EMCa

energy market consulting associates

GGT - Goldfields Gas Pipeline

REVIEW OF TECHNICAL ASPECTS OF GGT ACCESS ARRANGEMENT 2025-29

Report prepared for:

ECONOMIC REGULATION AUTHORITY

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Preface

This report has been prepared to assist the Economic Regulation Authority (ERA) with its assessment of Goldfield Gas Transmission's (GGT) Access Arrangement for the Goldfields Gas Pipeline, for the period from 1st January 2025 to 31st December 2029 (AA5), which it is required to conduct in accordance with the National Gas Law (NGL) and the National Gas Rules (NGR) as applied in Western Australia. This report covers a particular and limited scope as defined by the ERA and should not be read as a comprehensive assessment of proposed expenditure that has been conducted making use of all available assessment methods.

This report relies on information provided to EMCa by the ERA and by GGT up until 10 May 2024. 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 GGT's Access Arrangement Information (AAI) or other documents due to rounding.

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ABBREVIATIONS

Term	Definition
AA	Access Arrangement
AA4	Access Arrangement for the period 2020-2024
AA5	Access Arrangement for the period 2025-2029
AAI	Access Arrangement Information
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AESCSF	Australian Energy Sector Cyber Security Framework
ALARP	As Low As Reasonably Practicable
APA	APA Group
AS	Australian Standard
BST	Base Step Trend
CAGR	Compound Annual Growth Rates
CAM	Cost Allocation Method
Capex	Capital Expenditure
CIRMP	Critical Infrastructure Risk Management Plan
CISC	Cyber and Infrastructure Security Centre
CP	Corrosion Protection
CPI	Consumer Price Index
CY	Calendar year
DCVG	Direct Current Voltage Gradient
DMIRS	Department of Energy, Mines, Industry Regulation and Safety
ECSO	Enhanced Cyber Security Obligations
EGWWS	Electricity, Gas, Water and Waste Services
EMCa	Energy Market Consulting Associates
EoEL	End of Equipment Life
EPWA	Energy Policy Western Australia
ERA	Economic Regulation Authority
ERP	Enterprise Resource Planning
EY	Consultant to APA
FD	AA4 Final Decision
FTE	Full time Employee

Term	Definition
FY	Financial Year
GEA	Gas engine alternator
GGP	GGT's Goldfield Gas Pipeline
GGT	Goldfields Gas Transmission
GIS	Graphical Information System
HCM	Human Capital Management
IAS	International Accounting Standards
ILI	In Line Inspection
ITOT	Information Technology/Operational Technology
KPI	Key Performance Indicator
NGER	National Greenhouse and Energy Reporting
NGI	Northern Gas Interconnect pipeline
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NGR (WA)	National Gas Rules (WA)
NPV	Net Present Value
Opex	Operational expenditure
PIG	Pipeline Inspection Gauge
PwC	Consultant to APA
RAB	Regulated Asset Base
RTU	Remote Terminal Unit
Rules	National Gas Rules
SaaS	Software As a Service
Safeguard Rules	Set Out In the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015
SCADA	Supervisory control and data acquisition
SIB	Stay In Business
SLACI Act	Security Legislation Amendment (Critical Infrastructure) Act 2021
SLACIP Act	Security Legislation Amendment (Critical Infrastructure Protection) Act 2022
SoCI Act	Security of Critical Infrastructure (SoCI) Act 2018
SoNS	Systems of National Significance
TCO	Total cost of ownership
WA	Western Australia
WPI	Wage Price Index

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EXECUTIVE SUMMARY

Purpose of this Report

1. This report provides our assessment and findings from our review of Goldfield Gas Transmission Pty Ltd's (GGT) capex incurred (or to be incurred) in the period from 1st January 2020 to 31st December 2024 (AA4 period), and its proposed capex and opex allowances for the period from 1st January 2025 to 31st December 2029 (AA5 period).
2. We have undertaken our review primarily based on GGT's AA5 Access Arrangement Proposal Overview and the documents that GGT provided in support of its proposal. Our default position is to consider these documents to definitively provide its proposal and supporting rationale, though GGT subsequently advised a significant error which we refer to below.
3. To augment these sources, we sought and were provided with a range of additional documents,[1] and we met with GGT for an onsite meeting at which we provided GGT with the opportunity to provide clarification of the information it had provided and to request additional information to support its proposal.

Review approach

4. Our review approach is to assess GGT's proposal based on the methods that it claims to have used in preparing it. We have sought to understand GGT's expenditure governance and management processes, and the forecasting methods and relevant assumptions it has applied and, with this understanding, to then assess the projects and programs of work that form the basis of its submission.
5. Our review has placed emphasis on assessing those matters that are of greatest significance in driving the level of reference tariffs that the Economic Regulation Authority (ERA) is being asked to approve. Accordingly, we have deepened our assessment process on such components of proposed expenditure, so as to provide the ERA with the necessary supporting evidence and supporting logic on matters of most significance. Our review does not, nor is it intended to, represent an expenditure approval process and the specific projects, programs and activities that GGT chooses to undertake are matters for GGT's management judgment.

GGT's proposal

AA4 capex and opex

6. In its Proposal, GGT reported that it had incurred, or expected to incur, a total of $60.5 million capex in the AA4 period. However, GGT subsequently advised of errors in its allocation of capex between covered and uncovered assets and submitted a corrected capex for the AA4 period of $70.2 million.
7. With this corrected amount for capex, GGT is proposing that it will incur conforming capex that is $62.7 million more than the ERA's regulatory capex allowance for the AA4 period of $7.5 million included in the ERA's AA4 Final Decision (FD). According to GGT, the variation of actual/estimated expenditure to the ERA's FD is primarily due to:

[1] We have sought to take account of all information provided, but we disclaim responsibility for full consideration or acknowledgment in this report, of information that was provided after 10 May 2024 as the information cut-off for completion of our assessment.

- Entire categories of expenditure were omitted or not anticipated, with Shared capex (covering information and operational technology, cyber security and other corporate capex) the major contributor;
- Scope uncertainty for several planned projects; and
- Supplier cost pressure.

8. For opex, GGT estimates spending $109.8 million[2], which is 9.6% more than the ERA's AA4 opex allowance of $100.2 million, with GGT advising that the forecast overspend is due to:

- Costs in the base year of 2017, were lower than usual;
- Increased operations and maintenance cost in 2022 as several unforeseen maintenance activities occurred that were not planned;
- Previously unidentified trends in equipment failures required unbudgeted maintenance in 2022; and
- Higher contractor and contingent worker costs.

Proposed AA5 capex and opex

9. GGT has forecast total capex of $62.9 million capex and total opex of $130.8 million for the AA5 period. These amounts would represent a reduction of 10% and an increase of 17% respectively from GGT's actual/estimated capex and opex for the AA4 period.

- For capex, the reduction is primarily due to lower Shared capex and the AA5 amount would be even lower if not for the once-in-ten-years impact of its proposed In Line Inspection (ILI) program; and
- For opex, GGT describes the main drivers of its proposed increase in AA5 opex compared to the AA4 period as being due to '*rising labour costs related to the maintenance of ageing assets, increased corporate expenses, primarily driven by information technology, and the necessary expenditure to meet new legislative requirements, such as SoCI.'*

Our assessment

GGT's governance and management framework

GGT has made improvements to address systemic weaknesses in its investment governance framework highlighted in the ERA's FD for AA4

10. GGT has made a number of changes to its governance and management practices over the last five years in response to feedback in the ERA's FD. For example, GGT has introduced a 'Project Excellence Team' for its Stay In Business (SIB) capex projects and programs which should progressively help consolidate improvements in each of these project lifecycle elements.

11. GGT continues to apply a largely qualitative approach to benefits identification and to risk management. It applies deterministic criteria to establish the scope and timing of the majority of its programs. This is common practice within the gas network industry.

12. GGT together with its parent organisation APA Group (APA) has demonstrated to our satisfaction that it has an adequate governance framework for its day-to-day operations. APA/GGT have produced supporting information such as business cases (which are not part of its BAU network capex governance processes) to provide justification for its selected

[2] AAI, table 4. We note that this differs from figures derived from GGP's overview document, where it states that it proposes to spend $130.8m in the next period. In this document, GGP states that this is $19 million higher than in the current period which would imply current period expenditure of $111.8m. (GGP Proposal Overview Public Amended pg.76)

programs and projects for its AA5 submission. Many of the business cases address programs of work that commenced in the AA4 period.

Quality assurance in GGT's regulatory submission remains poor

13. GGT presents the significant variance of its claimed AA4 expenditure from ERA's determination for this period, as being largely due to errors and omissions and judgments formed on information in its AA4 access arrangement submission. We consider that this also applies to its AA5 access arrangement submission, noting the significant error referred to above and GGT's interpretation regarding what constitutes GGT covered pipeline expenditure and conforming expenditure. These are the main factors contributing to the significant adjustments that we propose.

Assessment of GGT's forecasting methods and assumptions and regulatory accounting matters

GGT's gas demand forecasts are reasonable

14. GGT provided information on the specific customer loads that it has assumed, including the impact of the Northern Gas Interconnect (NGI) pipeline. GGT's demand forecast represents an aggregation of specific forecasts for specific customers, as GGT has claimed. Overall, we consider that GGT's demand forecasts are reasonable.

15. We also observe that there is a minimal extent to which GGT's demand forecasts influence the AA5 capex and opex forecasts. In substance, GGT's capex and opex forecasts reflect expenditures required to operate and maintain its system and to service its customers.

GGT's capex forecasting methodology is based on common industry practice

16. GGT's AA5 capex forecasting methodology comprises largely a 'bottom-up' approach in which the individual project expenditure is aggregated to form the portfolio amount for the next regulatory period. Where applicable, GGT (with APA) has apportioned 'total' project /program costs between the GGP covered and uncovered assets using allocation factors that are essentially unchanged from previous access arrangements. We note however that the introduction of the Northern Gas Interconnector (NGI) pipeline has changed some ratios.

17. GGT has demonstrated that it has taken a 'top-down' approach to refine the AA5 portfolio, applying a simplistic but, in our view, adequate risk-based prioritisation process and by considering improvement initiatives.

18. GGT's cost estimation methodology is aligned to common industry practices, although GGT has declared that a significant number of projects are at an early ('concept') phase of development which adds considerable uncertainty to the scope, cost and timing of the work in the AA5 period. We have sought to address these uncertainties to the extent practicable in our assessments.

GGT has erred in its regulatory accounting treatment of a proposed new and significant cost item

19. For reasons that we describe below, we consider that GGT has erred in seeking to retrospectively introduce a significant allowance for the capital expenditure of its parent company as 'shared capex'. Over the access arrangement regime since its inception GGT has not sought to include such amounts in its regulatory asset base. We do not consider that its previous omission of such expenditure, or ERA's previous determinations which were made on this basis, were erroneous.

GGT's BST opex forecasting method is appropriate

20. GGT's opex forecasting methodology is appropriately based on the Base-Step-Trend approach. However, we consider that its application of this method has resulted in an overstated opex forecast.

21. We find that GGT has applied real cost escalation appropriately.

Assessment of GGT's proposed AA4 conforming capex

GGT's proposed AA4 conforming capex allowance is overstated, mainly due to its proposed inclusion of a new claim for 'shared capex'

22. GGT claims that the omission of $30.4 million Shared capex from its proposed AA4 conforming capex was a regulatory oversight on its part. However, we find no compelling basis for this claim. Moreover, inclusion of such an amount would appear to represent 'double-dipping' to the extent that these costs have previously been included in APA's Corporate opex fee, a fee which has increased in the AA5 submission. We consider that this amount is not conforming capex.

With minor exceptions, GGT's proposed SIB conforming capex for AA4 is reasonable

23. We are generally satisfied with the justification of the remaining sources of variance, except for what we consider to be inappropriate allocations of aspects of the End of Equipment Life (EoEL) and Reliability capex programs to covered assets.

Assessment of GGT's proposed AA5 capex

GGT's proposed AA5 capex allowance is overstated, mainly due to its proposed inclusion of an allowance for 'shared capex'

24. For the reasons stated in our assessment of GGT's proposed AA4 capex, we consider that its proposed AA5 Shared capex is not conforming capex.

With minor exceptions, GGT's proposed SIB conforming capex for AA5 is reasonable

25. With one exception, we find that the proposed AA4 SIB expenditure is likely to satisfy the capex criteria. Consistent with our AA4 capex assessment, we consider that GGT has treated capex on elements of its EoEL program as being split between covered and uncovered assets but which we consider are wholly uncovered assets.

Assessment of GGT's proposed AA5 opex

GGT's proposed AA5 opex allowance is overstated

26. While GGT has proposed (negative) adjustments to its Base Year opex, we consider further adjustments are required in establishing an efficient and representative base year value.

27. Of the three step changes that GGT has proposed, we consider that one is reasonable, one should be excluded as it does not reflect conforming opex and the third is conforming but the amount is overstated.

28. We consider that GGT's proposed trend factors, including real labour cost escalation, are reasonable.

Implications for GGT's proposed expenditure allowances

Conforming capex for AA4

We calculate that adjustment based on our findings leads to an AA4 conforming capex allowance that is 50.3% less than GGT has proposed

29. For AA4 capex, we consider that $34.9 million, compared with GGT's proposal to allow $70.2 million, is likely to satisfy the capex criteria. This implies an adjustment of minus $35.3 million. The resulting adjustment would represent 50.3% of GGT's proposal for conforming AA4 capex.

30. The largest source of adjustment is the removal of GGT's proposed 'shared' capex category (minus $30.4 million).

Conforming capex allowance for AA5

We calculate that adjustment based on our findings leads to an AA5 capex allowance that is 28% less than GGT has proposed

31. The aggregate impact of our assessed adjustments is a reduction to GGT's proposed AA5 capex of $17.7 million (to $45.2 million), which represents 28% of GGT's estimated capex requirement of $62.9 million. Consistent with our findings on AA4 conforming capex, the largest adjustment is for GGT's proposed allowance for 'shared' capex.

Conforming opex allowance for AA5

We calculate that adjustment based on our findings leads to an AA5 opex allowance that is $11.6 million less than GGT has proposed

32. For AA5 opex, we consider that $119.7 million compared with GGT's proposed allowance of $130.8 million, is likely to satisfy the opex criteria.

33. The majority of adjustments are as a result of adjustments to Base Year opex (minus $8.4 million over five years) and some step changes (minus $3.1 million over five years).

1 INTRODUCTION

The Economic Regulation Authority (ERA) has asked us to provide technical advice to assist with its assessment of proposed revisions to the access arrangement for Goldfields Gas Transmission's (GGT) Goldfields Gas Pipeline (GGP). The requested technical advice covers a range of matters that can affect the capital and operating expenditure proposed by GGT. Our review is based on information that GGT provided and on aspects of the National Gas Rules (NGR) that apply in Western Australia relevant to assessment of regulatory expenditure allowances.

1.1 Purpose and scope of this report

34. The ERA, in accordance with its responsibilities under the National Gas Law (NGL) and the NGR, is reviewing GGT's revised access arrangement (AA) proposal for the GGP for the period 1 January 2025 to 31 December 2029 (AA5).

35. In Western Australia, the *National Gas Access (WA) Act 2009* amends and implements the NGL ('the NGL (WA)'). The NGL WA gives effect to a modified version of the NGR as relevant to gas access regulation in WA ('the NGR (WA)'). For simplicity, and unless otherwise designated, references in this report to NGR shall mean NGR (WA).

36. To assist with its assessment of GGT's AA5 proposal, the ERA has engaged Energy Market Consulting associates (EMCa) to review and provide technical advice on the following aspects:

- The capital expenditure (capex) incurred (or to be incurred) by GGT in the current AA period of five years, which extends from 1 January 2020 to 31 December 2024 (AA4)
- GGT's proposed capex for AA5
- GGT's proposed operating expenditure (opex) for AA5
- The governance arrangements, forecast methodology and cost estimation processes employed by GGT when developing its expenditure proposals
- Other specific matters, including GGT's Key Performance Indicators (KPI) and asset lives assumed for depreciation purposes.

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

1.2 Scope of our review

38. In regard to GGT's expenditure, the overarching objective of this review is to assist the ERA to determine whether the actual capex incurred, or to be incurred, by GGT in AA4 and its proposed capex for AA5 complies with the criteria set out in rule 79 of the NGR and whether its proposed opex for AA5 complies with rule 91(1). To the extent that we consider that such expenditure does not comply, the ERA has sought our technical advice on adjusted expenditures that could be considered to comply.

