significant contention, yet ATCO has not provided sufficient evidence that would justify a claim that carries such prominence.

290. We consider that, taken together with the factors that we described in paragraph 502 of our 2014 report and ATCO's lack of consideration of these factors in its amended proposal, the additional points above further strengthen our view that ATCO has not provided sufficient justification of the need for continuing to increase the incremental step in recurring network beyond the significant steps allowed for in 2014 and 2015.

6.3.4 Inferred prudence of management and governance

291. In its amended proposal[129], ATCO relies on a series of statements by Zincara to justify retaining its initially-proposed forecast expenditure. We address each of the points in this paragraph as follows:

- '*As noted in section 5.4.3 above, Zincara believes that a number of the incremental recurring activities will require additional expenditure beyond 2015'*. There is no section 5.4.3 in the report nor could we identify the section that this may have been referring to or a basis on which such a view could be reached.
- '*It would seem improbable that prudent management methodologies applied to the existing business would be ignored in preparing forecasts for AA4*.' We consider that, with prudent management methodologies applied, ATCO ***is*** likely to incur prudent and efficient costs in AA4 but, as with its forecast for the first six months of this period, we consider that it has proposed more than it will reasonably incur.
- *'…Zincara is of the view that* [the Incremental Recurring activities] *represent good practice when compared with ATCO's peers across Australia….*'. EMCa has accepted the need for the incremental recurring activity to the level proposed by ATCO to 2015, which is an additional $3.6m p.a. In our 2014 report we noted that ATCO's safety case was approved in 2011 and that implementation commenced in 2013. Having accepted the increments to implement its safety case, ATCO has not justified the need to keep increasing this amount still further over the period from 2016 to 2019.
- *'…Zincara 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.*' We concur with this statement, which was part of the reasons why in our 2014 report we recommended disallowing further increases that ATCO had proposed from 2016 onwards.
- *'…Zincara is of the view that the additional responsibility identified in the Safety Case is incremental to ATC's* [sic] *base activities and, as such, the cost is therefore incremental to its base costs.'* We have agreed with this in our initial report; the relevant matter is the quantum of such costs from 2016 onwards.

[129] ATCO amended proposal, paragraph 320

- *'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.'* We do not agree with this statement.

292. In summary, we would accept that a business that is currently prudent and efficient is more likely than not to be prudent and efficient in its future expenditure. We consider it reasonable to assume that 2013 reveals an efficient base year expenditure level and reasonable to assume from this, and recognising the incentives on ATCO, that it will incur a prudent and efficient level of opex in the future. For the reasons that we described in section 7.4.2 of our 2014 report and the additional reasons stated above, it is not reasonable to draw a conclusion from this that ATCO's regulatory proposal ***forecast*** is necessarily a reasonable estimate of the prudent and efficient level of expenditure that ATCO will actually incur. We consider that, in this regard, Zincara's assessment is based on a false premise that conflates a business' performance with the validity of its forecasts.

6.3.5 Allowing for growth in the capital base

293. In our initial report, we aligned our opinion on network opex with our advice to accept a lower level of growth capex than ATCO proposed.

294. Other things being equal, we accept that an increase in the network will lead to an increase in network opex requirements. If for its final decision the ERA allows a greater amount of capital expenditure than it allowed in its Draft Decision, then we consider it would be reasonable to allow for some growth in network opex from 2016. We consider that this would best be related to the growth in the pipeline network, which only by coincidence would be related to the growth in customer numbers and throughput such as ACIL Tasman has proposed, but which also should be offset to the extent of the factors that ATCO had not considered and which we described in our June report and in paragraph 289 above.

295. As a proxy for such allowance, we suggest an adjustment could be applied to pro rate between the base level of network opex that ATCO proposed and the amount allowed for in the Draft Decision based on the pro rata difference between ATCO's proposed RAB and the RAB that incorporates the ERA's Final Decision on growth capex.

7 Review of IT operating expenditure

7.1 Introduction

296. The ERA's draft decision was to apply a reduction of $15.0m or 25.5% of ATCO's proposed IT operating expenditure on the basis of reductions to IT Licence Fees (-$0.9m) and IT Service fees (-$14.1m).

