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DBNGP (WA) Transmission Pty Limited
Proposed
Access Arrangement 2016-2020 for the
Dampier to Bunbury Natural Gas Pipeline

Review of Technical Aspects of the Proposed Access Arrangement

Report to

Economic Regulation Authority of Western Australia

From

Energy Market Consulting associates

FINAL REPORT, December 2015

This report has been prepared to assist the Economic Regulation Authority (ERA) with its assessment of DBNGP (WA) Transmission Pty Ltd's Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, for the period from 2016 to 2020 (AA4), 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 DBNGP (WA) Transmission Pty Ltd up until 29 September 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 DBNGP (WA) Transmission Pty Ltd's Access Arrangement Information (AAI) or other documents due to rounding.

Energy Market Consulting associates
802 / 75 Miller Street, North Sydney, NSW 2060
and
Level 1 Suite.2 572 Hay St, Perth WA 6000
AUSTRALIA

Email: **contact@emca.com.au**
Web: **www.emca.com.au**

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.

Authorship

Prepared by:	Mark de Laeter, Hugh Driver, Paul Sell, Gavin Forrest, and Eddie Syadan
Quality approved by:	Paul Sell
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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 DBNGP (WA) Transmission Pty Ltd's (DBP) revised access arrangement (AA) proposal for the Dampier to Bunbury Natural Gas Pipeline (DBNGP) for the period 1 January 2016 to 31 December 2020 (AA4).

2. To assist with its assessment of DBP's revised AA4 proposal, the ERA has engaged EMCa to review and provide technical advice on the following aspects of the proposal:
    - the capital expenditure (capex) incurred (or to be incurred) by DBP in the current AA period, which extends from 1 January 2011 to 31 December 2015 (AA3);
    - DBP's proposed capex for AA4;
    - DBP's proposed operating expenditure (opex) for AA4; and
    - the governance arrangements, forecast methodology and cost estimation processes employed by DBP when developing its expenditure proposals.

3. The results of our technical assessment are set out in this report.

1.2 Regulatory framework

4. The provisions the ERA is required to have regard to when assessing DBP's capex and opex proposals are set out in Part 9 of the NGR. In short, these rules require the ERA to accept DBP's proposal if:
    - the capex complies with the conforming capex criteria set out 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, pursuant to rule 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 also satisfy rule 74(2).

1.3 Scope of the review

5. The overarching objective of this review is to determine: (1) whether the actual capex incurred by DBP in AA3 and its proposed capex for AA4 complies with the criteria set out in rule 79 of the NGR; (2) whether its proposed opex for AA4 complies with the criteria set out in rule 91(1) of the NGR; and (3) whether DBP has provided sufficient evidence to support a finding that the forecasts and estimates which underpin both its capex and opex proposals might be considered reasonable in accordance with rule 74(2).

6. In carrying out this review, the ERA has asked us to evaluate a range of matters that can affect capex and opex, including:

- DBP's substantiation and justification for forecast increases in opex[1] and capex;
- DBP's project governance arrangements (e.g. procurement practices and delivery models) and the methods or models used by DBP to estimate its expenditure requirements and to prioritise areas of expenditure;
- the methodology DBP has used to develop capacity and utilisation forecasts as part of developing its capex and opex forecasts;
- the extent to which DBP has factored efficiencies into the opex and capex forecasts;
- DBP's ability to deliver its proposed capex program;
- the asset lives assumed by DBP when calculating depreciation; and
- the Key Performance Indicators (KPIs) used by DBP to support its capex and opex forecasts including comparison with industry standards and any proposed changes to DBP's operational and service level performance.

1.4 Data sources

7. In the course of carrying out this review, we have examined a large number of documents. This includes the AA Information (AAI) and other documents that DBP provided to the ERA in support of its proposed AA4 and a number of other significant documents that were provided by DBP during on-site meetings (held on 9-10 February) or in response to our information requests.

8. We wish to acknowledge the assistance that DBP has provided during this review.

1.5 Rounding of numbers and real conversion

9. Numerical totals in tables may not present as being equivalent to the sum of the individual numbers due to the effects of rounding.

10. This report refers to real dollars (December 2015 base) unless denoted otherwise. In cases where the real values have been derived from DBP's nominal values, DBP's Reference Tariff model inflator has been applied.

[1] With the exception of (i) the forecast System Use Gas price (including consideration of DBP's contractual obligations under its shipper contracts), (ii) salaries escalation, and (iii) regulatory expenses

1.6 Structure of this report

11. The remainder of this report is structured as follows:
    - Section 2 provides an overview of our key findings and recommendations;
    - Section 3 describes the framework we have used to assess DBP's actual and proposed capex and opex and our general approach to undertaking this review;
    - Section 4 outlines the results of our review of the governance arrangements, forecast methodology and cost estimation processes employed by DBP when developing its expenditure proposals and the KPIs used by DBP to support its proposal;
    - Section 5 describes our review of DBP's demand forecast;
    - Section 6 sets out the results of our examination of the capex incurred (or to be incurred) by DBP in the AA3 period;
    - Section 7 sets out the results of our assessment of DBP's proposed capex for the AA4 period and the asset lives that have been assumed in DBP's depreciation calculations; and
    - Section 8 sets out the results of our review of DBP's proposed opex for the AA4 period.

12. Further supporting information is provided in the Appendices.

1.7 Our qualifications

13. 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 the authors of this report are summarised in Appendix C.

2 Overview of findings and recommended adjustments

2.1 Introduction

14. In this section, we provide an executive summary of our findings. Our specific findings, supporting evidence and our recommended adjustments to the capex and opex that DBP has proposed, are contained in sections 4 to 8.

2.2 Governance, forecasting framework and performance

15. DBP's governance and management structure comprises documented asset management and risk management policies and strategies that guide the procedures used by the business to develop its capex and opex program. DBP advise that it applies top-down review to the bottom-up build of its forecast and approves annual budgets that are managed by its respective committees.

16. Our main findings are that:

- With a small number of significant exceptions, DBP's business frameworks, processes and procedures are consistent with good industry practice. However, we observed significant gaps in the application of the procedures in practice;
- DBP has taken a conservative approach to the application of its risk framework, with a large proportion of its proposed projects deemed to be 'mandatory'. We consider that, on the balance of probability, there is a proportion of the proposed expenditure that is more likely to be prudently deferred;

- DBP's capital project reporting, at least for regulatory control purposes, is difficult to follow.[2] This made its assessment unnecessarily difficult by introducing project scope and expenditure uncertainty. It appears DBP uses a similar project structure in its capital governance process and we consider this to increase the risk of inadequate monitoring and control of scope, schedule and budget;
- Whilst DBP has a top-down review process to challenge the bottom-up forecast, we did not see evidence that the proposed work has yet been optimised across the portfolio (e.g., by aggregating the diverse and multitudinous work packages on an asset basis to provide more efficient delivery);
- Business case documentation, as presented, does not follow DBP's own guidelines and is deficient when compared with industry practice, including:
  - Risk assessment – business need;
  - Options analysis;
  - Delivery approach; and
  - Cost estimation.
- DBP management focus on satisfying gas transportation contract performance requirements and licence obligations. It has a large number of plant performance and maintenance performance indicators designed around supply reliability and fuel use (the major operating expense). DBP's single KPI to support its proposed expenditure is forecast vs actual annual opex, which in our view is not adequate.

17. We are satisfied that the majority of the work proposed by DBP will address a legitimate business need. Notwithstanding, we have identified systemic issues that principally relate to the volume, timing and cost of DBP's incurred and forecast expenditure. Accordingly, where we are not satisfied that the proposed work would be incurred by a prudent service provider acting in the manner prescribed in rules 79(1)(a) and 91(1), we have proposed adjustments. These specific adjustments are described in our assessments in Sections 6, 7 and 8.

2.3 DBP's demand forecast

18. We consider that DBP's capacity forecast is derived from a reasonable assessment of information available to it, and is significantly underpinned by contracted capacity commitments. We consider that this is a reasonable forecast that meets the requirements of the NGR.

19. We consider that DBP's throughput forecast is derived from a reasonable assessment of user-specific information available to it. We accept Jacobs' findings[3] that the derived capacity factor is in a reasonable range and that the throughput forecast is suitably consistent with the IMO's GSOO forecast. We consider that this is a reasonable forecast that meets the requirements of the NGR.

[2] Programs of work are broken down by year, often with project names changing without adequate linkage between the multiple 'projects', and there was lack of clarity in the scope descriptions, particularly with multi-year projects which crossed regulatory periods

[3] Jacobs, *Appendix B to DBP's Supporting Submission 11,* October 2014

2.4 AA3 conforming capex

2.4.1 Stay in Business Capex

20. We consider that DBP has provided sufficient information to confirm that the requirements of rule 79(1)(b) were satisfied through meeting at least one of the tests under rule 79(2)(c).

21. However, DBP has not provided sufficient evidence that it has met the full requirements of the prudent service provider test pertaining to rule 74(2). We found systemic issues in the practical application of DBP's policies, processes and procedures at the project level to the extent that we could not satisfy ourselves that the Stay in Business (SIB) expenditure incurred was prudent and efficient. Systemic issues include:

- Lack of clarity about the options considered and why the proposed solution (including the nature, timing, and volume of work) was necessary;
- Lack of clarity about what was actually delivered for the reported cost; and
- Lack of clarity of the approach taken to ensure the delivered cost was efficient.

22. We consider a total AA3 SIB adjustment of -$47.60m to be reasonable. This would result in a recommended conforming SIB capex amount of $89.66m (or -35% of DBP's actual and forecast AA3 SIB capex).

2.4.2 Expansion Capex

23. We found sufficient evidence to conclude that DBP's AA3 Expansion capex of $117.82m should be treated as conforming capital expenditure as, in our view, it satisfies the requirements of rule 74(2).

2.5 Proposed AA4 capex

24. DBP proposes spending $106.67m ($21.3m p.a.) on a range of capex projects during the AA4 period. This is $150.01m (58%) lower than the actual/forecast total expenditure in the AA3 period of $256.75m, due primarily to the absence of Expansion capex planned for the AA4 period.

25. We reviewed a sample of DBP's projects which revealed systemic issues with the evidence presented by DBP to support its proposed expenditure. Whilst there is sufficient information to support the business need in most (but not all) cases, we consider that the evidence DBP provided does not sufficiently satisfy the requirements of rule 74(2). We found systemic issues in the practical application of DBP's policies, processes and procedures at the project level to the extent that we could not satisfy ourselves that the SIB expenditure incurred was prudent and efficient. Systemic issues include:

- Lack of clarity of the scope;
- Lack of clarity about the options considered and why the proposed solution (including the nature, timing, and volume of work) is necessary; and
- Lack of clarity about the basis for the cost estimate, including the delivery strategy.

26. Based on our assessment of a sample of AA4 capex projects and programs, we estimate that the aggregate impact of these systemic issues is in the order of a 22% to 32% reduction of proposed SIB capital expenditure.

27. To assist the ERA with its revenue modelling, we have proposed a specific allocation of this reduction across six expenditure categories by considering the extent to which the systemic issues uniquely apply to each category of proposed expenditure.

2.6 Proposed AA4 opex

28. DBP proposes spending $560.8m on opex in AA4 which is 2.7% *higher* than the $545.8m allowance approved by the ERA for AA3 and 18.1% *higher* than the amount of $453.8m actually spent by DBP in AA3. Most of the proposed increase can be attributed to the proposed +260% ($120.0m) increase in the cost of System Use Gas (SUG), which in turn is primarily driven by its forecast Fuel gas expenditure.

29. DBP has proposed 2015 as the Base Year and it has in most, *but not all*, opex categories assumed its 2015 expenditure will apply in each year of the AA4 period (i.e., at a constant level with zero real escalation). Notable exceptions to the Base Year approach are:

- SUG – DBP forecasts a more than two-fold increase in Fuel Gas expenditure, the key driver of SUG, primarily due to its revised contracted Take-or-Pay gas price;
- Wages & salaries, Consulting and Insurance – DBP propose 2% real escalation; and
- GEA/turbine – opex varies with the scheduled maintenance program.

30. In our opinion, DBP's justification for using 2015 as the Base Year is inadequate noting that, in most cases, the forecast increase from 2014 (the most recent revealed actual cost) to 2015 is not adequately explained. We have therefore estimated the majority of our proposed adjustments using 2014 as the Base Year and have assumed (where applicable) no real escalation for labour. On instructions from the ERA,[4] our assessment of proposed SUG expenditure was confined to consideration of the forecast SUG quantity for the AA4 period. We found that the forecast quantity was formed on a reasonable basis.

2.7 Aggregate implications

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

- For AA3 conforming capex, we recommend an allowance of $207.5m, compared with DBP's proposed allowance of $256.8m. This represents a reduction of $49.3m;
- For AA4 conforming capex we recommend an aggregate adjustment in the order of 22-32% to DBP's proposed allowance of $106.7m. This represents a reduction of $23.7m to $33.8m; and
- For AA4 opex, we recommend an allowance of $515.3m compared with DBP's proposed allowance of $560.8m,[5] noting that we have not been asked to recommend an adjustment for the SUG expenditure sub-category. This represents a reduction of $45.5m.

[4] Email from ERA on 22 September 2015

[5] This figure includes $3.8m for ancillary services

3 Review framework

3.1 National Gas Law and National Gas Rules

32. As the owner (service provider) of a covered pipeline, DBP is required to submit a full AA to the ERA and to obtain its approval for the price and non-price terms and conditions of access to the reference service(s) DBP provides through DBNGP. The current AA period ends on 31 December 2015.

33. When assessing the AA, the ERA is required to have regard to:

- the access arrangement provisions set out in Part 8 of the NGR;
- the price and revenue regulation provisions set out in Part 9 of the NGR; and
- the National Gas Objective (NGO) and the revenue and pricing principles (RPP) set out in sections 23-24 of the NGL.

34. Of particular relevance in this context are the provisions the ERA is required to consider when assessing the capex and opex elements of DBP's revised AA proposal, which are set out in Part 9 of the NGR. An overview of these provisions is provided below.

3.1.1 Capex provisions

35. By virtue of the operation of rules 77(2)(b) and 78(b),[6] the ERA is required to carry out both:

- an ex post assessment of the capex incurred (or to be incurred) by DBP in AA3 to determine whether it satisfies the conforming capex criteria in rule 79(1); and
- an ex ante assessment of the capex DBP proposes to incur in AA4 to determine whether it is likely to satisfy the conforming capex criteria in rule 79(1).

36. Conforming capex is defined in rule 79(1) as capex that satisfies the following criteria:

- the capex "*must be such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest*

[6] Rule 77(2) sets out how the opening value of the capital base at the commencement of a new AA period is to be calculated, while rule 78 sets out how the value of the capital base during the AA period is to be calculated. In short, these two rules only allow conforming capex to be rolled into the value of the capital base.

sustainable cost of delivering pipeline services" (the 'prudent service provider test') (rule 79(1)(a)); and

- the capex must be justifiable on one of the following grounds (rule 79(1)(b)):
  - the overall economic value of the expenditure is positive (the 'economic value test') (rule 79(2)(a));7 or
  - the present value (PV) of the expected incremental revenue exceeds the PV of the capex (the 'incremental revenue test') (rule 79(2)(b));8 or
  - the capex is necessary to:
    - (i) maintain and improve the safety of services (rule 79(2)(c)(i)); or
    - (ii) maintain the integrity of services (rule 79(2)(c)(ii)); or
    - (iii) comply with a regulatory obligation or requirement (rule 79(2)(c)(iii)); or
    - (iv) maintain the service provider's capacity to meet levels of demand for services existing at the time the capex is incurred (rule 79(2)(c)(iv)); or
  - the capex is divisible into two parts, with one part referable to incremental services and justifiable under 79(2)(b) and the other part referable to a purpose under 79(2)(c) and justifiable on this basis (rule 79(2)(d)).

37. In accordance with rule 79(6), the ERA's discretion under rule 79 is limited. It cannot therefore withhold its approval of the capex incurred by DBP in AA3 or the capex it proposes to incur in AA4, if it is satisfied the capex complies with:
    - the criteria set out above;
    - rule 74(2), which states that any forecast or estimate must be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances; and
    - any other relevant provision in the NGL and/or the NGR.

38. In determining whether capex is efficient and complies with other criteria prescribed in the rules, rule 71 states that the ERA may, without embarking on a detailed investigation, infer compliance from the operation of an incentive mechanism or any other basis the ERA considers appropriate. It must, however, consider, and give appropriate weight to, submissions and comments received.

Conforming capex vs non-conforming capex

39. Where the capex proposed by DBP (in whole or in part) is found to:
    - satisfy rule 79 - it will be considered conforming capex for the purposes of rules 77(2) and 78 and rolled into the capital base (i.e., it will be included in the derivation of the reference tariff(s)); or

[7] Rule 79(3) sets out the matters to be considered when applying the economic value test. In short, this rule only allows consideration to be given to the economic value directly accruing to the service provider, gas producers, users and end-users when determining whether the overall economic value of the capex is positive.

[8] Rule 79(4) sets out what is to be considered when applying the incremental revenue test. In short, this rule requires:

- a tariff to be assumed for the 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 had been reference services; and
- incremental revenue to be taken to be the gross revenue to be derived from the incremental services less incremental opex; and
- the discount rate is to be based on the rate of return implicit in the reference tariff.

- not satisfy rule 79 - it will be considered non-conforming capex and excluded from the capital base (i.e., it will be excluded from the reference tariff(s)).

40. In this context, while non-conforming capex cannot be recovered through the reference tariff(s), DBP may still undertake this form of capex and either:
    - recover that expenditure, or a portion thereof, through a surcharge (rule 83) or a capital contribution (rule 82); or
    - include the investment in a notional fund, referred to as the 'speculative capital expenditure account', which may be rolled into the capital base at a later date if the capex is found to satisfy the conforming capex criteria (rule 84).

3.1.2 Opex provisions

41. The criteria the ERA is required to consider when assessing DBP's proposed opex for AA4 are set out in rule 91 of the NGR, which is reproduced below:

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

42. The ERA's discretion under rule 91(2) is limited, which means the ERA may not withhold its approval if it is satisfied that DBP's proposal complies with:
    - the criteria set out in rule 91(1);
    - rule 74(2), which states that any forecast or estimate must be arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances; and
    - any other relevant provisions in the NGL and/or the NGR.

43. In a similar manner to capex, rule 71 states that in determining whether opex is efficient and complies with other criteria prescribed in the rules, the ERA may, without embarking on a detailed investigation, infer compliance from the operation of an incentive mechanism or any other basis the ERA considers appropriate. It must, however, consider and give appropriate weight to submissions and comments received.

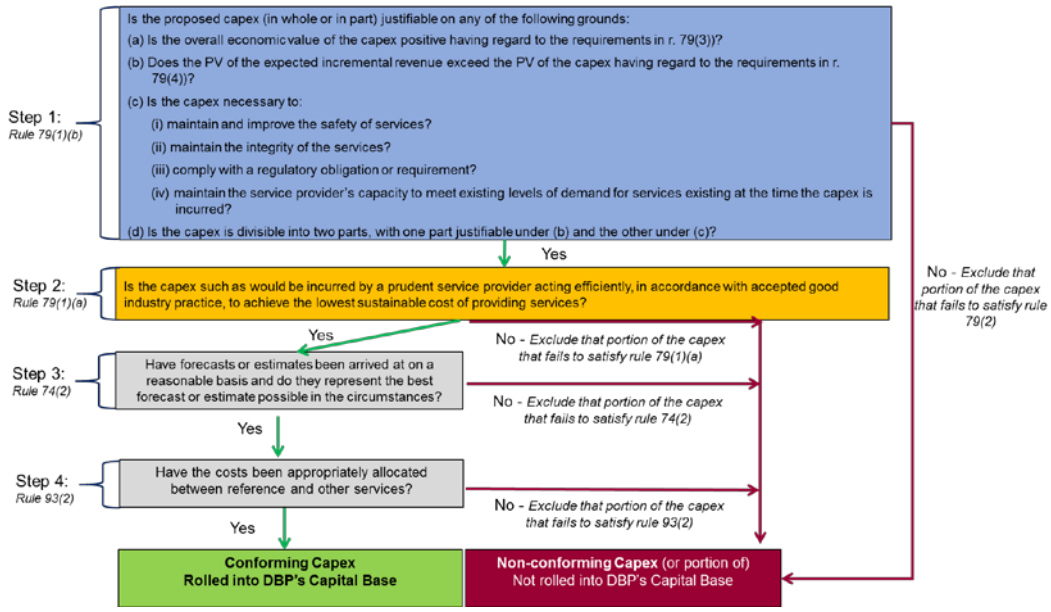
3.2 Assessment framework

44. An overview of the framework we have used to assess DBP's capex and opex proposals is provided below.

3.2.1 Capex assessment framework

45. The framework we have used to assess whether the capex incurred (or to be incurred) by DBP in AA3 and its proposed capex for AA4 can be considered conforming capex is depicted in Figure 1.

Figure 1: Capex assessment framework



46. As Figure 1 highlights, the framework consists of three steps based on the specific requirements set out in rules 79 and 74(2). Where there might be discretion as to which ground is relevant under rule 79(2), we based our assessment on the grounds that DBP identified and reviewed the supporting evidence that DBP provided. Further detail on the matters we have considered in each step is provided below.

Step 1: Is the expenditure justifiable on a ground set out in rule 79(2)?

47. The first matter we have considered when assessing DBP's capex proposal is whether the expenditure can be justified on any of the grounds set out in rule 79(2).

48. For those capex projects (or a portion thereof) where DBP has claimed the economic value is positive under rule 79(2)(a) or that the expenditure satisfies the incremental revenue test under rule 79(2)(b), we have had regard to a range of matters, including:

- rules 79(3) and 79(4), which set out how the economic value of a project and the present value of incremental revenue are to be calculated; and
- the analysis DBP provided in support of its claim and its underlying assumptions.

49. For those capex projects (or a portion thereof) where DBP has claimed the expenditure is necessary to maintain the safety or integrity of the services, comply with a regulatory obligation and/or maintain the capacity to meet existing levels of demand (rule 79(2)(c)), we have, amongst other things, had regard to:

- DBP's Asset Management Plan (AMP);
- DBP's Safety Case (Safety Case) and the formal safety assessments (FSA);
- the Gas Standards (Gas Supply and System Safety) Regulations 2000;
- Australian Standard AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- other regulatory requirements that DBP is required to comply with; and
- the analysis DBP provided in support of its claim and its underlying assumptions.

50. As Figure 1 indicates, where the capex project in whole or in part is found to:

- be justified under rule 79(2) - we have considered whether it satisfies the prudent service provider test in rule 79(1)(a) (Step 2); or

- not be justified under rule 79(2) - then we have deemed the expenditure to be non-conforming capex.

Step 2: Does the capex satisfy the prudent service provider test in rule 79(1)(a)?

51. The second matter we have considered is whether the proposed expenditure on capex projects that are justified under rule 79(2) is "*such as would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of providing the service*".

52. In conducting this assessment, we have considered a range of matters (some of which are more or less relevant to particular projects or programs of work), including:

- The project governance framework employed by DBP - key elements of which are: DBP's business planning process; AMP and Safety Case; investment governance arrangements; IT strategy and AMP; forecasting methodology; procurement policies; and risk management plan;
- The project management and procurement processes employed by DBP on particular projects and the nature of any outsourcing arrangements it has entered into (e.g., competitive tender or related party transaction);
- DBP's capability to deliver the proposed projects efficiently in the time proposed;
- The extent to which DBP has adequately assessed and accounted for any benefits from productivity or efficiency enhancing programmes (benefits realisation);
- The actual costs incurred by DBP in AA3 relative to what it has proposed for AA4;
- DBP's compliance with Australian standards, such as AS/NZS 2885; and
- Benchmarking of approaches and/or costs against other gas pipelines and/or regulated businesses.

53. As Figure 1 indicates, where the expenditure in whole or in part, is found to:

- satisfy the prudent service provider test - we have considered whether the proposed expenditure satisfies rule 74(2) (Step 3); or
- not satisfy the prudent service provider test - we have excluded that portion of the expenditure that is deemed to fail this test.

Step 3: Do any forecasts or estimates comply with rule 74(2)?

54. The final matter we have considered is whether the forecasts or estimates underlying those capex projects that are justifiable under rule 79(2) and that satisfy the prudent service provider test have been arrived at on a reasonable basis and represent the best forecast or estimate possible in the circumstances, as required by rule 74(2).

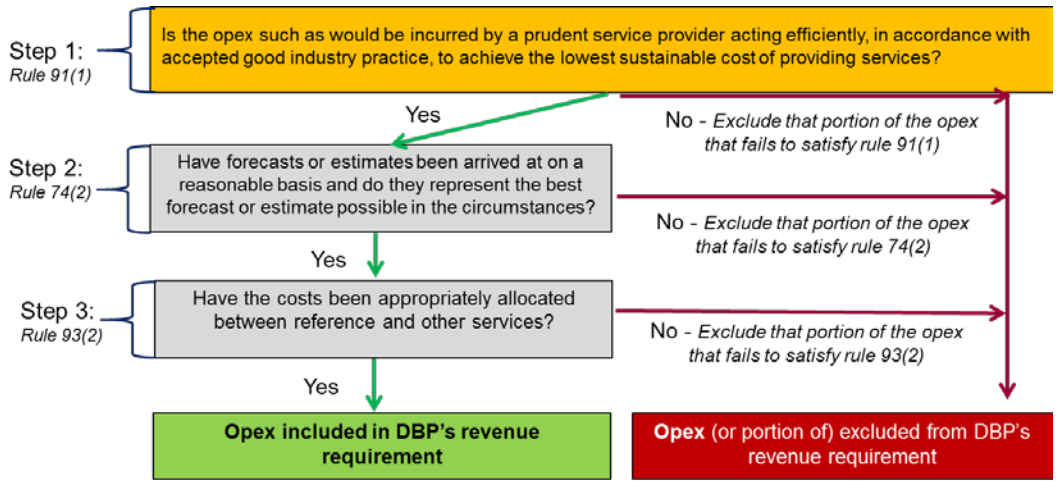
55. As Figure 1 highlights, where the forecasts and/or estimates are found to:

- satisfy this rule - the proposed expenditure has been deemed to comply with the conforming capex criteria; or
- not satisfy this rule - we have excluded that portion of the expenditure that fails to satisfy this rule, on the grounds that a prudent service provider would not expect to incur this expenditure (rule 74(2)).

3.2.2 Opex assessment framework

56. Figure 2 sets out the framework we have used to assess DBP's proposed AA4 opex.

Figure 2: Opex assessment framework



57. When compared with Figure 1, it is clear that the questions considered under steps 1 and 2 of this framework are broadly the same as those considered under steps 2 and 3 of the capex assessment framework. The matters that we have considered when applying this framework are therefore largely the same as those set out in section 3.2.1, albeit focused on opex rather than capex.

58. Additional matters that we have considered under Step 1 of the opex framework which are not relevant to capex are:

- The methods used by DBP's parent company to allocate corporate overheads to DBP and the extent to which:
  - the the parent company provides services that justify this as an expenditure item recoverable through regulated tariffs; and
  - there is any overlap in services provided by DBP and the parent company.
- The nature of any discretionary opex projects proposed by DBP (e.g., business development and marketing) and the extent to which these projects are expected to yield a net economic benefit for consumers.

3.3 EMCa's approach to this review

59. Our review has entailed:

- Carrying out a first pass review of DBP's capex and opex proposals to identify any areas where there has been a material change in either:
  - the capex incurred (or to be incurred) by DBP in AA3 relative to what was approved by the ERA in its 2011 final decision;
  - the justification for Capital Works in Progress (CWIP) that DBP has submitted as Conforming Capital expenditure;
  - the expenditure DBP has proposed for AA4 relative to what it spent in AA3; and
  - the expenditure trend for AA4 opex, referring to the actual versus ERA-approved opex for the AA3 period.

- For AA3 and AA4 capex, undertaking a two tier approach regarding our further assessment:
  - Assessment of DBP's documentation for a subset of the projects completed (AA3) and proposed (AA4) to identify any systemic issues;
  - Assessment of the balance of expenditure, whereby we sought to confirm the applicability of findings from the sample project analysis to the remaining projects/project expenditure (i.e., a higher level assessment considering the applicability of any systemic found in our assessment of the sample subset).
- Conducting an item-based assessment of the large opex expenditure items, focusing on: (i) the justification for use of and extrapolation from DBP's nominated 2015 Base Year expenditure; and (ii) System Use Gas (SUG) as this category represents the greatest contribution to opex and the greatest increase from the average annual expenditure in the AA3 period.