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

- GGT's substantiation and justification for forecast increases in opex and capex
- GGT's project governance arrangements (e.g. procurement practices and delivery models), and the methods or models used by GGT to estimate its expenditure requirements and to prioritise areas of expenditure
- Observations regarding GGT's demand forecasts as part of developing its capex and opex forecasts and the impacts of changes to demand forecasts

- The extent to which GGT has factored efficiencies into its opex and capex forecasts
- GGT's ability to deliver its proposed capex program
- The asset lives assumed by GGT when calculating depreciation
- The KPIs used by GGT to support its capex and opex forecasts including comparison with industry standards and any proposed changes to GGT's operational and service level performance
- Individual assessment of potential non-compliant capex and opex related to the provision of renewable gases into the gas network.

40. We have presented the findings of our assessment in this technical report.

1.3 Our review approach

41. In undertaking our review, we:

- Completed a desktop review of the information provided to us by the ERA
- Prepared requests for information to GGT to help ensure that we correctly understood the methodology and assumptions that GGT had applied in estimating its expenditure requirements
- Conducted an in-person review meeting with GGT staff to review elements of its submission
- Undertook an assessment of relevant aspects of the proposed expenditure, including by taking into account the responses from GGT to information requests - our review considers the requirements of the NGR, specifically the capex and opex criteria and objectives
- Documented our findings in this report.

42. We also provided feedback to ERA staff on our preliminary findings, while drafting this report.

43. Our review has placed emphasis on those matters that are of greatest significance in driving the level of reference tariffs the ERA has been asked to approve. Accordingly, we have deepened our assessment process on such components of proposed expenditure to provide the ERA with the necessary supporting evidence and supporting logic on matters of most significance. Our review does not, nor is it intended to, represent an expenditure approval process and the specific projects, programs, and activities that GGT chooses to undertake are matters for GGT's management judgment.

44. Where we find that GGT's proposed expenditure is not reasonable in terms of the relevant requirements of the NGR, we have identified the extent to which the issues we have found have resulted or may result in a higher level of expenditure than what would be required of a prudent and efficient service provider.

45. To the extent that there may be implications for aspects of GGT's access arrangement that are beyond our scope, we have included additional observations in some areas that we trust may assist the ERA with its own assessment.

1.3.1 Conformance with NGR requirements

46. In undertaking our review, we have been cognisant of the relevant aspects of the NGR under which the ERA is required to make its determination. We provide our interpretation of the capex and opex criteria in our assessment in Appendix A.

1.3.2 Technical review

47. Our assessment comprises a technical review. While we are aware of stakeholder inputs on aspects of what GGT has proposed, our technical assessment framework is based on engineering considerations and economics.

48. We have sought to assess GGT's expenditure proposal based on GGT's analysis and GGT's own assessment of technical requirements and economics and the analysis and other information that it has provided to support its proposal. Our findings are therefore based on the available information and, to the extent that GGT may subsequently provide additional information in a revised proposal, any subsequent assessment may differ from the findings presented in the current report.

49. We have been provided with a range of reports, internal documents, responses to information requests and modelling in support of what GGT has proposed and our assessment takes account of this range of information provided. To the extent that we found discrepancies in this information, our default position is to revert to GGT regulatory submission documents as provided on its submission date, as the 'source of record' in respect of what we have assessed.

1.4 About this report

1.4.1 Report structure

50. The following sections of our report are structured as follows:

- In section 2, we present our assessment of matters pertaining to GGT's investment governance and management
- In section 3, we present our assessment of GGT's forecasting methods, assumptions and regulatory accounting matters
- In section 4, we present our assessment of GGT's AA4 capex
- In section 5, we present our assessment of GGT's AA5 capex forecast
- In section 6, we present our assessment of GGT's AA5 opex forecast.

51. We have also included Appendix A, where we discuss the review framework applied to our assessment and Appendix B where we provide background information on the requirements for critical infrastructure.

1.4.2 Information sources

52. We have examined relevant documents that GGT has published and/or provided to the ERA in support of the areas of focus and projects that the ERA has designated for review. This included further information at meetings with GGT and further documents in response to our information requests. These documents are referenced directly where they are relevant to our findings.

53. Except where specifically noted, this report was prepared based on information provided to us prior to 10 May 2024 and any information provided subsequent to this time may not have been taken into account.

1.4.3 Presentation of expenditure amounts

54. Expenditure is presented in this report in $2023 real terms, to be consistent with GGT's AAI, unless stated otherwise. In some cases, we have converted to this basis from information provided by the business in other terms.

55. While we have sought to reconcile expenditure presented in this report to source information, in some cases there may be discrepancies in source information provided to us and minor differences due to rounding. Any such discrepancies do not affect our findings.

2 GOVERNANCE AND MANAGEMENT MATTERS

GGT has made changes to its governance and management practices over the last five years to address issues that the ERA identified in assessing its AA4 proposal.

GGT continues to apply a largely qualitative approach to benefits identification and to risk management. It applies deterministic criteria to establish the scope and timing of the majority of its programs. This is common practice within the gas network industry.

GGT together with its parent organisation APA Group (APA) has demonstrated to our satisfaction that it has an adequate governance framework for its day-to-day operations. APA/GGT have produced supporting information such as business cases (which are not part of its BAU network capex governance processes) to provide justification for its selected programs and projects for its AA5 submission. However, we consider that GGT has erred in its regulatory judgment in seeking to retrospectively include capex incurred by its parent APA in its regulatory asset base and a significant error in its regulatory submission reduces confidence in its regulatory governance and management processes.

2.1 Introduction

56. To inform our assessment of the capex incurred (or to be incurred) by GGT in the AA4 period and its proposed expenditure for the AA5 period, we have reviewed GGT's approach to investment governance and management systems, procedures, and practices and compared them to good industry practice. We have also compared what GGT's governance framework requires and the evidence we have seen, or otherwise, of consistent application of those requirements.

2.2 Investment governance framework

2.2.1 GGT's governance framework

Management and operation of the GGP[3]

57. The GGP is owned by an unincorporated joint venture, Goldfields Gas Transmission Joint Venture (GGT JV), The owners comprise Southern Cross Pipelines Australia Pty Ltd, Southern Cross Pipelines (NPL) Australia Pty Ltd and APA GGT Pty Ltd.

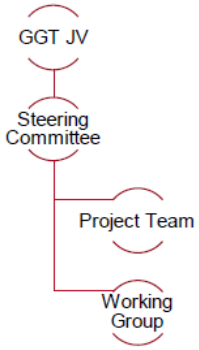
58. On 1 November 2023, APA acquired Alinta Energy Pilbara Holdings Pty Ltd including Alinta's share of the GGP. APA now owns 100 per cent of GGP. Goldfields Gas Transmission Pty Limited (GGT) is the operator of the GGP for and on behalf of each of the owners.

GGT's governance for the GGP Access Arrangement proposal 2025-29

59. GGT developed a GGP AA charter to oversee the preparation of the submission. Its governance structure for the AA5 submission is shown in Figure 2.1.

[3] GGT, GGP-AA5-Proposal overview, page 8

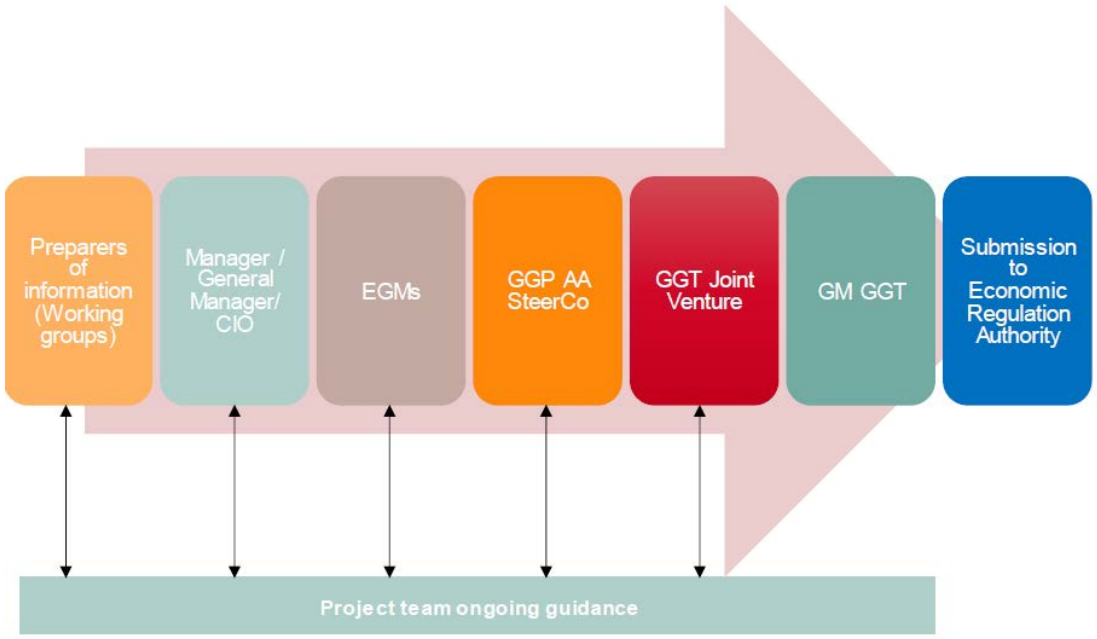
Figure 2.1: GGP AA5 governance structure



Source: GGP EMCa workshops 25 March 2024

60. GGT describes the process for developing and approving the AA proposal as depicted in Figure 2.2

Figure 2.2: GGT's Sign-off process for the 2025-29 AA proposal



Source: APA, Presentation - ERA, EMCa & GGT/APA meeting 25 March 2024, slide 12

2.2.2 Our assessment

The high variance from the AA4 FD highlighted weaknesses in GGTs governance

61. As discussed in section 5, GGT has significantly overspent its AA4 Final Decision (FD) capex allowance through a combination of omissions and step inputs. GGT advises that the largest source of omissions, shared corporate services assets, '*appears to be an oversight by the regulatory team at the time*.'[4] We have seen some evidence of improvements made by GGT, including the revised governance structure and process for the AA5 submission, and:

- inclusion of forecasts for categories of expenditure absent from the AA4 forecast; and

[4] GGT response to information request EMCa31

- iterations of demand forecasts, opex and capex, revenue and tariffs through the AA5 governance committee.

62. However, several significant matters affecting the expenditure forecast for the balance of the AA4 period (2023-2024) were identified after the submission to the ERA – that is, they were not revealed through a robust quality assurance process that we would expect to occur at the level of detail necessary to ensure a high quality submission. The issues were in relation to 'mapping' AA4 expenditure to covered and uncovered assets:[5]

- Four projects were identified where $3.0 million capex was incorrectly allocated to the covered pipeline
- Incorrect application of cost allocators leading to a $9.7 million uplift in costs over the CY20-CY22 period.

63. These errors were identified by GGT when preparing responses to our information requests. In the absence of any other information from GGT, we assume that there are flaws at some level in GGT's governance process for preparing the regulatory proposal.

64. We discuss the implications of these errors in our assessment of the AA4 expenditure in section 5. We also review other material increases in capex relative to the AA4 allowance, and our assessment of the reasons for the variance.

There is a material error in the AA5 forecast which is another sign of room for governance improvement

65. In response to our information request,[6] GGT advised that it had erroneously included two projects with combined capex of $6.0 million in its End of Equipment Life (EoEL) AA5 forecast in several documents (although this error does not manifest in the relevant business case).

66. The 'corrected' amount of $11.4 million is consistent with the relevant business case, however GGT's updated model, from which the two projects have been removed, shows a revised EoEL forecast of $11.0 million, not $11.4 million.

67. We manage the implications of these errors in our AA5 assessment in section 5.

APA has an ITOT strategy and architecture governance framework that is consistent with good industry practice

68. APA provided artifacts illustrating its approach to Information Technology/Operational Technology (ITOT) governance, including its 'strategy and architecture governance framework.'[7] We are satisfied that this is consistent with good industry practice.

2.3 Planning and delivery

2.3.1 GGT's approach

Asset planning is managed through APA's Operational Excellence framework

69. APA has a national approach to business planning and budgeting, risk management, procurement, accounting policies, and cost allocation. Accordingly, GGT advises that the planning process for the GGP is managed through APA's Operational Excellence framework and supporting business processes, which include the Asset Management System and planning processes.[8]

5 GGT response to information request EMCa32

6 GGT response to information request EMCa11

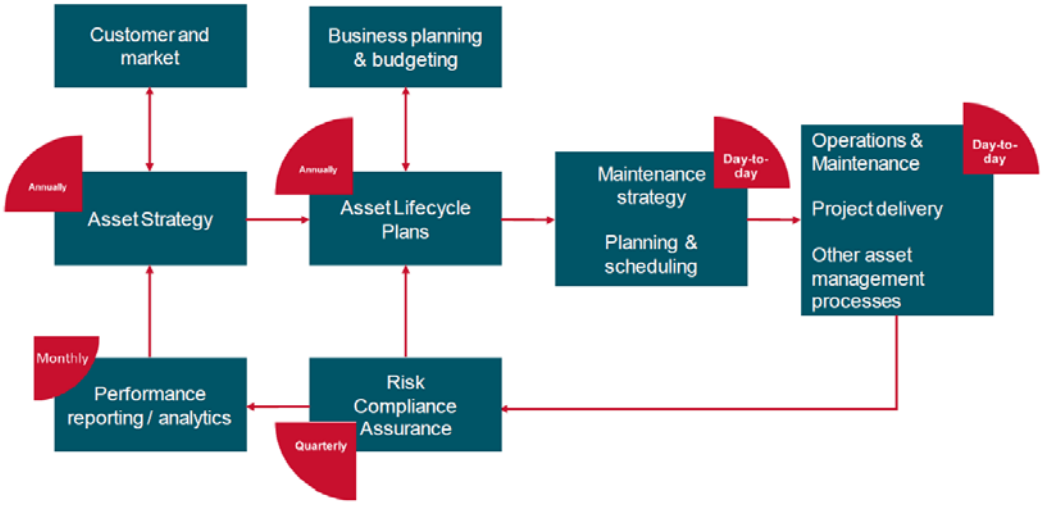
7 GGP EMCa workshop, slides 20-25 and GGT's response to EMCa19

8 GGP EMCa workshop, slide 6, 18, 25, 48

70. GGT advises that all of its investment decisions are made in the context of the matrix structure, supporting systems and 38 business processes. For example, Figure 2.3 illustrates its asset management process, and which includes daily, monthly, quarterly, and annual asset decisions.

71. GGT has provided a number of documents both describing and providing evidence of its asset management approach, which it identifies as being aligned to the international asset management standard, IS55000.

Figure 2.3: GGT's asset management process- overview



Source: GGP EMCa workshop, slide 50

Improvements made across the Engineering and Planning function

72. GGT advises that in 2022 it identified several engineering and planning issues relating to:[9]

- processes and systems maturing at different rates;
- capability gaps, including in project governance and project scoping; and
- loss of talent, loss of corporate knowledge, and high recruitment costs.

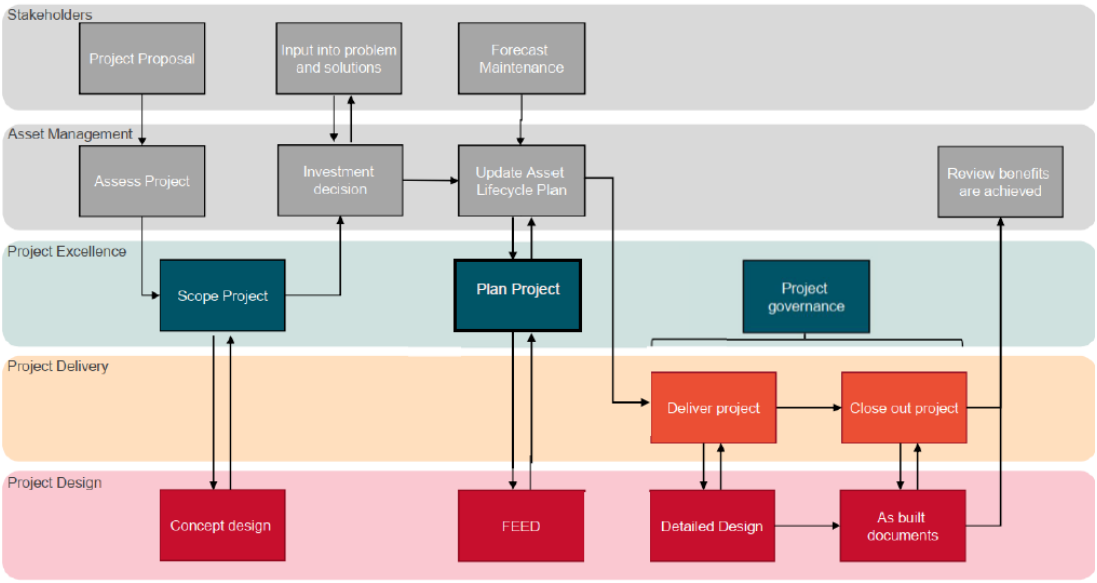
73. In response, GGT notes that it created 'Project Excellence', which included increased headcount and a Project Excellence Team. It advises that the latter '*has led to a step-change improvement in early scoping (including some preliminary site visits and investigations) and the production of development reports which set out the analysis undertaken and proposed solution.*[10]

74. Figure 2.4 shows GGT's revised approach to project lifecycle management, which GGT points to as being illustrative of its new project excellence focus.