297. EMCa assessed ATCO's IT operating expenditure for the AA4 period that at the time was based on the contractual arrangement (the *IT Services Agreement*, ITSA) with the service provider I-Tek, a related party to ATCO. The ITSA comprised of three components:

(i) IT Licence Fee – a pass through of shared application licence fees (ie. payable to the applications vendors);

(ii) IT Service Fee – for provision of helpdesk, applications support, technicians; and

(iii) IT Usage Fee – comprising an Applications Usage Fee for the use of corporate applications (such as SAP, EIM) and Infrastructure Usage Fee for the use of infrastructure such as servers, PABX, PCs and laptops.

298. ATCO subsequently entered into a new commercial arrangement with WIPRO in 2014, called the Managed Service Agreement, which in turn includes a new fee structure, the Managed Service Fee (MSF). ATCO now pays IT licence fees direct to vendors and now owns the 'corporate' applications it requires (eg. SAP, EIM). Therefore the IT Licence and Applications Usage Fee component (beyond December 2014) are no longer applicable. The MSF includes a charge to ATCO for:[130]

(i) IT services – for provision of help desk, applications support, technicians, etc; and

[130] Figure 6-15, ATCO Response, p. 94

(ii) IT usage - use of infrastructure (eg. servers, PABX, PCs and laptops).

299. In the sections below, we present and assess ATCO's revised information pertaining to its new IT fee structure and other IT operational expenditure forecasts.

7.2 IT Fees and charges

7.2.1 ATCO's revised proposal

IT Licence Fees

300. Under the ITSA, ATCO paid licence fees for shared corporate applications through I-Tek. This was essentially a pass-through arrangement of fees allocated to ATCO. ATCO has accepted the Draft Decision for IT Licence Fees from 2015-19 of $13.5m.

IT Usage Fee

301. The Draft Decision for IT Usage Fee for the period July – December 2014 (ie. until the commencement of the WIPRO MSF in January 2015) is $1.9m, which ATCO accepts.

Managed Service Fee

302. ATCO proposes a MSF of $44.1m for the period 1 January 2015 to June 30 2019. As discussed above, the MSF provides for the same services as the IT Services Fee under the ITSA and a portion of the IT Usage Fee (per the ITSA). In its Draft Decision, the ERA revised the IT Service Fee to $30.0m.

303. ATCO advises that the ERA applied EMCa's conclusions on the efficiency of the I-Tek IT Service Fee to the MSF and therefore submits that because of the fundamental differences between the two funding models, the ERA's approach is inappropriate and '*leads to an unreasonable forecast for the purposes of rule 74 of the NGR.'*[131]

304. ATCO submits that the MSF forecast for AA4:[132]

(i) *'Appears higher than the levels in AA3 because of confusion over the different charging methods*

(ii) *Is efficient and required to support 'moderate'*[136] *growth in the business; and*

(iii) *As a result of the competitive tender process, the services to be provided will be delivered at a lower cost than under the previous IT service arrangements with I-Tek;*

(iv) *Lower than total costs under the previous ISTA; and*

(v) *Is reducing over time.'*

[131] *Ibid,* p. 94

[132] *Ibid,* p. 93-95

7.2.2 EMCa's assessment

305. The table below shows a comparison between actual AA3 IT opex and ATCO's proposed AA4 IT opex. Figure 9 also shows the ERA's and EMCa's positions on AA4 IT opex. This table and the figures below illustrate that ATCO has reduced its total IT opex by $8.4m (12.5%), which is slightly more than our proposed reduction of $7.4m (11.0%). ATCO's proposed expenditure remains $15.0m (34.3%) above the ERA's Draft Decision.