4 Review of governance, expenditure forecasting and performance

4.1 Introduction

60. To inform our assessment of the capex incurred (or to be incurred) by DBP in AA3 and its proposed capex and opex for AA4, we have reviewed the project governance framework, cost estimation process and forecasting approach employed by DBP. We have also examined the KPIs that DBP has provided in support of its capex and opex proposals. The results of our review are set out below.

4.2 Governance framework

61. We have reviewed DBP's governance framework with the emphasis on the policies, processes, procedures and key documents that it has in place to:
    - develop projects and programs of work;
    - approve individual projects of work in the context of the business's portfolio of work; and
    - manage the delivery of approved work.

62. Our review has focused on the following aspects:
    - alignment of the governance framework with DBP's corporate objectives, including its regulatory and statutory obligations;
    - alignment with good industry practice;
    - evidence that the processes and procedures are being used in practice; and
    - effectiveness of the governance and management process.

4.2.1 Governance structure

63. DBP's governance structure comprises two key committees that report directly to the Unitholders and/or the Board of Directors. These are as follows:[9]

- The Audit & Risk Management Committee (ARMC); and
- The Asset Management Committee (AMC).

64. The ARMC is responsible for the DBP risk management framework, whereas the AMC primarily provides oversight to the business by reviewing regular financial and commercial reports, as well as other issues prior to making recommendations to the Board.

65. DBP's capital expenditure program is developed and controlled by the Project Review Committee (PRC). The objectives of the PRC include to ensure cost control and provide a process and framework for the due diligence review and approval of capital projects.

66. DBP has advised that it is incentivised under its shipper contracts to ensure its capital and operating costs are at least efficient and prudent. [10] DBP refers to its foundation gas transportation contract entered into with DBP's largest shipper, Alcoa of Australia Limited, and known as the Alcoa Exempt Contract (AEC) to describe these incentives. We note that Alcoa has a 20% share in DBP. We have reviewed the cost allocation methodology and management of these incentives in our review.

4.2.2 Business planning and budgeting process

67. DBP has developed the AA4 proposal capital and operating expenditure forecast using its Business Planning process.[11] DBP undertakes its business planning and budgeting process annually and establishes the high level objectives to be achieved both in the short and longer term, informing expenditure requirements. However, DBP has asserted that many of the matters considered in DBP's business plans are not relevant to the functions to be performed by the ERA in assessing DBP's access arrangement proposal.[12]

68. Costs determined for the 2014 business plan have been used as the basis for operating expenditure in the CY2015 'base year'. In response to Information Requests, we have received and referenced DBP's actual 2014 capital and operating expenditure. However, as discussed in more detail in Section 8, DBP has used its forecast 2015 expenditure as its Base Year for forecasting much of its AA4 opex requirements, rather than its most recent actual expenditure.

69. DBP advises that a business case is completed for each proposed SIB capex project and we have been provided with a number of them as part of our AA3 and AA4 project assessments. As discussed above, whilst we found these business cases to be structured in accordance with common industry practice, we consider the content is typically inadequate in a number of respects, which we elaborate on in section 6 and 7.

[9] Sub 2 Gov and Cost Controls _Final page 5

[10] Sub 2 Gov and Cost Controls _Final page 21

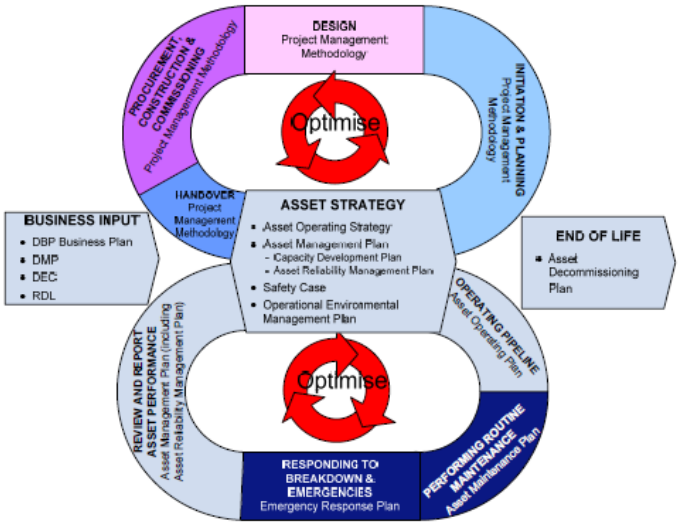
[11] Sub 2 Gov and Cost Controls _Final page 11

[12] Submission 17(2) Response to EMCa tranche 1 requests_FINAL, page 7

4.2.3 Asset management system framework

70. DBP has an Asset Management system framework[13] as shown in Figure 3.

Figure 3: Asset strategy documents



Source: Figure 1, Asset Management System Framework

71. DBP has an asset strategy that provides the strategic direction for its asset management activities. The AMS framework contains the following key documents:[14]

- *Safety Case*: provides demonstration of effective management of hazards, risks and control measures that includes the facility description, safety management system and formal safety assessment (represented by the risk assessment undertaken on the DBNGP to AS2885.1 and company standards);
- *Operational environmental plan*: to systematically and continually identify and assess environmental aspects arising from the operation of the DBNGP and manage these so as to eliminate or minimise the impacts to environment to a level that is As Low As Reasonably Practical (ALARP) over the life of the DBNGP;
- *Asset operating strategy*: provides the critical framework within which the more detailed Asset Management Plan is developed and updated annually; and
- *Asset Management Plan*: The main purposes of the Asset Management Plan are to: (i) set out the asset management programs to operate, maintain and develop the DBNGP, and by doing so; (ii) demonstrate that the DBNGP assets are developed, managed and maintained in a safe and effective manner that is consistent with DBP's strategic objectives.

72. Key tactical documents included in the AMS framework include:[15]

- *Business plans*: document leadership and commitments to capture the delivery requirements of the strategies;
- *Asset operating plan*: provides guidance and structure for the operation of the DBNGP by Transportation Services Control Centre (TSCC) in a manner that

[13] Sub 2_App C_Asset Management System Framework Rev 4, July 2010

[14] Based upon information provided in Sub 2_App C_Asset Management System Framework Rev 4, July 2010 and related supporting documents

[15] Ibid

supports the achievement of the DBP objectives as outlined in the Asset Operating Strategy and the Asset Management Plan;

- *Project management methodology:* provides the Project Management Office with a process to ensure that projects are executed consistently in a manner that represents industry best practice;
- *Asset maintenance plan*: outlines the key strategic objectives to meet the requirements of the Asset Management Plan (including Asset Reliability Management Plan) and statutory obligations; and
- *Emergency management plan*: is in place to manage incidents and emergencies so as to limit the consequences of such events.

73. It is beyond the scope of our review to audit the AMP. We have drawn on our experience in asset management and other documents provided by DBP in assessing the role of the AMP in relation to the proposed Access Arrangement.

Asset Management plan

74. We have assessed the asset management plan from two perspectives: (i) the framework of the plan (i.e., is it consistent with good industry practice); and (ii) the content of the AMP (i.e., are the assumptions and strategies consistent with rules 79 and 91).

75. We find that the AMP *is* based on a sound asset management conceptual framework, and has been developed with reference to the regulatory, statutory and other obligations that DBP is required to respond to under its license. There is also evidence that DBP has a continuous improvement process in place, including incorporating asset management forums that provide critical feedback into the Asset Management Planning process.

76. DBP has three main maintenance strategies: (i) Preventative maintenance; (ii) Predictive maintenance; and (iii) Corrective maintenance. As part of the AMP risk assessments, risk levels have been determined for different asset classes and criticality of controls have been analysed based on the significance of risk reduction provided by the risk controls. The asset criticality risk rating is included in Appendix C of the AMP[16] and shows a high number of *Extreme* and *High* residual risks.

77. The risk register for the AMP is included in Appendix B of the AMP.[17] Upon review, we consider that whilst the overarching risk matrix is consistent with the risk assessment precepts of AS2885[18], DBP's bespoke risk rating process leads to a bias to rate risks as *High*. By definition, *High* (and *Extreme)* risks require immediate action. There also appear to be a large number of residual risks rated as *High* and *Intermediate*. These risk levels drive further treatment to achieve a risk level of ALARP. We consider there is evidence in our project reviews of this resulting in an upward bias to the expenditure forecast (as discussed in sections 6 and 7).

78. We sought, but did not find, supporting justification in the risk register for the risk assessments DBP has made. We also looked for evidence of the link between the risk register and the expenditure forecast as part of our project review. We did not find evidence to support an explicit link to the risk assessments undertaken, in the Business Cases,

[16] Sub 2 App I AMP General Rev 6 6 May 2014, Appendix C

[17] Sub 2 App I AMP General Rev 6 6 May 2014, Appendix B

[18] Australian Standard 2885 -1987 Pipelines - Gas and liquid petroleum

Project Summaries or any other project-level documentation that we reviewed. In our view, this casts a level of doubt on the robustness of these risk assessments.

79. Similarly, as we show in Appendix D,[19] we identified further application of risk to the AMP general improvements. We note a high proportion of improvements rated as *High* risk including examples where we would expect much lower ratings relating to provision of information.

Safety Case (and Formal Safety Assessments)

80. In its AMS framework, DBP states that: [20]

> *"The DBNGP is licensed under the Petroleum Pipelines Act 1969, which is administered by Department of Mines and Petroleum (DMP). The Act and supporting Petroleum Pipelines (Management of Safety of Pipeline Operations) Regulations 2010 require development of a Safety Case (a 'case for safety')."*

81. In its safety case, DBP state that:[21]

> *"This Safety Case contains the assessment by DBP of its systems, processes and procedures that allow it to safely operate the DBNGP and maintain a work environment for its staff, contractors and Other Protected People that, as far as is practicable, is free from risk. It demonstrates that DBP provides and maintains an effective case for safety capable of systematically and continually identifying and assessing hazards and undertaking risk reduction measures to eliminate or minimise the risks to personnel, public, pipeline and environment to a level that is "as low as reasonably practical", over the life of the DBNGP."*

82. The Safety Case comprises three key chapters. Each has a publication date of 2011 and it is therefore unclear as to whether this safety case reflects a full risk assessment of the assets applicable for the AA period.

83. The approval status of the DBP Safety Case in the case of the AA4 period is not clear, nor is the status of any recent audits and corresponding recommendations to be addressed by DBP.

84. The Safety Case includes a Major Accident Event (MAE) risk assessment process which has been used to determine those risks that are capable of causing more than one fatality in the event the identified risk transpires.[22] There are no actions arising as a direct result of MAE Hazards.[23]

85. We have examined the link between the Safety Case, FSAs and business case justification in forming our view of the forecast capital expenditure. Whilst we have concerns about DBP's risk assessment approach, we have considered the broader range of available documentation and are satisfied that the majority of business needs identified with a safety driver in the AA3 and AA4 periods require some form of treatment. However, to be clear, we do not consider the selected treatment (i.e., scale, scope, timing) to be justified in each

[19] Sub 2 App I AMP General Rev 6 6 May 2014, Appendix D

[20] Sub 2_App C_Asset Management System Framework Rev 4, July 2010, page 5

[21] Sub 2 App D Safety Case Chapter 1 Introduction, page 4

[22] DBP also gives the same consideration to other hazards and threats that may cause single fatalities or serious injury.

[23] DBPNGP Safety Case, Chapter 4, p45

case. This rationale is discussed in more detail in sections 6 and 7, where we present our assessment of DBP's risk management framework and AA3 and AA4 capex.

4.2.4 Risk management framework

86. DBP's risk management framework is centred on the management of an Enterprise Risk Register (ERR) by conducting risk analysis, evaluation and treatment throughout the organisation.[24] The risk management framework includes reporting lines through the Audit & Risk Management Committee to the DBP Board.

87. DBP has an audit plan that includes mandatory audits required under its licence, Safety Case, National Energy and Greenhouse Reporting Act, and as part of its enterprise wide risk assessment practice. DBP states that all findings from the mandatory audits must be closed out and therefore form part of the business plans and associated expenditure.

Risk assessment

88. DBP has provided a project priority scoring process for its SIB capital projects. DBP states that it incorporates the Corporate Risk Analysis Matrix for the risk assessment and ranking[25] as shown in Figure 4.

Figure 4: DBP's Risk Analysis Matrix

Qualitative Risk Analysis Matrix – Level of Risk						
		Consequence				
Frequency		1 Trivial	2 Minor	3 Severe	4 Major	5 Catastrophic
E	Frequent	LOW	INTERMEDIATE	HIGH	EXTREME	EXTREME
D	Occasional	LOW	LOW	INTERMEDIATE	HIGH	EXTREME
C	Unlikely	NEGLIGIBLE	LOW	INTERMEDIATE	HIGH	HIGH
B	Remote	NEGLIGIBLE	NEGLIGIBLE	LOW	INTERMEDIATE	HIGH
A	Hypothetical	NEGLIGIBLE	NEGLIGIBLE	NEGLIGIBLE	LOW	INTERMEDIATE

Source: Sub 2 App B SIB Risk Ranking Process, page 2

89. DBP's risk analysis matrix is based on *AS2885.1: Pipelines- Gas and Liquid Petroleum Design and Construction*[26] with risk consequence definitions of:

- impact on DBP – operational risk;
- people – safety risk;
- environmental impact;
- [loss of] supply / [community] outrage; and
- [financial] loss.

90. DBP have nominated indicative frequency scales that increase from a hypothetical value of 1 in 10,000 years by a factor of 10 to a frequency value of 1 or more per year. We note DBP's caution in the use of the indicative frequency table that it should be read in

[24] Sub 2 Gov and Cost Controls_Final, page 14

[25] Sub 2 App B SIB Risk Ranking Process

[26] With the exception of the frequency and severity classes included in AS2885.1. DBP state that its risk model captures the DBNGP operating environment whilst maintaining consistency with AS2885.1 and AS/NZS ISO 31000 (Risk Management-Principles and Guidelines)

conjunction with the frequency definitions. However, these values may be interpreted in such a way as to include an upward bias of the frequency assessment.

91. The process includes provision for calculation of a risk score and an implementation score to assist the prioritisation of projects. The risk score is a product of the risk factors shown in Figure 5.

Figure 5: Risk ranking factors

Likelihood	Consequences				
	Trivial	Minor	Severe	Major	Catastrophic
Frequent	0.25	1.5	7.5	70	200
Occasional	0.12	0.6	3	15	60
Unlikely	0.05	0.3	1.5	7.5	30
Remote	0.01	0.06	0.3	1.5	6
Hypothetical	0.002	0.012	0.06	0.3	1.2

Source: Sub 2 App B SIB Risk Ranking Process, page 3

92. DBP states that the risk scores have been designed to enable distinct separation between each of the risk levels.

93. We sought evidence in the application of this ranking model in our review of the expenditure forecast. In our review of DBP's analysis of the proposed SIB projects,[27] we observed that:

- the classification of risk consequences had changed from those proposed in its business process, with the supply/outage category being separated. This provided six risk assessment categories to each of which DBP derived a risk score for each project;
- the risk scores applied by DBP vary from those proposed in its business process. The applied risk scores apply separation of risk levels from: 1-Negligible; 5-Low; 25-Intermediate; 125-High; and 625-Extreme. This would appear to provide a similar separation of risk levels to that proposed; however, this is not consistent with the documented process;
- 35% of the forecast capex is based on an assessment of *Extreme* or *High* risk of impact to DBP;
- 25% of the forecast capex is directed to address risks which DBP rates as posing a *Low* or *Negligible* risk to the business. DBPs Safety Management System states that *Low* and *Negligible* risks are tolerable.[28] The apparent reason that these projects have been included in the proposed AA4 work program is DBP's aggregation of the risk scores across the six risk categories. We therefore looked for justification to support inclusion of these projects into the forecast; and
- the Implementation Score does not appear to have been used.

[27] Our analysis was based on the supplied data in App B_DRAFT PRC process. The total forecast SIB capex in the AA is lower than the total provided. No consolidation of the two sources has been provided by DBP.

[28] Sub 2 App F Safety Case Chapter 3 Safety Management System, Appendix 8

94. DBP's business process allows for grouping of projects into the categories of: (i) carryover; (ii) Mandatory; (iii) Front End Engineering Design (FEED); and (iv) Ranked. Ranked projects are considered discretionary projects and are risk-ranked to determine their respective priority within the funding limit. The Mandatory projects include:

- integrity/safety – required to improve or maintain pipeline integrity;
- equipment obsolescence – replacement and/or upgrade for operability and maintainability; and
- policy – to incorporate new industry standards, operational, health and safety policy or licensing and regulatory requirement.

95. Based on our knowledge of industry practice, we consider that equipment obsolescence and some elements listed under 'policy' should not automatically be regarded as mandatory.[29]

96. Overall, we consider that DBP's risk assessment and raking approach represents a bias for inclusion of projects in the forecast without adequate justification. We sought evidence of this bias in our project reviews.

4.2.5 Portfolio optimisation / top down review

97. DBP describes a top-down review process to optimise its forecast for both capital and operating expenditure.

Capital expenditure

98. DBP states that:[30]

> *"DBP's top-down measure for capital expenditure is carried out by the Project Review Committee (PRC). DBP's method of budgeting for capital expenditure involves maintaining a list of all possible projects which are then risk ranked. The PRC then applies a top-down approach to limit the number of projects that are allowed into the budget for the next financial year and forward forecast period."*

99. DBP states that as part of the development of its capital forecast:

> *"An affordability cut-off is established, based upon the amount of expenditure that can be supported, given DBP's expected revenue flows, the owners' return expectations and the need to maintain certain credit metrics (required to retain an investment grade credit rating) and comply with DBP's debt obligations."*[31]

100. DBP advises that several iterations of the proposed project forecast are presented to the PRC before it is finalised and included in the budget and business plan for approval by DBP's Board and owners. Progress against the budgets set by the Board are considered monthly by the Executive Team and various committees.

101. DBP has provided the initial considered list of SIB projects to the PRC, and the forecast is included in the AA. However DBP has not provided evidence of the process nor the level or rationale of the affordability cut-off referred to by DBP in the supplied information.

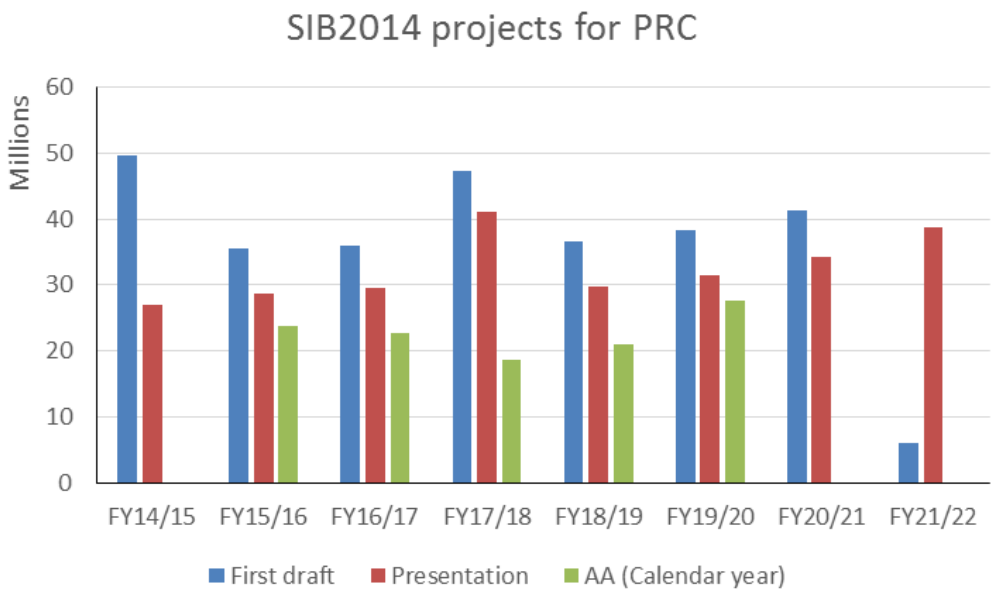
[29] This is not to say that expenditure driven by these factors is not justified

[30] Response to EMCa02 and EMCa16 - CHECK

[31] Submission 19(1) Response to EMCA tranche 2&3requests FINAL

102. The projects presented to PRC are on average 17% lower than first draft (see Figure 6), which is a positive indicator of the process in action; however, we consider there is further challenge that could be applied (based on our project reviews).

Figure 6: Analysis of SIB projects ($ nominal)

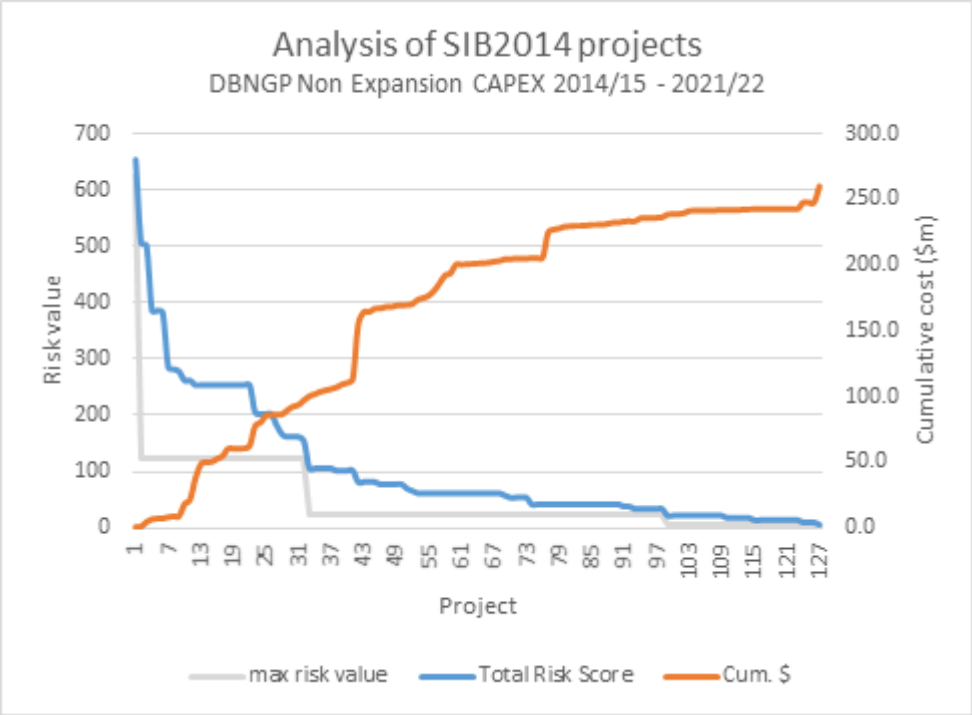


Source: EMCa analysis

103. Our review of the proposed 2014 SIB capital projects identified that 24% of SIB projects address a *High* risk and 52% address an *Intermediate* risk. These projects account for 37% and 53% of the capital forecast respectively as shown in Figure 7. We therefore looked for evidence that the proposed projects to address the intermediate risks satisfy the ALARP test.[32] As discussed in Sections 5 and 6, we did not find any evidence that DBP explicitly assessed whether or not the expenditure proposed was justifiable from an economic perspective.

[32] DBP states that, for intermediate risks, the risk is tolerable if DBP judges it to be ALARP

Figure 7: Analysis of SIB projects ($ nominal)



Source: EMCa analysis of DBP's App B_DRAFT SIB risk ranking PRC process.xls

4.2.6 Project and program management

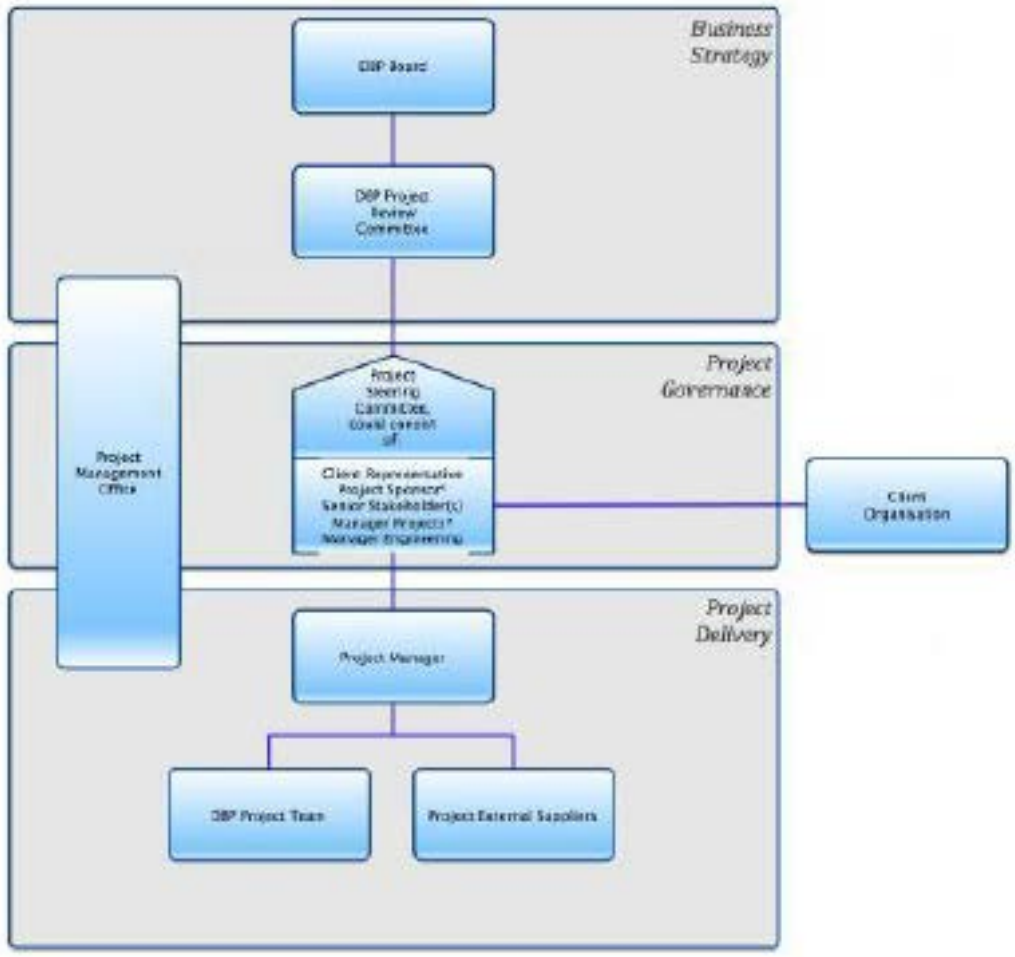
104. As shown in Figure 8, project and program management is overseen by PRC[33] which comprises of all members of the Executive Management Team (excluding the GM – HR, Training & Administration) or any delegate of the relevant Extended Management Team member. The PRC is intended to operate principally in a review and approval capacity pursuant to the DFA policy. Functions of the PRC include: (i) capital expenditure cost control; (ii) project evaluation; (iii) capital expenditure approval; (iv) provision of recommendations to the DBP Board of Directors; and (v) reporting to the Board.

105. We consider that the project governance structure is consistent with good industry practice.

106. The Project Management Office (PMO) is the custodian of PMM and utilises the systems and processes embedded in PMM in the execution of capital projects.

[33] PRC Committee Charter, October 2013

Figure 8: Project governance structure



Source: Sub 9 forecast capex final, Figure 4, page 10

107. DBP has implemented a number of decision gates within its project management methodology and management structure. The PMM includes a project sizing procedure[34] to determine the PMM requirements for small, medium and large size projects. This procedure requires a project lessons learnt register as mandatory for all projects. As discussed above, whilst we consider the PMM framework to be consistent with industry practice, we did not see sufficient evidence of the processes being sufficiently followed.

4.3 Delivery strategy

108. In response to our request for a copy of DBP's Work Program Delivery Strategy and Plan (or equivalent), DBP states:[35]

> *"DBP understands that this term is more relevant to businesses involved in the operation of distribution networks than to transmission pipeline businesses. Instead, DBP has a database of equipment replacement requirements which is fed into the SIB process map at the beginning of the process and the risk ranking to rank each project's criticality based on the 6 risk factors used by DBP."*

109. We have reviewed the sources of information DBP have directed us to for a summary of its Works Program Delivery Strategy, and found further reference to the project management

[34] Project sizing DBP PMM PR A 02, Rev A, March 2010

[35] Submission 19(1) Response to EMCa tranche 2 requests FINAL, page 23

methodology and intent for the PMO to review a works scheduling and resourcing plan, rather than details of a delivery strategy.

110. DBP has a Procurement Management Policy (DBP-PM.01) which provides strategies on the undertaking of procurement activities which it claims to provide an efficient, cost effective, confidential and ethical manner to enable the achievement of the business objectives, with priority given to ensuring continued safe operation.