9 GGT response to EMCa information requests IR3 and IR4

10 GGT response to EMCa information requests IR3 and IR4

Figure 2.4: GGT's new project development process



Source: GGP EMCa workshop, slide 57

ITOT planning is delivered at the corporate level with GGT a 'taker' of the corporate solutions

75. APA is responsible for planning the APA Group's ITOT program of work, which is precipitated from its IT Strategy[11] and aligned with its Technology Guiding Principles and its ITOT Architecture.[12] GGT provided the 2024 version of APA's ITOT Plan[13] with its submission. The latter document summarises its strategy and each of the IT and OT programs and projects applicable to GGP and which span the AA4 and AA5 periods.

76. APA is undertaking an ITOT Transformation Program to 'uplift the existing suite of information technology applications to be consistent with IT industry standards, ISO compliance and international frameworks.'[14]

77. GGT has proposed that it is allocated a portion of the corporate program cost, and which we discuss in sections 4.4 and 5.4.

2.3.2 Our assessment

Asset management planning process now in place will assist alignment with industry practice over time

78. GGT has stated a number of times in its submission, in its responses to information requests, and in its presentation at a joint ERA/EMCa/GGT/APA workshop that it recognised the need to improve all aspects of its approach to asset management (i.e. structure, strategy, skills, processes, and systems) following the ERA's FD for the AA4 period. From the evidence provided, we consider that the changes made to date and the improvement initiatives that GGT declares itself (with APA) to be committed too, will assist to align GGT with good industry practices over time.

79. As with all businesses, the key to consistent high performance will be attraction and retention of capable asset managers to make good decisions. APA/GGT has recognised that this is a challenge for them.

11 APA IT Strategy – April 2020 - CONFIDENTIAL

12 GGP-AA5-Attachment 10.5-ITOT architecture vision-1 January 2024-Confidential

13 GGP-AA5-Attachment 10.4-ITOT plan-1 January 2024-Confidential

14 GGP-AA5-Attachment 10.4-ITOT plan-1 January 2024-Confidential, page 8

APA/GGT does not typically produce 'Stay in Business' (SIB) business cases of a quality consistent with other similar businesses, nor clear records of governance decisions to assist ex post review

80. GGT advises that it typically does not prepare 'business cases'[15] nor change control documentation that is accessible to the ERA:

> *'Similarly, our AFEs (Approval for Expenditure) do not always contain the detail on options for the project requested, given the work and decision was made in previous phases or in separate processes.*
>
> *We do not produce change request documents which provide an audit trail of changes to the ERA's final decision allowance for AA4.'* [16]

81. Instead, GGT uses APA's on-line project investment governance system. This system has a downside for external assessments such as we are undertaking which is recognised by GGT:

> *'…one drawback of our approach is that there isn't a single document we can provide which captures all the consideration, governance and assurance that has occurred. This is partly due to our matrix approach and partly due to our use of modern 'live' systems and processes.'* [17]

82. GGT argues that this project governance system works for their business. We consider that the revised process and added capabilities (i.e. via the Project Excellence project) are likely to largely address the major shortcomings apparent from our AA4 submission assessment which were reflected in the ERA FD.

Further improvement of SIB business case documents is required to meet good industry practice

83. Whilst not a feature of its SIB development process, APA's revised project lifecycle process now generates artefacts such as development plans, which can with some effort, reveal information pertaining to the prudency of investment decisions. APA/GPT has, however, developed SIB business cases specifically for the AA5 period and APA's ITOT project development process includes business cases (at varying levels of detail, depending on the project cost/complexity).[18]

84. From APA/GGT's network planning documents and business cases prepared for the AA5 submission, we have identified further scope for improvement because they do not consistently provide the following:

- Clear statements about how asset stranding risk has been managed - stranding risk varies for different asset classes[19] - for example assets with relatively short asset lives have a lower potential stranding consequence than assets with long technical lives such as pipelines - at the very least we consider there should be cross-references to documents in which stranded asset risk is identified and explicitly managed
- Clear identification of the planned versus actual historical activity and expenditure for each asset class
- Discussion of the variance and the reasons for variance between planned and delivered work and expenditure

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15 That is, single documents which provide the driver for the investment, including the risk assessment, options identification and analysis, including cost-benefit analyses, and the preferred solution in a single document

16 GGT response to EMCa information requests IR3 and IR4

17 GGT response to EMCa information requests IR3 and IR4

18 GGP EMCa workshops, 23 March 2024, slide 24

19 Except through its proposed cap on economic asset lives for depreciation purposes (41 years)

- Discussion of the outcomes (i.e. safety, risk, service performance, etc.) from what has been done (and expenditure incurred) and how this aligns with the expected benefits or otherwise.

85. The regular absence of the clear links to historical plans, expenditure (including variances) and performance outcomes, frustrates attempts to understand fully the basis for the planned work and is not reflective of good industry practice.

GGT leverages off APA's national procurement approach

86. GGT leverages off the APA purchasing power wherever possible for SIB projects achieving economies of scale. APA/GGT discussed improvements to its procurement practices at our on-site meeting and we found evidence of application of good procurement practices in its business case documents.

APA has invested heavily in ITOT transformation in AA4 which is continuing into AA5

87. APA is embarking on an enterprise-wide IT transformation program during AA4. The case for the transformation program is consistent with similar 'transformation' programs across the gas and electricity utility industry, and should positively impact GGT, noting that APA provides corporate and management services to GGT. APA levies a corporate charge to GGT for these services.

APA has introduced a Climate Transition Plan

88. APA has developed a Climate Transition Plan to, among other things, respond to the emission reductions targets that GGT is now subject to through the national Safeguard Mechanism.[20] We discuss GGT's strategy to meet its Safeguard Mechanism targets via its Net Zero program as part of our AA5 capex expenditure assessment.

2.4 Risk Management

2.4.1 GGT's approach

GGT assigns a risk and alignment score to SIB projects

89. GGT states that projects in its asset management plan are assessed and prioritised primarily using two metrics to derive a RiskXAM score:[21]

- A risk score based on a qualitative assessment derived from the APA corporate 5x5 risk matrix, with Negligible = 1, Low = 2, Moderate = 3, High = 4 and Extreme = 5)
- An asset management alignment score from 1 to 5, with higher scores given to higher priority projects.

Ongoing prioritisation is via Asset Lifecycle Management Plan PowerApp

90. GGT describes its approach to ongoing prioritisation of its portfolio as being facilitated by its PowerApp which provides a live view of its investment program[22] '…*[u]sing this tool we continually review and optimise our investment program taking into account factors such as:*

- *Operational conditions which affect risk and deliverability windows.*
- *The need to implement new initiatives or address new challenges.*
- *Changes (increases or decreases) in deliverability capacity or project delays.*

[20] Requires Australia's largest greenhouse gas emitters, of which GGT is one, to keep their emissions below a limit, with these limits to be gradually reduced over time

[21] GGT response to EMCa information requests IR33, IR34 & IR35 (combined), with AM alignment score descriptors and examples provided in table 1 in the response

[22] GGT response to EMCa information requests IR33, IR34 & IR35 (combined)

- *Opportunities to package-up work and optimise delivery.'*

2.4.2 Our assessment

GGT has a rudimentary risk-based prioritisation capability

91. GGT's RiskXAM score is a rudimentary approach to ranking and prioritising its projects, but it is not fully transparent to us how it combined the RiskXAM score with the other factors to prioritise the work. Nonetheless, from our review of the program of work and, specifically, the qualitative risk assessments of the projects, we accept GGT's statement that:

- *Maintenance strategies, delivering integrity plans, and complying with regulatory obligations are considered high priority; and*
- *There is consistency across our investment portfolio with board approved strategies.*[23]

GGT typically applies qualitative risk assessment for its SIB projects

92. GGT does not monetise risks in the SIB information presented to us. GGT instead uses a qualitative risk assessment, deriving a risk ranking for projects based on APA's Enterprise Risk Matrix, which is a fairly standard matrix.[24] GGT typically applies deterministic criteria and experience-based qualitative risk analysis to select its preferred option and the timing of the work. In some cases, it has quantified benefits and undertaken a cost-benefit analysis, for example, in its AA5 Net Zero project business case.

93. The advantage of quantitative risk and benefit analysis is that it enables one or more of the following:

- Quantitative comparative analysis of options – the technically feasible option with the highest NPV is typically selected:
  - This analysis can include sub-options in which the same technical approach is used but with different volumes
  - A comprehensive counterfactual is defined (typically the 'business-as-usual' case)
- Determination of the economically optimum timing for implementing the project
- Undertaking sensitivity analysis to demonstrate that the proposed project has a robust NPV despite reasonably applied negative variances to key inputs
- Satisfying the economic test required as part of demonstrating that the proposed investment reduces the risk to As Low As Reasonably Practicable (ALARP) where required to do so.

94. Fron our experience and from discussions at the workshop with GGT and APA representatives, we understand that APA/GGT predominately apply deterministic and qualitative assessments because:

- subject matter experts are able to assess whether reasonably practicable measures are available to reduce risk; and
- GGT's risk management actions are considered to be in-line with good industry practice, which provides a level of assurance that proposed actions are reasonably practicable.

95. Whilst we consider there are material advantages in applying quantitative risk-cost analysis, we note that it is rare in the gas network industry. We further note that the approach applied by GGT in managing risk is the same as applied in the AA4 period for similar programs to address similar risks.

23 GGT response to EMCa information request IR34 and IR35 (combined)

24 GGT Capital Expenditure Overview, page 9

GGT has not provided a quantitative assessment of ALARP for its SIB projects

96. As noted above, a quantitative assessment is typically applied to demonstrate that the proposed investment reduces the risk to ALARP. This is reflected in the normative requirements of AS2885 to demonstrate ALARP which requires:

> *'[s]ubstantiation that the sacrifice (including cost) of further risk reduction measures is grossly disproportionate to the benefit gained from the reduced risk that would result.'* [25]

97. We have not seen evidence of quantification of this 'test' in the information we have reviewed to objectively meet this requirement, but rather GGT relies on qualitative arguments. In absence of quantitative analysis, it is difficult to objectively determine whether the ALARP test has been met in accordance with the governing Australian Standard.

98. Given the tacit acceptance of the technical regulator, Department of Energy, Mines, Industry Regulation and Safety (DMIRS), of the current approach and in the absence of a priori requirement from the ERA for application of quantitative risk analysis to be undertaken by GGT to base our assessment, we have not sought to develop alternative analyses to cross-check GGT's risk analysis. Rather, we have worked from an experienced-based review of the information provided by GGT in justifying its projects, and specifically demonstration of the level of risk and ALARP.

APA is responding to the worsening cyber security threat landscape

99. GGT's IT Strategy incorporates a response to changed legislation pertaining to mandated minimum cyber security measures and to the worsening threat landscape. We assess its proposed cyber security investments in sections 5, 6 and 7.

2.5 GGT's KPIs and benchmark information

2.5.1 GGT's suite of performance indicators

100. The existence of a comprehensive suite of KPIs is typically an indicator of good governance, with the proviso that the measures and targets are meaningful in the context of the business priorities, objectives and strategies. Benchmarking information typically provides limited or indicative performance comparison, nonetheless, it is potentially useful as a tool to assess the prudency and/or efficiency of an organisation's expenditure (among other things).

GGP capex comparison with other gas pipelines

101. GGT benchmarked the GGP's average level of capex against the largest 14 pipelines in Australia (based on capacity and length). GGT states that '*whilst only indicative, the benchmarking data…suggests that GGP's actual AA4 capex and forecast AA5 capex is relatively low.'* [26]

GGT's asset management performance measurement

102. GGT has a suite of asset management KPIs, including asset reliability, asset integrity, project and shutdowns, risk controls, emissions, and maintenance.[27]

GGT's SoCI performance management

103. GGT has assessed its capability against the requirements of the Security of Critical Infrastructure (SoCI) Act 2018 (SoCI Act) and the AESCSF and has developed a plan to lift

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25 AS4645.1:2018, page 84

26 GGP-AA5-Attachment 10.1-Capital expenditure overview-1 January 2024-Confidential, page 19

27 GGT Asset Performance & Lifecycle Plan, pages 9-17

its cyber security and physical and hazards security, with outcomes measured against defined targets.

2.5.2 Our assessment

GGP capex benchmark indicates that its AA4 and AA5 capex is not excessive

104. Noting that the pipelines included in its comparison have a range of owners, operate in different environments and regulatory jurisdictions, the AA4 FD allowance included in its benchmarking analysis was, at $1.5m p.a. likely to be on the low side, and understate the required capex for the GGP.

GGT has not provided opex KPIs

105. In its AA4 submission, GGT presented two opex-related KPIs being $opex/TJ MDQ km (i.e. normalised against capacity reservation) and $opex/TJ km (i.e. normalised against throughput), among others. These were of some use for visualising GGT's movement in these normalised metrics over a 10-year period.

106. In its AA5 submission, GGT has not presented these normalised opex KPIs at all, nor any other opex KPI that can be usefully compared with its peers.

GGT has adequate project level KPIs and operational KPIs

107. GGT has provided sufficient evidence for us to conclude that it has an adequate suite of operational KPIs to help it govern its expenditure.

2.6 Implications for our review

GGT has improved its governance and management frameworks

108. GGT has acknowledged the governance and management issues identified in the ERA's FD and we have seen evidence of the steps it has taken to improve its processes and systems.

109. APA applies an on-line system of project and expenditure governance which GGT is obliged to follow. We have seen evidence of its on-line 'Authority for Expenditure' process, which appears to be comprehensive from the descriptions we have received. However, APA advises in responses to requests for information that it is challenging for it to provide to an external party such as the ERA the artifacts from its on-line system to demonstrate the management of a project through its lifecycle.[28]

110. We were required to ask several information requests to overcome the opaqueness to its governance approach at a level of detail to assure ourselves that what it says it does, it does in fact do. We received sufficient information in response to our questions to satisfy us that we have sufficient information to make a reasonable assessment of expenditure.

There is further room for improvement

111. We have identified a number of improvement opportunities for GGT's governance and management framework and practices, which include addressing the following:

- Inadequate links to historical plans, expenditure (including expenditure variances), and performance outcomes in critical SIB documents (overarching plans and business cases, in particular)
- The lack of transparency of the derivation of its risk-based portfolio
- Breakdowns in its quality assurance of the application of the cost allocation methodology.

[28] For example, an approved business cases and a sequence of cost variations approvals which should be evident for the AA4 Yarraloola GEA replacement project which went from $1.6m to $8.7m

112. We sought to overcome the first and second of these limitations by asking APA/GGT for explanations. This took multiple attempts, with several explanations lacking evidence and consistency. However, we are satisfied that we achieved adequate understanding through persevering with this process.

113. GGT advised the ERA and us of the errors in its application of the cost allocation methodology in a response to one of information requests. The changes were significant and led to rework of parts of our analysis. No doubt in the absence of this alert from GGT, this would have been revealed through our subsequent analysis, and the corrections have been included in our assessment.

3 FORECASTING METHODS, ASSUMPTIONS AND REGULATORY ACCOUNTING MATTERS

GGT provided information on the specific customer loads that it has assumed, including the impact of the Northern Gas Interconnect (NGI) pipeline. We consider that its demand forecast represents an aggregation of specific forecasts for specific customers, as GGT has claimed. Overall, we consider that GGT's demand forecasts are reasonable. We also observe that there is a minimal extent to which GGT's demand forecasts influence the AA5 capex and opex forecasts and, in substance, GGT's capex and opex forecasts reflect expenditures required to operate and maintain its system.