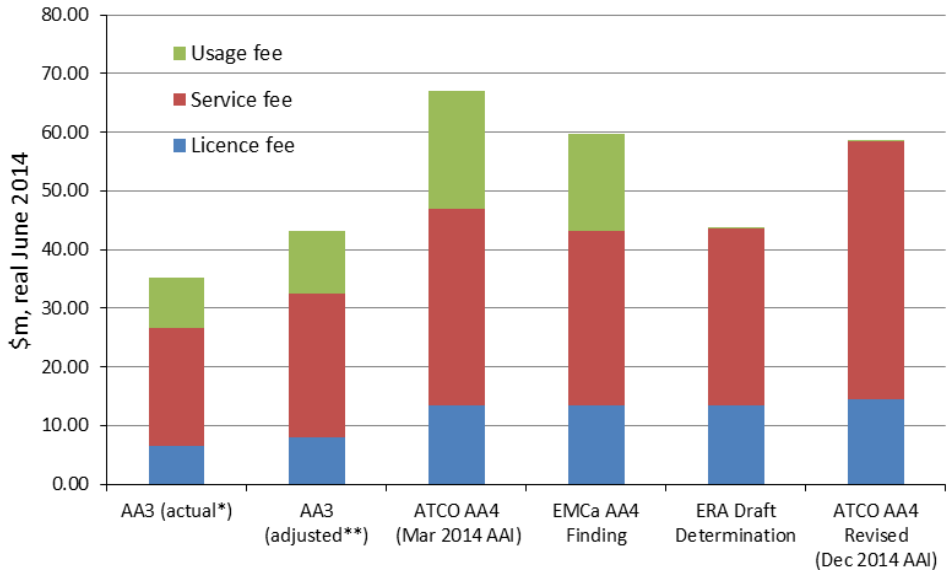
Table 12: AA3 and AA4 IT operating expenditure ($m, real June 2014)

IT Fee	AA3 total	AA4						AA4 Total
		Jul-Dec 2014	2015	2016	2017	2018	2019	
Usage Fee	6.35	1.9	-	-	-	-	-	1.9
Service fee	16.35	1.4	8.2	8.3	8.3	8.0	7.8	42.0
Licence Fee	8.65	1.0	2.4	2.4	2.4	2.5	2.6	13.3
Total	**31.35**	**4.3**	**10.6**	**10.7**	**10.7**	**10.5**	**10.4**	**57.2**

Sources: ATCO Response to Draft Decision – 23 December 2014, p.93; ATCO Appendix 6.4; EMCa Final Technical Report, Table 35

** 4.5 year period ** 5.5 year equivalent*

Figure 9: AA3 and AA4 IT operating expenditure ($m, real June 2014)



*** adjusted from 4.5 to 5.5 years for comparison with AA4*

306. The figure below shows the annual expenditure profile of ATCO's revised AA4 IT opex, with rising costs levelling off in 2017 and then reducing. This is in contrast to the I-Tek-based commercial arrangement which showed steadily increasing costs.

307. As discussed below, whilst ATCO has reduced its AA4 IT opex forecast by $8.4m compared to its March 2014 forecast, this has been achieved in part through an opex to

capex trade-off. Formerly, a significant proportion[133] of the IT Usage fee payable to I-Tek was for the Use of Applications that I-Tek owned. ATCO now owns the applications and has added them to the capital base.

Figure 10: AA3 and ATCO proposed AA4 IT operating expenditure

Sources: ATCO Response to Draft Decision – 23 December 2014, Table 6-25, p.100 and ATCO Appendix 6-4, p.8

IT Licence Fee

308. ATCO has accepted the ERA's Draft Determination of $13.5m and therefore we have not assessed this component of ATCO's revised IT opex proposal.

IT Usage Fee

309. ATCO has accepted the ERA's Draft Decision on IT Usage Fee of $0.2m for the period July – December 2014. We have therefore not assessed this component of ATCO's revised IT opex proposal.

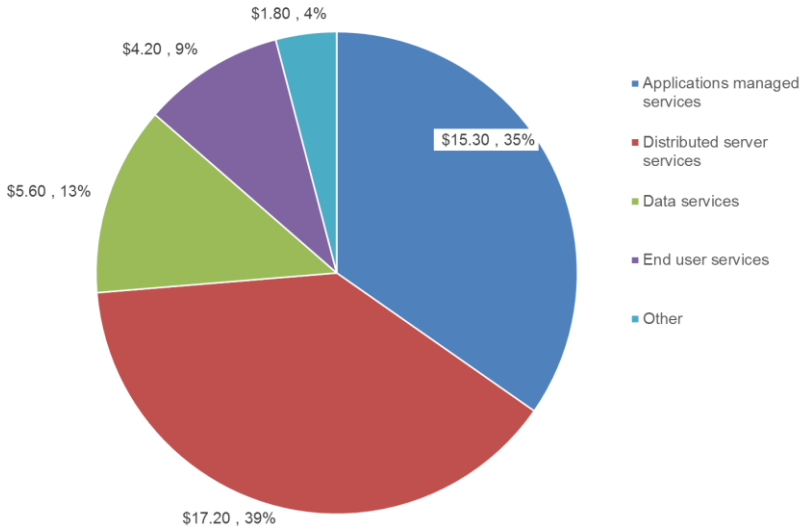
310. The IT Usage Fee provided a return to I-Tek for the use of (its) Applications and the use of (its) infrastructure by ATCO. ATCO purchased 'key business systems' from I-Tek at a cost of $3.0m and so an ongoing Applications Usage Fee (or its equivalent) is not a component of the MSF from January 2015 onwards.