111. DBP advised that preferred vendors will be established for provision of goods and/or services to develop agreement on cycle times, quality, overall cost reduction, technical assistance, product improvement or development and assistance in inventory management where appropriate.[36]

112. DBP has a Project Procurement Procedure (DBP PMM PR I 01) for projects which details how items are purchased for new facilities and associated equipment and includes the appropriate design deliverable and technical specifications.[37] DBP has a formal vendor evaluation process, whereby relevant suppliers and/or manufactures are pre-qualified prior to any equipment being purchased.

113. The selection and management of service providers (or contractors) is carried out in accordance with the Service Provider Accreditation Policy, whereby all service providers are assessed prior to engagement to ensure their systems and processes of work meet the requirements of DBP HSE and policies and procedures and quality requirements.[38]

114. We did not see evidence of an overview of the resourcing and delivery strategy and plan to deliver the proposed portfolio of work as efficiently as possible. The absence of any reference to a portfolio level assessment of the proposed asset management program points to incomplete top-down assessment by the Board/Executive regarding its prudency. In the absence of a compelling analysis by DBP of its capacity to deliver the proposed work program, we have made our own assessment in respect of rule 79(1)(a), noting that DBP is forecasting to undertake a similar amount of work in AA4 as it delivered in AA3 (when measured by expenditure).

4.4 Performance indicators

115. Under rule 72(1)(f) of the NGR, DBP is required to include the key performance indicators to be used by the service provider to support expenditure to be incurred over the access arrangement period. In its AAI, DBP nominates[39] one key performance indicator that supports the expenditure to be incurred in the current AA period: namely, the comparison of forecast to actual operating expenditure.

116. DBP claims that establishing causation between the expenditure and movement in a key performance indicator in a complex asset such as the DBNGP is difficult and isn't perceived to add value.[40] As such, it has not sought to develop such indicators. The process for identification and approval of expenditures involves the use of risk-ranking to prioritise

[36] EMCa19 – Submission 19(1) Response to EMCa tranche 2&3 requests FINAL

[37] Sub 2 APP I AMP General Rev 5 6 May 2014, page 54

[38] Ibid, page 59

[39] Sub 1_App B_Access Arrangement Information_Final, page 16

[40] DBP, Submission 19(1), page 11

projects and the setting of a budget constraint to choose amongst potential projects. Further, DBP advises that specific performance levels are often included within individual contractual requirements or are binary in nature (such as legislative conditions).

117. DBP states that:[41]

> *"There are three main sets of performance indicators used within DBP:*
>
> *(a) those used by the Maintenance division;*
>
> *(b) those used by the Systems Design and Operations (SDO) division; and*
>
> *(c) those which make up the business scorecard, being the scorecard that the Board assesses DBP's performance against."*

118. As an example, DBP identifies a number of key parameters that will be monitored to track the adequacy and effectiveness of its AMP: (i) asset management performance; (ii) plant performance; and (iii) maintenance performance. DBP includes a typical range of management indicators to monitor the health of its assets and its business operations, including a short-term incentive program.

119. From a regulatory assessment perspective, the proponent is required to present a KPI or KPIs pursuant to rule 72(1)(f) to assist in demonstrating that the proposed expenditure is prudent and efficient. A business should be able to demonstrate a causal link between inputs (expenditure) and outcomes, both of which can be represented by KPIs and both of which can be subject to scrutiny to determine:

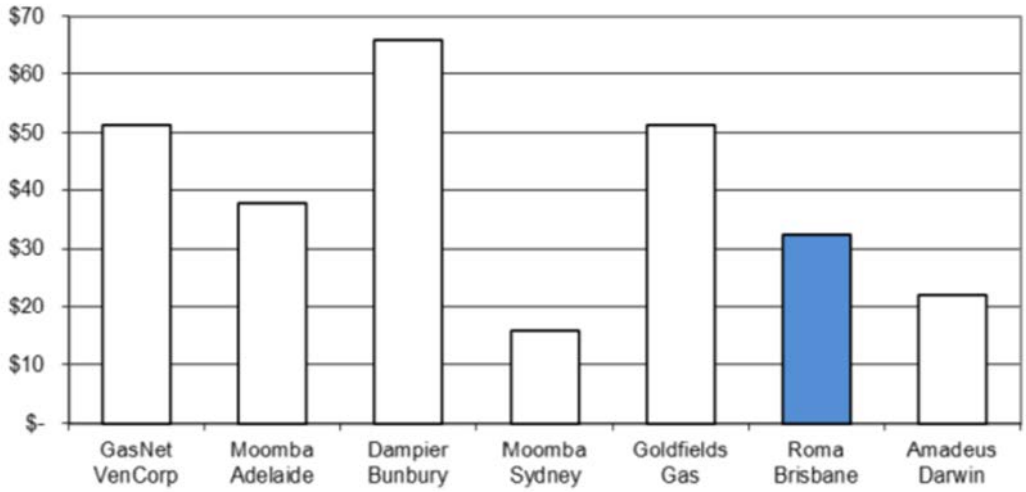
- whether the inputs are justifiable – including through benchmarking against similar businesses via 'common' transmission pipeline (normalised) expenditure measures; and
- whether the outcomes are justifiable – typically in terms of what measures satisfy prudent safety, reliability, and cost objectives.

120. As DBP has not provided such KPIs, we have drawn on publicly available information. The two figures below show alternative opex benchmarks (from 2011) which indicate that DBP's operational expenditure is relatively high. We note that:

- DBP underspent its opex allocation in the AA3 period, including through the impact of the new capitalisation process (i.e., introducing the Subsequent Costs category); and
- DBP has proposed to significantly increase opex in real terms from its 2011 'base'.

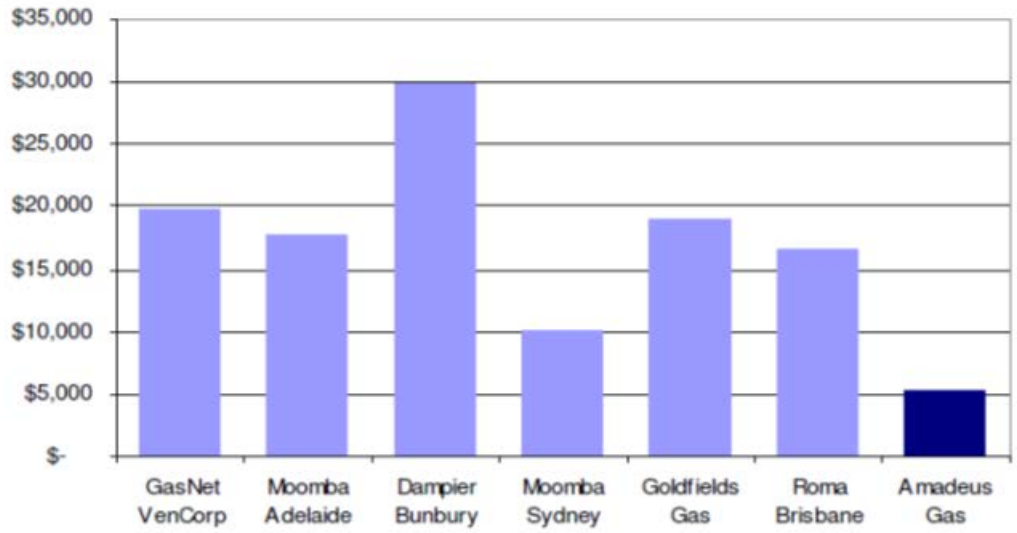
[41] Submission 19(1) response to EMCa tranche 2&3 requests, page 11

Figure 9: Operating expenditures/mm-km comparison: various pipelines



Source: APTPPL - Roma Brisbane Pipeline Access Arrangement Submission, Figure 8.2 (Oct 2011)

Figure 10: Operating expenditure/km comparison: various pipelines



Source: N.T. Gas Pty Ltd, Access Arrangement Revision Proposal Submission Dec 2010, Figure 9.7

Compliance with Rule 72(1)(f)

121. In accordance with the requirements of rule 72(1) of the NGR, DBP is required to include key performance indicators supporting expenditure to be incurred over the access arrangement period.

122. DBP has provided a number of pipeline performance KPIs (such as pipeline integrity, availability, etc.). We consider that these KPIs demonstrate that DBP is focussing on important operating outcomes and appears to be consistently achieving them. However, DBP has not provided a satisfactory 'input' KPI (such as Operating expenditure/km) to support its expenditure over the AA4 period. Whilst publicly available information indicated that DBP is not efficient relative to other pipelines, we acknowledge that a normalised benchmark is only a starting point for comparative assessment and there may be exogenous factors which explain DBP's apparently poor relative performance.

123. We recommend that the ERA requires DBP to present an opex KPI based on $/km to facilitate comparison with other transmission pipelines.

4.5 Expenditure forecasting methodology

4.5.1 Overview

124. In this section, we summarise and assess the methodologies that DBP uses to forecast its capex and opex requirements. This can be considered in two parts:

- The methodologies used to forecast required activities; and
- The methodologies used to estimate the costs of those activities.

125. DBP describe the development of its capital and operating expenditure forecast as being derived from its business planning and budgeting process for 2014/15,[42] which involves:[43]

i. *"The establishment of key business objectives;*

ii. *The identification of all activities required for the estimation of forecast costs; and*

iii. *The establishment of key assumptions that were set having regard to a range of factors."*

126. DBP states that:

> *"Each divisional plan and cost centre budget is built from the ground up on an annual basis and includes a forecast covering the forward regulatory period (note that in the year of filing proposed revision of an access arrangement this requires the business to develop a forecast for 7 financial years)"*

127. As part of the budgeting process, DBP reviews the assumptions and allowances made in relation to the following matters:[44]

i. *"The Safety Case that is required to be in place, under the Petroleum Pipelines Act, for the safe and reliable operation of the pipeline in accordance with the pipeline licences for the pipeline;*

ii. *The pipeline licence and other mandatory requirements;*

iii. *The pipeline maintenance planning process;*

iv. *Findings from audits;*

v. *The need to comply with other statutory and contractual obligations; and*

vi. *Other relevant matters."*

[42] Sub 2 Governance and Cost Controls, page 1

[43] Sub 2 Governance and Cost Controls, page 11

[44] Sub 2 Governance and Cost controls, page 11

4.5.2 Capital expenditure forecasting

128. DBP describes its forecasting requirements as being developed using a bottom-up approach for each year in the regulatory period, taking into account historical performance. DBP states that:[45]

> *"Ongoing review and management of the capital spend is undertaken by the PRC at its monthly meetings. DBP provided evidence that changes to the capital program were made to manage within budget targets. As part of this process, the PRC considers projects which might be abandoned or deferred, and goes through a process of risk-ranking to understand the consequences of such an action."*

129. DBP provides an example of the steps taken to manage the FY13/14 budget.[46] We observe that in March of the 13/14 financial year:

- approximately [redacted] was able to have the scope reduced with low risk impact which suggests these projects were over-estimated; and
- approximately [redacted] was able to be deferred, accepting a risk assessment of *High* or below which supports our findings concerning DBP's bias towards over-estimating risk.

4.5.3 Operating expenditure forecasting

Key drivers of expenditure

130. DBP states that its operating expenditure is influenced by a number of key drivers:[47]

i. *"Requirements and obligations under the DBNGP Safety Case;*
ii. *Obligations under pipeline licenses and other mandatory requirements; and*
iii. *Findings from internal and external audits that are completed."*

131. DBP states that its operating expenditure is based on the outcomes of its business planning and budgeting process. DBP undertakes a bottom-up budget for each of its 40 functions and applies a top down review of costs for the majority of its cost categories.

Application of base year

132. DBP has developed its forecasts based on a bottom-up planning approach, with 2015 as the Base Year, noting that in each case the 2015 opex is an expenditure forecast, not a revealed cost.

Methods for review of DBP's forecast

133. DBP states that its budget is primarily developed from bottom-up requirements. However:[48]

> *"DBP does however complement this with top down review measures during the review and approval process, these include:*
>
> *(a) an iterative peer review process by the Executive Management Team (EMT) to identify budget reductions; and*

[45] Submission 19(1) Response to EMCa tranch 2 requests FINAL, page 5

[46] App C_DBNGPCapex Actual YTD Forecast – Mar 14

[47] Sub 10 Operating Expenditure, page 47

[48] Response to EMCa 02 - CHECK

(b) the use of Central Management Adjustments (CMAs) for operating expenditure. CMAs are essentially a commitment to find savings in expenditure during the budget period regardless of division or cost category."

134. DBP provided an example to illustrate the outcome of the EMT review process for the FY 2014 that resulted in a 6.4% reduction from $70.2m (first look) to $65.7m (budget) for opex.

135. DBP states that CMAs are used to find unspecified savings throughout the year. DBP states that its management team committed to finding [redacted] in savings (or offsets) to reduce the impact of reduced revenue through re-contracting, [redacted].[49]

136. DBP advises that the estimated savings identified for the FY15 budget have been incorporated in the base year costs and form the basis of its forecast. We sought evidence that the opex forecast for the access arrangement period reflected this practice, without success, as discussed in Section 8.

137. DBP refers to its continual process for improving efficiency and driving down costs by:[50] (i) incentives in negotiated contracts; (ii) Board imposed central management allowance in available budget; and (iii) incentives for employees to lower costs (i.e., STIP programme). The ongoing nature of item (ii) suggests to us that the top-down review may not be adequately challenging the proposals from the business and that there is a greater level of efficiency that could be achieved.

[49] Submission 17(2) response to EMCa tranche 1 requests_FINAL, page 8

[50] Submission 19(1) response to EMCa tranche 1 requests_FINAL, page 16

5 Review of DBP's demand forecast

5.1 Introduction

5.1.1 Scope

138. We have been asked to review the reasonableness of DBP's demand forecasts. In doing so we have been asked to consider:

- the forecasting methodology that DBP has used;
- the reasonableness of its assumptions;
- information on trends in demand - including user numbers and delivery or receipt points; and
- whether these forecasts have been used appropriately to develop DBP's capex and opex forecasts.

5.1.2 Relevance of the demand forecasts

139. The demand forecasts are relevant as the denominators by which allowable revenues are divided to construct unit regulated tariffs. For a given allowable revenue level, therefore, a higher demand forecast will lead to lower tariffs and vice versa. However, while the forecasts are used to set the initial regulated tariffs, the Reference Tariff Variation Mechanism effectively trues up tariffs annually to a revenue cap allowance.[51] From this, it would appear that there is not a revenue incentive on DBP to bias its demand forecasts.

140. In principle, the demand forecasts drive expansion capex requirements. However, as we see in this section, DBP's demand forecasts are essentially flat and it has forecast no expansion capex. Detailed analysis is therefore not required to conclude that DBP has used its flat demand forecast appropriately in forecasting no expansion capex requirements.

[51] Proposed revisions to DBNGP Access Arrangement, 31st December 2014, page 21 and 22

141. There is not, and neither should there be, any material relationship between demand and SIB capex, nor would we expect there to be any material relationship between demand and maintenance, inspections or corporate opex. There is a direct and material relationship between demand and the quantity of system use gas and we assess DBP's application of its demand forecast to its forecast expenditure on system use gas in section 8.4. This would appear to be the only material way in which DBP's demand forecasts affect its proposed expenditure.

142. Other than [redacted] we do not observe any other change to DBP's customer numbers or to its delivery or receipt points. We note the implications of this in section 5.2. We do not consider [redacted] would have any material impact on DBP's forecast capex and opex requirements and we therefore do not consider this further in our assessment of DBP's overall demand forecasting methods and assumptions.

5.1.3 Information

143. In this section, we have relied primarily on the following information provided by DBP:

- Throughput and Capacity forecast, Supporting Submission 11; and
- DBNGP Forecast Review, Report by Jacobs, presented as Appendix B to DBP's Supporting Submission 11 (20th October 2014).

5.2 DBP's Demand Forecast

5.2.1 Capacity

144. DBP's forecast contracted capacity is shown in the table below.

Table 1: DBP forecast of annual contracted capacity (TJ/day - yearly average)

	2016	2017	2018	2019	2020
Total Full Haul	727.1	718.5	718.5	716.4	716.4
Total Part Haul	259.3	259.3	259.3	259.3	259.3
Total Back Haul	217.7	216.6	216.6	216.6	216.6

Source: DBP Submission 11, Table 1

145. Figure 11 shows the forecast contracted capacity for the forthcoming RP compared to the actual contracted capacity in the current RP (from 2012). DBP has recently completed a round of re-contracting and its capacity forecast is based almost entirely on its currently-contracted capacity through to 31st December 2020, which is the end of the next Access Arrangement period. In agreeing to extend their contracts, some parties were allowed to prematurely exercise some relinquishment rights that otherwise wouldn't have been available until 2016. This has brought forward these decreases to 2014, which is evident in the graph below.

146. DBP's forecast shows a further step down from 2015 to 2016, and small further decline to 2017, after which it is stable. From inspection of Figure 11, it can be seen that these decreases result from discrete changes for specific customers, which we review in our assessment in section 5.3.

Figure 11: DBP forecast committed capacity (Full Haul)

Source: EMCa analysis from DBP Submission 11, Table 3[52] and DBP's response to EMCa27

5.2.2 Throughput

147. DBP's forecast throughput is shown in Table 2 below.

Table 2: DBP forecast of annual throughput (TJ/day - yearly average)

	2016	2017	2018	2019	2020
Total Full Haul	626.3	622.0	625.7	629.5	633.1
Total Part Haul	119.6	130.0	135.5	136.2	136.1
Total Back Haul	183.2	182.6	182.6	182.6	182.6

Source: DBP Submission 11, table 2

148. As can be seen in Figure 12, the capacity reductions from 2014 to 2015 referred to in section 5.2.1 above are not reflective of throughput reductions and DBP expects throughput to remain steady across those years. DBP's forecast incorporates [redacted] Apart from this, DBP forecasts modest growth in gas throughput [redacted]).

[52] *While Table 3 also shows part haul and back haul, only full haul capacity is shown here*

Figure 12: DBP forecast throughput (Full Haul)

Source: EMCa analysis from DBP Submission 11, Table 4[53] and DBP's response to EMCa27

5.3 Assessment

5.3.1 Purpose of EMCa's assessment and DBP's incentives

149. In undertaking an assessment of any forecast, we are mindful of the incentives that an entity has in relation to that forecast.

150. We have already noted (in section 5.1) that DBP has proposed no expansion capex. Growth capex would be related to capacity rather than throughput and DBP has forecast a decline in its contracted capacity. We consider that DBP does not have a regulatory incentive that would bias it towards forecasting such a decline.

151. DBP's proposed tariffs are based on its capacity and throughput forecasts and inspection of DBP's tariff model indicates that its tariffs are intended to recover around [redacted] of revenues through capacity charges and [redacted] from throughput charges. However, DBP has stated that none of its current customers is on the regulated tariff. From 2016, this will change, with [redacted] of firm full haul capacity contracted to at least the end of 2020 with negotiated tariffs rather than the reference tariff and the balance reverting to the Reference Tariff on 1 January 2016.[54] The regulated tariff would therefore be relevant to new customers arising during the next AA and as a baseline for renegotiation of the relatively small amount of shipping capacity that is not contracted fully through to 2020. Regarding its existing customer base, we therefore consider that DBP has little incentive to under-forecast or to over-forecast. Further, as noted in section 5.1, the annual tariff variation mechanism would appear to have the effect that additional volumes would lead to reduced tariffs, thus maintaining revenue within the allowable revenue cap.

[53] While Table 4 also shows part haul and back haul, only full haul capacity is shown here

[54] DBP, Submission 19(1), paragraph 6.15 and footnote 3, and Submission 30, paragraph 2.12 (a)

152. In relation to system gas use, in principle, DBP has an incentive to over-forecast throughput since this would lead to a higher forecast of system gas costs and we consider this is the sole relationship between forecast demand and DBP's expenditure forecast.

153. Taking the above factors into consideration, we consider that DBP does not have a material incentive to bias its demand forecasts and our assessment reflects this base understanding of the relevant commercial drivers.

5.3.2 Capacity assessment

Capacity trends and DBP's justifications

154. Figure 13 shows that the step down in capacity from 2013 to 2014 has happened due to [redacted] and these have already occurred. The subsequent decreases from 2016 to 2017 are due to [redacted] Beyond that, the small decreases are from [redacted]

Figure 13: Capacity forecast by customer for period 2012 - 2020

[redacted]

Source: DBP's response to EMCa27

155. In its review for DBP, Jacobs[55] stated that more than 85% of contracted capacity has recently been renegotiated until at least 31st December 2020.[56] This is consistent with DBP's statement that, in its recent renegotiations, "*all Participating Shippers agreed to defer the right to relinquish capacity that they otherwise would have had from 1 January 2016*" and that "*this right* [to relinquish capacity] *has largely been deferred to 1 January 2021*".

156. Whilst it is clear that the capacity requirements of most customers are flat, DBP states that it has user-specific reasons both to accept the constant capacity forecasts for the majority of its customers and to forecast reductions [redacted]. DBP states that it currently has 85TJ of spare capacity that it has currently advertised on the gas

[55] DBP, Submission 11 op. cit. paragraph 5.3

[56] *DBNGP Forecast Review*, Jacobs, (20th October 2014) (presented as Submission 11, Appendix B). Section 2.2.1

bulletin board. However, it states that there are no shippers in the "queue" for this capacity and there are no projects that DBP considers have a reasonable likelihood of proceeding such that they would require additional gas capacity in AA4.

157. DBP states that all part haul and back haul shippers have terms beyond 2019, and that, while there are some potential new part haul customers in the Pilbara, the lead time for their projects would most likely defer capacity requirements beyond AA4 or, at the earliest, it might occur in the very last years of the AA period.[57]

Conclusion on capacity forecast

158. We consider that DBP's capacity forecast is derived from a reasonable assessment of information available to it, and is significantly underpinned by contracted capacity commitments. We consider that this is a reasonable forecast that meets the requirements of the NGR.

5.3.3 Throughput assessment

Throughput trends and DBP's justifications

159. DBP's throughput forecast shows [redacted] The throughput forecast is otherwise essentially flat for other customers. As can be seen in Figure 14, [redacted] there is only a very slight subsequent rise in throughput year by year over the remaining three years of the AA period.

160. DBP's submission in relation to the assumptions underlying its throughput forecast could be read as suggesting that it expects throughput to fall. For example, DBP refers to the recent decline in full haul throughput (despite WA GSP growth and population growth) and also to flat electricity demand and some displacement of generation by gas with generation by coal and renewables[58]. We note, however, that the relatively small increase in DBP's forecast full haul throughput is [redacted]. DBP also states that discussions with Shippers in the course of the recent contract renegotiations informed it that throughput would "… *either slightly reduce or remain constant for the duration of the period".*[59]

161. On the face of it, the slight increases for some customers that we observe in DBP's forecast, along with flat demand for others, are not materially consistent with background assumptions that DBP has presented. DBP's projected growth rate in throughput is, in aggregate, very modest. Nevertheless, we consider its throughput forecasts by looking at the implied capacity factor and also through validation against independent forecasts.

[57] DBP op. cit. paragraph 5.5(a) and 5.5(d)

[58] DPB op. cit. paragraph 5.7

[59] DBP op. cit. paragraph 5.7(d)

Figure 14: Throughput forecast

Load factor

162. There is a relationship that we would expect to find between contracted capacity and throughput, since shippers pay for capacity whether or not it is used and they pay excess charges for daily throughput that exceeds their contracted capacity. At 84.6% in 2016 and rising to 86.7% in 2019,[60] the projected load factors implied by DBP's throughput forecast are considerably higher than in 2012 and 2013, for example, when they were 75.6% and 76.7% respectively.[61] Inspection of figures 14 and 15 shows that this is essentially the result of the negotiated reductions in contracted capacity referred to above (occurring in 2014) in the face of relatively flat throughput. The upwards drift in load factor over AA4 appears to result from growth in throughput that is not matched by proportional increases in contracted capacity.

163. Jacobs has reviewed the load factors implied by DBP's throughput forecast and compared them with those in the 2010 AA revision, which were of a similar order: 82.6% and rising to 85.1%. From this perspective, its current forecasts of 84.6% rising to 86.7% seem to be in a reasonable zone.

Validation against other forecasts

164. In its review for DBP, Jacobs compares DBP's throughput forecasts with those prepared by the IMO in its Gas Statement of Opportunities (GSOO)[62]. Jacobs finds that DBP's Full Haul throughput forecast has an almost identical trend to the GSOO forecast (adjusted to comparable offtakes) and is consistently 1% lower than the GSOO. We consider this difference to be within the bounds of reasonableness.

Conclusion on throughput forecast

165. We consider that DBP's throughput forecast is derived from a reasonable assessment of user-specific information available to it. We accept Jacobs' findings that the derived capacity factor is in a reasonable range and that the throughput forecast is suitably

[60] Jacobs op. cit. table 2-1

[61] Jacobs op. cit. table 2-1

[62] Jacobs op. cit. table 2-3

consistent with the IMO's GSOO forecast. We consider that this is a reasonable forecast that meets the requirements of the NGR.

6 Review of AA3 capex

6.1 Introduction

166. This section contains the results of our review of the capex incurred (or to be incurred) by DBP in AA3. We have undertaken this review using the assessment framework set out in section 3.2.1 and having regard to our findings on DBP's governance framework and expenditure forecasting methodology in section 4.

167. As agreed with the ERA, we undertook:

- a specific review of a sample of projects from the AA3 capex program; and
- a higher level review of the other projects within DBP's AA3 capex program to consider the extent to which findings from our review of the sample is likely to extent to the remainder of projects.

168. The results of our review and our overall assessment of whether this capex can be considered conforming capex (rule 79) for the purposes of rule 77(2) are set out below.

6.2 Overview of AA3 capex

169. During AA3 DBP spent (or is forecast to spend, in the case of the 2015 calendar year) $256.74m on:[63]

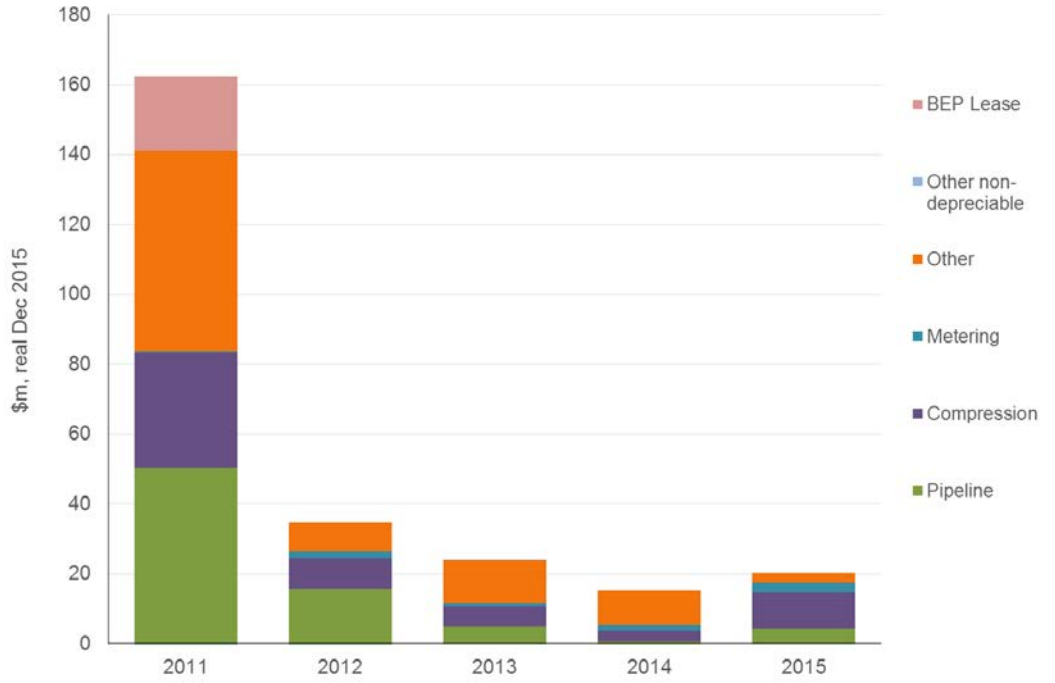
- Expansion capex ($117.82m) - projects that are carried out to extend or expand the network to accommodate new connections; and
- SIB capex ($138.92m) - projects that are required to maintain and improve the safety or integrity of services and/or comply with a regulatory obligation or requirement.