GGT seeks to retrospectively introduce a significant amount of capex incurred by its parent APA, as conforming capex in AA4 and as proposed capex in AA5. GGT asserts only that this was an omission from its AA4 regulatory submission, however we consider that it represents a new and flawed interpretation of regulatory requirements, which GGT has not sought to justify.

GGT was able to adequately explain other sources of variance from the ERA's AA4 FD and its actual and estimated capex and opex for AA4, and which we are satisfied are not as a result of systemic governance or management shortcomings.

GGT's SIB capex forecasting methodology comprises largely of a bottom-up approach. GGT has demonstrated that it has taken a 'top-down' approach to refine its portfolio of work for the AA5 period, applying a simplistic risk-based prioritisation process and by considering improvement initiatives. GGT has apportioned 'total' project /program costs between its covered and uncovered assets using familiar allocation factors. GGT's cost estimation methodology is aligned to common industry practices, although GGT has declared that a significant number of projects are at an early ('concept') phase of development which adds considerable uncertainty to the scope cost and timing of the work in the AA5 period. We have sought to address these uncertainties to the extent practicable in our assessments.

GGT's opex forecasting methodology is appropriately based on the Base-Step-Trend approach. However, we consider that its application of this method has resulted in an overstated opex.

3.1 Introduction

114. In this section we describe and assess the forecasting methods and assumptions that GGT has applied in developing its capex and opex forecasts, its real cost escalation assumptions, and asset life assumptions. We make observations in relation to the demand forecast provided by GGT in areas that are material to our assessment. Finally, we comment on the implications of our assessment for GGT's proposal.

3.2 Demand forecast assumptions

115. Consistent with our scope, we have considered GGT's demand forecast in the context of its proposed capex and opex forecasts.

3.2.1 What GGT has proposed

116. As is shown in Table 3.1, GGT's contracted capacity and throughput has been relatively stable over the current period to date. For this period, ERA's approved forecasts were 110.53 TJ/day capacity and 90.71 TJ/day for throughput.

Table 3.1: 2020 – 2022 actual demand (capacity and throughput) for pipeline services

Actual demand	Unit	2020	2021	2022
Maximum capacity	TJ/day	108.53	111.42	115.67
Average capacity	TJ/day	108.53	109.49	110.77
Average throughput	TJ/day	96.78	94.57	97.23

Source: Table 4-1, GGP attachment 5.1 Demand forecast report

117. GGT's forecast for AA5 is shown in Table 3.2. For its Yarraloola receipt point forecasts, GGT has relied on current contracted capacity for the covered portion of GGP, together with expectations about probable renewals of contracts that expire in this period. GGT has based its throughput forecast on the average annual actual load factor of 0.9, of these customers in the current period to date (i.e. 2020 to 2022).

118. The NGI provides additional capacity, and this drives GGT's forecast of increased demand over the next regulatory period.

119. For the NGI receipt point, the contracted capacity forecasts that GGT has used are built up from forecasts for contracted capacity from individual customers. These comprise currently contracted capacities for these customers together with what GGT describes as 'highly probable' contracted capacity information, provided to it by APA. GGT states that this excludes contracted capacities from offtakes that do not flow through the GGT. For its forecast, GGT has assumed that the NGI loads have the same load factor as its customers from Yarraloola receipt point.

120. GGT provided information on the specific customer loads that it has assumed.[29] This information is commercially sensitive, and we have chosen not to replicate it in this report. However, we have confirmed that its demand forecast does represent an aggregation of specific forecasts for specific customers, as GGT has claimed.

[29] This is contained in GGT workbook Attachment 5.2, sheets *(CONF) capacity by customer* and *(CONF) Throughput by customer*.

Table 3.2: GGP 2025-29 demand forecasts – Yarraloola receipt point and NGI receipt point

	2025	2026	2027	2028	2029
Total Contracted Capacity (TJ/day)					
Yarraloola	110.2	110.2	110.2	110.2	110.2
NGI (Case 2)	22.8	27.8	32.8	32.8	32.8
Total	**133.0**	**138.0**	**143.0**	**143.0**	**143.0**
Throughput (TJ/day)					
Yarraloola	93.3	93.3	93.3	93.3	93.3
NGI (Case 2)	19.7	24.0	28.3	28.3	28.3
Total	**113.0**	**117.3**	**121.6**	**121.6**	**121.6**

Source: Table 6-1, GGP attachment 5.1 Demand forecast report

3.2.2 Our assessment

121. We consider that GGT's demand forecasts are reasonable. Its Yarraloola forecasts essentially represent a continuation of 'business as usual' and information that GGT provides suggests that this is a reasonable expectation. Its NGI forecast reflects the knowledge that its parent APA has, based on assumptions regarding new customers and increasing loads from those customers of its potential customer base. We note also GGT's statement that these forecasts are '*consistent with the information APA has provided to the market*.'[30] We consider it reasonable to accept that APA is in the best position to assess the level of commitment of assumed new customers and the likelihood of their assumed load requirements.

122. We also observe, however, that there is a minimal extent to which GGT's demand forecasts influence the AA5 capex and opex forecasts that we assess in sections 5 and 6. In substance, GGT's capex and opex forecasts reflect expenditures required to operate and maintain its system.

123. As we describe in section 3.4 and section 6, GGT has not included a 'growth' parameter in its Base-Step-Trend (BST) opex forecast and has included only a single $200,000 base year increment that GGT ascribes as being to service 'NGI' customers. As we describe in section 5, its capex forecast is driven largely by its maintenance and operation of its system and is similarly not driven by its forecast increase in demand.

3.3 Capex forecasting method

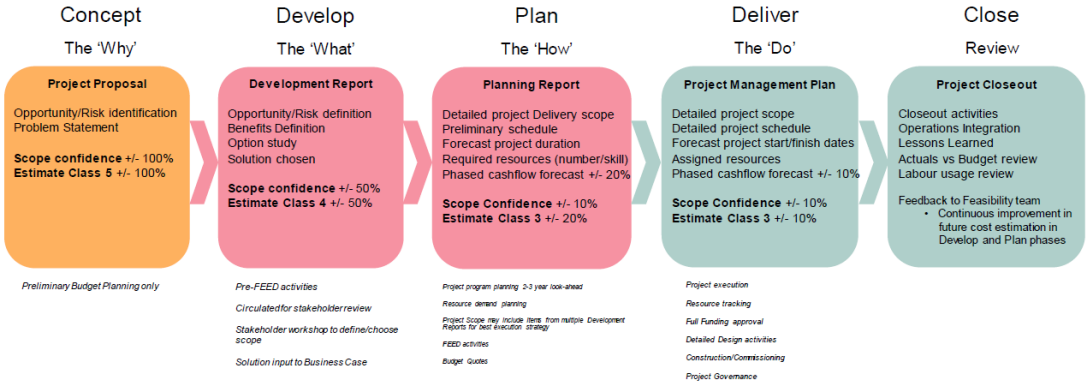
3.3.1 GGT's approach

Stay In Business Capex

124. GGT has forecast its SIB capex requirements using a 'bottom up' approach by aggregating individual projects and programs for each capex category. Unique capex project expenditures are identified and costed based on assessed building blocks or market-based costs, with expenditure phased over the project timeframe to meet the required commissioning dates. GGT's SIB project cost estimation process is shown in Figure 3.1.

[30] GGP AA5 Proposal overview (page 36)

Figure 3.1: GGT's SIB project cost estimation process



Source: GGP EMCa workshop, slide 58

125. GGT describes its cost estimation process in its Capital Expenditure Overview document,[31] including an explanation of why it considers forecasting costs over AA5 is challenging due to (i) high levels of recent and ongoing inflation, (ii) obsolescence requiring new (unfamiliar) products to be introduced; and (iii) unknown scope at the concept stage (i.e. pre-site visits, detailed design, etc).

126. GGT stated that it incorporates labour escalation in its forecasts but not overheads. We discuss GGT's derivation of labour escalation in section 6.5.2.

Other shared SIB corporate capex

127. GGT's cost forecasting methodology for non-recurrent projects follows a bottom-up process, similar to the SIB process. For projects incurring recurrent expenditure, APA applies historical costs or costs secured from vendors, as appropriate for the project.[32]

Shared capex

128. GGT has retrospectively included Share capex covering an allocation of its corporate program costs to the GGP for Information and Operational Technology (ITOT) programs, its cyber security program, and miscellaneous other shared capex. It has similarly included this new category in its AA5 proposed capex.

3.3.2 Our assessment

GGT has demonstrated application of a challenge process to review of its 'bottom-up' build of SIB capex

129. GGT initially developed its forecasts using a capex program 'bottom-up build' process by incremental aggregation of detailed activity. Based on our experience, aggregate forecasts derived from such a process are more likely than not to overstate the expenditure requirements that will ultimately be delivered to meet the service performance outcomes of the business.

130. We would expect to see senior management challenge the bottom-up result developed by a range of top-down indicators. The final expenditure position should demonstrably result in a balance between risk, service performance, tariff impacts and stakeholder returns (or similar criteria).

31 GGP-AA5-Attachment 10.1-Capital expenditure overview-1 January 2024-Confidential, pages 18-19

32 For example, the Network Refresh program (for networking systems, corporate WAN and SCADA WAN telecommunication services, and the Zscaler cloud-based security platform) is based on vendor-derived information for the vendor-driven version upgrades

GGT provided evidence of challenge to its bottom-up SIB program of work

131. GGT has presented evidence that (i) it has followed an iterative approach to refining its SIB forecast for the AA5 proposal,[33] (ii) that it has applied a risk-based prioritisation process (based around its RiskXAM scores), and (iii) that the 'challenge' process resulted in changes to the content of the program (albeit resulting in an increase in its forecast expenditure overall). The three reported iterations to developing the AA5 capex forecast resulted in the forecast increasing from $49.7 million in iteration 1 to $53.4 million in iteration 3, and which aligns with the proposed capex for AA5. GGT's evidence of change is outlined in its Capex Overview document:[34]

- Updates to cost estimates;
- Reprofiling of expenditure;
- Adjusting timing;
- Removing duplication; and
- Adding and removing projects.

Overall we have not seen explicit evidence of the impact on overall risk levels

132. However, we have not seen explicit evidence of the impact on overall risk levels and related KPIs of different expenditure levels. Whilst GGT has advised that no discretionary or lower priority projects (scored as 1 or 2) have been included in its AA5 program,[35] this does not necessarily mean that the portfolio is optimised in scope or timing (e.g. some moderate risk projects may prudently be able to be fully or partially deferred). Consequently, customers *may* be paying for a higher level of investment on the network, and/or improvements in service beyond that which customers are willing to accept. We have kept this in mind during out program/project assessments.

The majority of GGT's AA5 SIB cost estimates are likely to be better than AACE Class 4/5 estimate accuracy

133. We consider GGT's cost estimation process to be adequate except for the very broad range of estimate accuracy for its 'concept' stage projects. It quotes AACE[36] Class 5 accuracy of ±100% (refer to Figure 3.1). We received somewhat conflicting information regarding projects that are in the 'concept' planning stage. For example:

- The response to EMCa information request IR09 (in which we asked for an explanation of the basis for each SIB cost estimate) states that four of the nine AA5 programs/ projects are based on concept stage cost estimates,[37] but that all of them are derived from historic costs of undertaking similar work
- The response to EMCa information request IR27 states that only a few EoEL projects are at the concept stage, with the rest at the planning stage (AACE Class 3).

134. Our expectation aligns with the response to EMCa information request IR09 - that is, we assume that if GGT can apply relevant historical costs and project delivery lessons, the project scope and cost estimate should be much better than ±100% accuracy and even better than ±50% in some cases. This provides more confidence in the forecast cost for the AA5 regulatory period for those projects and overall.

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33 GGT response to EMCa information requests IR33, IR34 and IR35 (i.e. combined)

34 GGT, GGP-AA5-Attachment 10.1-Capital expenditure overview-1 January 2024-Confidential, section 3.5 and GGT's response to EMCa information requests IR33, IR34 and IR35 (i.e. combined)

35 GGT response to EMCa information requests IR33, IR34 and IR35 (i.e. combined)

36 Association for the Advancement of Cost Engineering

37 Rotating equipment major maintenance, End of equipment life, Wiluna wet seals, and GEA replacement program

SIB project estimates do not include contingencies

135. GGT has confirmed that it does not include contingency amounts in its AA4 or AA5 SIB project estimates for the AA5 submission, instead taking a portfolio approach to managing contingencies.[38, 39]

GGT's introduction of Shared capex

136. GGT has for the first time incorporated an allocation to the GGP of a portion of the capital cost of APA-wide programs into its AA5 proposed capex and to its proposed conforming AA4 capex (i.e. retrospectively). We discuss our assessment of this new expenditure category in section 4 (AA4 capex assessment) and section 5 (AA5 capex assessment).

3.4 Opex forecasting method

3.4.1 GGT's approach

137. GGT has developed its AA5 opex using a BST method except for SoCI expenditure which GGT has removed from the base year and separately forecast on a bottom-up basis. GGT does not propose output growth or productivity as factors in its opex BST. GGT proposes three step changes.

3.4.2 Our assessment

Appropriate choice of opex forecasting methods

138. We consider that the methods that GGT has used are appropriate approaches for the components that GGT has applied them to. We have concerns with aspects of GGT's application of BST, and of some assumptions it has proposed, which we describe in our assessment of the proposed opex in section 6.

3.5 Other regulatory accounting matters

3.5.1 Cost allocation between covered and uncovered services

139. In ERA's determination for the current regulatory period, ERA determined (in summary) that GGT's costs not required solely to provide covered services should be allocated between covered and uncovered services as follows:[40]

- Capex on compressor units, based on the ratio of compressor units
- All other capex, based on the ratio of TJ-km of contracted capacity, and which ERA noted to be 69.9% in AA3
- Opex for engineering and field services based on direct costs
- Opex for APA operations costs (other than regulatory and engineering and field services) based on the ratio of TJ/d contracted capacity
- 75% of commercial and GGT operations expenditure within the regulatory expenditure category, allocated to the covered pipeline.

140. GGT has provided a cost allocation model, which provides an update to the relevant allocation factors. GGT has provided allocation factors that applied to its Yarraloola receipt

[38] GGT response to EMCa information request IR27

[39] GGT response to EMCa information request IR50, part 2

[40] ERA Final Decision on Proposed Revisions to the Goldfields Gas Pipeline for 2020 to 2024, paragraphs 155 to 156 (opex) and paragraph 325 (capex)

point customers only, and cost allocation factors that take account of the additional customers supplied through capacity provided from its NGI receipt point. The relevant cost allocation factors are summarised in Table 3.3.

Table 3.3: Covered to total cost allocation ratios

Cost allocation ratio	YRP only	YRP & NGI
Ratio of TJ contracted covered capacity (to total)	55%	61%
Ratio of TJ-km of contracted covered capacity (to total)	69.4%	70.3%

Source: GGP AA5 Attachment 6.2. Sheet FINAL|CAM Summary

141. We observe that the cost allocation for capex is hardly affected by the additional NGI customers and is very similar to the factor of 69.9% referred to in GGT's previous regulatory submission.

142. GGT's opex allocation factor, after taking account of the NGI customers, is 11% higher than would be the case with Yarraloola customers only.[41] However, from the information that we show in section 3.2, GGT's contracted capacity forecast is increased by 21% in 2026 increasing to 30% in 2030 resulting from the additional assumed demands of the customers enabled by the NGI. Therefore, the increased allocation of costs resulting from the new NGI-enabled loads is proportionately less than the increased demands and, other things being equal, would lead to a reduced per-TJ allocation of costs to the covered pipeline.

3.5.2 Depreciation – asset life assumptions

GGT's proposal

143. GGT proposes changing the approach to calculating the asset lives by capping asset lives to the weighted average remaining life (WARL) of its pipeline and laterals class.[42]

144. Table 3.4 compares GGT's calculated WARL, GGT's 'standard' asset lives, and the range of corresponding expected 'asset lives' applied by available published information from other gas utilities in Australia. We note that the documents we have relied upon for the other utilities do not have consistent descriptions of the asset categories.