Managed Service Fee

311. The MSF covers the services shown in Figure 11. The Other category includes voice and video services ($1.7m, 3.9%), and user connectivity services ($0.1m, 0.3%).

[133] 95% in 2012, 70% in 2013, 41% January – June 2014; source: ATCO response to Information Request EMCa99, 29 April 2015

Figure 11: Components of MSF forecast expenditure Jan 2015 - July 2019 ($m, real June 2014)



Source: KPMG, Appendix 6.4, *IT Operating Expenditure, page 8*

312. In our original report to the ERA, we observed that ATCO cited the following reasons for its proposed increase in IT opex during the AA4 period:[134]

- the Safety Case requirements to document and retain records to demonstrate regulatory and safety case compliance;
- wholesale infrastructure replacement as it has reached end-of-life;
- entry of a new retailer which has increased volume of churn and transactions in the billing system; and
- prior owners' reduced IT expenditure in AA3 (so as not to commit potential purchasers to a specific IT approach).

313. In our report to the ERA, our findings were that:

- With the exception of infrastructure replacement, ATCO had not provided sufficient evidence to demonstrate that the other drivers supported the extent of opex increase proposed; and
- ATCO had not provided sufficient evidence to demonstrate that the opex forecast was representative of efficient costs, with our primary concerns related to (i) the issues concerning I-Tek's role in procurement, and (ii) ATCO's capacity to deliver multiple IT-capex projects.

314. In its revised submission, ATCO has mitigated one of our key concerns with its previous proposal by selecting WIPRO through a competitive tender process. The selection process was managed by ATCO's parent company (Canadian Utilities Ltd) for provision of IT services to all ATCO companies worldwide.[135] We do not have visibility of the commercial terms achieved at the Group level versus the terms (including prices) for the MSF agreed to for ATCO's GDS operations. As analysis of the arrangements is outside

[134] ibid, section 6.2.2

[135] ATCO Response to Draft Decision – 23 December 2014, page 98

our scope of work, we have necessarily made the working assumption that ATCO Gas Australia has achieved terms, conditions and prices under the MSF commensurate with the average results from the global competitive tender process.

315. With respect to ATCO's delivery capability, we note that ATCO has advised that in moving to the commercial relationship with WIPRO, there are financial penalties for breach of the service level agreement and that WIPRO has access to 140,000 employees to draw upon to ensure IT capex projects are delivered. In our experience, it is the capacity and commitment of the business to support the development and implementation phases of complex IT projects that cause delay and increase costs. Nonetheless, we are generally satisfied that the new arrangement with WIPRO has substantially satisfied our concerns regarding delivery risk.

316. ATCO now states that the reasons for the increase in the MSF over the AA4 period are as shown in the table below.

Table 13: AA3 and AA4 IT operating expenditure ($m, real June 2014)

Driver	ATCO assumption	IT Opex impact
Increase in users	15% growth in customers results in moderate increase in the number of users	'Moderate' increase in: • Applications managed services • End user computing services • User connectivity services
Change in network operations	2.1% increase in customer numbers	• 10% increase in data services • Small increase in data storage services
Replacement of IT infrastructure	Age-based asset replacement	None denoted
New IT capex projects	IT capex projects require increased IT opex	$0.9m (1.6%) of total IT opex

Sources: Appendix6.4, KPMG Report, pages 10-11

317. We have assessed the reasonableness of ATCO's forecast increase to IT opex from AA3 by considering the impact of each of its nominated cost drivers:

(i) User growth – it is beyond the scope of our review to assess the reasonableness of ATCO's forecast workforce growth rate in detail, however, based on our findings with respect to ATCO's network growth expenditure, we consider the assumed 15% workforce growth to be too high. We note that KPMG considers that 15% growth in users is a 'moderate' amount and that this will have a 'moderate' impact on IT opex over the same period. We agree that there is likely to be a proportional increase in IT opex with growth in the number of users, and we therefore consider the absolute impact to be somewhat less than ATCO has assumed. ATCO has forecast $19.6m

opex for the three components in the table above; we estimate that there is likely to be 5% ($1m) less IT opex growth due to lower than forecast user growth;

(ii) Changes in network operations – ATCO's has assumed 2.1%pa customer growth or approximately 12% over the AA4 period, which we consider to be optimistic. ATCO has assumed a directly proportional increase in Data Services, but at $1.0m over the AA4 period, this is not a significant component of IT opex. ATCO also assumes a slight increase in Data storage services, which represents a small impact on total IT opex given that the total AA4 forecast expenditure on that component is $4.6m. Therefore, despite our concern regarding ATCO's assumed customer growth forecast, we consider that it will have a minimal effect on IT opex;

(iii) IT asset replacement – WIPRO purchased IT assets[136] from I-Tek and is responsible for replacements and upgrades, which was formerly paid for through the IT Infrastructure Usage Fee component of the ITSA. We accept that renewal of IT assets is prudent practice if undertaken in accordance with reasonable assumptions regarding asset lives. We note that the MSF incorporates a 20% reduction of servers in the last two years of the AA4 period. This is indicative of a reasonable expenditure forecast;

(iv) New IT capex projects – with the exception of our concern regarding ATCO's capacity to deliver the nominated IT capex projects, we considered that the bulk of ATCO's proposed IT capex was justified in our original report to the ERA. Our assessment of specific aspects of its revised proposal has strengthened that view. We note that KPMG's advice supports ATCO's rationale for allowing a $0.9m increase in IT opex because: (i) the link is consistent with recent industry trends in other relevant regulatory submissions, (ii) ATCO's percentage increase is relatively low, and (iii) the proposed projects are likely to increase demand for managed services. Whilst we consider KPMG's first point to be irrelevant, we also consider that the quantum of increase IT opex of $0.9m to be a reasonable amount.

Comparison of IT opex to industry benchmarks

318. In its March 2014 submission, ATCO included the results of a benchmarking survey conducted by ITNewcom and concluded that its services were, overall, competitively priced. KPMG has provided additional benchmarking information to support ATCO's latest submission and reaches the same conclusion.[137]

319. Our concern with the ITNewcom benchmark analysis was that the extent of exclusions led us to conclude that the information was 'helpful but not conclusive', particularly given the lack of competitive tendering for the significant amount of Shared IT capex projects. This concern has been mitigated by the new arrangement with WIPRO but not eliminated as the extent of new IT infrastructure that will be procured competitively is not clear to us.

320. KPMG points out that its benchmarking study comprises predominantly electricity distribution utilities. KPMG does note that IT expenditure for gas businesses is typically much less than electricity distribution businesses and therefore observes that ATCO's IT

[136] End user devices, servers, storage, network equipment, telephony (ATCO, Response to Draft Decision – 23 December 2014, pages 97-98)

[137] KPMG, Appendix 6.4, *IT Operating Expenditure,* page 12-13

opex per customer results should be at the low end of the spectrum presented – and they are, at about $17/customer, compared to the mean of $45/customer (2013).

321. Whilst there are limitations to the benchmarking data and analysis, the combination of the more competitive approach to establishing the fees payable to WIPRO and the two benchmarking studies support ATCO's position that its revised IT opex forecast is reasonable.

Appendix A - AS/ANZ 4645 excerpts

APPENDIX C

QUALITATIVE RISK ASSESSMENT

(Informative)

C1 GENERAL

This appendix provides guidance for qualitative risk assessment undertaken in accordance with AS/NZS 4360.

Where a failure event may have several outcomes, the consequence and frequency of each outcome shall be considered. Full evaluation of every outcome may not be necessary, but sufficient outcomes shall be evaluated to identify the outcome with the highest risk ranking.

NOTE: The highest energy release rate may not give rise to the highest consequence or the highest risk (e.g. a small LPG leak which is initially unignited may well have a higher consequence or higher risk ranking than a large immediately ignited release).