170. Referring to Figure 15: (i) expansion capex was primarily incurred in 2011 ($105.09m) with the remaining expansion expenditure ($12.73m) occurring in 2012; and (ii) much higher

[63] DBP, Sub 7, Table 1, Sub 8, Table 1

than average SIB capex in 2011 ($57.3m) was due to inclusion of Capital Work in Progress (CWIP) as required by an accounting adjustment.[64] The 2015 expenditures are estimates.

Figure 15: Expansion and SIB capex incurred by DBP in AA3 - $m, real Dec 2015



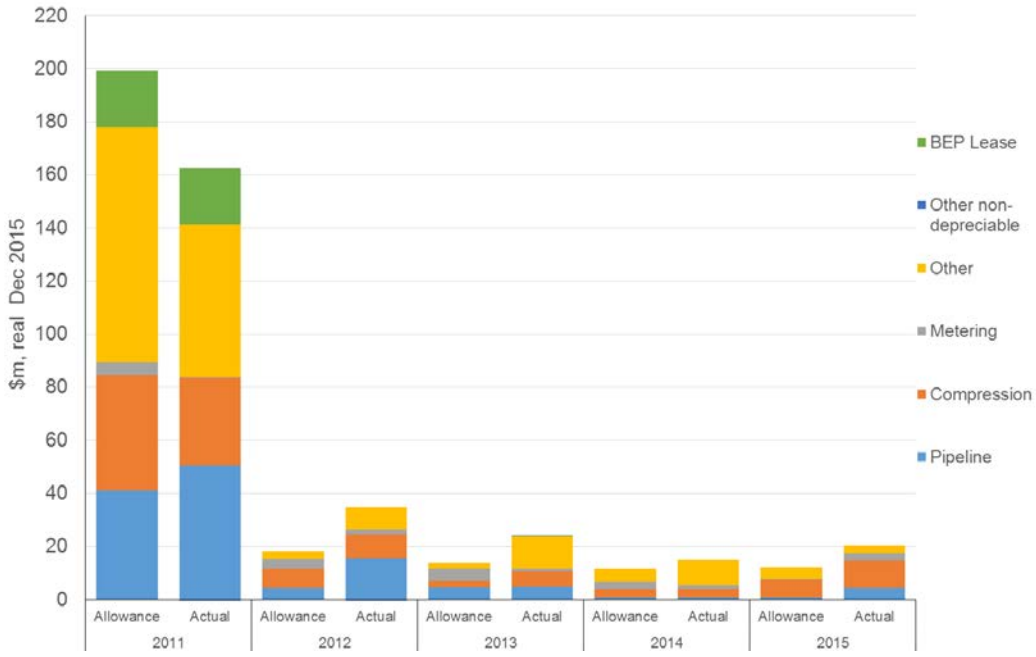
Source: EMCa analysis derived from Table 4, Sub 1_App B_Access Arrangement Information_Final.docx, page 4

171. Figure 16 shows the variance between the ERA-approved forecast expenditure from the previous AA submission and DBP's actual expenditure. Overall, DBP spent only $1.24m less on its capex program than allowed for by the ERA ($257.99m).[65] There were, however, material variances between the actual and forecast expenditure at the category level. These are discussed in our assessment of the SIB and expansion capex in sections that follow.

[64] DBP, Submission 8 Part 1, paragraph 2.5, page 3

[65] EMCa analysis, Capex opex v1.4

Figure 16: Capex incurred by DBP in AA3 vs ERA allowance



Source: EMCa analysis from data Table 13 - Revised Access Arrangement Information for the Dampier to Bunbury Natural Gas Pipeline and Table 4, Sub 1_App B_Access Arrangement Information_Final.docx

6.3 Stay in Business capex

6.3.1 DBP's proposal

172. Over the AA3 period, DBP spent $138.92m on SIB capex (see Figure 17) as follows:[66]

- $28.6m was spent directly on the pipeline;
- $30.1m on the compressor stations;
- $7.8m on metering; and
- $72.4m on other items.

173. The 2011 expenditure is much higher than the other four years of the AA3 period because of a change in accounting treatment of capital expenditure:

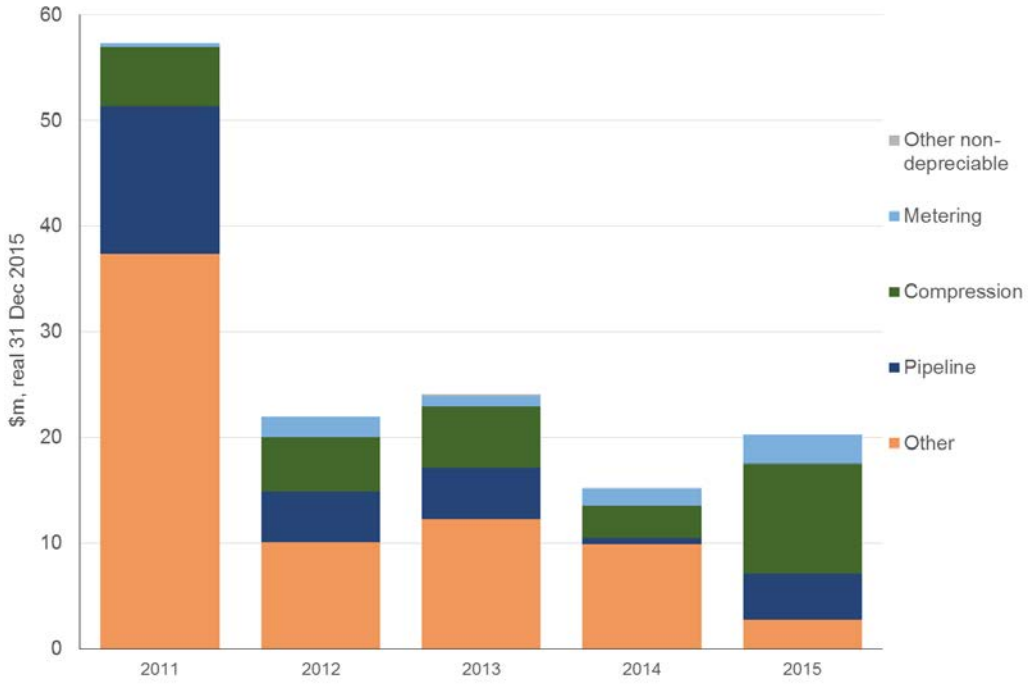
> *"In 2012, DBP moved from a capitalised basis of accounting to an incurred basis for regulatory purposes. DBP's actuals during 2005 to 2010 were reported to the ERA on an 'as capitalised' basis which required capital that was Capital Works in Progress (CWIP) (ie. not capitalised to DBP's corporate asset register) as at 31 December 2010 to be treated as forecast conforming capital expenditure in 2011."*[67]

174. The underlying level of actual 2011 expenditure is $18.63m which is commensurate with the expenditure in the other four years.

[66] DBNGP-DBP-AA4-Sub1_App B_Access Arrangement Information_Final, Table 4, December 2014

[67] DBP Sub 8 SIB Project Justification PART1_Final, December 2014

Figure 17: AA3 expenditure on SIB capex - $m, real Dec 2015[68]



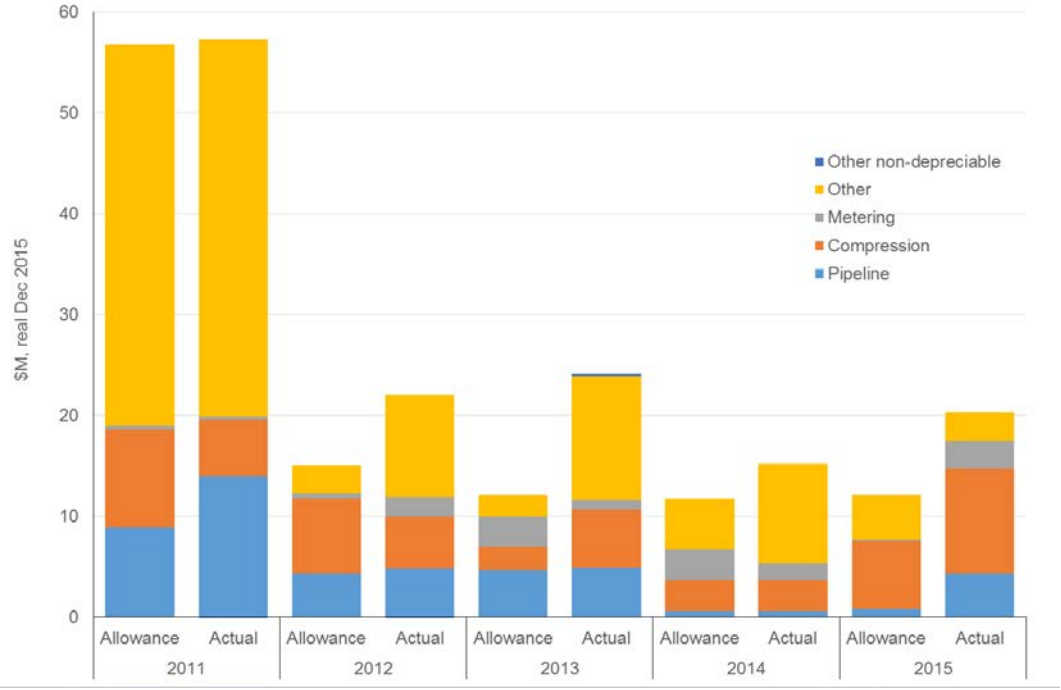
Source: EMCa analysis from Sub 1_App B_Access Arrangement Information_Final.docx, Table 4, p. 4

Difference between DBP's expenditure and the ERA approved allowance

175. At $138.92m, the amount spent by DBP on SIB capex in AA3 was $30.93m (29%) higher than the $107.99m approved by the ERA. Figure 18 shows the variance within years and Figure 19 shows the variance within the expenditure categories.

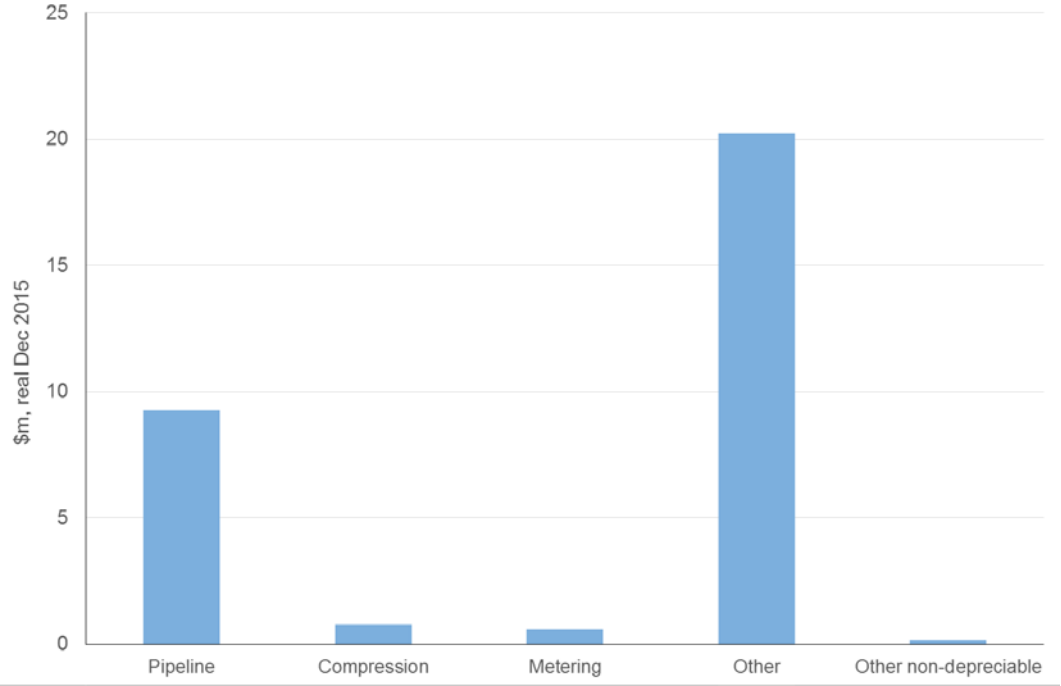
[68] The total 2014 figure was subsequently revised by DBP through EMCa35 to $13.56m.

Figure 18: DBP's SIB capex vs ERA allowance - $m, real Dec 2015



Source: EMCa analysis from data in DBP AAI, table 4 Sub 1_App B_Access Arrangement Information_Final.docx, & Table 13 - Revised Access Arrangement Information for the Dampier to Bunbury

Figure 19: Variance between actual SIB capex and ERA allowance



Source: Source: EMCa analysis from data in DBP AAI, table 4 Sub 1_App B_Access Arrangement Information_Final.docx, & Table 13 - Revised Access Arrangement Information for the Dampier to Bunbury

Basis on which DBP has sought to justify SIB capex in AA3

176. DBP has sought to justify all of its expenditure on SIB capex in AA3 under one or more of the grounds in rule 79(2)(c) of the NGR (i.e., safety, integrity, compliance and/or maintaining capacity to meet existing levels of demand). DBP has also claimed that the expenditure satisfies the prudent service provider test in rule 79(1)(a).

6.3.2 EMCa assessment

177. DBP has essentially presented its justification for SIB capex on three tenets:

- It provides summaries for each of the 'projects' (as DBP defines them) that it has undertaken in the AA3 period, noting that:
  - It defines projects as work done within a calendar year, even if the same work is undertaken over multiple years. As a direct consequence of this approach, DBP has presented 411 project summaries; and
  - The 2011 expenditure includes CWIP.
- It submits that the ERA should infer compliance with the prudency requirements of the NGR rule 79 because of its processes which demonstrate prudent project planning, prioritisation, management, collaboration, and documentation;[69] and
- DBP claims that incentive mechanisms in its shipper contracts "*ensure its capital and operating costs are at least efficient and prudent*".[70]

DBP's project summaries

178. We found that DBP's project summaries provided significant barriers to our review because:

- DBP offered only sporadic linkages between project summaries for 'parent' or multi-year projects;
- DBP often used different project names for the same work in different years;
- It was unclear what expenditure had actually been incurred on what aspects of the scope; and
- DBP did not provide the forecast versus actual expenditure or the reasons for any variance (such as not proceeding with a project and the reasons for not doing so).

179. The sheer number of project summaries precluded assessing all of them and the fractured nature of the information made it very difficult to understand what was being spent to resolve a particular issue, why it was being spent, how much was forecast to be spent, what was actually spent and whether the project objectives had been achieved. We consider that these indicate a lack of cohesive understanding that would hamper DBP's own understanding of and ability to manage its project portfolio.

180. We agreed with the ERA that we would base our assessment of DBP's SIB capex on the following:

- Our assessment of DBP's policies, processes and key strategic documents (as outlined in section 4), noting that this was to establish, in the main, the quality of what DBP "says it does";
- Our assessment of 15 SIB projects with the highest expenditure – these were identified by DBP;[71]
- A high level assessment of the balance of the project expenditure – this was considered in three parts: (i) projects which exhibited >$1m variance from the initial forecast, (ii) the Subsequent Cost 'project', and (iii) the rest of the projects.

[69] DBP Sub 8, section 3.19, page 6

[70] DBP Sub 2, section 7, page 21

[71] Note that we have in some cases combined projects where we consider that DBP has undertaken the work under different project names (noting that DBP advises that it does change project names)

181. We consider this approach to provide an adequate basis for assessing the impact of the systemic issues that we identified in our 'top-down' review, given that the combined value of the sample projects and the Subsequent cost category is approximately 70% of the total proposed conforming AA3 expenditure.

182. We have assessed the current state of DBP's processes, policies and systems in Section 4. With few exceptions we concluded that they were appropriate to manage DBP's business, if properly applied. However, as discussed below, we reviewed the consistency of DBP's *application* of the procedures and policies and in this respect, we found DBP's information in support of its AA3 program to be generally inadequate to justify the expenditure.

DBP's contractual incentives

183. DBP submits that the SSCs include a commercially negotiated tariff through which DBP bears the risks of over-expenditure. The examination of this aspect of DBP's proposed AA is out of scope for our review.[72]

Assessment of sample projects

184. The 15 sample projects represent combined expenditure of $75.23m over the five year period, which is 54% of the reported AA3 expenditure. We also reviewed the Subsequent Costs expenditure category [redacted], so in total we have specifically reviewed [redacted] of the AA3 expenditure. The assessment is primarily intended to confirm that DBP "does what it says it does" with respect to its policies, processes and strategies. To this end, we requested from DPB relevant supporting documentation for the 15 nominated projects, including:

- A sample of project audit reports (per Information Request EMCa06);
- Evidence of lessons learned from project close-out reports (EMCa08);
- Business cases and close-out reports (EMCa09); and
- Explanation of the variance between planned and actual work (EMCa30).

185. We took into account the project information that DBP provided in response to this request. Our analysis of each of the projects is provided in Appendix A. In the following sub-sections we draw from the project sample to inform our findings.

186. To determine whether the fifteen projects comply with the conforming capex criteria we have, in the first instance, considered whether the projects are justified under one or more of the grounds set out in rule 79(2) of the NGR. In doing so, we have had regard to:

- The relevant information provided by DBP for each project;
- The Safety Case;
- The FSAs (essentially a risk assessment process) conducted by DBP, which we understand from the on-site meetings are agreed to on a consensus basis by DBP staff through an internal validation process as required by Australian Standards AS2885;
- Australian Standards AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- The Asset Management Plan; and

[72] Based on the revised scope of work received on 22 September 2015 which limited our assessment to the forecast quantity of SUG

- The practices employed by other gas transmission pipelines.

187. We summarise our findings as follows:

Primary documents

188. In reviewing the sample projects, we focussed on project-level documentation. We asked DBP to provide the relevant information to support their claims that its expenditure on the nominated projects was prudent and efficient. The primary documents DBP presented for our review were Project Summaries,[73] business cases[74], and FEED documents.[75]

189. The business case documentation was typically unsigned and undated and did not fully adhere to DBP's own internal QA instructions,[76] as discussed below.

Business need

190. In very few cases in the project level documentation was an explicit link between DBP's risk assessment and risk rankings provided. There was no discussion of the concept of ALARP in any of the business cases provided, noting that we would only expect such discussion when the risk was ranked as *Intermediate.* DBP uses its individual project risk scores to determine the portfolio of work for the next regulatory period and to manage the portfolio on an ongoing basis as part of BAU. Within the project business case, we would expect the risk rating to be explicitly identified and, if it is identified as *Intermediate*, then the business case should explain why the risk treatment satisfies the ALARP test applicable under AS2885. In the 'INITIATE' and 'PLAN' phases of DBP's PMM, this information is supposed to be generated and reviewed for approval and we would expect the business case (or equivalent) to draw it together as part of the justification for the scope.

191. Despite these limitations, we found that DBP's project-level documentation was in most cases adequate to support the need to respond to the asset-related issue in some manner. Many of the SIB projects respond to either equipment obsolescence, OEM-recommended replacement cycles and/or regulatory obligations, all of which are common and accepted drivers within the industry for SIB work.

Options analysis

192. For multi-million dollar projects we would expect to see, among other things, rigorous options analysis as part of a comprehensive business case. Based on the evidence provided, we found that DBP's options analysis was inadequate to support a finding that the work planned to be undertaken was prudent.[77]

193. The FEED documents usually include at least rudimentary options analysis but they do not often present the range of options we would expect to see. Similarly, the business cases provided typically do not present a compelling case for the timing and scope of work to be undertaken in the AA3 period. Even in the case where there is only one logical supplier of a replacement part or system, we would expect that DBP to explore scope/timing options to

[73] In Submissions 8 Parts 1 and 2

[74] We note that DBP's PMM has an approval gate at which the pertinent document is called the Project Management Plan and no mention is made of the Business Case (DBP, Sub 8, Figure 2, p7), however DBP's Stay In Business Process (Figure 3, Sub 2) shows that Business Cases are a feature of the approval process

[75] DBP also provided other documents for some projects, including Project Management Plans and worksheets

[76] Provided as Explanation Notes in the Business Case template and in cl. 5.9, Submission 2

[77] In response to our request for supporting documentation to demonstrate that it followed its own policies and processes, DBP provided a large number of business cases and related documentation. Whilst we observed the risk ranking process, we did not see rigorous business cases

demonstrate the selected scope and timing is optimal from a cost-benefit perspective. Typically, this analysis was not presented. In cases where the risk was judged to be *Intermediate*, we would expect to see the details in the business case demonstrating that the proposed expenditure was justified under the ALARP test in accordance with the requirements of AS/NZS2885. No such analysis was presented.

Procurement

194. The identification and implementation of the appropriate procurement strategy for cost effective delivery of the project is a key aspect of prudent project management. Whilst we assessed DBP's procurement policy to be sound (Section 4), we expect business cases to be explicit in confirming the rationale for the procurement approach to be applied for the particular project and for delivery risks and risk mitigation initiatives to be identified. In only a few cases was the procurement strategy clear from the documents provided. We note, however, that this step is not required in DBP's business template. The inadequate information about the procurement process followed undermined our confidence that DBP has delivered expenditure efficiently.

Delivered scope

195. DBP often did not provide sufficient explanation of the reasons for variations between initially proposed/forecast expenditure (across the AA3 period) and actual expenditure, nor how project timing was determined. Furthermore, its approach to identifying each year's expenditure as a different project and the lack of project close-out reports makes it very difficult in many cases to identify what had been delivered for the reported expenditure. DBP provided scant linkages to related projects and offered little information about the opportunities taken (or if not taken, why not) to combine work on a zone or asset basis to reduce costs. Whilst DBP claims to have done so, evidence is lacking.[78] These factors combined to undermine our confidence that DBP has delivered AA3 capex efficiently.

Delivered cost

196. DBP has provided inadequate information to allow us to conclude that it has deployed prudent means of establishing efficient costs at the project/program level. It would appear from the close match at the portfolio level of the forecast and actual AA3 expenditure that DBP pays close attention to the overall budget. However, there were significant variances between actual and forecast expenditure within expenditure categories (see Figure 7), which in the absence of compelling (or any) explanations, is indicative of suboptimal decision making at a project level. Furthermore, DBP provides scant information at the project level concerning the procurement processes actually deployed (e.g., competitive tendering).

197. As DBP did not provide project close-out reports in which we would expect project cost performance to be summarised (among other things), we asked DBP for a separate explanation of project variances – its response is discussed in a separate section below. This undermines our confidence that efficient costs have been achieved in delivering the AA3 capital works program.

Close-out reports

198. We would expect a prudently operated business with good governance procedures to produce project close-out reports for all projects over a certain threshold (say $2m as an example). DBP did not produce close-out reports for the projects comprising its $139m AA3 SIB program of works. As discussed above, this made it challenging to confidently assess the delivered cost against the business case estimate and the reasons for any significant

[78] For example, in response to our Information Request EMCa08

variance. Close-out reports also provide a record of lessons learned, which are particularly valuable for repeat and/or multi-year projects (which comprise a significant proportion of DBP's SIB expenditure). Also, close-out reports provide an opportunity to record progress with benefits realisation, providing a foundation for further review in 12-24 months after project completion. For several projects, the supporting business case referred to efficiency dividends/cost savings from undertaking the work, but no evidence was provided to confirm that benefits were realised (or tracked).

199. In short, the absence of close-out reports further undermines our confidence that DBP delivers projects for an efficient cost and that benefits are realised.

Sample projects - Justification for expenditure per rule 79(1)(b)

200. Despite the limitations with DBP's documentation denoted above, DBP's project scope descriptions (including descriptions of the reasons for undertaking the projects) were, in conjunction with information from supporting documents and our industry experience, sufficient to enable us to form a view as to project need in accordance with the requirements of rule 79(1)(b).

201. In each of the fifteen projects reviewed, we found that the project need was justified in accordance with one or more of the tests in rule 79(2)(c)(i) – (iv).

Sample projects - Prudency test rule 79(1)(a)

202. However, our assessment of the fifteen projects in the context of the prudent service provider test led us to conclude that only $56.72m (75%) of the $75.23m total expenditure reviewed satisfied the prudent service provider test.

203. This assessment reflects the inadequate information provided to support DBP's claims that it has completed a prudent scope of work and has undertaken it efficiently. We asked DBP to provide us with evidence to support its claims in the form of project-level documentation. As discussed above and in Appendix A, sufficiently compelling evidence was not provided for many of the projects.

Assessment of projects with significant variance between forecast and actual expenditure

204. We further considered the projects that DBP identified as incurring the largest variations in expenditure (>$1m) that had not been considered in detail (i.e., in the 15 project sample). The information provided was for the period 2011-2014 only. The projects are in three categories:

- *Included in the 2010 proposal, but not undertaken in AA3* – there were seven projects in this category, with combined forecast expenditure of $17.42m. Five replacement projects with a combined budget of $11.14m were deferred, [redacted][79] We note that the magnitude of the deferred projects (about 10% of original expenditure) is not a particularly large amount and it is not unusual for

[79] DBP, Submission 19(1). Table 7, page 31

projects to be deferred from a five year program. However, we consider that: (i) the lack of a rationale for deferral (implying that the original assessment may have been flawed); and (ii) the apparently haphazard way in which DBP reassigns project titles combine to diminish our confidence in the ability of DBP to apply good project and program governance over its portfolio of projects to achieve prudent and efficient outcomes. We have taken this finding into account in both our AA3 and AA4 expenditure assessment.

- *Undertaken during AA3 but not foreshadowed in 2010* – there were only four projects in this category in addition to 'Subsequent Costs', which is discussed separately below. All four 'new' projects were considered in our sample of projects. In each case, our review of the reasons for inclusion of the project in the AA3 budget led us to conclude that it satisfied one or more of rule 79(2)(c)(i)-(iv).
- *Foreshadowed in 2010 and undertaken in AA3* – DBP identified only six projects in this category. Only one has not been considered in our sample project assessment: [redacted] DBP has not advised the reason for the 27% underspend, but DBP has provided sufficient information for us to conclude that the expenditure satisfies rule 79(2)(c)(i) and (ii).

Subsequent costs

205. The Subsequent Costs category of expenditure is [redacted], the largest category of SIB expenditure. Given the absence of any capex budget provision, it also represents the most significant variation in actual versus forecast expenditure.

206. DBP defines this cost item as "*those that cannot be adequately forecast on an individual basis, but which we know are likely to occur.*"[80] DBP provides additional information in Submission 8 Part 1:

> *"The Subsequent Cost category, [is] consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), [and] captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value."*[81]

207. The average annual expenditure of [redacted] (over 5 years) comprises a myriad of expenditure items, with a number of them costing several hundred thousand dollars. DBP has provided a breakdown of the expenditure. From what we can discern from the information provided, the majority of expenditure appears to conform with one or more of rule 79(2)(c)(i)-(iv).

208. DBP has essentially replaced operating expenses with capital expenditure and has used the same categorisation in its AA4 forecast. However, DBP received an operating expenditure 'allowance' from the ERA in its Final Determination for the AA3 period that included a component for the work that DBP has now capitalised. Whilst DBP's rationale for the changed approach according to application of the accounting policy would appear to be reasonable for the future, we consider that if the ERA was to allow the proposed capex expenditure as Conforming Capital expenditure in its determination, DBP would effectively

[80] DBP, Sub 19(1), para 16.7, page 32

[81] DBP Sub 8 (1), Table 190

be 'double-dipping'. We therefore conclude that Subsequent Costs expenditure should not be classified as Conforming Capital for AA3.

All other SIB projects

209. In relation to the other SIB capex projects undertaken by DBP in AA3, we have undertaken a higher level review having regard to:

- DBP's rationale for carrying out these projects; and
- Our assessment of the sample projects.

Business Need

210. As discussed in Section 4, we have reservations about DBP's risk assessment process in that we consider it generates a bias towards including projects in the expenditure program because of the cumulative approach to ranking risks. In general terms, the smaller projects by dollar value also have lower risk assessment scores. Our concerns are mitigated by: (i) DBP's inherent incentives to only undertake necessary expenditure via the in-built contractual incentives; and (ii) DBP's top-down challenge process. We considered the project summaries for a random sample of the smaller projects and are satisfied that the business need for the projects appears sound.

211. Furthermore, the business need for CWIP expenditure was justified on the basis that the 'parent' projects had already been endorsed by the ERA through the previous regulatory determination.

212. We therefore concluded that the 'Other SIB projects' are justified under one or more of the grounds in rule 79(2)(c).