Table 3.4: A comparison of the economic asset lives proposed by GGT and selected other gas utilities

		Asset lives (years)	
Asset categories	**WARL**	**GGT current standard life**	**Other gas distribution utilities**
Pipeline and laterals	41	70	30-70
Main line valve and scraper stations	21	50	n/a
Compressor stations	14	30	30
Receipt and delivery point facilities	22	30	30
SCADA and communications	7	10	10
Cathodic protection	11	15	15
Maintenance bases and depots	32	50	30
Other assets	5	10	5

41 Calculated as (61% - 55%) / 55%

42 GGT – AA5 Proposal overview-1 January 2024-Public-amended, page 95

Sources: GGT, GGP-AA5-Proposal overview, Table 12-1; Victorian Transmission System 2023-2028 Access Arrangement Information December 2021, Table 3.5; Dampier to Bunbury Natural Gas Pipeline 2021-2025 Final Plan, January 2020, Table 9.4

Our assessment

145. GGT has proposed the same asset lives for AA5 as those approved by the ERA in its AA4 FD. There is now less published information on standard asset lives than has previously been available for comparative analysis and from which we considered that the GGP asset lives were within the typical ranges. Based on the limited comparative analysis we were able to undertake, [43] GGP asset lives are still reasonable. We do not propose any changes to the expected useful asset lives.

3.6 Implications for our review

GGT's demand forecast has minimal impact on its capex and opex forecasts

146. The demand forecast for the GGP has minimal influence on the AA5 capex and opex forecasts that we assess in sections 5 and 6. In substance, GGT's capex and opex forecasts reflect expenditures required to operate and maintain its system.

GGT/APA's SIB cost estimates are likely to be somewhat more accurate than claimed

147. APA/GGT's cost estimation methodology is consistent with common industry practice (i.e. largely bottom-up builds). GGT has identified that a number of its projects are still in the 'concept' or early stages of their development lifecycle and so the cost estimates are based on early or incomplete designs. We consider the basis for the cost estimates in each project and consider whether they are a reasonable estimate of AA5 costs.

GGT's opex forecast is based on an acceptable approach

148. The focus of our assessment of GGT's opex forecast is to identify whether or not GGT has appropriately applied the BST methodology, given that this is an appropriate methodology.

The introduction of the NGI has led to modification of cost-allocation factors between covered and uncovered assets

149. GGT has developed and deployed a series of cost-allocation factors which are designed to appropriately assign costs between covered and uncovered assets. In our assessment we have sought to check that the correct allocation factors have been applied by GGT.

[43] Our only meaningful comparison of asset lives is with DBNGP as APA owns and operates the Victorian Transmission System (and so we would expect similar asset life assumptions as for the GGP); we could not discern a meaningful comparator for Main line valve and scraper stations, however in our equivalent AA4 assessment for the ERA, we did not recommend any change to the GGP proposed asset life

4 ASSESSMENT OF AA4 CAPEX

At $70.2 million, GGT proposes conforming AA4 capex that is almost ten times higher than the ERA's AA4 FD of $7.5 million. The increase comes from inclusion (for the first time) of Shared capex, from cost over-runs associated with projects that were assessed in the ERA's FD, and from new projects responding to new information and regulatory obligations that have arisen since the FD.

GGT claims that the omission of $30.4 million Shared capex was a regulatory oversight on its part. However, we find no compelling basis for this claim. Moreover, inclusion of such an amount would appear to represent 'double-dipping' to the extent that these costs have previously been included in APA's Corporate Services fee, a fee which has increased in its AA5 submission. We consider that this does not represent conforming capex and removing it therefore reduces GGT's proposed allowance by $30.4m.

We are generally satisfied with the justification of the remaining sources of variance, except for what we consider to be inappropriate allocations of aspects of the EoEL and Reliability capex programs to covered assets. Removing these results in an adjustment of $4.9 million.

The aggregate impact of our assessed adjustments would imply a reduction to GGT's AA4 capex of $35.3 million, or 50.3% of GGT's actual/estimated capex of $70.2 million.

4.1 Introduction

150. We have reviewed the information provided by GGT to support the capex incurred (or to be incurred) by GGT in the AA4 period. Our focus is to assess the extent to which the actual and estimated capex is likely to satisfy the capex criteria for the purposes of determining the level of conforming capex under the NGR.

151. In this section, we have undertaken a review of every project nominated by GGT as incurring AA4 capex. We pay particular attention to understanding the basis for material deviations between the expenditure incurred (or expected to be incurred) by GGT and the ERA's FD.

4.2 GGT's proposed conforming AA4 capex

4.2.1 Information provided

152. The information provided by GGT in its submission to support of its AA4 capex includes the following:

- A description of the AA4 projects and programs and the variances from the ERA's FD in its Capital Expenditure Overview document
- Business cases for its IT projects, noting that they commenced in AA4.

153. Due to the relatively high level of the information provided with its submission, we asked numerous formal information requests regarding GGP's AA4 capex to help ensure we had a sound understanding of GGT's positions. These requests included asking for the following:

- Business cases (or similar documents) for the SIB, OT and other projects

- Variance analysis comparing actual/estimated capex for AA4 to the ERA's FD, including any change request (or equivalent) documents to show an auditable trail of variance management
- A breakdown of the cost estimates for the AA4 capex projects, including the cost forecasting methodology applied
- Identification of the projects that have been deferred to the AA5 period or are starting in the AA4 period but are continuing into the AA5 period
- Any improvement initiatives and/or efficiency gains achieved throughout the AA4 period.

General observations on information provided

154. GGT did not initially provide compelling information to evidence its statements regarding significant changes in its expenditure. For example, with respect to the asset reliability expenditure in AA4 which increased from the ERA FD allowance of $1.6 million to $19.9 million actual/estimated:[44]

- The ERA FD allowance was based on a single project, Yarraloola GEA replacement, the cost of which increased to $7.1 million for which the evidence of the contributions and timing of the declared sources of variation were not provided. Subsequently the project cost was later revised upward to $8.7 million due mis-allocation to covered assets
- The unplanned Wiluna pre-NGI project at a cost of $8.6 million which is explained by a short four-page project summary
- Four other unplanned projects (including 'Other') for a combined cost of $2.6 million, each of which GGT supports with a sentence.

155. Good industry practice includes being able to provide comprehensive, approved business cases (or equivalents) and change control documentation (as required) to provide an auditable evidence trail to help justify expenditure when there is significant variance between the FD (in this case) and what was actually spent. Nonetheless, GGT was, when prompted by information requests, able to explain most variations and provide evidence to support its claims.

156. We have taken this additional information provided by GGT into account in our review of the proposed AA4 capex. We discuss the results of our assessment in the subsequent sections of this report.

4.2.2 Comparison between GGT's expenditure and the ERA approved allowance

Updates to GGT's proposal

157. GGT's submission identified $60.5 million AA4 capex as shown in Table 4.1 (as uncorrected), being $52.9 million higher than the ERA's FD of $7.5 million.[45]

158. Subsequently, GGT advised that it had made several errors in allocating expenditure to the covered network and provided a revised AA4 capex spreadsheet. The revised AA4 capex is $70.2 million, being $62.7 million higher than the ERA's FD.

[44] GGT response to EMCa information request IR32, Table 2

[45] GGT response to EMCa information request IR32, Table 1

Table 4.1: Summary of proposed conforming AA4 capex compared with ERA's FD, uncorrected and corrected allocation - $m. real 2023[46]

Capex by category	ERA's FD	Actual/ estimate Uncorrected	Variance to FD	Actual/ estimate Corrected	Variance to FD
Stay in Business					
Integrity	0.25	0.46	0.21	0.49	0.24
Rotating maintenance	0.23	1.66	1.43	2.54	2.31
End of equipment life	2.46	5.78	3.33	7.53	5.07
Net zero	0.00	0.00	0.00	0.00	0.00
Physical security	0.00	1.52	1.52	1.52	1.52
Hazardous area/ compliance	0.24	1.02	0.78	1.14	0.90
Reliability	1.58	13.60	12.02	19.94	18.36
Other	2.77	4.08	1.30	4.66	1.88
Buried pipework	0.00	1.92	1.92	1.99	1.99
SIB sub-total	**7.53**	**30.04**	**22.51**	**39.80**	**32.28**
Shared capex					
ITOT	0.00	18.03	18.03	18.03	18.03
SoCI Cyber	0.00	4.05	4.05	4.05	4.05
Other shared capex	0.00	8.33	8.33	8.33	8.33
Shared capex sub-total	0.00	30.41	30.41	30.41	30.41
Total AA4 capex	**7.50**	**60.45**	**52.92**	**70.22**	**62.69**

Source: GGT response to EMCa information request IR32

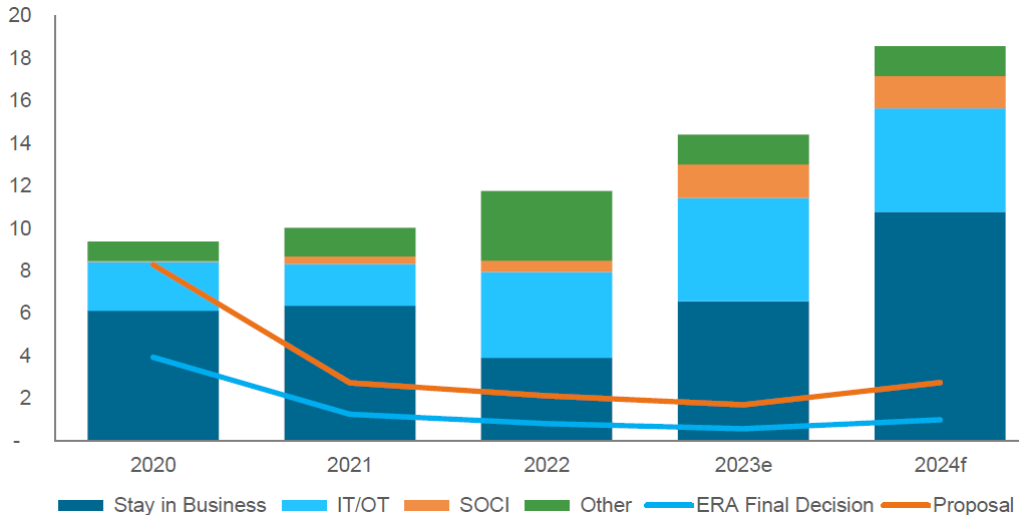
159. All major categories of expenditure are materially higher than the ERA's FD, except for the Net Zero sub-category for which there was no allowance in the FD and no capex proposed to be incurred in this sub-category for AA4 by GGT.

Variance analysis

160. In Figure 4.1 we show the variance between the proposed AA4 capex compared with the ERA's FD by expenditure category and by year. This diagram is from GGT's proposal and does not incorporate subsequent corrections (which we discuss in relevant sections).

[46] We have relied on the AA4 capex model provided by GGT for our analysis, specifically the 'AA4 Capex Real$ Summary (2023)' worksheet for actual/estimated capex and 'AA4 FD project list' worksheet for the final decision.

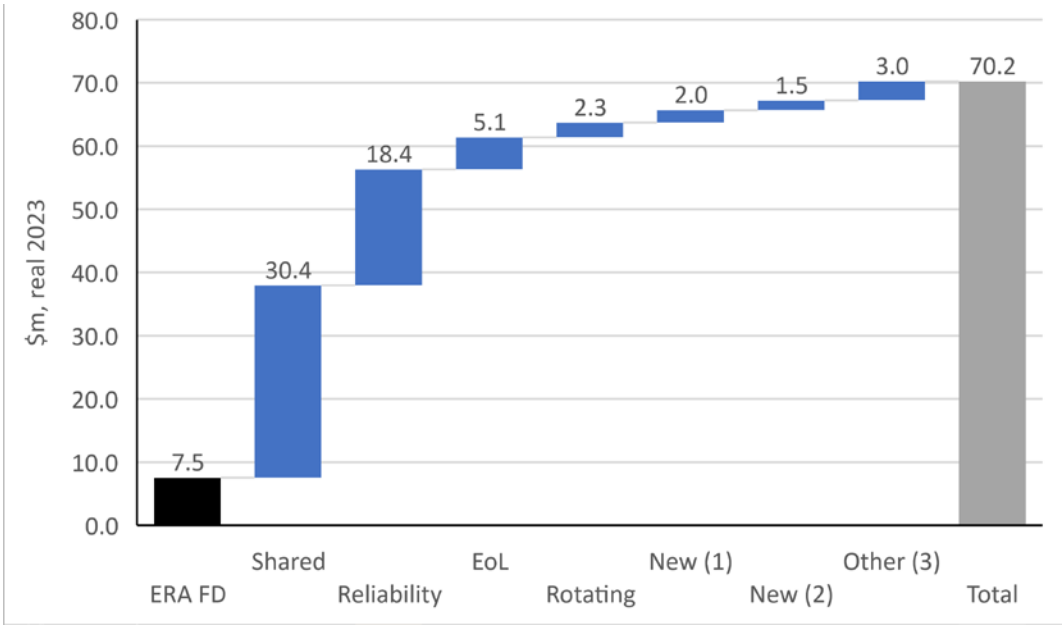
Figure 4.1: GGP capex over 2020-24 compared to proposal and allowance (uncorrected) - $m, real $2023



Source: GGT, GGP-AA5-Proposal Overview, Figure 10.1

161. In Figure 4.2 we show the variance analysis between the proposed AA4 capex and the ERA's FD by expenditure category. We note that for this purpose we utilise GGT's proposed 'allocation-corrected' capex of $70.2 million, however in GGT's AA5 submission, GGT proposed $10 million less than this amount, all of which is for 'SIB' capex.

Figure 4.2: Variance analysis of proposed conforming AA4 capex compared with ERA's FD by expenditure category (corrected) - $m real 2023



Source: EMCa chart derived from GGT response to EMCa information request IR32 corrected & IR02
[1] New – Buried pipework; [2] New – Physical security; [3] Variance – 'Other', Hazardous area / compliance, Integrity

162. According to GGT, the variation of actual/estimated expenditure to the ERA's FD is primarily due to:[47]

- Exclusion of key expenditure categories: GGT did not include 'Shared capex' (ITOT, cyber security, physical security, and Other) in its AA4 forecast for its AA4 submission, therefore ERA did not consider such an amount.

[47] GGT, Capital Expenditure Overview, page 12

- Scope uncertainty - the example cited by GGT is the reliability expenditure being higher than expected, mostly driven by the Yarraloola GEA replacement program.
- Supplier cost pressures - GGT cite a significant increase in post-COVID input prices (but without explicitly stating an overall contribution to the revised capex).

163. GGT's explanation above did not explicitly identify new projects that were added to the AA4 capex portfolio, such as:

- Expansion of its EoEL Program, commencing in 2024
- Addressing integrity issues with buried pipework which were identified in the AA4 period, and which commenced in 2021
- Unplanned reliability work, including:
  - Wiluna pre-NGI project
  - Yarraloola gas analysis
  - Yarraloola air systems upgrade
  - Installation of load banks at Ilgarari and Paraburdoo.

4.2.3 Impact of restrictions on resources during AA4

164. GGT cites significant increase in post-COVID market prices as a major contributor to the forecasting variance. GGT refers to the part-contribution of '*global and local supply chain constraints and, where available, higher costs for specialised equipment, support and labour, particularly in remote areas in which the GGP operates*.'[48]

165. By way of evidence to support its claim, GGT notes that:

- When the AA5 Proposal was written in Q3 2023, the WA Wage Price Index was the highest in Australia
- AEMO has found that the cost to undertake transmission projects has increased by about 30% in real terms between the 2022 and 2024
- A price and wages indicator shows that input prices and wages have been in 'expansion' territory since mid-2020 and remain 'substantially elevated'. [49]

166. Whilst the attribution of AEMO's findings to gas pipelines is questionable, there is sufficient evidence that COVID-19 had an impact on prices in the AA4 period that are likely to have contributed to GGT's overspend, but it does not state the contribution.

4.2.4 Carry-over to AA5

167. In response to our request for information on which AA4 projects would carry over into the AA5 period,[50] GGT identified:

- SIB projects, in two forms:
  - Programs which had not yet started but were scheduled to commence in FY24 and will carry-over to the AA5 period (such as the EoEL program)
  - Programs which had already started and will continue into AA5 – for example Yarraloola GEA upgrade, buried pipework and hazardous area rectification
- IT projects – all commenced in AA4 and carry over into AA5
- OT projects – only three OT projects carry over into AA5.

168. We have included the relevant capex proposed to be incurred during AA5 in our assessment of the forecast capex for AA5 in section 5.