C2 CONSEQUENCE ANALYSIS

The severity of the consequences of each failure event shall be assessed. Consequences to be assessed shall include the potential for the following:

(a) Human injury or fatality.

(b) Interruption to continuity of supply with economic impact.

(c) Environmental damage.

NOTES:

1 Other factors such as property damage and loss of reputation may also be considered.

2 Gas distribution networks and some liquid petroleum gas distribution networks may be identified as 'essential infrastructure' where the consequence of a loss of supply is significant. This may be in terms of the potential for economic impact, and in some cases significant fatalities may result from the cascading consequence of loss of the energy supply.

A severity class shall be assigned to each failure event based on the consequences at the location of the failure. The severity class may be selected from Table C1.

Where necessary to make the severity classes applicable to the gas distribution network under study the measures of severity in Table C1 may be modified with the agreement of the stakeholders. Modification should be minimized. Any modification of the severity classes shall be undertaken so that consistency with Table C3 is maintained.

The reasons for any changes to the measures of severity shall be documented and approved.

TABLE C1
SEVERITY CLASSES

Dimension	Severity class				
	Catastrophic	Major	Severe	Minor	Trivial
	Measures of severity				
People	Multiple fatalities result.	Few fatalities, or several people with life-threatening injuries	Injury or illness requiring hospital treatment	Injuries requiring first aid treatment	Minimal impact on health and safety
Supply	Long term interruption of supply	Prolonged interruption or long-term restriction of supply	Short term interruption or prolonged restriction of supply	Short term interruption or restriction of supply but shortfall met from other sources	No impact; no restriction of gas distribution network supply
Environment (See Note)	Effects widespread, viability of ecosystems or species affected, permanent major changes	Major off-site impact or long-term severe effects or rectification difficult	Localized (<1 ha) and short-term (<2 yr) effects, easily rectified	Effect very localized (<0.1 ha) and very short term (weeks), minimal rectification	No effect, or minor on-site effects rectified rapidly with negligible residual effect

NOTE: Significant environmental consequences may occur in locations which are relatively small and isolated.

C3 FREQUENCY ANALYSIS

A frequency of occurrence of each threat shall be assigned for each location where risk estimation is required. The frequency of occurrence shall be selected from Table ~~A~~C1.3(a).

The contribution of operations and maintenance practices and procedures to the occurrence or prevention of failure events shall be considered in assigning the frequency of occurrence.

TABLE C2
FREQUENCY CLASSES

Frequency class	Frequency description
Frequent	Expected to occur once per year or more
Occasional	May occur occasionally in the life of the gas distribution network
Unlikely	Unlikely to occur within the life of the gas distribution network, but possible
Remote	Not anticipated for this gas distribution network at this location
Hypothetical	Theoretically possible but has never occurred on a similar gas distribution network

For a threat which exists for a limited period the frequency class should be assessed against the exposure period rather than the life of the gas distribution network.

C4 RISK RANKING

Table C3 shall be used to combine the results of frequency analysis and consequence analysis and determine the risk rank.

Risks determined to be low or negligible or demonstrated to be as low as reasonably practicable (ALARP) are accepted risks.

TABLE C3

RISK MATRIX

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

C5 RISK TREATMENT

C5.1 General

Action to reduce risk shall be taken in accordance with Table C4 based on the risk rank determined from Table C3.

The action(s) taken and their effect on safety management shall be documented and approved.

TABLE C4

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. For a gas distribution network in operation the risk must be reduced immediately.
High	Modify the threat, the frequency or the consequences to ensure that the risk rank is reduced to Intermediate or lower. For a gas distribution network in operation the risk must be reduced as soon as possible, typically within a timescale of not more than a few weeks.
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 demonstration 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 threat to prevent occurrence and to monitor changes which could affect the classification.
Negligible	Review at the next review interval.

C5.2 ALARP

A risk cannot be designated as ALARP until the following has been completed:

(a) Analysis of the means of further reducing the risk, including an analysis of various options.

(b) Review as to the reasons why these further means have not been adopted.

(c) Substantiation that the cost of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result.

Options that shall be considered include—

(i) relocation of the network components;

(ii) modification of the design of network components;

(iii) review of pressure levels;

(iv) modification or enhancement of specific operations or maintenance procedures;

(v) modification to gas distribution network marking; and

(vi) threat treatment for operating gas distribution networks shall consider interim control measures (e.g. reduction in operating pressure, access restrictions) to allow time for the implementation of permanent control measures (e.g. repair).