213. However, we did not see compelling evidence to persuade us that DBP acted to ensure expenditure was efficient. Accordingly, we have proposed adjustments to the 'Other SIB' project expenditure as follows:

- The combined expenditure of projects with a value less than $0.15m is [redacted] - this expenditure is endorsed on the basis that: (i) this is a typical threshold under which it is often counterproductive for organisations to spend significant time to refine scope and achieve delivery efficiencies;[82] and (ii) it is generally the level under which expenditure can be ad hoc and reactive such that the opportunity for significant savings are limited;
- All of the [redacted] 2010 CWIP expenditure is endorsed on the grounds that our detailed review of the sample projects showed that over 93% of the 2010 CWIP work was deemed to satisfy the prudent service provider test; and
- Actual 2011-2015 expenditure for projects with expenditure above $0.15m is adjusted by the same -36.7% ratio as we applied to the 2011-2015 sample project expenditure. Thus, of the [redacted] in this category, we consider [redacted] to satisfy the prudent service provider test.

Compliance with the conforming capex criteria

214. In summary, for each of the fifteen projects, we found that DBP provided sufficient information for us to conclude that the expenditure satisfied one or more of the components of rule 79(2)(c)(i) – (iv).

[82] Noting that DBP's procurement policy does require a competitive price to be established unless there is a compelling reason

215. In reaching that position, we applied our industry knowledge and experience to bridge information gaps pertaining to project-level risk assessment in the project summaries and other supporting project-level documentation.

216. Our assessment of DBP's projects in respect of the prudent service provider test concludes that DBP has provided limited, and in many cases inadequate, project-level information to support its claim that it has prudently and efficiently incurred the capital expenditure in the AA3 period. It is our view that, in many instances, DBP's supporting documentation was superficial, incomplete and fell short of satisfying its own business case requirements[83].

217. Based on the findings set out above, we consider that DBP has undertaken SIB capital projects in the AA3 period that meet the requirement of rule 79(1)(b) through satisfying one or more of the requirements of rule 79(2)(c). However, we are not persuaded that DBP has at all times satisfied the requirement of rule 79(1)(a) in demonstrating that the costs incurred were efficient. DBP has not provided sufficient information to explain the 27% overspend relative to the ERA's AA3 allowance, nor has it provided sufficient evidence to verify that its expenditure was incurred efficiently.

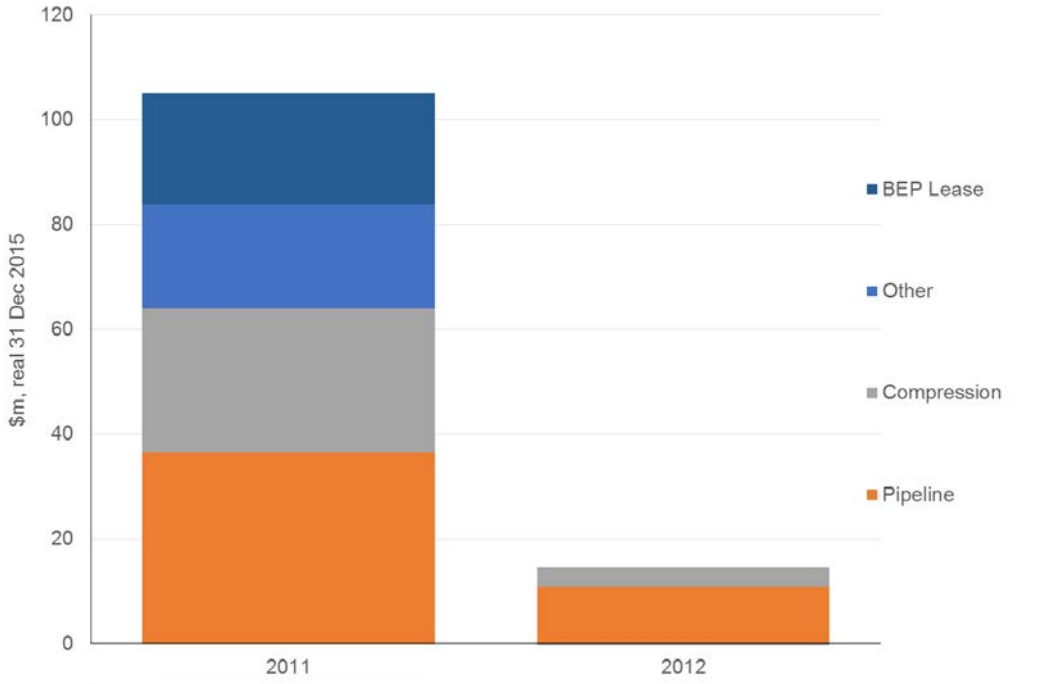
6.4 Expansion capex AA3

6.4.1 DBP's proposal

218. DBP propose adding a total of $117.82m into the capital base for the AA3 period The expenditure, which was incurred in 2011 ($105.10m) and 2012 ($12.72m), is for the Stage 5A and 5B expansion projects and represents the final two years of multi-year projects that commenced in the AA2 period. The expenditure profile is shown in the figure below and includes expenditure to close out aspects of the Stage 5B project and CWIP for both Stage 5A and 5B expansion projects.

[83] Neither in DBP's corporate documentation, nor in the 'Explanation Notes' that form part of the Project Business Case template

Figure 20: AA3 expenditure on Expansion capex - $m, real Dec 2015



Source: EMCa analysis from Sub 1_App B_Access Arrangement Information_Final.docx, page 4

Basis on which DBP has sought to justify Expansion capex in AA3

219. DBP has sought to justify its expenditure on Expansion capex during AA3 on the grounds that:[84]

- The ERA should consider the Stage 5A and 5B expansion projects in their totality and the benefits that each project delivered;
- Stages 4, 5A and 5B expansion projects met the requirements of NGR 79(2)(a), NGR 79(2)(c)(iii) as determined by the ERA for the 2005-2010 regulatory period;
- The ERA determined that CWIP expenditure of $61.2m (real $2010) incurred but not capitalised in the 2005-2010 period was conforming capital expenditure for the AA3 period;[85]
- The ERA approved DBP's forecast expansion capital expenditure of $47.9m (real $2010) to complete the Stage 5A and 5B expansion projects, noting that only an audited cost will be added to the capital base;
- The reasons the projects were undertaken over a period of time that straddled two regulatory periods were that DBP needed to: (i) split the projects to commence work to provide certain shippers with their requested capacity and timing requirements; and (ii) match funding for the projects with the contractual commitments of shippers; and

220. Accordingly, DBP asserts that the expenditure on capex in AA3 satisfies the prudent service provider test in accordance with rule 79(1)(a).86

[84] DBP, Sub 7 Actual Expansion CAPEX_FINAL.docx

[85] Including the value of the BEP Lease following a merit review by the Australian Competition Tribunal

[86] DBP, AAI, March 2014, pages 122-128

6.4.2 EMCa assessment

221. Over 90% of the capital expenditure on the Stage 5A and 5B projects was incurred in the AA2 period (2005-2010).[87] DBP has effectively argued that the conclusions reached by the ERA in its 2011 Final Decision regarding the prudency and efficiency of the two expansion projects are applicable to the Expansion expenditure proposed as conforming capex in the current submission.

Justification for the expenditure (rule 79(2))

222. The ERA concluded[88] that the proposed Stage 5A and 5B expenditure satisfied or was likely to satisfy:

- Rule 79(2)(a) on the basis that the overall economic value of the expenditure is positive. The ERA accepted that the expenditure satisfied the economic benefits test; and
- Rule 79(2)(c)(iii) on the basis that "*the expansion was undertaken to comply with the terms of an undertaking provided to the Australian Competition and Consumer Commission…*"[89]

223. On this basis, we consider that the project need has been satisfactorily established.

Prudent service provider test (rule 79(1)(a))

224. The second matter that we have considered when assessing whether the $117.82m that DBP either incurred (as CWIP) or spent on Expansion capex in the AA3 period complies with the conforming capex criteria, is whether the amount spent by DBP was efficiently delivered in accordance with the requirements of the prudent service provider test in rule 79(1)(a).

225. In carrying out this assessment, we had regard to the following:

- *The ERA's requirement for DBP to provide satisfactory audited statements of capital expenditure*[90] - DBP provided Submission 6, '*Cost allocation and Verification'* in response to this requirement, outlining the approach and findings from Ernst & Young who were engaged by DBP to "*provide a report of factual findings in regard to DBP's verification process…*" Tables 4-6 in Submission 6 show Expansion capex of $108.02m (nominal) which is equivalent to $117.82m (real). EY's report found "*no errors or exceptions*" for capital expenditure.[91] It is beyond our scope to verify these findings in detail. However, based on the evidence provided, DBP's process for validating its expenditure and the outcomes would appear to satisfy the ERA's requirements.
- *The project governance framework employed by DBP* – In its Submission 7 and in response to our Information Request EMCa08, DBP has provided project documentation for its Stage 4, 5A and 5B projects which cover all the typical aspects of a large capital project, including:

[87] DBP, Sub 7, paragraph 6.2 (a)

[88] ERA Final Decision, 22 December 2011, paragraph 310

[89] DBP, Submission 7, paragraph 2.5; In addition, according to paragraph 2.4 of DBP's Sub 7, Appendix A, the DBP also had an obligation to the State under the Financial Assistance Agreement (October 2004)

[90] ERA Final Decision, Nov 2011, paragraph 269

[91] DBP, Sub 6, App D, Tables pages 2/11-3/11

- Independent engineer reports (Stages 4, 5A, 5B);
- Final close-out report and handover documentation (for Stage 4 only); and
- Lessons learnt register (Stage 4 only).

The independent engineers' reports were commissioned as a requirement of and in conjunction with DBP's financiers to verify the following (prior to each Stage commencing):[92]

- Each stage is technically feasible "*having regard to good operating practice"*;
- Appropriate levels of capacity will be created;
- An appropriate risk mitigation strategy is in place; and
- The contracting strategy/form/content are appropriate.

We have reviewed the engineers' reports[93] and consider that they support the cost estimate and delivery strategy (including the contracting strategy) as being appropriate at the time for Stages 5A and 5B. However, they are ex ante assessments. We therefore sought from DBP project close-out (ex post) reports. The Stage 4, 5A and 5B Close Out reports are comprehensive. Collectively, the reports provide evidence that despite some challenges, (i) DBP successfully applied the lessons from each stage of work to subsequent stages, and (ii) DBP's planning, management and documentation are appropriate. This is sufficient to verify that DBP applied good project governance for Stages 5A and 5B.

- *DBP's delivery strategy* – given the nature of the contracts it has with existing shippers, we consider that DBP has a commercial interest in achieving prudently minimised costs. We have also reviewed the assessment by Evans & Peck[94] of the delivery strategy deployed for Stages 5A and 5B and whilst it makes some important assumptions, we accept the findings of this report that the delivery approach (including procurement and contracting strategies) is reasonable.
- *Expenditure performance* – the 2010 forecast total expenditure on 5A and 5B (AA2 and AA3) was $1,312m (nominal)[95] compared to the actual expenditure of $1,249m[96]. It is not within the scope of this assessment to examine the full extent of Stage 5A and 5B expenditure other than where it is relevant for the expenditure submitted in DBP's AA3 submission.

  The 2010 forecast for total expenditure on the remainder of Stage 5A and 5B approved by the ERA was $104.9m ($2010)[97] which is within a reasonable bound of the actual expenditure of $108.0m ($nominal) incurred in the period 2011-2013.[98] Of the actual expenditure, $57.6m is CWIP (adjusted for the BEP lease valuation)[99] and of the balance, $47.9m (real $2010) had been considered by the ERA to be

[92] DBP, Sub 7, Appendix A, paragraph 8.28

[93] DBP, Sub 7, Appendix A, Attachments 8, 9, 10

[94] DBP, Sub 7, Appendix A, Attachments 9, 10

[95] DBP, Sub 7, Appendix A, Submission 9, paragraph 1.13

[96] DBP, App 17 Close out Report Stage 5A 090608 (page 35) and App 19 Close out Report Stage 5B v1 (page 39), noting that the final expenditure may have exceeded the reported actual expenditure plus forecast to complete amounts due to outstanding claims

[97] DBP, Sub 7, Actual Expansion CAPEX FINAL, Table 2, paragraph 4.1

[98] *Ibid,* Table 1

[99] *Ibid,* paragraph 4.12

conforming capital expenditure in its 2011 determination. In summary, DBP's actual expenditure performance is indicative of efficiently incurred costs.

226. Based on our assessment of the matters discussed above, on balance we consider that it is reasonable to conclude that DBP's expenditure on Expansion capex in AA3 satisfies the prudent service provider test pursuant to rule 79(1)(a).

Compliance with the conforming capex criteria

227. On the basis of the findings set out above, we are satisfied that the expansion capex amount of $117.82m satisfies the requirements of rule 74(2).

6.5 Quantified implications

228. Table 3 sets out the aggregate effect of our findings above, for DBP's AA3 capex, taking account of our findings in sections 6.3 and 6.4.

Table 3: Revisions to DBP's AA3 proposed confirming capex - $m, real Dec 2015

Assessment category	ERA allowance	DBP Actual	Adjustments	EMCa Adjusted
Sample projects		75.23	-18.51	56.72
Other		41.92	-9.12	32.80
[redacted]		[redacted]	[redacted]	0.00
Other non-depreciable		0.14	0.00	0.14
Total SIB after correction by DBP		**137.27**	**-47.60**	**89.66**
DBP adjustment to correct 2014 figure		1.66	-1.66	
TOTAL SIB per proposal	107.93	138.93	-49.26	
Expansion	150.06	117.82	0.00	117.82
Total	**257.99**	**256.75**	**-49.26**	**207.48**

Sources: EMCa analysis from Table 4 Submission 1, App Q Capex 2011-2014, Submission 8 Part 1 & 2 and DBP's response to EMCa35

7 Review of proposed AA4 capex

7.1 Introduction

229. This section contains the results of our review of DBP's capex forecast for the AA4 period. We have undertaken this review using the assessment framework set out in section 3.2.1 and having regard to our findings on DBP's governance framework and expenditure forecasting methodology in section 4.

230. As agreed with the ERA, we undertook a review of a sample of projects from the AA4 capex program and used this to test the extent to which the systemic governance, management and expenditure forecasting issues identified in section 4 are manifest in DBP's claimed AA4 capex requirement. We then considered the impact of those issues on the proposed allowance.

231. The results of our review and our overall assessment of whether this capex can be considered conforming capex (rule 79) are set out below.

7.2 Overview of AA4 proposed capex

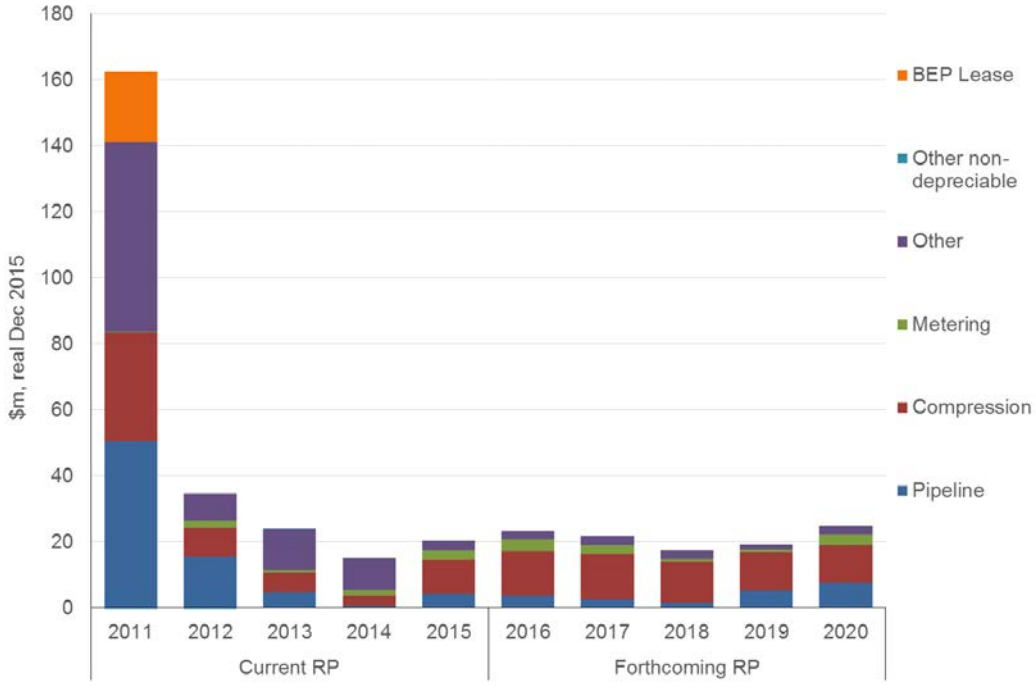
232. Over the next 5 years, DBP proposes to spend $106.67m (~$21.33m p.a.) on a range of capex projects. The breakdown of this expenditure is set out in Table 4 and in Figure 21, with the latter figure also showing AA3 capex (actual and forecast) for comparison. Whereas the AA3 capex includes a significant amount of Expansion capex in 2011, DBP's proposed AA4 capex is directed entirely towards *sustaining* the pipeline (i.e., SIB expenditure).

Table 4: DBP's AA4 proposed capex - $m, real Dec 2015

	2016	2017	2018	2019	2020	Total	Percentage
Pipeline	3.67	2.48	1.63	5.33	7.55	**20.66**	19%
Compression	13.61	13.97	12.44	11.65	11.59	**63.26**	59%
Metering	3.60	2.68	0.85	0.64	3.10	**10.87**	10%
Other	2.39	2.64	2.58	1.75	2.52	**11.88**	11%
Other non-depreciable	0.00	0.00	0.00	0.00	0.00	**0.00**	0%
BEP Lease	0.00	0.00	0.00	0.00	0.00	**0.00**	0%
Total	**23.27**	**21.77**	**17.50**	**19.37**	**24.76**	**106.67**	**100%**

Sources: Table 13, Sub 1_App B_Access Arrangement Information_Final.docx, page 11

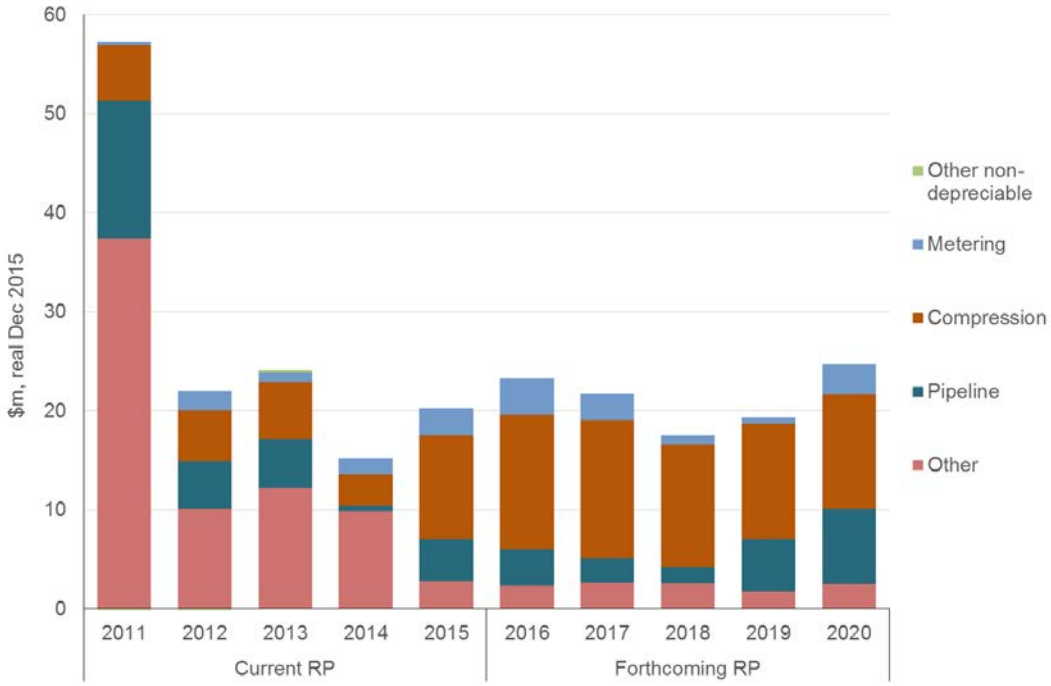
Figure 21: Breakdown of DBP's proposed capex (SIB and expansion) - $m, real Dec 2015



Sources: Table 4 and 13, Sub 1_App B_Access Arrangement Information_Final.docx

233. The profile of DBP's proposed SIB capex for AA3 and AA4 is illustrated in Figure 22.

Figure 22: Profile of DBP's AA3 and AA4 SIB capex - $m, real Dec 2015



Sources: Table 4 and 13, Sub 1_App B_Access Arrangement Information_Final.docx.

Basis on which DBP has sought to justify SIB capex in AA4

234. DBP submits that it has satisfied the requirements of rule 79(1)(a), the 'prudent service provider test' for the following reasons:[100]

- It has developed a project management methodology that is applied to every phase of the life of every capital project within the business (this methodology is discussed in Section 4); and
- A governance management structure (also discussed in section 4) has been established which includes, among other things:
  - The Project Review Committee which determines the priority of DBP's portfolio of projects;
  - The Project Steering Committee which is required for all projects and is responsible for project delivery;
  - Use of a RASCI Matrix to define the participation by various stakeholders in the completion of project tasks and deliverables;
  - A project 'Gate Station' structure which outlines what must be completed by each phase of a project;
  - Comprehensive project reporting;
  - FEED studies which involve, among other things, a needs assessment for the proposed work and identification and investigation of options available; and
  - That the terms of the gas transportation contract with Alcoa and the terms and conditions of the SSC both provide commercial incentives for DBP to be prudent and efficient in its capital planning and expenditure.

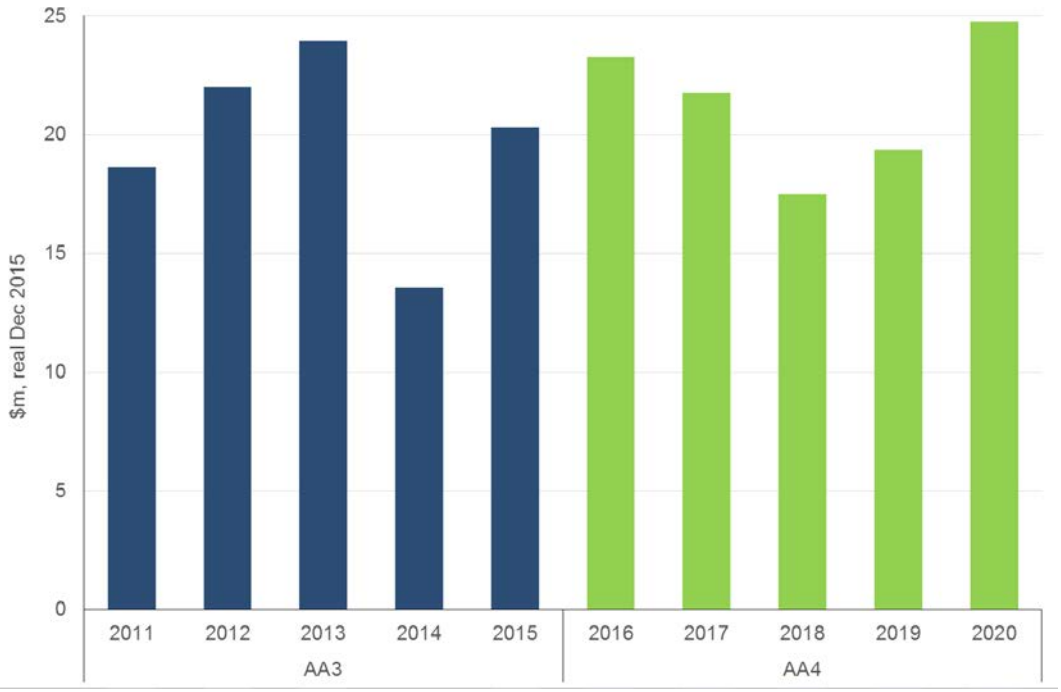
[100] DBP submission 9 Forecast capex Final.docx, *Section 4,* pages 7-13

235. Our assessment of DBP's proposed AA4 capital expenditure takes these factors into account, with the emphasis in this section on the evidence presented by DBP to confirm that 'it does in practice what it says it does'.

7.3 EMCa assessment

236. As shown in the figure below, DBP has forecast[101] spending a similar though slightly higher average annual expenditure in the AA4 period as it spent in the AA3 period (excluding the 2010 CWIP impact on the 2011 expenditure).

Figure 23: DBP AA3 & AA4 SIB capex (excl. WIB 2010) - $m, real Dec 2015



Source: EMCa analysis from table 4 and 13 Sub 1_ App B_ Access Arrangement Information_ Final.docx and DBP's response to EMCa35

237. DBP has provided its justification for its proposed SIB capex projects in three main parts:

- Overarching justification - based on its processes, policies, key documentation (such as the AMP and Safety Case) and incentives;
- Project summaries – per Submission 9 in which it lists 104 projects with forecast designated by year; and
- Supporting documentation – some were provided by DBP in its original submission and others were provided in response to our Information Requests.

238. As a result of the large number of project summaries provided, we agreed with the ERA that we would base our assessment of DBP's AA4 capex on the following:

- Our assessment of DBP's policies, processes and key strategic documents (as outlined in section 4); and
- Our assessment of seventeen AA4 SIB projects in order to identify how DBP applies its policies and processes in practice. We assessed the fifteen projects with

[101] Actual 2011-2014; forecast 2015

the highest expenditure (as identified by DBP)[102] and two other projects of an atypical nature.[103]

239. The total sample of seventeen projects represent combined expenditure of $72m over the five year period which is equivalent to 67% of total proposed AA4 capex. DPB provided relevant supporting documentation for the sample projects,[104] including FEED and business case documents.

Justification for the expenditure (rule 79(2))

240. To determine whether the proposed expenditure complies with the conforming capex criteria, we have, in the first instance, considered whether the projects are justified under one or more of the grounds set out in rule 79(2) of the NGR. In doing so, we have had regard to:

- the rationale provided by DBP for each project;
- the Safety Case that was accepted by Energy*Safety*;
- relevant FSAs (essentially a risk assessment process) conducted by DBP, and which we understand from the on-site meetings are agreed to on a consensus basis by DBP staff through an internal validation process as required by Australian Standards AS2885;
- Australian Standards AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- DBP's AMP; and
- practices employed by other gas transmission pipelines.

241. The results of our review of the sample projects, taking these factors into account, are provided in Appendix B. In summary, we found that for fifteen projects DBP provided sufficient information for us to conclude that the expenditure satisfied one or more of the components of rule 79(2)(c)(i) – (iv) (i.e. project need). We identified two exceptions [redacted] as follows:

- *New compressor station accommodation* – DBP proposed [redacted] capex across the 10 compressor stations on two grounds (safety and cost efficiency), but has not provided sufficient supporting evidence to justify the expenditure on these grounds; and
- *Sealing of airstrip and installation of runway lighting [at] compressor* stations – DBP proposed [redacted] capex from 2017 onwards to comply with the safety requirements of the Pipelines Act, but has not provided sufficient information (such as a risk assessment and an explanation of why this requirement applies specifically from 2017) to justify this work.

242. In reaching our findings regarding the other fifteen projects (representing $60.54m capex) we applied our industry knowledge and experience to bridge information gaps pertaining to risk assessment in the project summaries and other supporting project-level documentation where necessary.

[102] In some cases we have combined 'projects' where we consider that DBP has undertaken what are in effect the same projects but under different project names

[103] Subsequent costs and Upgrade of southern communications network from MLV117 to Clifton Rd

[104] DBP, Submission 17(4), Table 2

Prudent service provider test (rule 79(1)(a))

243. As discussed in Section 3, the keys to determining whether DBP's capital expenditure satisfies the prudent service provider test is to determine: (i) whether the expenditure is likely to be necessary in the AA4 period; and (ii) whether the cost estimate is reasonable.

244. In short, our assessment of DBP's projects in respect of the prudent service provider test is that DBP has provided insufficient information to support its claim that its proposed AA4 capex is likely to satisfy the requirements of rule 79 (1)(a).