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48 GGP-AA5-Proposal overview-1 January 2024-Public-amended, page 65

49 GGP-AA5-Proposal overview-1 January 2024-Public-amended, page 65

50 GGT response to EMCa information request IR05

4.2.5 Improvement initiatives and efficiency gains

169. We asked GGT to identify quantified benefits from improvement initiatives and efficiency gains either in the AA3 period that have been taken into account in the AA4 capex proposal or that have been implemented in the AA4 period.[51] GGT identified two initiatives for improving efficiency in its response:

- Took advantage of the connection of the NGI to revise its compressor operating philosophy, leading to reduced emissions; and
- Introduction of risk-based GEA replacement program rather than age-based, reducing capex by $6 million through deferral.

170. We have taken these initiatives into account in our assessment.

171. We would have expected explicit improvement in overall GGT efficiency from APA's ongoing investment in IT and OT, particularly through its IT Technology Transformation Project, given that APA identifies optimising efficiency as one of its six guiding principles for this program.[52] Whilst APA cites the drivers of its IT initiatives gains to be '*consistent with IT industry standards, ISO compliance and international frameworks,'* references abound in its IT plan regarding efficiency gains.[53] Neither GGT nor APA has explicitly recognised these benefits in its proposal.

4.3 Assessment of AA4 Stay In Business capex

172. We provide our assessment of the corrected total of $70.2 million included for SIB capex in the following sections, as presented in Table 4.1.

4.3.1 Integrity work

173. The FD allowance for this work was $0.3 million. The driver for the work on inspecting the integrity of the pipelines was compliance with AS/NZS 2885. GGT expects to incur $0.5 million by the end of AA4 towards ensuring the integrity of the pipeline as follows:

- $0.1 million in CY20 for DCVG survey and verification dig-ups
- $0.4 million in CY24 for in-line inspection of the Newman lateral.[54]

174. The inspection techniques are consistent with good industry practice.

175. Given APA's experience with pipeline inspections and the relatively high frequency with which it carries out the work, we consider that the AA4 expenditure is likely to be at an efficient level, noting that the variance with the FD is relatively small.

4.3.2 Rotating Maintenance work

176. The FD allowance for rotating maintenance work in the AA4 period was $0.2 million, with GGT's AA4 capex initially reported as $1.7 million and then revised to $2.1 million following the covered/uncovered allocation correction.[55] The corrected capex was incurred as follows:[56]

- $1.5 million for overhauling the Wiluna turbine
- $0.4 million for overhauling the Yarraloola U1 [redacted] engine

51 EMCa information requests IR06 and IR07

52 APA, ITOT Plan, page 8

53 For example, with respect to its Technology Enablement Program, Gris Solutions Program, Maximo upgrade, and its cloud-preferred strategy.

54 EMCa information request IR32 -SIB Projects spreadsheet - Updated 29 April - Corrected allocators – CONFIDENTIAL and GGT response to EMCa information request IR32, Table 2

55 GGT's response to information request EMCa32, Tables 1 and 2

56 EMCa32 -SIB Projects spreadsheet - Updated 29 April - Corrected allocators - CONFIDENTIAL

- $0.2 million for Ilgarari compressor overhaul.

177. GGT advises that the main driver of the variance was the overhaul of the Wiluna turbine which was identified post the AA4 submission as a result of a 'bad actor' review conducted in 2021 and 2022:

> *'Wiluna – Improvements were enacted in 2022 to mitigate systematic compressor failures due to varnishing and are expected to improve site performance, however, [there] have been three events since the improvement.'* [57]

178. Whilst we note that the $1.5 million expenditure at Wiluna does not appear to have had the desired effect, we are satisfied that the response to the compressor failures was prudent and that the cost incurred is likely to have been efficiently incurred. GGT identify similar issues at Paraburdoo and Ilgarari, and again we are satisfied that the response to the issues was reasonably undertaken and that the cost is likely to have been efficiently incurred.

179. We consider that the expenditure is likely to satisfy the capex criteria.

4.3.3 End of Equipment Life capex

There are four sources of variance to the FD amount

180. The FD allowance for EoEL work in the AA4 period was $2.5 million, with GGT's actual expenditure initially submitted as $5.8 million and then revised to $7.5 million following covered/uncovered allocation correction.[58] The corrected covered expenditure was incurred through five projects/programs as follows:

- EoEL Program: $5.0 million
- Wiluna RTU replacement: $1.3 million
- Yarraloola Station RTU Upgrade: $0.9 million
- Wiluna cathodic protection: $0.2 million
- Other: $0.2 million.[59]

181. GGT provided cost estimates for a number of EoEL projects in response to our information request and which we have referred to in our assessment of both AA4 and AA5 EoEL capex.[60] We note that GGT has continued aspects of the EoEL Program into the AA5 period, which we assess in section 5.

The stated cost of EoEL Program appears to include capex on uncovered assets

182. We are satisfied that there are reasonable cases for replacing the equipment at end of life (i.e. obsolescence).[61, 62] However, based on the corrected capex spreadsheet provided to us in response to our request for further information regarding the variances,[63] we are unable to reconcile GGT's stated AA4 (allocation-corrected) expenditure for the covered network. Specifically, work has been undertaken at a number of receipt and delivery points. Based on our review of the GGP schematic published on the APA website, only the Newman and Yamima delivery points are part of the Scheme Pipeline. Where the delivery points are not specified as either Scheme or Non-Scheme, we assume that they are shipper funded in accordance with the Standard Terms and Conditions of the Gas Transportation Agreement and are accordingly not part of the Scheme Pipeline for tariff purposes.

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57 GGP-AA5 Proposal overview, page 82

58 GGT's response to EMCa information request IR32, Tables 1 and 2

59 GGT response to EMCa information request IR32

60 GGP-EoEL cost basis – Confidential and GGP Cost Estimates - CONFIDENTIAL

61 GGP-AA5-Attachment 10.12-SIB business case - End of equipment life-1 January 2024-Confidential

62 GGT response to EMCa information request IR32, Table 3

63 EMCa32 -SIB Projects spreadsheet - Updated 29 April - Corrected allocators - CONFIDENTIAL

183. We note that GGT's allocation model shows the receipt and delivery points as 'not able to be specified'.[64] Whilst the Wiluna RTU replacement and Wiluna cathodic protection expenditure is identifiable, the rest of the expenditure which adds to the balance of the $7.5 million includes non-covered assets.

184. Based on our identification of covered assets, only $5.9 million in total satisfies the capex criteria applied to the covered pipeline, representing an adjustment of -$1.6 million.

The Wiluna and Yarraloola RTU replacement costs are significantly different

185. The Wiluna work was included in the FD, however the replacement of the Yarraloola station remote terminal units (RTU) appears to be unplanned based on the variance incurred. The work is to address technical obsolescence risks associated with RTUs, which is a reasonable basis for replacement (noting that refurbishment of RTUs is typically not a prudent end of life response). The cost of the Wiluna work exceeded the cost of the Yarraloola work by 44% ($0.4 million) which we understand is because the scope differed somewhat.

The capex for Wiluna cathodic protection and 'Other' EoEL work appears reasonable

186. The work at Wiluna was required to replace a failed Corrosion Protection (CP) unit and GGT advises that the Other work was *'…related to FEED and development reports (e.g. our approach to gas chromatographs which fed into our end of equipment life program).'*[65]

187. We consider the expenditure to be reasonably incurred.

4.3.4 Physical security and natural hazards program

188. GGT has proposed to incur [redacted], being a new program not included in the FD allowance.[66]

A new obligation arose within the AA4 period in relation to security of its assets

189. As discussed in Appendix B, the GGP is classified as critical infrastructure and is subject to the amended requirements under the SoCI Act. As required under the legislation, the responsible entity, APA, has developed a Critical Infrastructure Risk Management Plan (CIRMP), part of which relates to physical security of its assets.[67]

190. The CIRMP Rules require that responsible entities:[68]

- Identify the physical critical components of the Critical Infrastructure asset
- As far as it is reasonably practicable to do so, minimise or eliminate a material risk, and mitigate a relevant impact, of:
  - a physical security hazard on a physical critical component; and
  - a natural hazard on the Critical Infrastructure asset
- Respond to incidents where unauthorised access to a physical critical component occurs
- Control access to physical critical components, including restricting access to only those individuals who are critical workers or accompanied visitors
- Test that security arrangements for the asset are effective and appropriate to detect, delay, deter, respond to and recover from a breach in the arrangements.

64 GGP-AA5-Attachment 10.3-Capital expenditure coverage allocation model-1 Jan 24-Confid

65 GGT response to EMCa information request IR32, Table 3

66 GGT response to EMCa information request IR32, Table 2

67 [redacted]

68 CISC, Guidance for the Critical Infrastructure Risk Management Program, page 12

Elevated risk from [redacted]

191. The details regarding the assessment and responses to the risks posed to critical infrastructure are subject to strict confidentiality provisions. In undertaking our assessment, we were given restricted but sufficient access to APA's physical security related risk assessment, options analyses, selected solution and cost estimates to enable our assessment.

192. [redacted]

193. We are satisfied that GGT was subject to a new obligation (under the amended SoCI Act) during the AA4 period and that it could not reasonably foresee the extent of those obligations when its AA4 Proposal was submitted. We therefore consider it reasonable that there was a variation to its forecast AA4 capex in which GGT was required to respond.

APA's assessment of site and risk assessments was consistent with good practice

194. [redacted]

195. [redacted]

196. We are satisfied that the classification of GGP sites into one of the three security tiers was reasonable and that the risk assessment was comprehensive.

The selected option is the prudent choice

197. APA considered three options:

1. [redacted]
2. [redacted]
3. [redacted]

198. [redacted]

199. We consider [redacted] to be the prudent selection of the three considered and we see no reasonable means of reducing the proposed scope of work at each of the covered sites without compromising [redacted]

69 [redacted]
70 [redacted]
71 [redacted]
72 [redacted]

Cost is likely to be efficient

200. The program costings were developed by an independent, third-party consultant. The consultant took into account [redacted]

201. We are satisfied that the proposed [redacted] Accordingly, we consider that the Physical security and natural hazards program expenditure satisfies the capex criteria.

4.3.5 Hazardous area compliance program

202. GGT forecast $0.7 million in its AA4 submission, but due to what GGT has described as scope uncertainty, the ERA FD included only $0.2 million, which GGT accepted at the time. GGT's actual expenditure is now reported as $1.0 million, which was subsequently revised to $1.1 million with the correction of the allocation to the covered pipeline.[74]

203. GGT provided cost estimates for two aspects of the hazardous area compliance program in response to our information request and which we have referred to in our assessment of both the AA4 and AA5 capex.[75]

The work to address electrical hazards has been confirmed by site visits

204. APA (for GGT) is required to periodically undertake Electrical Equipment Hazardous Area inspections and to remediate hazards in accordance with AS/NZS 60079 Explosive atmospheres and AS/NZS 3000:2018 Electrical Installations (Wiring Rules).

205. APA/GGT reports that it engaged a contractor to undertake the inspections at Paraburdoo and Ilgarari compressor stations.[76] Defects (non-compliances) were identified.

206. In response to our information request[77] to support the justification of the planned work in AA4, GGT provided two relevant planning reports, which summarise the defects, include rectification reports, deliverables lists, and the scopes of work.

The basis for the expected costs are reasonable

207. Whilst GGT has only considered one option (rectify the non-compliances over AA4 and AA5), we are satisfied that a detailed options analysis is not warranted in this case. We were provided with a cost spreadsheet that shows the cost estimates for each project stage, and which we consider have a reasonable basis.

208. We consider that the Hazardous area program expenditure satisfies the capex criteria.

4.3.6 AA4 reliability program

The submitted information did not provide adequate justification for the significant variance against the ERA's FD

209. GGT's proposed AA4 reliability capex is $19.9 million[78] versus an ERA FD allowance of $1.6 million. The work included in the AA4 FD was for the Yarraloola GEA replacement project only, which GGT now proposes conforming capex of $8.7 million for that project.[79]

210. We requested a discussion with GGT at our on-site meeting to help understand the balance of the variance from the allowance. However, little further information was provided.

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73 [redacted]

74 GGT response to EMCa information request IR32, Tables 2 and footnote 7

75 GGP Cost Estimates - CONFIDENTIAL

76 GGT Capital Expenditure Overview, page 28

77 EMCa information request IR12

78 Which was increased after correction by GGT from the original (uncorrected) amount of $13.6 million

79 GGT response to EMCa information request IR32, Table 4

However, in response to EMCa information request IR32, we finally understood that a major driver of the increase in capex required for this program was five unplanned AA4 reliability projects (with the capex shown as the recently advised 'AA4 corrected' amounts), and which are in addition to the Yarraloola GEA replacement project:[80]

- Wiluna pre-NGI project ($8.6 million)
- Yarraloola gas analysis ($0.9 million)
- Yarraloola air systems upgrade ($0.5 million)
- Load banks ($0.4 million)
- Other ($0.8 million).

211. We assess each of the five components of the AA4 reliability in turn.

Yarraloola GEA replacement project

212. GGT included the GEA replacement project in the AA4 proposal because of ongoing reliability issues with the GEA, which is an original GEA from when the pipeline was commissioned in 1996. The ERA accepted GGT's case for replacement in the AA4 period in its FD based on GGT's estimate of $1.6 million at that time.[81]

213. However, GGT now proposes conforming capex of $8.7 million for that project.

Scope changes are the major driver of the variance

214. GGT's AAI included the following information about the cause for the cost increase:

> *'… while equipment failures (which put reliability at risk) were known when the 2020-24 forecast was prepared, investigations into the cause of these issues had not yet been completed. A provisional forecast of $4.9 million was included to replace the Gas Engine Alternators (GEA) at Yarraloola and Ilgarari.*
>
> *However, the works required at Yarraloola were more extensive than anticipated requiring a new fuel gas skid and the design and fabrication of a new enclosure and battery room. The covered component of reliability improvement works at Yarraloola over 2020-24 will cost about $6.9 million.'* [82]

215. Reference in GGT's Proposal was also made to the post-COVID cost increases, which we accept as a legitimate cause of significant cost increase. Reference was also made in the workshop presentation to the need for lube oil line modification as a scope change.[83]

The information provided is sufficient to justify the variation

216. We accept that the additional work identified by GGT at Yarraloola was likely to be required based on (i) the information that has been provided, (ii) the age of the plant and equipment, (iii) our acceptance of APA/GGT's cost estimation process, (iv) APA's extensive knowledge of GEA operations and maintenance, and (v) the qualitative information provided by GGT regarding the cost of services post-COVID.

217. We consider that the capex as conforming under the capex criteria.

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80 GGT response to EMCa information request IR32, Table 4

81 GGT response to EMCa information request IR32, Table 2

82 GGT AAI, pages 64-65

83 On-site presentation, slide 42

Wiluna pre-NGI project

The driver of the Wiluna pre-NGI project was an unexpected risk of capacity shortfall prior to the NGI being implemented.

218. The project was not included in GGT's AA4 Revised proposal and therefore was not included in the ERA's FD.

219. The Wiluna pre-NGI project was introduced during AA4 as an unplanned response to a change in the 'amount' of spare capacity attributable to diversity between the actual and contracted demand on the GGP. GGT describe the project driver as:

> *'Demand was contracted on the basis that northern demand diversity could support deliveries in the south and that the NGI would soon be connected (which would also alleviate capacity constraints)'* [84]

220. This decision was made on the basis of the northern section of the GGP supporting southern section capacity. However, with the significant contraction in northern section diversity, GGT advise that subsequently that:

> *'The reduction in northern diversity together with the ambient temperatures at Wiluna resulted in a risk that GGP could not maintain capacity to meet levels of demand of current services in summer and the shoulder periods.'* [85]

221. GGT has provided evidence that shows the decline of the diversity[86] and which we consider reasonable to support the need for a prudent operator to consider options to manage the risk.

GGT's option selection was the prudent choice at the time

222. GGT considered four options, each of which are discussed in Appendix 1 of the response to EMCa information request IR32. The selected approach was to add inlet air cooling to avoid being constrained in Summer/Shoulder (7TJ/d). The scope included installing an evaporative air-cooling package, a reserve osmosis water treatment package, a water bore, and an evaporation pond at a cost of $8.6 million.

223. Based on the information submitted, we conclude that GGT has demonstrated that the Wiluna pre-NGI project was required to maintain the level of capacity to meet levels of demand for service existing at the time the capital expenditure was incurred (CY20 and CY21), consistent with Rule 79(2)(c)(iv).

224. The project provides additional benefits as it allows for additional capacity on the pipeline as a whole and improves the reliability and in turn integrity of services.