The further risk reduction measures considered and the reasons they have not been adopted shall be documented.

Appendix B - Additional credentials

The following credentials are in addition to the review team credentials provided in the Final Technical Report to the ERA (Appendix C).

Philip Stevenson – engineer, gas sector

Philip Stevenson is an expert engineer and business manager with a 31 year background in strategic planning, maintenance, operation and expansion of gas distribution businesses. He has safely managed major infrastructure projects, the replacement of critical energy supply assets and identified opportunities to grow customer base. He has a proven track record in business and financial planning, modelling and budgeting. He exhibits strong people management skills, with the ability to grow and develop talented teams. Having worked in a regulated environment he has an exceptional focus and track record in safety, risk, customer focus and network performance within an environment of budgetary constraints.

Career summary and experience

Philip has considerable experience in asset management and was team leader in gaining the first Australasian PAS 55 Asset Management accreditation. His experience includes review of current asset plans and strategies in order to maximise business objectives and ensure priorities are met and review of asset management plans against regulatory (financial or technical) requirements, PAS 55 Asset Management and/or best practice and to use this information to make recommendations regarding new opportunities, improvement initiatives and out performing business or regulatory targets. He also has experience in developing life cycle optimisation; determining efficient division in linking condition monitoring, preventative maintenance and breakdown maintenance; reliability centred maintenance (RCM) analysis; conducting/ facilitating failure mode, effects, and criticality analysis (FMECA); conducting/ facilitating hazard and operability study (HAZOP), throughout the asset life cycle; implementing risk based asset management, prioritisation and planning; and assessing and making recommendations for major project approval documentation.

He is experienced in due diligence work including experience at SP AusNet during three company acquisitions. Philip is a gas industry expert and has provided an advisory service to organisations considering acquisitions. This service included financial analysis of capital and operating programs; advice on the regulatory framework both financial and technical and regulatory requirements and compliance; risk management reporting and assessment; asset base assessment and review of capital works strategies and plans. Philip has provided an advisory service for organisation acquisitions including providing support to management in preparing responses to acquirer questions; documentation presentation, compilation and system administration and data rooms set up.

Philip was a member of the previous three gas access arrangement reviews for Westar, TXU and SP AusNet, each achieving revenue outcomes within 10% of business target.

Philip has proven ability to evaluate and make recommendations to optimise revenue from a regulatory price determination; assess, validate and/or improve asset management plans and access arrangements; review access arrangement to optimise revenue, customer service, network performance, asset integrity and safety and in realisation of profit from capital expenditure and operating expenditure trade off.

Expertise

- Asset management.
- Due diligence – a gas industry expert.
- Utility industry prise resets.
- Auditing systems and processes in asset management, including conducting gap analysis of current vs. best practice; recommending and prioritising improvement opportunities within budget constraints; and auditing against PAS 55 Asset Management Systems, ISO 1400 Environmental Management, ISO 9000 Quality Management, AS 2800 Safety Management Systems, AS/NZ 4645 Gas Distribution Networks; AS 2885 Pipelines – Gas and liquid petroleum.
- Writing policies, standards, processes and procedures.

Glossary

AA	Access Arrangement
AAI	Access Arrangement Information
AMP	Asset Management Plan
ALARP	As Low As Reasonably Practicable
BD	Business Development
Capex	Capital Expenditure
CEAR	Capital Expenditure Approval Request
COTS	Commercial off the shelf
EOL	End of Life
ERA	Economic Regulation Authority
EMCa	Energy Market Consulting associates
Economic value test	Test set out in rule 79(2)(a)
FSA	Formal Safety Assessment
GNIS	Geographical network information system
Incremental revenue test	Test set out in rule 79(2)(b)
IT	Information Technology
KPI	Key performance indicator
MIS	Management information system
NDV	Network data visualisation
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net Present Value

Opex	Operating Expenditure
PV	Present Value
Prudent service provider test	Test set out in rules 79(1)(a) and 91(1) of the NGR.
RPP	Revenue and Pricing Principles
SAM	Strategic asset management
SAP	Enterprise management system
UAFG	Unaccounted For Gas
WAGN	WA Gas Networks