245. In reviewing the documentation provided by DBP in support of the proposed expenditure on the projects in the sample, we identified a number of systemic issues:

- *Poor documentation* - as identified in our review of the AA3 project sample, the business case documentation provided for our review of the AA4 sample projects was typically unsigned and undated and did not fully adhere to DBP's own internal QA instructions.[105] This is discussed in more detail below;
- *Lack of clarity about the scope* – for a number of projects it was not clear what work was proposed to be undertaken in the AA4 period. This included 'continuation' projects for work that had been commenced in the AA3 period and that continued into the AA4 period, sometimes with a different project scope or under a different project name;
- *Lack of options analysis* - whilst we do not expect detailed, approved business cases to be available for all the projects proposed to commence in the AA4 period at this point in the project lifecycle, we do expect DBP to be able to present the options considered in deciding the timing and volume of work assumed for the purpose of developing its expenditure proposal. In some cases, it is clear that the timing and volume of work is based on OEM recommendations and/or plant/equipment or system obsolescence. However, in a number of cases, we found insufficient justification for the proposed volume and timing of work;
- *Lack of clarity of the basis for the estimate* - in some case no basis for the cost estimate is given, in others the cost estimate is said to be 'preliminary'. In many cases only a breakdown of expenditure for one year was provided with no indication of the estimate accuracy. In some cases, the cost estimate in the AAI varies materially from the estimates in the 'business cases' presented for our review. Whilst this may be an indicator of refinement of the estimate, DBP little or no explanation for these variances. We expect that, for a regulatory submission, P50 cost estimates would be derived, the basis for their derivation clearly enunciated and sufficient detail provided to demonstrate that the cost estimate is robust; and
- *Lack of demonstration of delivery capability* - typically no information is provided about the delivery plan. At a portfolio level, this is not a significant concern because the volume of SIB work (as measured by expenditure) proposed for the AA4 period is similar to that delivered in the AA3 period. However, at the project level, the proposed delivery strategy is an indicator of efficient cost (e.g., the majority of the work is to be delivered through a competitively established outsourcing contract).

246. From the systemic governance, management and forecasting issues that we identified and described in section 4 (i.e. what DBP says it does), taken together with the evidence of those issues being apparent in our sample review (what DBP does in practice), we consider that there is reasonable evidence that those issues apply generally across DBP's proposed capex allowance. Accordingly, we conclude that DBP's proposed capex

[105] Provided as Explanation Notes in the Business Case template and in cl. 5.9, Submission 2

allowance does not meet the requirements of Rule 79(1)(a), in that it does not represent the best forecast or estimate possible in the circumstances (rule 74(2)) of the expenditure that would be incurred by a prudent service provider acting efficiently, in accordance with good industry practice, to achieve the lowest sustainable cost of delivering pipeline services.

7.4 Quantified implications

247. In order to estimate the impact of these systemic issues, we have considered the extent to which they are evident, and their relative impact, in projects of different types (by asset category). We have separately considered the likely impact for the various asset category-related components of 'Subsequent Costs" that DBP has proposed, and for work directly on physical network assets as opposed to work on associated non-network assets (such as on land, buildings etc.).

248. From this we have determined adjustment ranges applicable to each of the asset categories, as shown in the table below. We estimate the aggregate impact of the systemic issues identified above to be an over-statement of required capex of the order of 22% to 32% ($23.7m - $33.8m). We therefore propose that a reasonable forecast of DBP's capex requirement is likely to be in the range of $83m to $72.9m as shown below[106].

Table 5: DBP's AA4 proposed capex - $m, real Dec 2015

Assessment category	As per DBP proposal	EMCa adjustment range			Emca adjusted ($)	
		Percentage	Low ($)	High ($)	Low adjustment	High adjustment
Pipeline	20.66	15-25%	(3.10)	(5.17)	17.56	15.50
Compression	63.26	30-40%	(18.98)	(25.30)	44.28	37.96
Metering	10.87	15-25%	(1.63)	(2.72)	9.24	8.15
Other	11.88	0-5%	0.00	(0.59)	11.88	11.29
Other non-depreciable	0.00	0%	0.00	0.00	0.00	0.00
BEP Lease	0.00	0%	0.00	0.00	0.00	0.00
Total	**106.67**		**(23.71)**	**(33.78)**	**82.96**	**72.89**

Source: EMCa analysis

[106] As requested by ERA, we have provided a single point adjustment estimate for each category, in Appendix B

8 Review of proposed AA4 opex

8.1 Introduction

249. This section contains the results of our review of DBP's proposed opex for AA4, which has been carried out using the assessment framework set out in section 3.2.2 and having regard to the findings on DBP's governance framework and expenditure forecasting methodology in section 4. In a similar manner to our capex review, we have conducted a more detailed review of those aspects of DBP's proposal that involve a material increase in expenditure and a higher level review of the other aspects of its proposal.

250. In undertaking the assessment we note that in all cases when we refer to 'actual' AA3 expenditure, the 2015 expenditure is DBP's forecast.

251. The results of our review and our overall assessment of whether DBP's proposed opex complies with rule 91(1) of the NGR are set out below.

8.2 Overview of AA4 proposed opex

252. Over the next 5 years, DBP proposes to spend $560.8m (average $112.2m p.a.) on opex as follows:

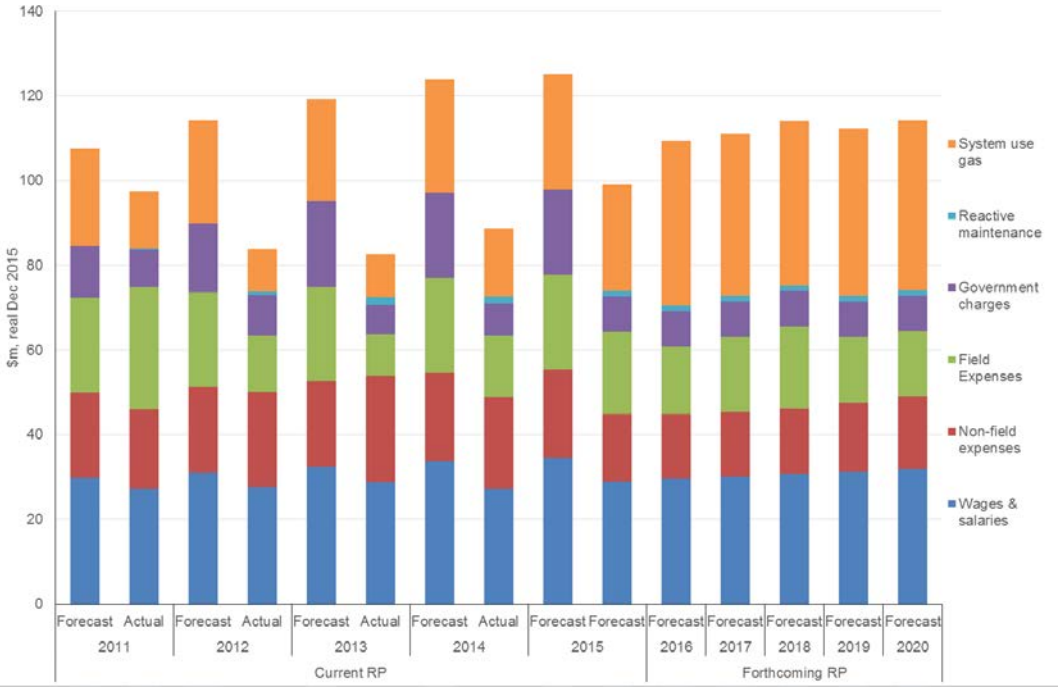
- System use gas (SUG) accounts for 34.8% ($195.1m) of the proposed expenditure;
- Wages and salaries account for 27.3% ($153.4m);
- Field expenses account for 15.1% ($84.4m);
- Non-field expenses account for 14.2% ($79.5m);
- Government charges account for 7.4% ($41.5m); and
- Reactive maintenance accounts for 1.2% ($7.0m).

253. Figure 24 shows the expenditure profile in AA3 (actual versus forecast) and the AA4 expenditure profile. The proposed average annual expenditure is 18% higher in AA4

compared to what was actually spent in AA3. This increase is driven by higher SUG expenditure, partially offset by lower non-field expenses.

254. DBP spent $98m less in AA3 than the ERA allowance. The main contributors to the under spend in AA3 compared to the ERA-approved forecast were lower SUG ($40m), however DBP also spent $58m less on other opex). Each of DBP's forecast amounts in these categories have been examined in sections 8.4-8.10 below.

Figure 24: AA3 opex vs AA4 proposed opex - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34) and 20111222 - D81673 - DBNGP 2010 - 2015 - Amended Final Decision - PUBLIC, Table 52 p.173

8.3 Top-down adjustment

8.3.1 DBP's proposal

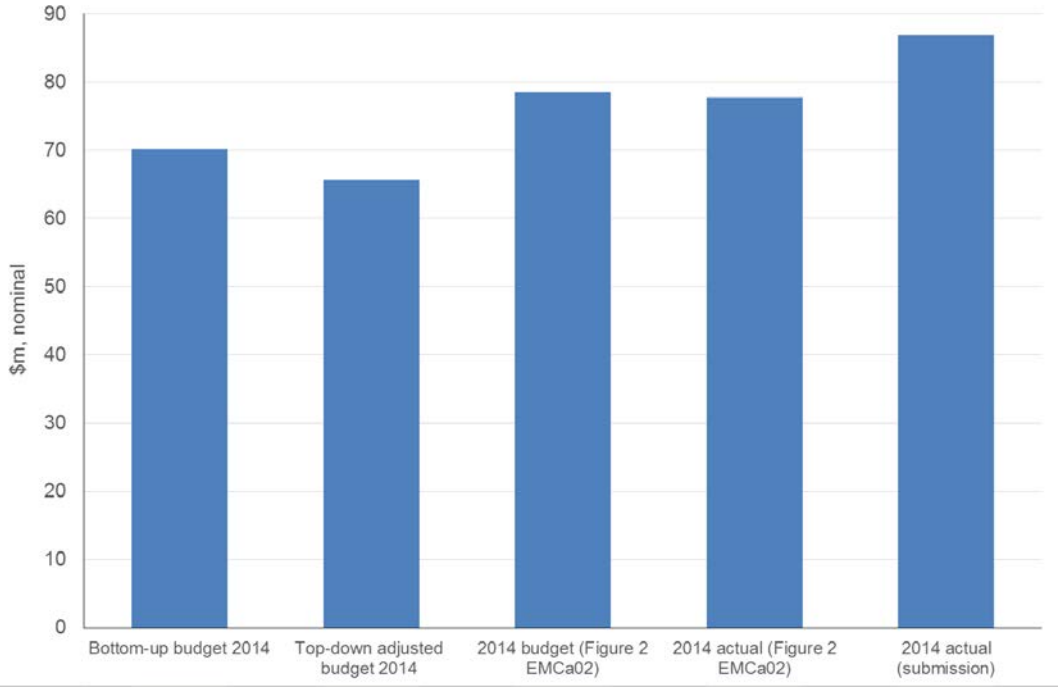
255. DBP advised that its opex budget is derived primarily from a bottom-up analysis, but that it applied a top-down review that resulted in a reduction of [redacted] to the initial FY-2014 budget. DBP maintains that this approach, which includes CMAs and other savings, has not only assisted it to outperform its budget forecast but has resulted in budgets becoming 'better predictors' of actual expenditure. DBP applied its top-down assessment to the 2015 initial (or 'First Look') budget and then has used this 2015 budget as the basis for forecasting AA4 opex.

8.3.2 EMCa assessment

256. Figure 25 shows the various values DBP provides for the 2014 budget. Whilst we note that DBP has undertaken a top-down adjustment to its Bottom-up 2014 budget, it is difficult to reconcile the values as presented from Figures 1 and 2 with the actual 2014 expenditure provided in response to our requests for information. In our view, the array of budget values presented does not provide the level of confidence in the proposed 2015 expenditure that DBP has sought to convey.

257. We have therefore sought to understand the rationale for the $10.3m (11.6%) increase from 2014 ($88.7m) to DBP's forecast for 2015 ($99.0m) as part of our assessment of the components of the opex forecast.

Figure 25: 2014 budget values and actual 2014 opex - $m, nominal



Source: EMCa analysis from data in Figures 1 and 2 in DBP's response to EMCa02, and App O_Opex actual and forecast.

8.4 System Use Gas

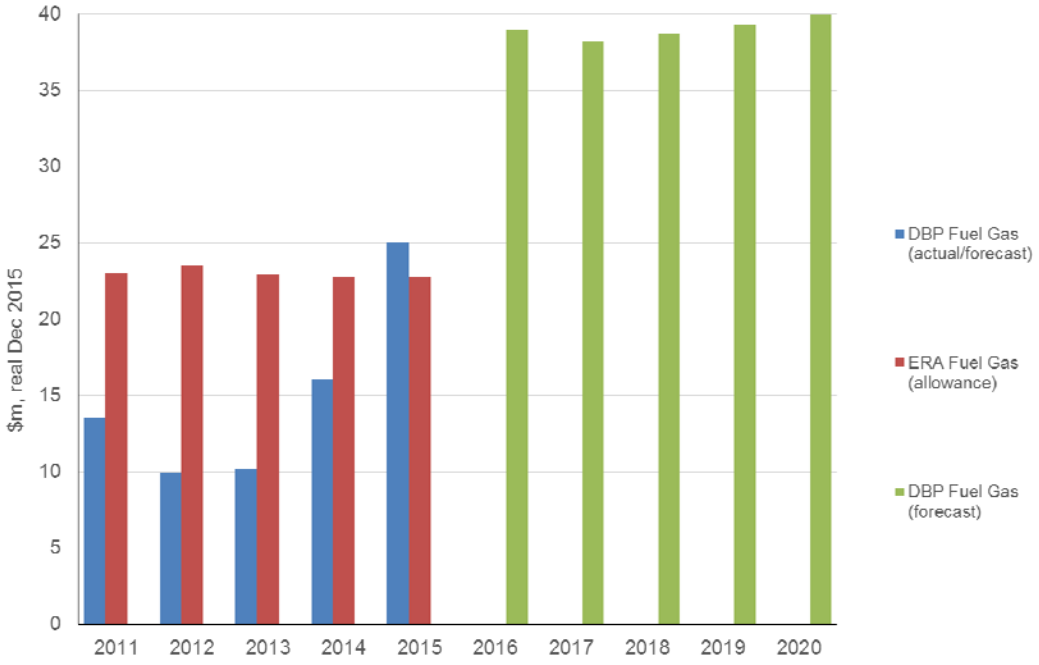
8.4.1 DBP's proposal

258. The primary driver of SUG expenditure (also referred to as Fuel Gas) is its use in compressors to achieve the pressure required to deliver contracted gas volume to outlet points. In AA4, DBP is forecasting spending $195.1m on Fuel Gas with no allowance for gas unaccounted for (GUF).[107]

259. The profile of DBP's proposed expenditure on these Network opex categories over AA4 and AA3 is illustrated in the figure below. [redacted].

[107] DBP, Submission 19(2), paragraph 11.2.3 (f)

Figure 26: AA4 proposed expenditure on Fuel Gas - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34)

8.4.2 EMCa assessment

260. Use of Fuel Gas is a significant driver of overall opex expenditure (35%) and DBP has proposed allowing for a more than two-fold increase in expenditure over the AA4 period compared to AA3. The results of our examination of the consistency of DBP's proposed expenditure with rule 91(1) are set out below.

Use of Gas forecasting methodology

261. DBP has modelled the DBNGP pipeline system and derived a suite of fuel curves[108] to represent different operating conditions[109] to produce a 'weighted average' fuel curve to capture the full dynamics of the pipeline system. DBP uses actual performance to calibrate its model and to manage costs within forecast.

262. DBP's explanations of the fuel gas use model and the modification and calibration of the fuel curve[110] are in accordance with common industry practice and appear to be reasonable. However, as shown in Figure 26, DBP spent significantly less than was forecast (and approved by the ERA) in the AA3 period. We assume that its AA3 forecast was undertaken using the same model, indicating that input assumptions are critical. We have therefore closely examined DBP's input assumptions.

[108] Ratio between full-haul throughput (TJ/d) and compressor Fuel use (TJ/d)

[109] Such as compressor configurations and ambient temperatures

[110] DBP, Submission 10 Operating Expenditure-Final, pages 37-40

AA3 actual versus forecast performance

263. DBP spent $40.5m (35%) less than the forecast $115.6m ERA-approved amount in AA3. In response to our request to DBP to explain the variance between actual and forecast AA3 Fuel Gas expenditure, it offered the following reasons:[111]

- Actual throughput was 10% less than forecast meaning less fuel gas was required to be purchased (due to a more efficient fuel ratio);
- Fuel gas requirements for operating CS10 were incorrect – the reduced throughput meant that CS10 was not required to operate as much as assumed;
- The amount of GUF was positive for the period rather than zero as forecast, meaning DBP did not need to purchase as much gas as expected. DBP advise that the positive GUF was a result of metering inaccuracy that occurred at a meter upstream of the DBNGP (and not part of the DBNGP) that has (or soon will be) corrected; and
- Price input assumptions did not eventuate – the price DBP agreed with Alinta (Alinta Sales System Use Gas Agreement) was approximately 27% less than it had assumed for its AA3 forecast.

264. Given the significant variation between DBP's assumptions in its 2011 submission and the significant expenditure involved, we have examined the rationale for volume assumptions underpinning the AA4 forecast, noting that consideration of price is outside our scope of work.

AA4 forecast quantity of gas

265. DBP derived its AA4 Fuel Gas volume forecast using estimates of the following in its pipeline model:

- The expected energy density (High Heating Value, HHV) of the gas DBP forecasts it will transport over the period;
- The quantity of gas required as compressor fuel to transport the forecast throughput; and
- The quantity of gas required for other operational activities (including GUF).[112]

266. The HHV of the gas is a determinant of the volume of gas required to be delivered to meet the capacity requirements of shippers, which is measured in terms of energy (MJ). The lower the HHV, the more gas volume needs to be transported to achieve a given delivered energy requirement. The more gas volume that needs to be transported, the harder the compressors need to work and the higher the quantity of fuel gas required to operate compressor stations. In other words, the lower the HHV, the higher the SUG required, all other factors being equal.

267. DBP forecasts a lower average HHV over the AA4 period compared to the AA3 period because of:[113]

- [redacted] *over the next few years*';

[111] DBP Supporting submission 17(2), pages 19-28

[112] DBP, Submission 17(2), paragraph 11.7

[113] DBP, Submission 10 Operating Expenditure-Final, pages 37-40

- [redacted]; and
- [redacted].

268. DBP forecasts that the HHV of gas transported will decline progressively over the course of AA4 and [redacted] due to [redacted].[114] We note that the HHV of blended gas transported (as measured at CS9) has [redacted].

269. Based on DBP's advice that [redacted], we consider that it is reasonable to assume that the Average HHV on the DBP over the AA4 period will reduce from the 2014 level of 37.7MJ/m^3 to 37.5MJ/m^3, as DBP has forecast.

270. [redacted][115]

271. [redacted][117]

272. [redacted].

273. DBP's resulting forecast fuel gas usage quantity is shown in Figure 27 below.

[114] Ibid, page 40

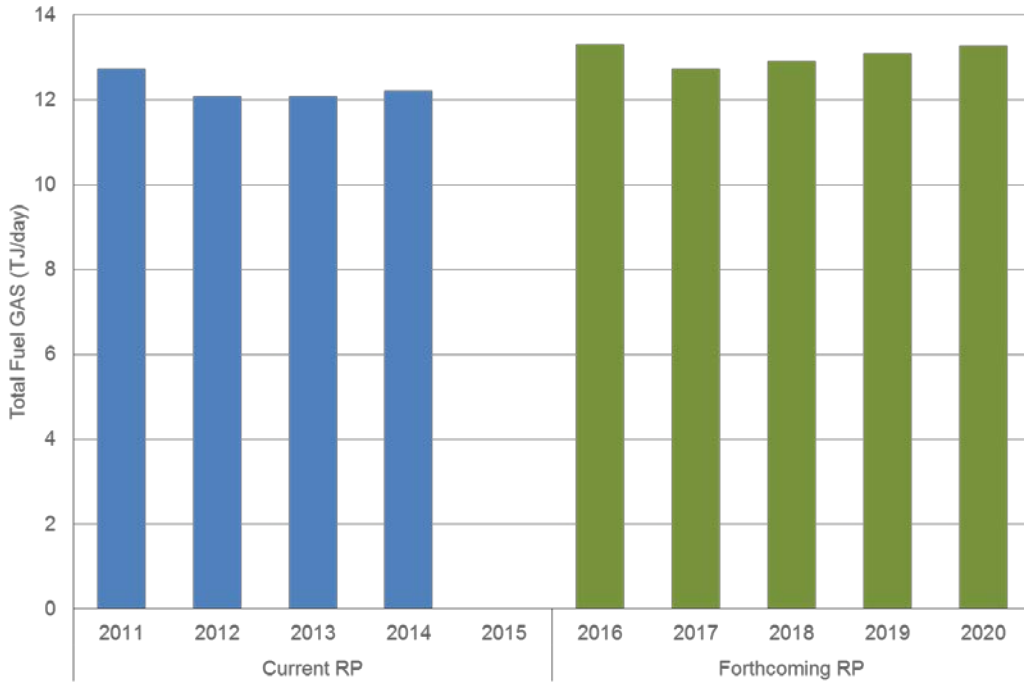
[115] DBP, Submission 17(2), paragraph 11.3. There are a number of factors in addition to inlet gas quality and pressure which affect the transient pipeline and the actual compressor fuel usage: linepack level, inlet gas temperature, pipeline outlet load peaking levels, level of part haul outlet flow, ambient conditions and actual compressor efficiency (paragraph 11.27)

[116] Fuel for gas engine alternators and heaters, gas vented during maintenance activities, and gas lost from the pipeline as a result of leakage or measurement error

[117] DBP, Submission 17(2), paragraph 11.31-32

[118] *Ibid, page 40*

Figure 27: Forecast fuel gas usage (TJ/day)[119]



Source: Table 7, submission 10 Operating Expenditure and table 4 sub 30 response to ERA p.16

274. The SUG requirement for 2015 has not been provided by DBP, but Figure 27 shows that despite the reduced throughput gas quantity forecast for the AA4 period (refer to Figure 14), SUG requirements are forecast to increase.

275. It is outside the scope of our work to undertake our own detailed modelling of the pipeline or to undertake a detailed examination of DBP's model. However, we consider that DBP's SUG quantity forecast for the AA4 period is reasonable for the following reasons:

- The gas quantity equation is based on an industry standard model;
- The constants are derived from calibrating the model from actual pipeline operation
- The other adjustment factors (Transient effects and Other gas) have been derived from experience with operating the pipeline and forecast declining Average HHV and Receipt Point pressure)
- DBP's Actual and Budget Fuel ratios (with the latter derived from the fuel quantity model) are almost identical, indicating a valid model and input assumptions.

Compliance with rule 91(1)

276. The determination of compliance or otherwise with rule 91(1) requires examination of the forecast fuel price to be undertaken and the results of that assessment to be combined with our assessment of the forecast quantity of fuel gas. As consideration of price is outside of our scope of work, we have (for the purposes of this report) included a nil adjustment for the SUG expenditure category (refer to Table 7).

[119] Note: the 2015 figure has not been provided by DBP

8.5 Subsequent costs

8.5.1 DBP's proposal

277. DBP introduced the capital expenditure category 'Subsequent Costs' in the AA3 period, but after its AA3 expenditure was considered by the ERA. DBP has now progressively capitalised expenditure previously recognised as operating expenditure where the expenditure extends the life of an asset.[120] DBP identifies the annual expenditure on Subsequent Costs in various tables in Submission 8 'SIB Project Justification PARTS 1 and 2'. DBP spent [redacted] (capex) on Subsequent Costs over the course of the AA3 period.[121]

8.5.2 EMCa Assessment

278. Capitalisation of Subsequent Costs of [redacted] in AA3 should have resulted in an average annual reduction of [redacted] in opex. It is likely to have been a significant contributor to DBP's 17% ($98.7m) AA3 opex underspend. In our assessment of AA3 capex, we conclude that the expenditure on the myriad of items underlying the Subsequent Cost capex category is likely to satisfy the NGR. However, we also conclude that it is inappropriate for DBP to have the capitalised amount recognised as conforming capital expenditure because the equivalent amount was already allowed for as operating expenditure in the ERA's AA3 assessment.

279. As DBP has proposed ongoing capitalisation of Subsequent Costs, we expect that (other things being equal) the AA4 opex forecast reflects an ongoing, commensurate reduction in opex. This in turn supports a level of average annual opex expenditure commensurate with that achieved in AA3, subject to justifiable, efficient step changes.

8.6 Wages & salaries

8.6.1 DBP's proposal

280. DBP is proposing to spend $153.4m in AA4 on 'Wages and Salaries' ("Salaries") with costs attributed to staff ($148.9m, 97.1%) and contractors ($4.5m, 2.9%). The figure below shows the profile of Salaries expenditure across the AA3 and AA4 periods.

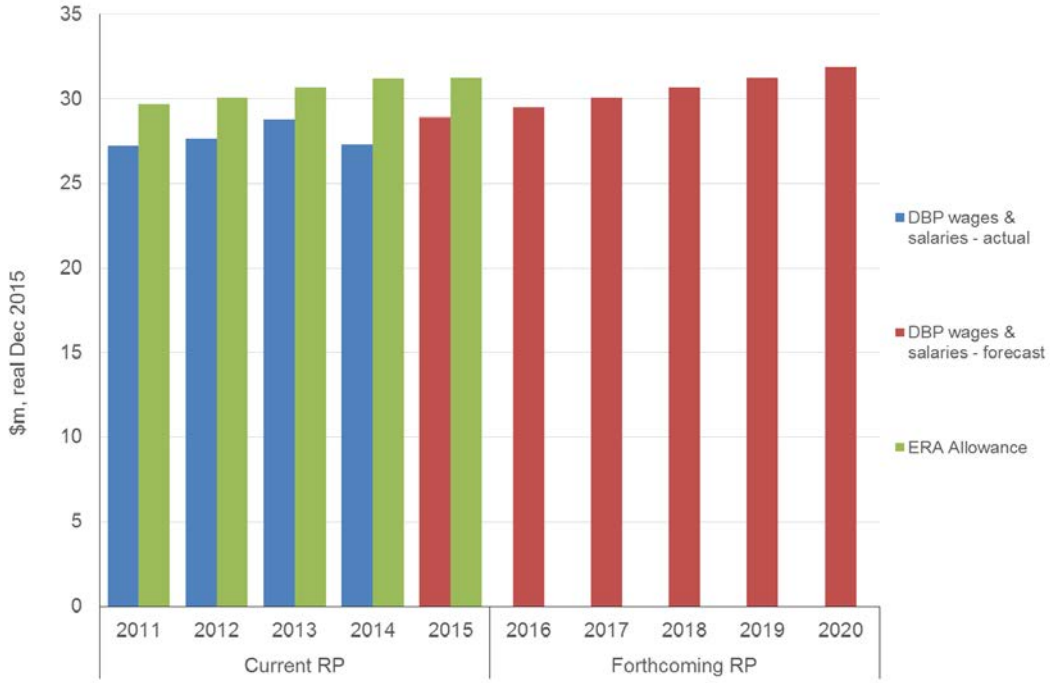
281. The ERA approved expenditure of $153.7m in the AA3 period. DBP's expenditure is likely to be $140.6m,[122] which is 8.5% less than forecast.

[120] DBP submission 8, Table 80

[121] DBP Submission 19(1), Table 7, page 31

[122] Noting that the 2015 expenditure is a forecast amount

Figure 28: AA3 and AA4 wages & salaries - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

8.6.2 EMCa assessment

Staff Salaries

282. DBP's forecast is based on using 2015 as the Base Year with a 2% real increase in labour rates alone driving the steady increase in expenditure across the AA4 period. DBP advises that the actuals for salaries in 2011-13 do not include salaries apportioned to preparation of revisions to the DBP AA or involvement in the AER/ERA's Rate of Return Guidelines consultation process. However, DBP's AA4 forecast does include all Salary expenses included in DBP's 2014/15 business plan including those associated with economic regulation of the DBP.[123]

283. The 2015 base year expenditure of $28.90m is 2.3% ($1.6m) higher than the 2014 level and 3.6% ($1.1m) higher than the 2011-2014 average expenditure.

284. DBP offers no explanation for the projected variance in salaries expenditure (actual vs forecast) of $13.1m over the course of AA3 other than the following:

- "*Salaries, contractors and consulting fees differ due to differences in actual expenditure compared to what was forecast.*"

285. Assessment of the escalation rate applied by the DBP is not within the scope of our review. The underlying Salaries projection without the real escalation proposed is essentially flat at 2015 levels. The flat expenditure profile appears commensurate with:

- the average actual Salaries expenditure across the AA3 period, noting that fluctuation around the average is common (e.g., due to turnover/vacancies);

[123] DBP, Submission 10 Operating Expenditure-Final, page 9

- DBP's practice of capitalising the proportion of wages and salaries directly associated with capital projects (shipper-funded, stay-in-business and expansion projects);
- the modest impact (<1%) of including forecast expenditure for economic regulatory work in the AA4 period;
- the relatively steady level of SIB capital expenditure from 2012-2020; and
- the absence of any expansion work from 2012 to 2020.