GGT has conflated several issues that have led to an over-allocation of capex to the covered pipeline for this project

225. GGT argues that it is reasonable to assign 100% of the cost of the project to the covered pipeline, stating that:

- *'While the Wiluna pre-NGI ambient temperature project **will provide benefits to covered and uncovered services** [emphasis added], it is important to consider this in the context of the pipeline as a whole.'*
- *'Specifically, while all Wiluna costs are allocated to the covered pipeline, a relatively low proportion of overall compressor capex is allocated to the covered pipeline.'*
- *'We note that the covered contracted capacity of the pipeline is 61% and the proportion of the covered contracted terajoule kilometres is 70%. However, only 17% ($3.1M of $18.4M) of forecast rotating major maintenance is allocated to the covered pipeline,*

84 GGT response to EMCa information request IR32

85 GGT response to EMCa information request IR32

86 GGT response to EMCa information request IR32, Figure 2

even though all operational compressors support the delivery of uncovered and covered services.'[87]

226. We disagree with GGT's rationale in allocating the cost in this way as we consider that GGT is conflating two issues relating to capex allocation:

- The benefit that will be derived from the ambient temperature project (which is to both the covered and uncovered services)
- Maintenance of the compressor.

227. We consider that a reasonable basis for allocation of the cost of the project is 61% since covered and uncovered services will benefit from the project.

228. This results in a reduction to the AA4 capex by -39% of $8.6 million or -$3.4 million for this project is reasonable.

Remaining unplanned AA4 reliability projects[88]

The capex for the Yarraloola gas analysis project capex is conforming

229. GGT advise that project was required to '*replace the gas analyser system which monitors the gas quality of the Apache/Santos inlet as it was unreliable and unserviceable*.' We consider this to be a reasonable driver of unplanned expenditure and we consider the cost to be reasonable.

The capex for the Yarraloola air systems upgrade is conforming

230. GGT advise that project was required 'to address several issues with the Yarraloola air system. For instance, unnecessary cycling of the standby unit, longer running times prolonging heat buildup etc.' We consider this to be a reasonable driver of unplanned expenditure and we consider the cost to be reasonable.

The capex for the load banks at Ilgarari and Paraburdoo is conforming

231. GGT advise that the project was required to *'[allow] for the direct consumption of…additional load, preventing unnecessary wear on the aftercoolers and improving system reliability by avoiding their operation when not needed*.' Load banks are a common solution for absorbing excess power produced by GEAs. From the information provided by GGT we assume that the existing load banks failed in service. Replacement is a reasonable response and we consider the cost to be reasonable.

4.3.7 'Other' AA4 SIB capex

232. There are five nominated projects in the AA4 period which GGT identifies under the 'Other' label at a total cost of $4.7 million[89] as follows[90]:

- Three projects totalling $2.8 million included in the FD, and for which the total cost outturn was $2.9 million, as listed below:[91]
  - Karratha maintenance base ($1.6 million)
  - Site accommodation upgrades ($0.4 million)
  - Miscellaneous capital ($0.9 million) for minor capital works and purchase instrumentation, tools, etc.
- Not included in the FD

87 GGT response to EMCa information request IR32, Appendix 1

88 GGT response to EMCa information request IR32

89 Which was increased after correction by GGT from the original (uncorrected) amount of $4.1 million per Table 4 in GGT's response to EMCa information request IR32

90 GGT response to EMCa information request IR32, Table 2

91 GGT response to EMCa information request IR32, Table 4

- Other ($1.4 million) for SCADA WAN Lifecycle Project and contributions to a national asset engineering project and other small projects
- NGI ($0.4 million) for costs associated with building interconnection with the NGI.

The proposed capex is conforming

233. The total cost increase for the three projects included in the FD is less than 5%, which we consider to be reasonable.

234. The Other sub-category of work for SCADA WAN as described by GGT, albeit briefly, is consistent with the operations of a transmission gas pipeline and GGT benefits from being allocated a relatively small amount of the APA Group cost. We consider the cost to be reasonable.

235. GGT argues that the cost associated with building the interconnection with the NGI conforms to the new capital expenditure criterion (i.e. covered) because it provides overall positive economic benefit. It is not within our scope to review the NGI project economics, but based on GGT's claim the relatively modest expenditure appears to be reasonably incurred and allocated to the GGP.

4.3.8 Buried Pipework

236. GGT has proposed a new program at a cost of $2.0 million for AA4 to relocate buried station piping and equipment for chemicals, chemical waste storage and transfer systems at compressor stations along the GGP.[92] This project was not included in the AA4 FD.

The project was in response to clearly identified need

237. GGT advise that during the AA4 period there were failures and environmental incidents which led to the need to commence this program. The buried pipework program commenced in 2023 at Yarraloola compressor station and is proposed to continue into the AA5 period.[93]

238. Based on the information provided, GGT could not have reasonably foreseen the failures and underground leakages. We consider that GGT has demonstrated that the environmental issues needed to be investigated given the operational and environmental risks that had been exposed.

The scope of AA4 work is prudent as is the timing

239. GGT discussed three options that it considered to respond to the environmental impacts and risks from buried pipework, including whether to address similar pipework at compressor stations and scraper stations or just at compressor stations:

> *'We find that relocation of buried pipework at scraper stations on the GGP adds considerable scope to the project that cannot be justified based on the limited reduction in risk. In contrast, deferring work on compressor sites introduces an unacceptable level of risk in terms of environmental failure and non- compliance as we cannot implement effective controls without an engineering solution.'* [94]

240. GGT constrained the scope of work to compressor stations which we consider to be prudent.

The proposed capex is conforming

241. The SIB project spreadsheet with corrected allocation shows that the work in fact commenced in CY21 with development work, and that the pipeline work itself (i.e. bringing

92 GGT response to information request EMCa32, Table 2

93 GGP-AA5-Attachment 10.16-SIB business case - Buried services-1 January 2024-Confidential, page 4

94 GGP-AA5-Attachment 10.16-SIB business case - Buried services-1 January 2024-Confidential, page 4

section of pipes above ground) commenced in CY23 and CY24 at Yarraloola, and Wiluna, with the Wiluna work forecast to extend into the AA5 period.

242. We consider the AA4 costs incurred satisfy the capex criteria.

4.4 Assessment of AA4 proposed shared capex

4.4.1 What GGT has proposed

243. As we show in Table 4.1, GGT has proposed $30.41 million of 'shared capex' to be considered as 'conforming capex' for the purpose of determining its opening RAB for AA5. GGT describes this expenditure as including '*national programs and property related costs, ITOT and cyber costs'*.[95] From examination of models that GGT provided to us, including in response to our information request, we observe that the proposed amounts are derived from APA-incurred corporate-level expenditure, for which a portion has been allocated to the GGP covered pipeline.

244. GGT acknowledges that it did not propose any such expenditure in its AA4 proposal and states that this was '…*primarily because entire categories of spend were not anticipated and were not included in the forecast.*'

4.4.2 Our assessment

245. On reviewing GGT's prior Access Arrangement submissions, we do not accept GGT's proposition that its proposed shared capex was simply 'not anticipated' for AA4.

246. We reviewed GGT's submissions on conforming capex for AA2 and AA3. In both cases, consistent with GGT's submitted forecast for AA4, GGT proposed 'Stay in Business' capex incurred by GGT, and which comprised largely 'technical' expenditure on the pipeline and related assets, with some expenditure also for GGT non-network assets such as maintenance bases and depots. In its AA4 proposal, GGT did not propose any allocation of APA capex to be included as conforming capex in the GGT RAB.

247. As we describe in section 6, APA group charges a 'corporate' charge to GGT for the corporate and management services that it provides, but we do not see that GGT has provided a breakdown of these services and the associated costs. Over the three years of AA4 for which actual expenditure is available, this averaged $5.9 million per year (in real $2023). From GGT's response to our information request, we find that the AA4 APA capex that GGT proposes is shared to it comprises a wide range of corporate-related amounts that includes expenditure on a range of IT systems including finance and HR systems, leased assets and refurbishment of APA's Brisbane office.[96] It is not consistent with APA's corporate service charge to GGT, to also allocate to GGT the capex that APA incurs in providing these services.

248. We looked for evidence as to whether APA group may have changed its policy for charging for its services to GGT. GGT makes no reference to a change of this nature, and which would, if made, be expected to reduce the corporate opex charge. As we discuss in section 6, the corporate charge has instead increased in 2022 to $7.9 million and is proposed to remain at around $8.3[97] million per year (in $2023) through AA5.

249. We also looked for any suggestion in GGT's documentation that its regulatory statement auditors may have identified expenditure in AA4 that had not been correctly accounted for but did not see such evidence.

250. We conclude that GGT's proposal to include, for the first time, an allocation of APA group corporate capex as GGT conforming capex in AA4, is not reasonable. We therefore

95 GGP-AA5 Proposal Overview, page 72

96 GGT explicitly refers to its IT costs being included in its corporate charges in explaining that its corporate charges have increased in part because of higher IT costs. Refer to GGP-AA5-Proposal overview, page 83

97 As per GGP AA5 Opex model.

conclude that the $30.4 million of such expenditure that GGT has proposed, should not be included.

4.5 EMCa adjustment summary

4.5.1 Compliance with capex criteria

251. Our assessment of the capex incurred and to be incurred in the AA4 period has been based on GGT's AAI and supporting information.[98]

252. As a part of our review, we have focussed on the variance in proposed AA4 capex relative to the FD capex allowance, and specifically in instances where GGT has introduced new projects in response to what it has described as external changes, adjustments in response to new information, and adjustments because it 'omitted' significant classes of expenditure from its initial and revised AA4 proposals. Except for the Shared capex, we find that GGT has responded reasonably based on the information it had available to it at the time, and which was not present for its AA4 proposal, or included in the AA4 FD capex allowance from the ERA.

253. Based on our assessment described in section 4.4.2, we consider that the proposed Shared capex introduced by GGT/APA is non-conforming with the capex criteria. Therefore, we have excluded the $30.4 million capex that GGT has proposed.

254. Our adjustments for AA4 SIB capex arise directly from our assessment of SIB projects and programs where we consider from the information GGT has provided that the expenditure does not satisfy the conforming capex criteria in rule 79(1), in accordance with Appendix A. We have taken a strict view of our obligations to advise the ERA based on the information that GGT has provided to us. It is possible therefore that further information from GGT may, if provided, lead us to different conclusions.

4.5.2 Aggregate adjustment assessment

255. As shown in Table 4.2, we have effectively made only two adjustments to the proposed SIB AA4 capex: (i) adjusting the EoEL capex by -$1.5 million, and (ii) adjusting the Reliability expenditure by -$3.3 million due, in both cases, to what we consider to be inappropriate allocation of costs to the covered pipeline.

256. As also shown in Table 4.2, we propose that the full amount of $30.4 million Shared capex is disallowed. The aggregate impact of our assessed adjustments would imply a reduction to GGT's AA4 capex of $35.3 million to a revised total of $34.9 million, which represents a reduction of 50.2% of GGT's actual/estimated AA4 capex proposal of $70.2 million.

[98] GGT's expenditure in 2020, 2021 and 2022 is actual, while the amounts that it proposes for 2023 and 2024 are GGT's estimates.

Table 4.2: Summary AA4 capex by driver & project/program - $m, real 2023

Category	2020 act.	2021 act.	2022 act.	2023 est.	2024 est.	Total
Stay in Business (SIB) - as proposed						
Integrity	0.14	0.00	0.00	0.00	0.35	0.49
Rotating maintenance	0.00	0.39	1.66	0.07	0.42	2.54
End of equipment life	2.22	0.06	0.20	1.53	3.53	7.53
Net zero	0.00	0.00	0.00	0.00	0.00	0.00
Physical security	0.00	0.00	0.00	0.00	1.52	1.52
Hazardous area / compliance	0.07	0.00	0.46	0.06	0.55	1.14
Reliability	3.97	8.49	1.86	2.94	2.68	19.94
Other	0.75	1.21	1.41	1.09	0.19	4.66
Buried pipework	0.00	0.02	0.30	0.61	1.05	1.99
SIB sub-total	**7.14**	**10.19**	**5.88**	**6.30**	**10.28**	**39.80**
less adjustment						
End of equipment life	0.00	0.00	0.00	-0.47	-1.05	-1.52
Reliability	-0.94	-2.41	0.00	0.00	0.00	-3.34
Subtotal adjustments	-0.94	-2.41	0.00	-0.47	-1.05	-4.86
SIB adjusted	**6.21**	**7.78**	**5.88**	**5.83**	**9.23**	**34.94**
Shared capex - as proposed	**3.25**	**3.67**	**7.85**	**7.85**	**7.79**	**30.41**
less adjustment						
IT/OT	-2.29	-1.97	-4.05	-4.86	-4.86	-18.03
Cyber	-0.03	-0.36	-0.53	-1.59	-1.54	-4.05
Other shared corporate	-0.93	-1.34	-3.27	-1.40	-1.40	-8.33
Shared capex adjusted	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
GGT Capex as proposed	**10.40**	**13.86**	**13.73**	**14.15**	**18.08**	**70.22**
EMCa adjustments	**-4.19**	**-6.08**	**-7.85**	**-8.32**	**-8.84**	**-35.27**
Total EMCa adjusted AA4 capex	**6.21**	**7.78**	**5.88**	**5.83**	**9.23**	**34.94**

Source: EMCa table derived from GGT responses to EMCa information requests IR32 (corrected) & IR02

Table 4.3: Summary AA4 adjusted capex by asset - $m, real 2023

Category	2020 act.	2021 act.	2022 act.	2023 est.	2024 est.	Total
Stay in Business (SIB)						
Pipeline and laterals	0.08	0.04	0.47	0.28	0.00	0.88
Main line valve and scraper stations	0.00	0.01	-0.01	0.21	1.07	1.27
Compressor stations	5.25	6.70	3.72	4.14	7.08	26.89
Receipt and delivery point facilities	0.00	0.00	0.00	0.00	0.02	0.02
SCADA and communications	0.15	0.12	0.08	0.53	0.43	1.31
Cathodic protection	0.00	0.00	0.00	0.00	0.10	0.10
Maintenance bases and depots	0.16	0.82	0.77	0.21	0.00	1.96
Other assets	0.56	0.10	0.85	0.46	0.55	2.52
SIB sub-total	**6.21**	**7.78**	**5.88**	**5.83**	**9.23**	**34.94**
Shared asset						
IT/OT	0.00	0.00	0.00	0.00	0.00	0.00
Cyber	0.00	0.00	0.00	0.00	0.00	0.00
Other shared corporate	0.00	0.00	0.00	0.00	0.00	0.00
SIB sub-total Shared asset	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total EMCa adjusted AA4 capex	**6.21**	**7.78**	**5.88**	**5.83**	**9.23**	**34.94**

Source: EMCa table derived from GGT responses to EMCa information requests IR32 (corrected) & IR02

5 ASSESSMENT OF AA5 CAPEX

GGT's AA5 capex forecast is $62.9 million, which is $7.3 million (10%) less than GGT's claimed 'corrected' AA4 capex forecast of $70.2 million. The main reason for the 10% lower forecast is because GGT proposes a much lower level of Shared capex in AA5 than it has claimed as conforming capex for AA4.

However, for the same reasons we discussed in section 4, we consider that GGT's proposed AA5 Shared capex is not conforming capex. This results in an adjustment of minus $15.9 million for AA5.

With one exception, we find that the proposed AA4 SIB expenditure is likely to satisfy the capex criteria. Consistent with our AA4 capex assessment, we consider that GGT has treated capex on elements of its EoEL program as being split between covered and uncovered assets but which we consider are wholly uncovered assets. This results in an adjustment of minus $1.8 million.

The aggregate impact of our assessed adjustments is a reduction to the proposed AA5 capex of $17.7 million (to $45.2 million), which represents 28% of GGT's estimated capex requirement of $62.9 million.

5.1 Introduction

257. This section contains our assessment of the forecast capex allowance proposed by GGT for the AA5 period. We have undertaken the review using the assessment framework set out in Appendix A, and with regard to our findings in sections 2 to 4 of this report.

258. In this section, we describe our review and assessment of what GGT has proposed, and our overall findings on the extent to which the proposed capex satisfies the capex criteria for the purposes of determining the level of conforming capex to be allowed under the NGR (WA).

259. Please refer to the adjustment table in section 5.5.2 for the total forecast capex adjustments that we consider aligns with the findings from our assessment.