Contractor payments

286. DBP forecasts expenditure of $4.5m on contractors over the AA4 period. This is $0.5m (12.5%) higher than the total AA3 expenditure, but 44% less than the approved forecast for AA3. Again, DBP has offered no explanation for the 51% underspend in AA3 relative to the ERA's allowance.

287. In real terms, DBP's forecast expenditure for AA4 is based on escalation at 2% from its nominated 2015 Base Year, which is consistent with the Staff salaries assumption.

Compliance with rule 91(1)

288. DBP has proposed 2015 as the Base Year and derived its forecast Wages & Salaries expenditure based on 2% real adjustment for labour escalation. We do not accept that 2015 is a reasonable Base Year for three reasons:

i. 2015 is not a revealed cost;

ii. DBP has not provided a compelling reason for the 3.6% increase from the most recent year (2014) of actual expenditure; and

iii. DBP has a track record of underspending its forward estimates which undermines our confidence that its 2015 estimate is accurate. In this regard, we note that DBP applies a top-down adjustment to its bottom-up forecasts; however, as discussed in section 8.3, we remain unconvinced that this offsets the bias towards over-estimating.

289. We consider that a reasonable Wages & Salaries expenditure allowance for the AA4 period to be $27.4m pa, totalling $136.6m. This represents a reduction of $16.87m (11%) from DBP's proposal, noting that:

- our recommended adjustment is based on the 2014 revealed cost with no provision for real escalation; and
- the ERA will separately assess DBP's proposed real escalation of 2% pa.

290. It is our view that an allowance of $136.6m is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

8.7 Field expenses

8.7.1 DBP's proposal

291. DBP proposes to spend $84.4m on Field Expenses in AA4 across the following areas:

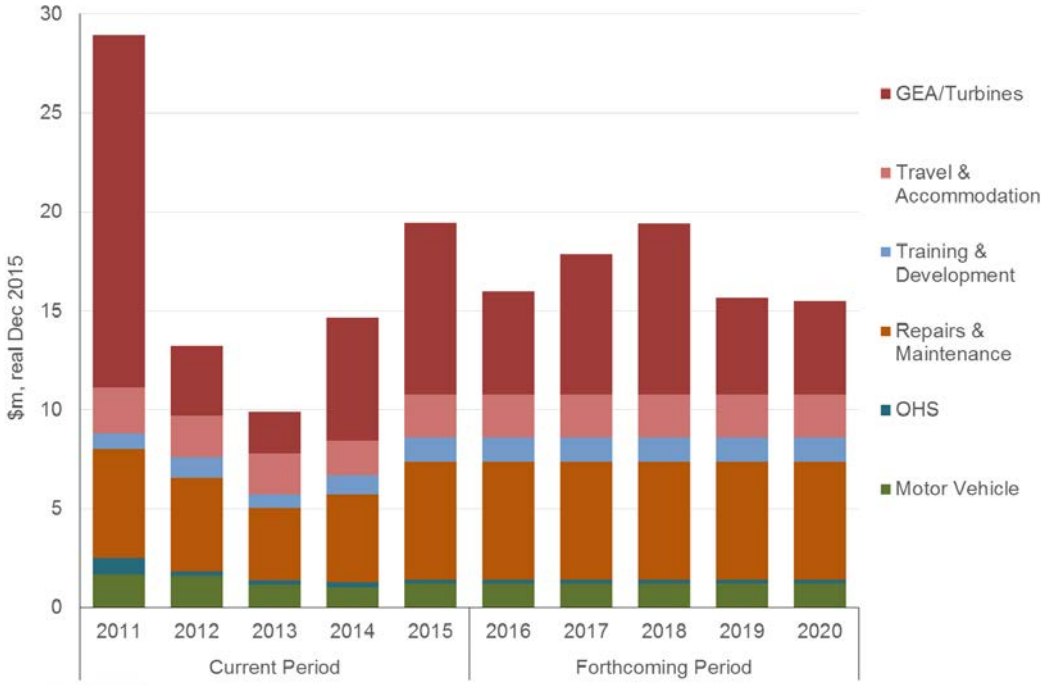
- GEA/Turbines: $30.6m (36.2%);
- Repairs and maintenance: $29.8m (35.3%);

- Travel & accommodation: $10.8m (12.8%);
- Training & development: $6.2m (7.3%);
- Motor vehicles: $6.1m (7.2%); and
- Occupational health & safety (OHS): $1.0m (1.2%).

292. Figure 29 shows DBP's 'actual' expenditure in the AA3 period as well as the profile of expenditure proposed in AA4. Overall, DBP underspent the overall AA3 forecast allowance of $90.8m by $4.0m, or 4.5%, despite spending $10m (52%) more than it forecast in 2011.

293. In the sub-sections below we assess each of the components of expenditure, focusing on the larger expenditure items, to help guide our overall assessment regarding the prudency of the AA4 forecast.

Figure 29: Field expenses AA3 actual vs AA4 forecast - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

GEA/Turbines

294. Figure 30 shows the actual and ERA-approved expenditure on gas engine alternator (GEA) and turbine overhauls in the AA3 period and the forecast expenditure in the AA4 period. Whilst DBP has not provided an explanation of the significantly different expenditure profile evident in Figure 37 between forecast and actual[124] expenditure, the net difference is expected to be -4% ($38.6m actual against an ERA allowance of $40.2m). DBP forecasts spending $30.6m in AA4, $8m less than was forecast to be spent in AA3.

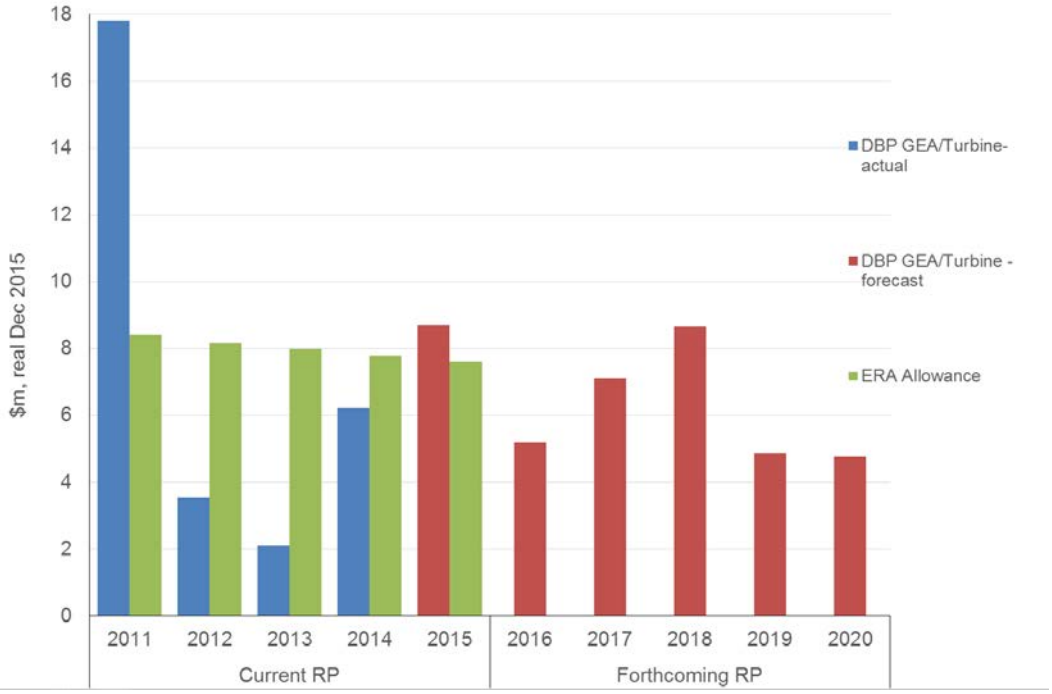
295. DBP advises that its asset management strategy and plan for the AA4 period is based on:[125]

[124] Noting that the 2015 amount of $8.7m is a forecast

[125] DBP, Submission 10 Operating Expenditure_Final, page 45

- Replacing turbines that have exceeded 30,000 hrs (the OEM's recommended replacement criterion) in the next financial year - the estimated replacement cost is [redacted] per unit except for one unit [redacted]; and
- Servicing engines at either 12,000hr, 24,000hr, 48,000hr, or 54,000hr operating time, with the time dictating whether the unit requires a minor or major overhaul - DBP has assumed [redacted] in each year of the AA4 period which accommodates 8 units being overhauled each year (i.e., an average of [redacted] per GEA service).

Figure 30: GEA/turbine expenditure in AA3 and AA4 - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

296. This approach results in DBP forecasting $30.6m on GEA/turbine maintenance in AA4, $8m ($1.6m p.a.) less than the AA3 actual expenditure.

297. We consider that DBP's asset management strategy and plan with respect to GEA/turbines is commensurate with good industry practice. We note from advice provided at the on-site meeting that DBP has tested the risk/benefit trade-off of shorter and longer maintenance and turbine exchange run time limits and decided to revert to the OEM-recommended operating times.

298. We examined the turbine replacement unit cost and GEA overhaul costs incurred in AA3 and compared them against the forecast AA4 unit costs; we consider the latter to be reasonable.[126]

299. Accordingly, we consider that the forecast GEA/turbine expenditure is:

- appropriately assessed on the basis of the planned overhaul schedule (as DBP has done), rather than a base-trend approach (which DBP has applied to AA4 expenditure forecasts in other expenditure categories); and
- commensurate with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

[126] DBP, Submission 19(2) response to Information Request EMCa26

Repairs & maintenance

300. The repairs and maintenance activity includes 15 sub-categories of expenditure, with the majority of the expenditure allocated to cleaning & waste removal, general, materials, and maintenance surveys. The figure below shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile that DBP has proposed for the AA4 period.

301. DBP proposes spending $29.8m ($6.0m p.a.) over the AA4 period, which is $5.4m (22%) higher than actual AA3 expenditure of $24.4m ($4.9m p.a.) and $2.6m (10%) higher than the ERA allowance of $27.2m ($5.4m p.a.). The AA3 actual expenditure was 10% less than allowed for in ERA's AA3 decision.

Figure 31: Repairs & Maintenance - $m, real Dec 2015

Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

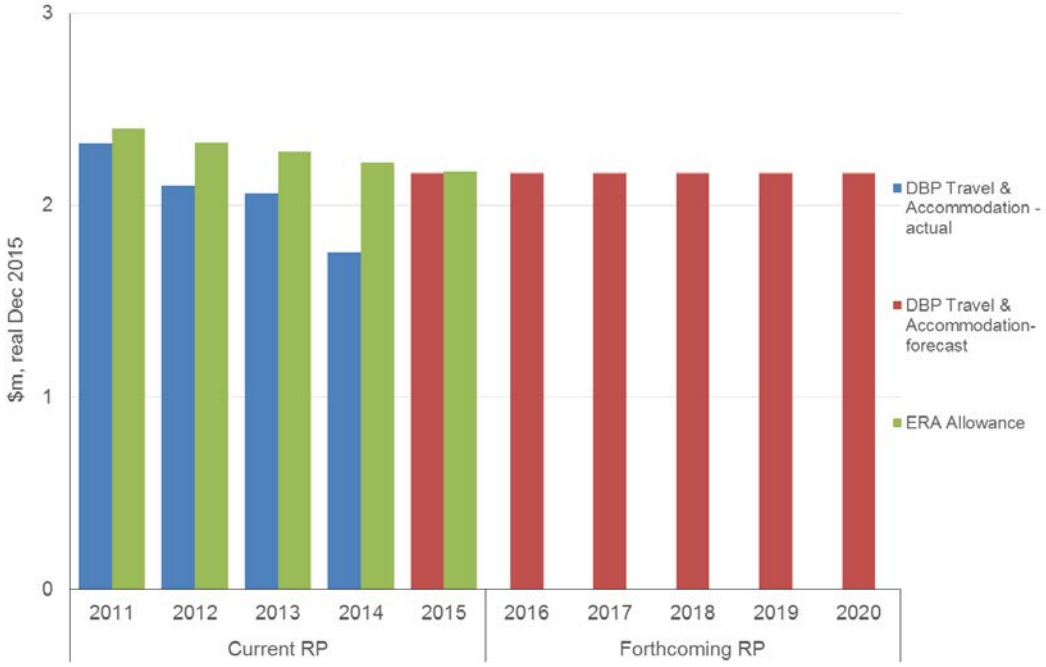
302. DBP attributes the underspend in maintenance and repairs against the forecast in 2012 – 2013 to restructuring of the Maintenance Division in 2012.

303. DBP has forecast its AA4 expenditure on the basis of maintaining its forecast 2015 expenditure level of $5.9m for the duration of the AA4 period. DBP has sought to explain the need for the increase from the 2013 amount by listing a number of step increases to certain cost components. We consider that the information provided is insufficient to support the extent of the increase from the 2013 amount on an ongoing basis. We do however consider that a portion of the increase is likely to be necessary and on that basis we propose an annual expenditure allowance commensurate with the 2014 amount actually incurred ($4.4m). Accordingly, we recommend that DBP's proposed allowance of $29.8m should be reduced by $7.6m to $22.2m over the AA4 period.

Travel & accommodation

304. Figure 32 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $10.8m ($2.2m p.a.) over the AA4 period, which is $0.3m (5%) higher than actual AA3 expenditure of $10.5m ($2.1m p.a.) and $0.7m (9.6%) lower than the ERA allowance of $11.5m ($2.3m p.a.). The AA3 actual expenditure was 9% less than allowed for in ERA's AA3 decision.

Figure 32: Travel & accommodation - $m, real Dec 2015



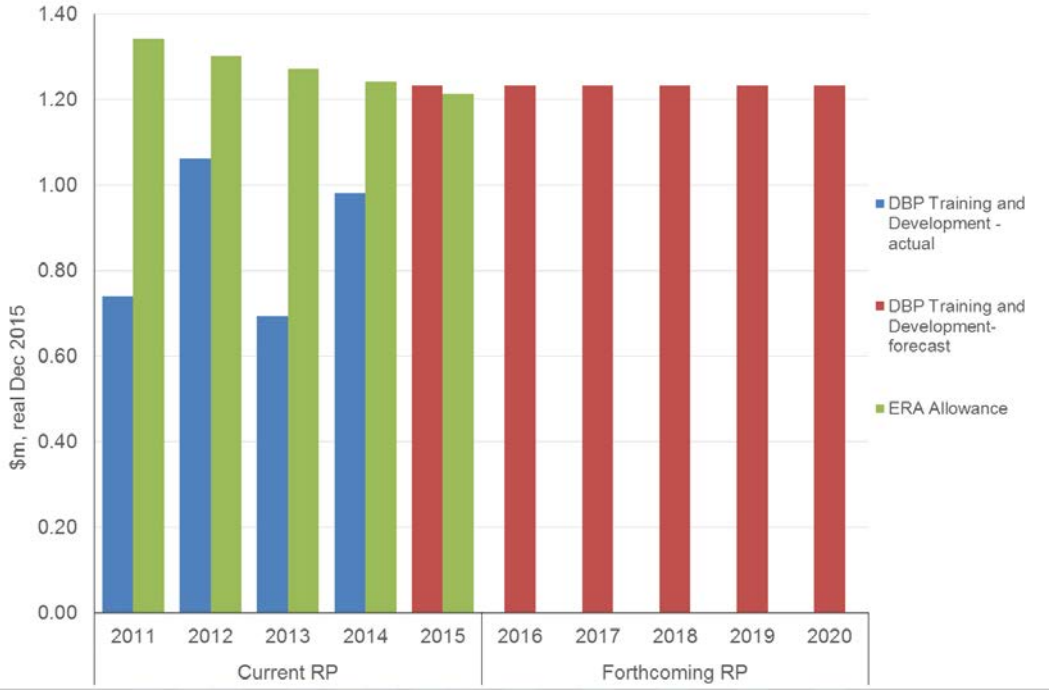
Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

305. DBP has used its 2015 forecast as the 'Base Year' for determining its AA4 forecast. DBP has not provided any explanation for the reversal of the downward trend of actual expenditure in AA3 through to 2014 with the forecast increase of $0.4m (23%) from 2014 to 2015. As DBP has not provided adequate information to demonstrate that the 2015 forecast expenditure level represents an efficient amount, we consider that the most recent revealed annual expenditure of $1.7m is likely to be representative of an efficient level. In our opinion, an allowance of $8.8m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

Training & development

306. Figure 33 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $6.2m ($1.2m p.a.) over the AA4 period, which is $1.5m (23%) higher than actual AA3 expenditure of $4.7m ($0.9m p.a.) and $0.7m (9.6%) lower than the ERA allowance of $6.4m ($1.3m p.a.). The AA3 actual expenditure was 27% less than allowed for in AA3.

Figure 33: Training & development - $m, real Dec 2015



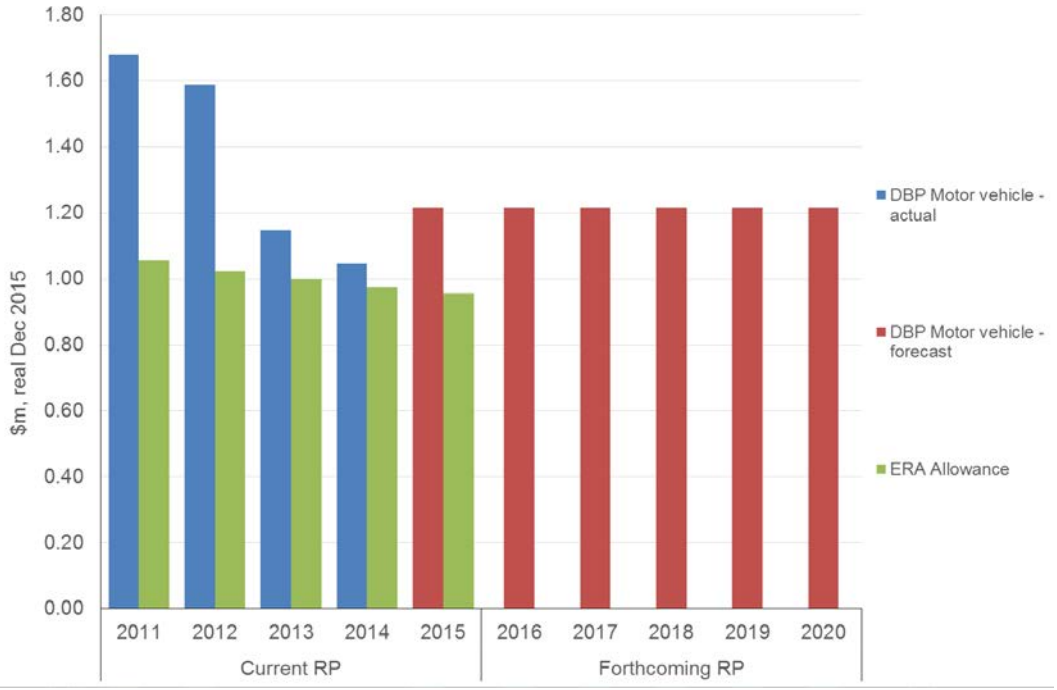
Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

307. DBP has used its 2015 forecast as the Base Year for determining its AA4 forecast. DBP advises that the relatively low expenditure in 2013 was due to establishing an in-house capability. DBP does not explain the relatively low expenditure in 2011 nor the increase from 2014 to 2015. As DBP has not provided adequate information to demonstrate that the 2015 expenditure level represents an efficient amount, we consider that the most recent revealed annual expenditure of approximately $1.0m (2014) is likely to be representative of an efficient annual amount. In our opinion, an allowance of $5.0m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

Motor vehicles

308. Figure 34 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $6.1m ($1.2m p.a.) over the AA4 period, which is $0.6m (9%) lower than actual AA3 expenditure of $6.7m ($1.3m p.a.) and $1.1m (22%) higher than the ERA allowance of $5.0m ($1.0m p.a.). The AA3 actual expenditure was 34% more than allowed for in AA3.

Figure 34: Motor vehicles - $m, real Dec 2015



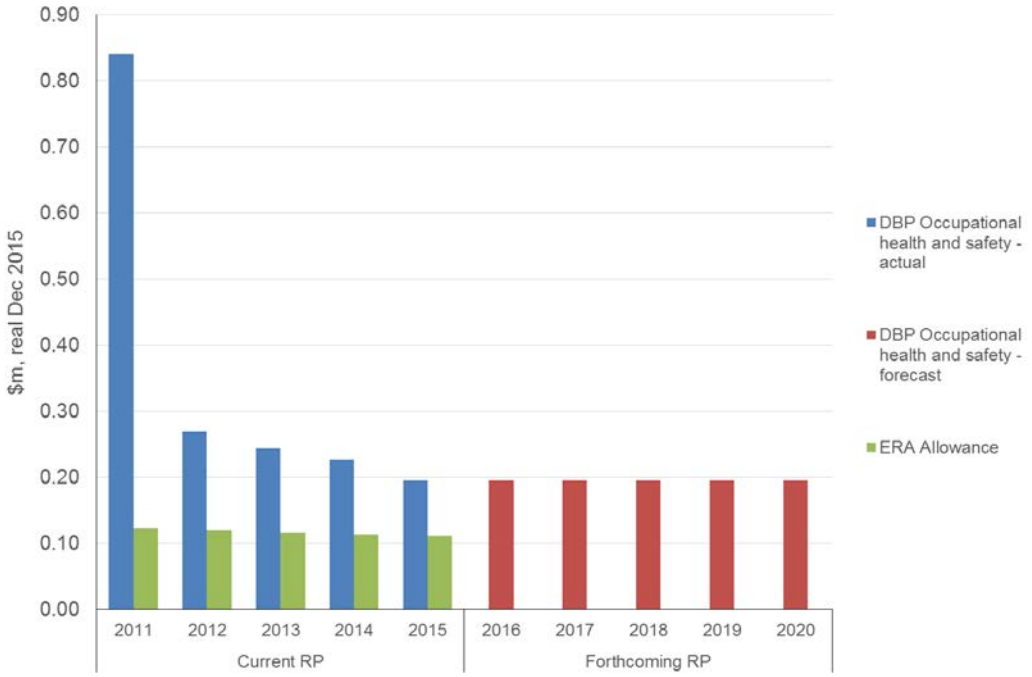
Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

309. DBP has used its 2015 forecast as the Base Year for determining its AA4 forecast. DBP does not explain the forecast increase from 2014 to 2015. As DBP has not provided adequate information to demonstrate that the 2015 expenditure level represents an efficient amount, we consider that the most recent revealed annual expenditure of just over $1.0m (2014) is likely to be representative of an efficient annual amount. In our opinion, an allowance of $5.2m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

Occupational health and safety

310. As shown in Figure 35, DBP proposes spending $1.0m over the AA4 period, which is $0.8m lower than actual AA3 expenditure of $1.8m and $0.4m (66%) higher than the ERA AA3 allowance of $0.6m. The AA3 actual expenditure was 300% more than allowed for in AA3, with expenditure of $0.8m on the 'Optalert program' in 2011 driving the AA3 expenditure average.

Figure 35: Occupational health and safety - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

311. DBP has used its 2015 forecast as the Base Year for determining its AA4 forecast. DBP has forecast a 14% reduction in expenditure from 2014 to 2015 and has forecast constant expenditure at the Base Year level from 2015. As the Base Year represents a reduction on the most recent revealed cost and as it comes after a number of years of progressive reduction, we are satisfied that the 2015 expenditure is likely to be representative of an efficient level. In our opinion, an allowance of $1.0m for the AA4 period is in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

8.8 Non-field expenses

8.8.1 DBP's proposal

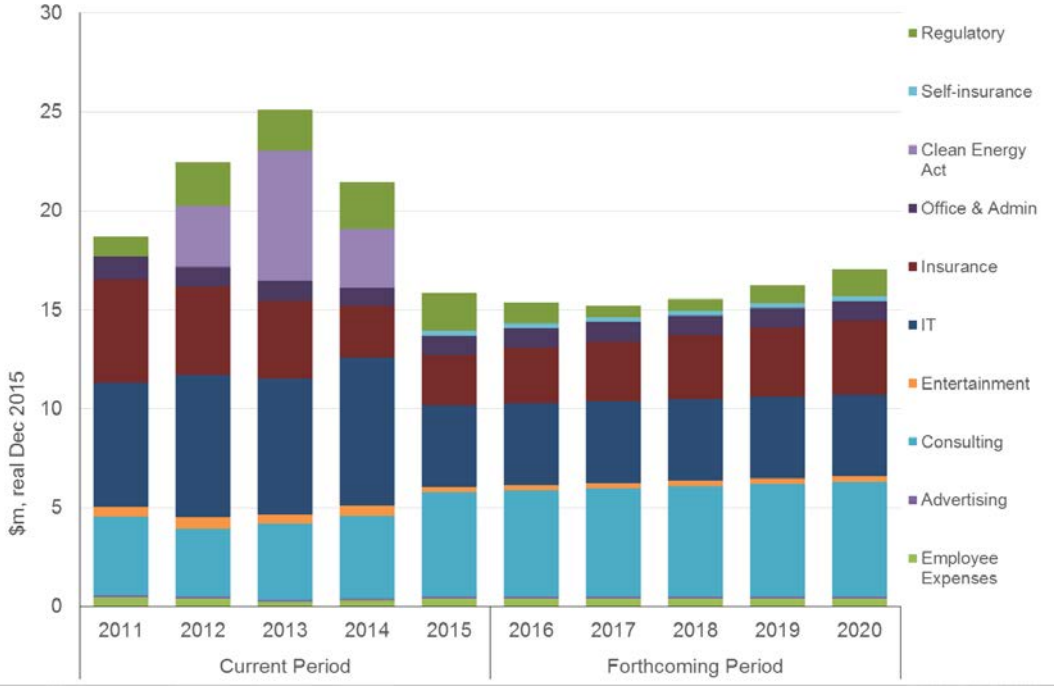
312. In AA4 DBP is proposing to spend $79.4m ($15.9m p.a.) across the following sub-categories of non-field expenses:

- Consulting: $28.0m;
- IT: $20.6m;
- Insurance: $16.4m;
- Office & admin: $4.9m;
- Regulatory expenses: $4.5m;
- Employee expenses: $2.0m;
- Entertainment: $1.4m;
- Self-insurance: $1.2m; and
- Advertising: $0.5m

313. Figure 36 shows the expenditure profile for the AA3 and AA4 periods. DBP proposes spending $79.4m ($15.9m p.a.) over the AA4 period, which is $24.8m (24%) lower than

actual AA3 expenditure of $104.2m ($20.8m p.a.) and $47.7m (38%) lower than the ERA AA3 allowance of $127.1m ($25.4m p.a.).

Figure 36: Non-field expenses - $m, real Dec 2015



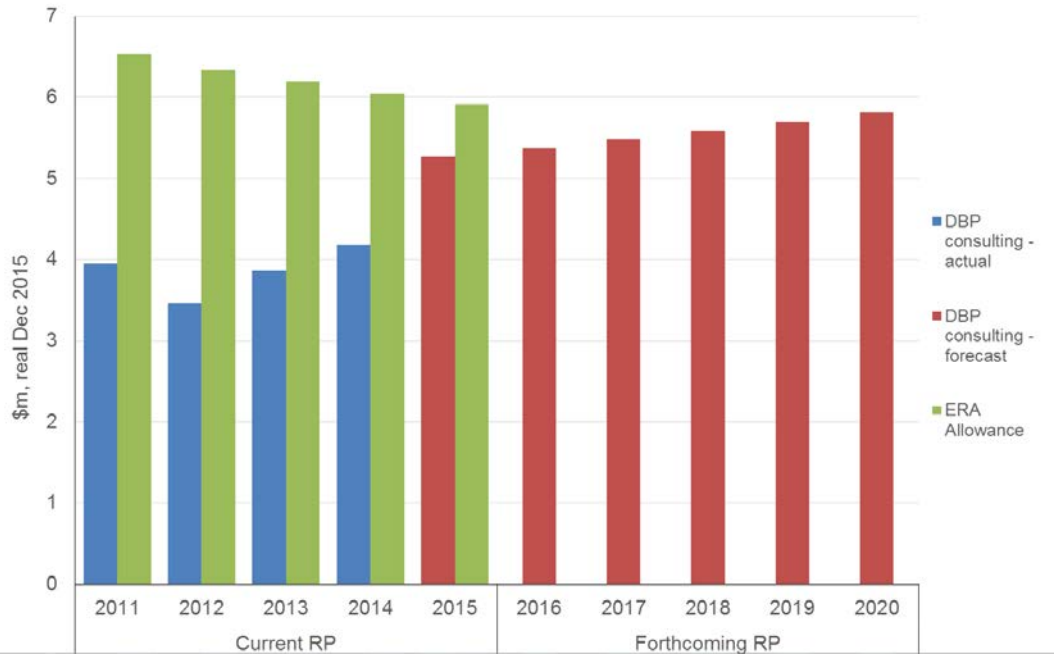
Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

8.8.2 EMCa assessment

Consulting

314. Figure 37 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $28.0m ($5.6m p.a.) over the AA4 period, which is $7.2m (35%) higher than actual AA3 expenditure of $20.8m ($4.2m p.a.) and $3.2m (10%) lower than the ERA allowance of $31.2m ($6.2m p.a.). The AA3 actual expenditure was 33% less than allowed for in AA3.

Figure 37: Consulting - $m, real Dec 2015



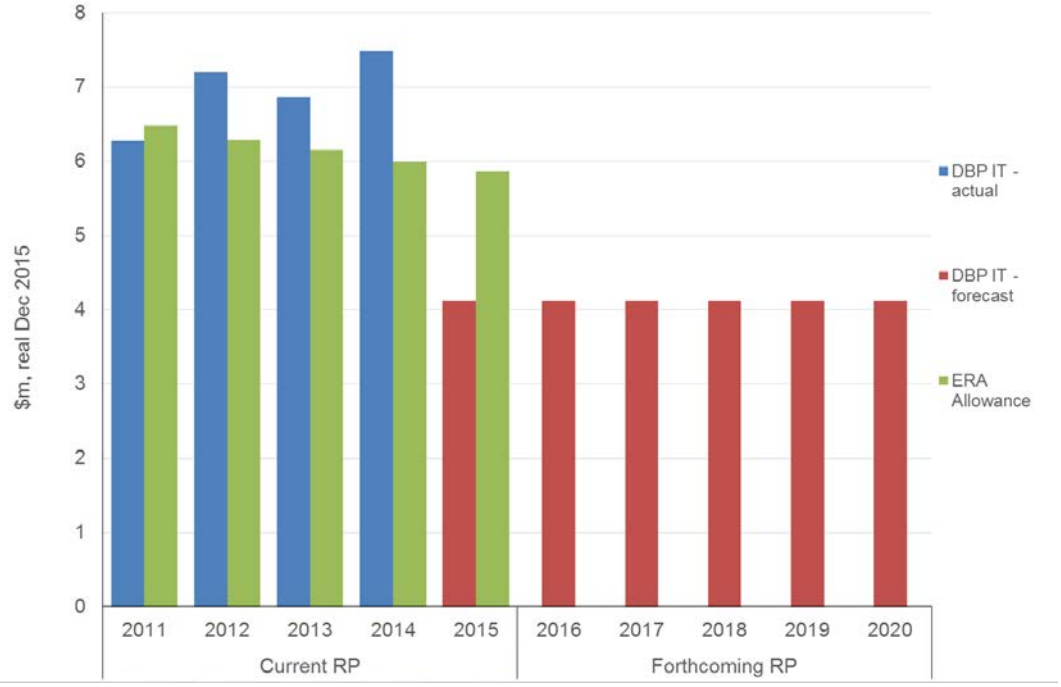
Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

315. DBP used its 2015 forecast as the Base Year for determining its AA4 forecast. DBP does not explain the forecast increase from 2014 to 2015. It has included a 2% real escalation rate, which we do not consider to be justified, but will be the subject of the ERA's separate determination. DBP has not provided adequate information to demonstrate that its forecast 2015 expenditure level represents an efficient amount or that this amount is required for the balance of the AA4 period. Accordingly, we consider that the most recent revealed annual expenditure of $4.2m (2014) is likely to be representative of an efficient annual amount. In our opinion, an allowance of $20.9m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

Information technology

316. Figure 38 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $20.6m ($4.1m p.a.) over the AA4 period, which is $11.5m (36%) lower than actual AA3 expenditure of $32.1m ($6.4m p.a.) and $10.4m (33%) lower than the ERA allowance of $30.9m ($6.2m p.a.). The AA3 actual expenditure was 3.8% higher than allowed for in AA3.

Figure 38: Information technology expenditure - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

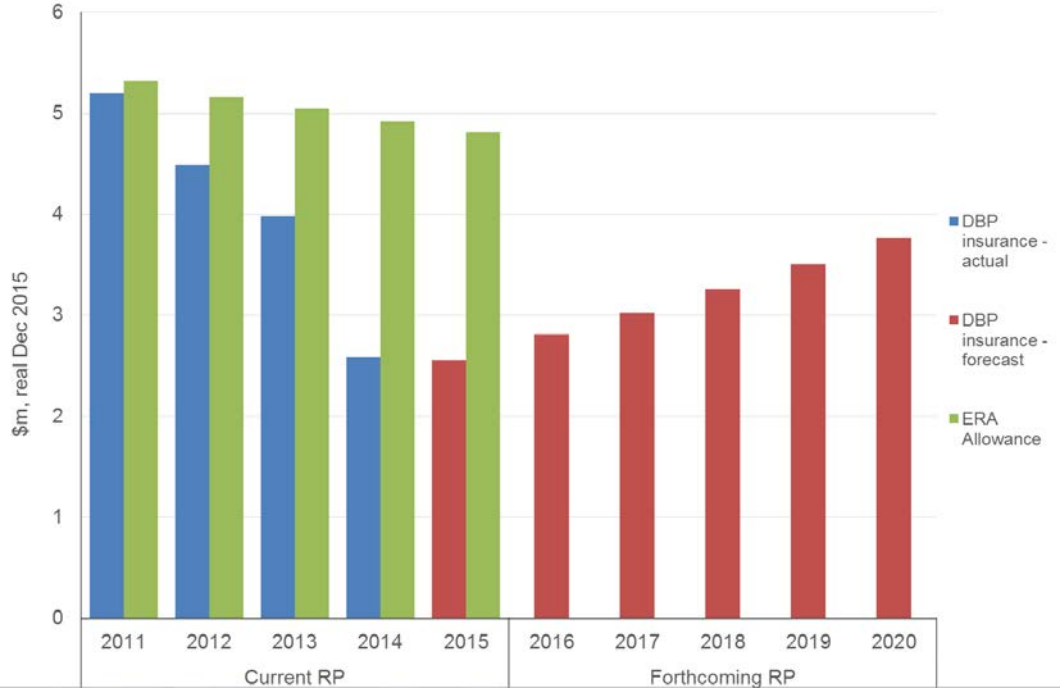
317. DBP has used its 2015 forecast as the Base Year for determining its AA4 forecast. DBP's forecast expenditure is based on the 2015 forecast expenditure, which in turn is based primarily on the terms of a new Corporate ICT Service Agreement. The agreement with a new ICT service provider (ZettaServe) was established through a competitive tender process. Based on the information provided by DBP,[127] it appears to represent good value for money pursuant to DBP's evaluation criteria. On this basis, we consider that the proposed expenditure level of $20.6m is likely to represent a prudent and efficient amount.

Insurance

318. Figure 39 shows the approved versus 'actual' expenditure in the AA3 period and the expenditure profile for the AA4 period. DBP proposes spending $16.4m ($3.3m p.a.) over the AA4 period, which is $2.4m (13%) lower than actual AA3 expenditure of $18.8m ($3.8m p.a.) and $8.9m (35%) lower than the ERA AA3 allowance of $25.3m ($5.1m p.a.). The AA3 actual expenditure was 26% lower than allowed for in AA3.

[127] DBP, Submission 10, page 22

Figure 39: Insurance expenditures - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

319. DBP advises[128] has used its 2015 forecast as the Base Year for determining its AA4 forecast, escalated by expected inflation. The 2014 (actual) expenditure of $2.6m is virtually the same as the forecast 2015 amount. The difference is not explained, but is immaterial. DBP has not provided compelling information to explain the increase proposed over the AA4 period. On this basis, we consider that the most recent revealed annual expenditure of $2.6m in 2014 is likely to be representative of an efficient level. In our opinion, an allowance of $12.9m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

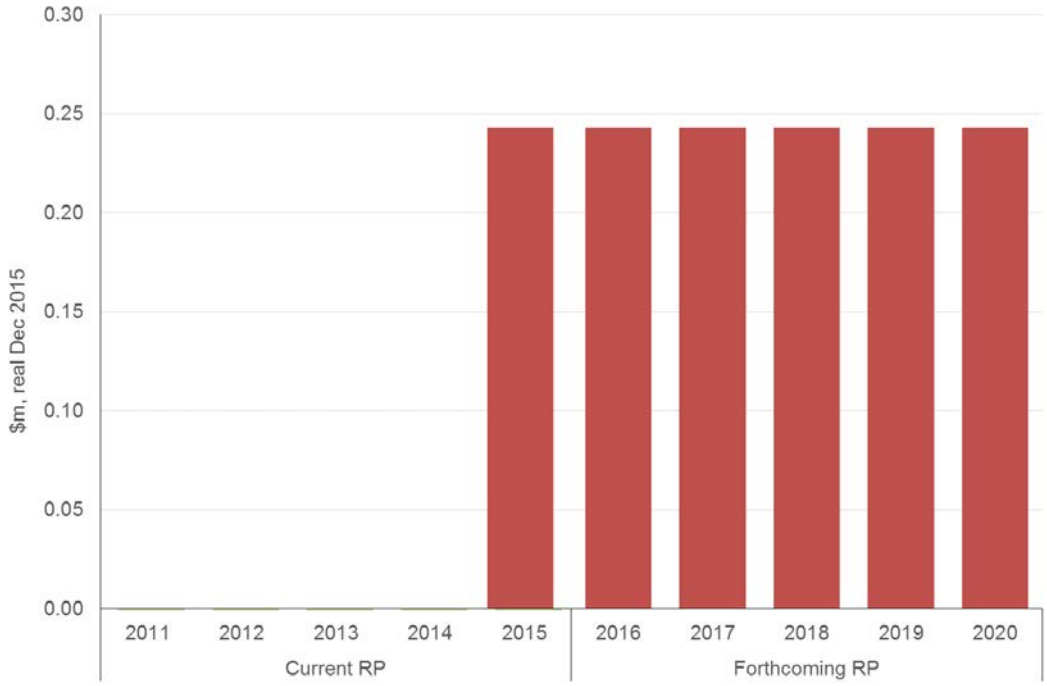
Self-insurance

320. Figure 40 shows that DBP's actual expenditure in the AA3 period was zero through to 2014, with $0.24m forecast expenditure in 2015 (based on the avoided cost of insurance products it could have elected to purchase, but did not).[129] The ERA did not approve any expenditure in this category for the AA3 period. DBP has used its 2015 forecast as the Base Year for determining the $1.2m ($0.24m p.a.) forecast expenditure for the AA4 period.

[128] DBP, Submission 10, paragraph 5.82

[129] Based on advice from its insurer, Marsh (Sub 10, p35)

Figure 40: Self-insurance expenditure - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

321. As DBP has no history of claims under this category (at least, it has not presented any evidence that it incurred such costs as would be covered by this self-insurance allowance prior to the AA3 period), we consider that there should continue to be nil allowance for this expenditure category.

Other non-field expenses

322. Table 6 summaries our assessment of the remaining categories of non-field expenses (with the exception of Regulatory Expenses[130], which is out-of-scope), and resulting findings.

[130] These are charges that are levied by the ERA to regulated service providers

Table 6: Assessment of 'other' non-field expenses sub-categories - $m, real Dec 2015

Category	Assessment	Proposed AA4 opex	EMCa adjusted AA4 opex	Variance
Office & admin	DBP has not provided a compelling reason for expenditure to increase from the most recent revealed cost (2014).	4.9	4.6	-0.3
Employee expenses	We expect that the labour conditions DBP refer to are more likely to persist rather than lead to increased labour expenses.	2.0	1.7	-0.3
Entertainment	DBP's forecast 2015 expenditure is substantially reduced from the 2014 revealed cost and is therefore considered to be efficient.	1.4	1.4	0
Advertising	DBP has not provided a compelling reason for expenditure to increase a from the most recent revealed cost (2014).	0.5	0.4	-0.1

Source: EMCa analysis

8.9 Government charges

8.9.1 DBP's proposal

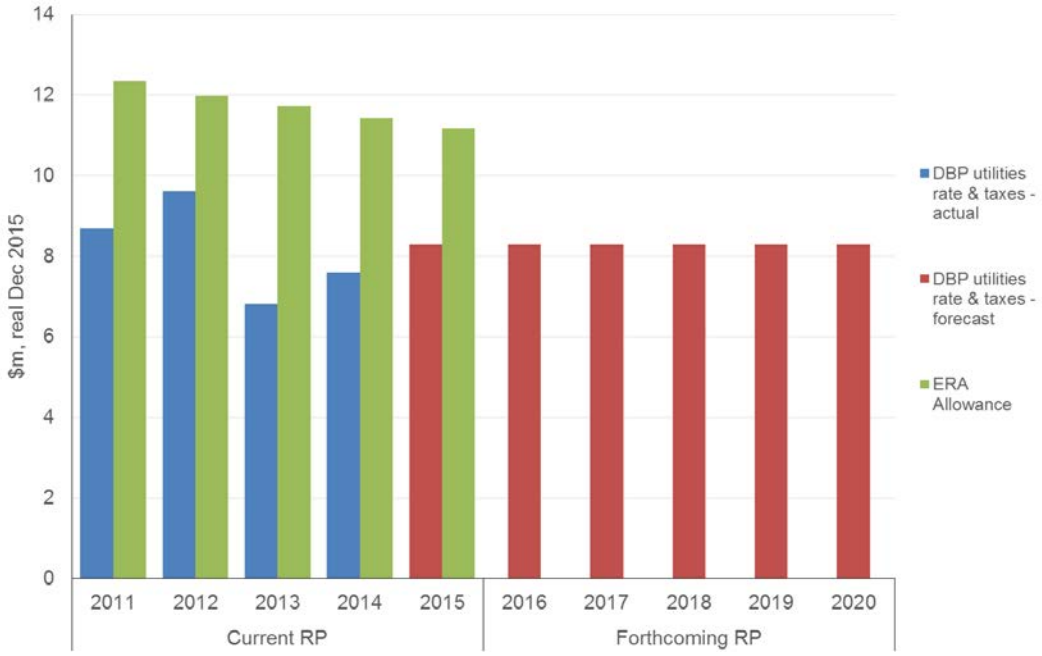
323. The Government charges category provides for forecast expenditure relating to:[131]

- Telecommunications;
- Rent and accommodation;
- Gas and water rates;
- ERA standing and specific charges; and
- Other general rates and taxes (not including carbon costs, but including FBT).

324. Figure 41 shows DBP's actual AA3 expenditure and 2015 forecast versus the ERA's allowance as well as the profile of expenditure proposed in AA4. DBP underspent the ERA's AA3 allowance of $58.6m by $17.6m, or 30%.

[131] Submission 10, p33

Figure 41: Government charges - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

8.9.2 EMCa assessment

325. DBP has offered the following explanation for the variance between the ERA-approved AA3 forecast and the actual/forecast expenditure:

> *"Differences in Utilities Rates & Taxes arise primarily due to the land access fee which DBP pays for access to its easement. This fee is re-determined every five years and the formula for the re-set is not overly clear. Again, this was in the process of re-negotiation at the time of the last access arrangement, and DBP was subsequently able to negotiate better terms with government. As part of the renegotiation, DBP achieved more certainty on the mechanism for reviewing the fee every five years."*[132]

326. This does not adequately explain the reason for the forecast increase in opex from 2014 to 2015, although we note that the 2015 forecast is commensurate with the average annual expenditure in 2011-2014. On the basis that DBP's regulated business activities are likely to be relatively stable, we would expect DBP's government charges (otherwise referred to as utilities, rates and charges) to be stable (flat) in real terms. Accordingly, we consider that the most recent revealed annual expenditure of $7.6m in 2014 is likely to be representative of an efficient level. In our opinion, an allowance of $38.0m for the AA4 period is more in keeping with the expenditure that a prudent and efficient service provider would incur and is consistent with rule 74(2).

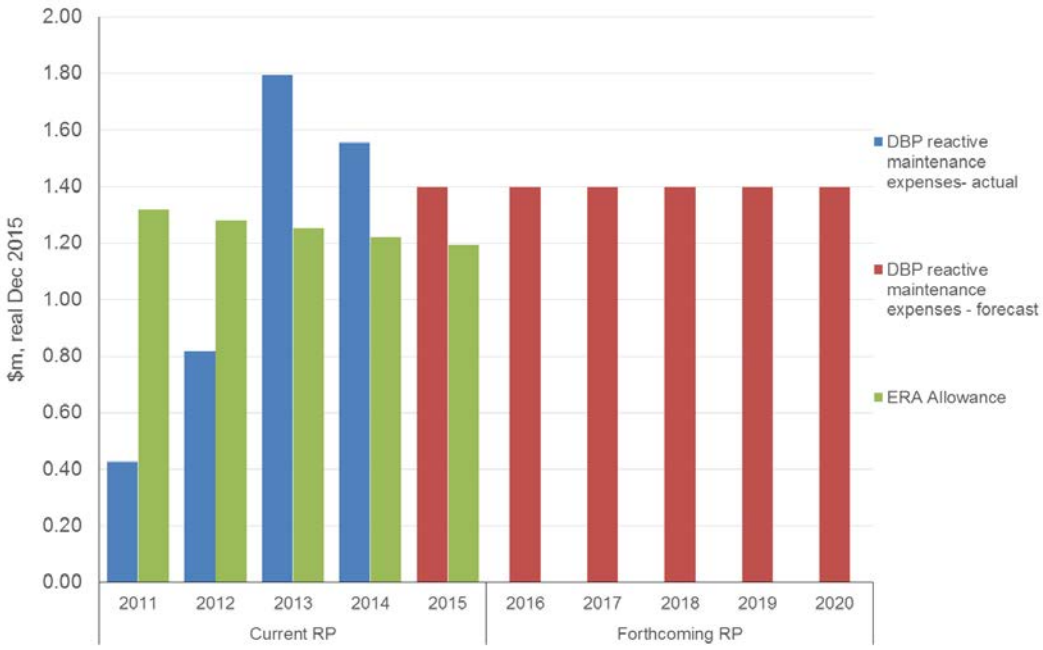
[132] Submission 19(1), page 15

8.10 Reactive maintenance

8.10.1 DBP's proposal

327. DBP has projected that it will spend $7.0m ($1.4m p.a.) on reactive maintenance in AA4. In AA3, it forecasts spending $6.0m ($1.2m p.a.) compared to the ERA allowance of $6.3m ($1.3m p.a.).

Figure 42: Reactive maintenance - $m, real Dec 2015



Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34).

8.10.2 EMCa assessment

328. DBP notes that expenditure captured under this category is volatile and difficult to forecast, and has used historical expenditure to forecast the 2015 expenditure. DBP has used its 2015 forecast expenditure as the Base Year for projecting its expenditure in AA4 at a constant $1.4m pa (real). The 2015 forecast is less than the 2014 expenditure, but is 17% higher than the average expenditure over AA3. We consider that $1.2m p.a. allowance for the AA4 period (rather than the $1.4m proposed) is likely to be representative of an efficient level for the following reasons:

- DBP's maintenance operations are aligned with good industry practice, which should help ensure reactive maintenance costs are relatively stable over a five year period;
- Through its 'Subsequent Costs' category, DBP intends capitalising a significant amount of expenditure on activities that we understand were previously treated as reactive opex (so that in effect there is an additional provision of [redacted] for 'unplanned work'); and
- DBP has provided no compelling information to support an expenditure level in excess of the average rate of expenditure in AA3.

8.11 Quantified implications

8.11.1 Cost implications

329. Table 7 sets out the revisions that EMCa's recommended adjustments would have to DBP's AA4 capex proposal for each assessment category and in aggregate.

Table 7: Summary of EMCa's proposed adjustment to DBP's proposed AA4 opex -$m, real 2015[133]

Assessment category	*AA3 Actual*	AA4 as per Proposal	EMCa Adjustment	EMCa Adjusted
Wages & salaries	*139.91*	153.40	(16.87)	136.54
Non-field expenses	*103.60*	79.44	(12.48)	66.96
Field Expenses	*86.17*	84.42	(11.74)	72.68
Government charges	*41.01*	41.44	(3.42)	38.02
Reactive maintenance	*5.99*	6.99	(0.99)	6.00
System use gas	*74.79*	195.14	0.00	195.14
Total	**451.49**	**560.84**	**(45.51)**	**515.33**

Source: EMCa analysis from App O_Opex actual and forecast and Forecast conforming opex 2011-15 (EMCa34)

8.11.2 Performance implications

330. We do not consider the proposed adjustments to DBP's opex allowance for the AA4 period will materially affect the risk profile of its pipeline operations. This is because in each case the proposed adjustment to forecast expenditure reflects an unsubstantiated rise in forecast expenditure from the latest revealed cost (2014) to DBP's Base Year (2015).

[133] EMCa has not assessed the gas price for SUG, and therefore for the purpose of this report we show no adjustment for this category.

Appendix A Assessment of a sample of DBP's AA3 capex projects

Table 8: EMCa assessment of DBP's 'top 15' AA3 capex - $m, real Dec 2015

[CONFIDENTIAL]

Appendix B Assessment of a sample of DBP's AA4 capex projects

Table 9: EMCa assessment of DBP's 'top 17' AA4 capex projects - $m, real Dec 2015

[CONFIDENTIAL]

As discussed in Section 7.3, the result of assessment of the sample projects summarised above is a recommended reduction of DBP's proposed AA4 capex of 22-32%. As requested by the ERA, we have provided a single-point adjustment for each expenditure category based on the mid-point of each suggested adjustment range.

Table 10: EMCa mid-point adjustments by expenditure category for AA4 - $m, real Dec 2015

[CONFIDENTIAL]

Appendix C Resumes

Paul Sell

Paul Sell is an energy economist, specialising in energy markets and market reforms. He has over 30 years' experience, which includes providing major advice on restructuring, on deregulation, on the design and implementation of electricity and gas markets and on network regulatory arrangements in Australasia. He has worked extensively with energy utilities, governments, energy regulators and energy market agencies.

Career summary

- Managing Director of Energy Market Consulting associates (EMCa), Sydney, NSW
- Vice President of Cap Gemini Ernst & Young, Global Services Unit (GSU), Sydney, NSW
- Partner of Ernst & Young Consulting, based in Sydney, NSW
- Consultant/Manager/Senior Manager/Principal of Ernst & Young Consulting , Wellington, New Zealand
- Economist in NZ Ministry of Energy, Planning and Forecasting Division Wellington, New Zealand

Expertise

- Electricity and gas utility network pricing, regulation and associated cost analysis
- Energy utility analyses including investment decisions and investment justification processes, energy forecasting and planning studies, and business modelling
- Electricity and gas wholesale markets design and operations
- Energy utility sector reform, restructuring and deregulation policies
- Retail competition in energy markets

Mark de Laeter

Mark de Laeter is an electrical engineer with 30 years' experience in most aspects of the electricity industry, with roles ranging from executive to line management in Western Power, a Top 500 Australian company with over 5,000 personnel.

Mark has strong affinity with the needs and desires of customers and is able to bring his deep technical knowledge to bear to help safely and affordably serve customers of all types and sizes.

Mark joined EMCa in May 2013.

Career Summary (all at Western Power)

- General Manager Networks at Western Power, the government trading enterprise responsible for managing the distribution and transmission network in the south west of Western Australia
- General Manager Customer Service which, in addition to his responsibilities as the GM Networks, included accountability for all service offerings to Western Power's 1m customers and for engineering design

- General Manager Asset Management – transmission & distribution
- Manager Asset Integration - responsible for transmission asset management, engineering design, and project management
- Manager Regional Power Procurement - securing Power Purchase Agreements with private generators
- Construction Services Manager – responsible for transmission substation and line construction and maintenance

Expertise

- Electricity transmission and distribution planning
- Electricity network access
- Asset management practices
- Project management
- Advanced metering infrastructure
- Electricity operations management
- Customer service and community engagement

Hugh Driver

Hugh Driver has a mechanical engineering background and has developed leadership, governance and management skills having been involved in lead roles in strategic development, corporate and operational risk, multi-million dollar construction projects, business operations and logistics, large change management processes and multi-million dollar divestment projects.

Hugh has experience across a range of technical and commercial roles in the corporate sector of New Zealand's energy and gas industries plus some time in Australia.

His most recent New Zealand corporate role was with Vector Gas Limited (formerly NGC New Zealand Ltd) as the Gas Transmission Asset Manager; however, he has in more recent times been working as an independent contractor/consultant involved in a variety of assignments including for Contact Energy and Powerco Gas.

Prior to the 6 years at Vector Gas, as an independent contractor, he also worked for all the New Zealand oil and gas companies. During the late 90's early 2000's he was based in Perth, as Facilities and Maintenance Manager for Kleenheat Gas with national engineering responsibilities which took him to all states in Australia not only associated with the LPG business but also tempered LPG distribution networks.

Other prior roles include a variety of commercial, operational and engineering management roles with BP New Zealand Limited plus mostly project engineering roles for MWD pipeline project and New Zealand electricity.

Gavin Forrest

Gavin Forrest is an electrical engineer with 20 years' experience in all aspects of the electricity industry, having held senior management roles in a top 500 Australian Company ranging from engineering and operational management to corporate business strategy and policy.

Career summary

- Associate Director EMCa, 2014-present

- Director Kaihen Consulting, 2013-present
- Manager Standards, Policy and Data Quality, Western Power 2010 – 2013: responsible for asset management data and systems, engineering standards and specifications, and regulatory compliance
- Manager Corporate Strategy, Western Power 2006 – 2010: responsible for business strategy, policy and strategic affairs
- Various Manager roles, Western Power Corporation 2000 – 2006: Organisation & Business Improvement; Reform and Establishment; Innovation; Standards)

Expertise

- Strategy and governance, including investment decision making
- Electricity technical and safety regulation
- Asset management planning, systems and practices
- Electricity transmission and distribution engineering standards
- Project, program and change management
- Smart networks

Eddie Syadan

Eddie Syadan is a finance, economics and accounting specialist recently recruited from the WA government. He has had several years' experience undertaking detailed analysis and providing recommendations and reports related to complex budget and finance matters to senior management at an agency level in both the Queensland and Western Australian Governments. He has considerable experience in operational budget development, budget planning and budget forecasting as well as the development of financial plans and strategies.

Career summary

Eddie has managed the budgets of state government funding programs at the agency level in both Queensland and Western Australia. This included developing financial plans and strategies and preparing the annual financial reports, preparing budget submissions, including resource allocation, monitoring budget performance and forecasting. Eddie has assisted in the development of policies and programs to facilitate the development of regional economies and communities.

Expertise

- Undertaking detailed analysis, recommendations and reports related to complex budget and financial matters.
- Preparing budget submissions, monitoring budget performance and forecasting.
- Preparing reports, including financial and project reports.
- Analytical and problem-solving including activity-based costing analysis, cost benefit analysis and variance analysis.

Appendix D Glossary

AA	Access Arrangement
AA3	Access Arrangement 3 (2010-2015)
AA4	Access Arrangement 4 (2016 – 2020)
AAI	Access Arrangement Information
AEC	Alcoa Exempt Contract
AMP	Asset Management Plan
ALARP	As Low As Reasonably Practicable
AMC	Asset Management Committee
ARMC	Asset & Risk Management Committee
BEP	Burrup Extension Pipeline
Capex	Capital Expenditure
CMA	Capital Management Adjustment
CWIP	Capital Works In Progress
DFA	Delegated Financial Authority
Economic Value Test	Test set out in rule 79(2)(a)
EMCa	Energy Market Consulting associates
EMT	Extended Management Team
ERA	Economic Regulation Authority
ERR	Enterprise Risk Register
FEED	Front End Engineering Design
FSA	Formal Safety Assessment
FY	Financial Year
GEA	Gas Engine Alternator
GSOO	Gas Statement of Opportunities
GUF	Gas Unaccounted For
GSP	Gross State Product
HHV	High Heating Value
Incremental revenue test	Test set out in rule 79(2)(b)
IT	Information Technology
JV	Joint Venture
KPI	Key performance indicator
NGL	National Gas Law
NGO	National Gas Objective

NGR	National Gas Rules
NPV	Net Present Value
MAE	Major Accident Event
OEM	Original Equipment Manufacturer
Opex	Operating Expenditure
PMO	Project Management Office
PP&E	Property Plant & Equipment
PRC	Project Review Committee
PV	Present Value
Prudent service provider test	Test set out in rules 79(1)(a) and 91(1) of the NGR.
RPP	Revenue & Pricing Principles
SIB	Stay In Business
STIP	Short Term Incentive Program
SUG	System Use Gas
TSCC	Transportation Services Control Centre