5.2 GGT's proposed AA5 capex

5.2.1 AA5 Proposed capex

260. In Table 5.1, we show GGT's proposed expenditure in AA5 of $62.9 million, by capex category and by year.

261. GGT notes that if the impact of the 'once in 10-years' In Line Inspection (ILI) of the GGP were omitted, the AA5 capex would be significantly lower than the AA4 total capex. However, the main reason why GGT's proposed AA5 capex is lower than its proposed AA4 capex, is because it has proposed including a much lower level of 'shared' capex in AA5 than it has claimed as confirming capex for AA4. As we have discussed in section 4.4, we consider that GGT's proposed shared AA4 capex is not conforming capex and, once this is removed GGT's proposed AA5 SIB capex is more than for AA4. Nevertheless, the ILI capex proposed for 2025 is the main contributor to AA5 SIB being higher than AA4 SIB.

Table 5.1: AA5 forecast capex versus AA4 capex by capex category – updated allocations, $m, real 2023

Capex category	Total AA4 Act/Est (corrected)	AA5 2025	2026	2027	2028	2029	Total	*Variance*
SIB								
Integrity	0.49	9.79	3.08	0.00	0.00	0.00	**12.87**	*12.38*
Rotating maintenance	2.54	0.45	0.17	1.69	0.43	0.33	**3.08**	*0.54*
End of Equipment Life*	7.53	4.68	3.16	1.62	1.11	0.38	**10.95**	*3.42*
Net Zero	0.00	4.00	0.00	0.00	0.00	0.00	**4.00**	*4.00*
Physical Security	1.52	3.73	2.67	0.83	0.37	0.00	**7.60**	*6.08*
Hazardous area compliance	1.14	0.68	0.15	0.00	0.00	0.00	**0.84**	*-0.30*
Reliability	19.94	0.31	0.03	2.00	1.98	0.00	**4.31**	*-15.64*
Other	4.66	0.29	0.29	0.15	0.15	0.30	**1.18**	*-3.48*
Buried pipework	1.99	1.03	0.83	0.28	0.00	0.00	**2.14**	*0.15*
Subtotal - SIB	**39.80**	**24.96**	**10.38**	**6.57**	**4.04**	**1.01**	**46.96**	***7.16***
Shared								
ITOT	18.03	2.81	1.25	0.47	0.41	0.24	**5.17**	*-12.86*
Cyber security	4.05	1.09	0.86	0.68	0.57	0.57	**3.77**	*-0.28*
Other	8.33	1.40	1.40	1.40	1.40	1.40	**6.99**	-1.34
Subtotal - Shared	**30.41**	**5.29**	**3.50**	**2.55**	**2.37**	**2.21**	**15.93**	***-14.48***
TOTAL	**70.22**	**30.25**	**13.88**	**9.12**	**6.41**	**3.22**	**62.88**	***-7.33***

Source: EMCa table derived from GGT responses to EMCa information requests IR32 (corrected) and IR02
** GGT's submission included $17.4 million in some documents (including the Capital expenditure overview, table 1.1) but which GGT subsequently advised was an error (GGT IR responses 11a)*

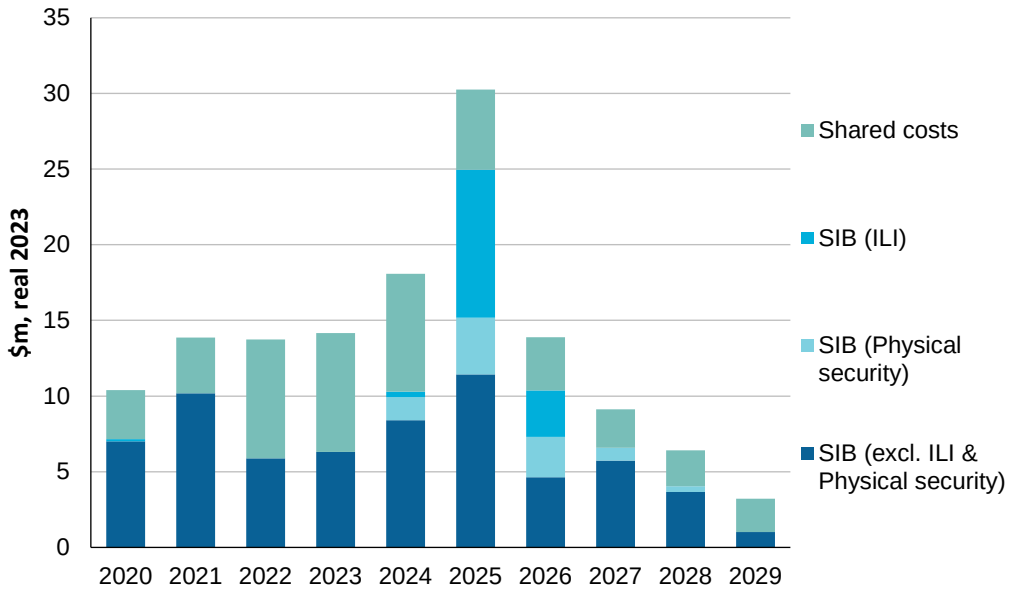
5.2.2 Capex trend and drivers

262. In Figure 5.1, we show GGT's AA4 capex (actual and estimated) and its forecast AA5 capex by category, with GGT's corrected AA4 capex shown by category. The 2025 capex profile is significantly impacted by the proposed $12.9 million ILI of the GGP together with the continuation and ramp-up of the physical security works which respond to the heightened risk landscape for critical infrastructure.

263. The annual average capex proposed by GGT in the AA5 period is 10% lower overall than the corrected AA4 period capex.

264. We do not consider there to be a significant risk to delivery of APA/GGT's program of works for the AA5 period. It may be the case that the peak in expenditure in 2025 will not be realised in that year, but the lower levels of work and expenditure proposed for subsequent years mean that any slippage should be able to be accommodated by GGT and APA.

Figure 5.1: AA4 vs AA5 capex by capex category ($m, real Dec 2023)



Source: EMCa graph derived from information in GGP corrected workbooks provided in response to EMCa information requests IR02 and IR32. (GGT provided a similar graph in GGP-AA5-Attachment 10.1-Capital expenditure overview-1 January 2024-Confidential, Figure 1.1, however its later information revealed that this graph was based on incorrect information)

5.3 Assessment of Stay In Business Capex

5.3.1 Introduction

265. GGT proposes SIB AA5 capex totalling $47.0 million for AA5. Table 5.1 also shows the eight projects/programs within the SIB program of works and which we discuss the results of our assessment in the sections following.

266. Much of the proposed AA5 capex is generated from continuation of capex programs commenced in the AA4 period and which are completed in the AA5 period. Therefore, in our assessment of APA/GGT's proposed AA5 capex, we build off our AA4 analysis where practicable, to avoid unnecessary duplication. In each case we have considered the analysis presented by GGT or APA in its relevant business cases to confirm or otherwise the prudency and efficiency of the proposed AA5 capex.

267. For projects or programs which are not directly related to AA4 period equivalents, we describe our assessment in more detail.

5.3.2 Integrity capex

Overview of GGT's proposal

268. The AA5 Integrity program is based on an ILI to test the integrity of the pipeline. The AA5 program is therefore quite distinct from the AA4 Integrity work.

269. The driver of the ILI is compliance with regulatory requirements, AS/NZS 2885: Standard for High Pressure Pipeline Systems (AS 2885). The estimated cost is $12.9 million capex for AA5.

Our assessment of AA5 Integrity capex

Undertaking ILIs is consistent with good industry practice

270. Undertaking ILIs is good industry practice across Australia and internationally. Inspections are completed at a maximum interval of 10-years, unless specific risk factors require more regular intervals. GGT advises that as the GGP was inspected using ILI tools in 2015, it has scheduled the next ILI in 2025.

GGT considered several options and selected the prudent approach

271. GGT considered five options, as follows:[99]

1. ILI complaint with PIMP[100] and Asset Performance and Lifecyle Plan (recommended option)
2. Defer ILI by 5 years
3. ILI with EMAT[101] Survey
4. ILI without MFL-C[102]
5. ILI with Tri-axial MFL[103]

272. GGT has selected option 1 as it provides the appropriate balance between cost and risk (specifically the risk of missing a major defect as a result of not undertaking the appropriate tests with the appropriate technology). We are satisfied that this is the prudent choice.

We consider that the proposed capex satisfies the capex criteria

273. We consider that the forecast capex is likely to be compliant with the Rules. In considering the reasonableness of the cost estimate we took into account:

- The breakdown of the cost estimate (Table 4.3, ILI Business Case), including the lack of a contingency provision
- APA has based the cost estimate on its recent ILI experience – given that APA undertakes ILIs regularly and has developed the requisite expertise and processes for doing the work, we consider it reasonable to assume that it will undertake the work on the GGP with/for GGT efficiently.

5.3.3 Rotating maintenance capex

Overview of GGT's proposal

274. GGP has proposed $3.1 million for rotating maintenance capex in AA5, which is the allocation to the covered network from the corporate program.

275. The driver of the project is good industry practice maintenance to ensure that GGP's rotating plant, which is critical to the safe and reliable supply of gas, operates reliably. GGT advises that the turbine compressors, reciprocating compressors, and GEAs in the program require regular maintenance to counteract the wear and tear associated with continuous or intermittent operation.[104]

99 GGP-AA5-Attachment 10.10-SIB business case - In-line inspection-1 January 2024-Confidential, pages 11-17

100 Pipeline Inspection Management Plan

101 Electromagnetic Acoustic Sensors Tool (EMAT), which is designed to identify cracks

102 Magnetic Flux Linkage (MFL) – circumferentially oriented

103 Uses three orthogonal sensors to measure magnetic fields in multiple directions

104 GGP-AA5-Attachment 10.11-SIB bus case - Rotating equipment major maintenance-1 Jan 24-Confidiential, page 4

Our assessment of AA5 rotating maintenance capex

The program is an extension of the AA4 program

276. We consider that GGP as a prudent operator should regularly maintain its rotating equipment in accordance with good industry practice. GGP (through APA) has a comprehensive Asset Performance and Lifecycle Plan. It has proposed an AA4 and AA5 maintenance program cognisant of:

- APA's maintenance regimes;
- the expected utilisation and run order of the machines; and
- GGP's remote location, limited spare compression capacity, and high consumer value on reliability.

Multiple options were considered and GGT has selected the prudent approach

277. For turbine compressors, GGT considered three options:

1. Program based on APA's maintenance regime consistent with the Asset Performance and Lifecycle Plan (recommended)
2. Move to a reactive replacement approach
3. Deploy advanced monitoring equipment and defer overhauls by 4,000 hours.

278. GGT has selected the cheapest technically viable option (Option 1). This option results in the maintenance program for AA4 (refer to section 4) and AA5 as shown in Figure 5.2, noting that some of these compressors are uncovered assets and maintenance capex for them are not included in the allocated cost to the covered pipeline.

Figure 5.2: GGT's forecast turbine compressor overhaul schedule based on Option 1

Station	Unit	Overhaul forecast
Yarraloola	YLA-U3	CY24, CY28
Wyloo West	WYW-U1	CY27
Paraburdoo	05-TC-01-3	CY25, CY28
Turee Creek	07-TC-3201	CY24
Neds Creek	NCS-U1	CY24, CY28
Wiluna	WIL-U1	CY27

Source: GGP-AA5-Attachment 10.11-SIB bus case - Rotating equipment major maintenance-1 Jan 24-Confidential, Table 3.2

279. GGT has followed a similar approach for maintenance of the GEAs and for the reciprocating compressors and, in each case, we consider that it has selected the prudent option balancing appropriately cost and risk.

We consider that the proposed capex satisfies the capex criteria

280. We consider that the forecast capex is likely to be compliant with the Rules. In considering the reasonableness of the cost estimate we considered the following:

- APA undertakes this work regularly and it has based the cost estimates on its recent experience with reciprocating and turbine compressors, and GEAs
- We have established in our review of APA's capabilities that it is reasonable to assume that it will undertake the work on the GGP with/for GGT efficiently.

5.3.4 End of Equipment Life capex

Overview of GGT's proposal

281. GGT proposes $11.0 million capex in the AA5 period to respond to obsolescence risks associated with selected equipment types.[105] We note that in GGT's proposal it included $17.4 million in Table 1.1 in the Capital Expenditure Overview document. In response to our information request, GGT advised that the correct amount should be $11.4 million after deducting programs that should not have been included.[106] However the corrected model, shows forecast capex of $11.0 million, which we have applied in our assessment.

Our assessment of AA5 EoEL capex

The program is an extension of the EoEL AA4 program

282. As discussed in section 4, GGT has spread the EoEL work out over the AA4 and AA5 periods. GGT's proposed AA5 program targets RTUs, Cathodic Protection (CP) Units, solar power systems, gas chromatographs and remotely controlled actuators. We consider that a prudent operator would address EoEL (obsolescence) issues with this plant, with work prioritised based on risk. In this context, we consider the rationale presented in GGT's business case for targeting the five asset types in the AA5 period to be compelling.

GGT considered four options and we consider that it selected the prudent approach

283. GGT undertakes comparative analysis of four options in its business case:[107]

1. Defer program to AA6
2. Focus on control and cathodic protection systems
3. Complete in AA5
4. Complete over AA5 and AA6 (preferred option).

284. GGT selected Option 4, which is the least cost, technically prudent approach, allowing work (and cost) to be spread over two access arrangement periods. Despite the delays to some work, GGT assesses the risks to be tolerable.

We consider that the proposed capex satisfies the capex criteria with the exception of work at some receipt and delivery points

285. For reasons we explain in section 4.3.3, we consider that some of the receipt and delivery points at which GGT propose work in AA5 are more reasonably considered to be uncovered assets. On this basis we consider the corresponding capex should be removed from the AA5 capex. This results in an adjustment of -$1.8 million.[108]

286. We consider that the balance of the capex forecast is likely to be compliant with the Rules because:

- APA/GGT have extensive experience in equipment life extension work on the GGP; and
- its experience has led it to reduce delivery cost by undertaking a site-by-site deployment (rather than a component-led program).

105 EMCa32 -SIB Projects spreadsheet - Updated 29 April - Corrected allocators - CONFIDENTIAL

106 GGT response to EMCa information request IR11

107 GGP-AA5-Attachment 10.12-SIB business case - End of equipment life-1 January 2024-Confidential, pages 15-19

108 The cost of EoEL work on Yarnima and Newman receipt delivery points is appropriately allocated

5.3.5 Net Zero capex

Overview of GGT's proposal

287. GGT proposes an estimated $4.0 million AA5 capex to install dry gas seals at the Wiluna compressor station, replacing the existing wet seal design. The project is co-driven by the emissions reduction benefit and reliability enhancement.

Our assessment of AA5 net zero capex

The issues with wet seals on the GGP

288. The relevant Wiluna turbine compressor unit, which is 23 years-old, features a wet seal system. GGP advises that:[109]

- Over the last six years there have been two failures of wet seals at Wiluna, cumulatively leading to 2,500 litres of oil leaking into the pipeline
- [redacted]
- APA has recently experienced wet seal failure on an east coast asset
- Operational complexity is added by having only one wet seal system in WA.

289. In addition to enhancement of reliability from new and modern technology, a co-driver of the project is the emissions reduction afforded by the replacement seals. GGT advises[110] that the volume of emissions depends on the total run hours of a compressor and the number of starts and stops (which trigger a blowdown) and estimate emissions at Wiluna from (i) wet seals, and (ii) blowdowns of 2,475 and 401 tCO2e per year, respectively.

290. GGT presents a sound case for considering remedial action, noting the history of leaks from Wiluna and broader industry experience of wet seals, and the emissions benefit.

GGT considered three options and we consider that it selected the prudent approach

291. GGT presents its analysis of three option in its business case:[111]

1. Status quo – make no changes to the seals at Wiluna
2. Install dry gas seals (and an air power system) where the air power system allows the compressor station to '*shift from gas powered to air powered instrumentation, actuation and to power the starter motor*' [112] (preferred option)
3. Install dry gas seals and a blow-down recovery system.

The selected Option 2 replaces obsolete seals with contemporary technology

292. Dry gas seals on compressors have been the industry standard for over 20 years. Seals on the rotating shaft of centrifugal gas turbine compressors prevent gas from escaping the compressor casing. Dry seals eliminate the risk of oil leaking into pipelines which can cause downstream issues with customer plant, present in wet seal systems such as installed at Wiluna.

293. GGT estimates the PV of the emissions reduction (over 15 years) from Option 2 as $1.3 to $1.9 million, depending on the ACCU price forecast,[113] and if only the reduction in Safeguard Mechanism costs is considered. The benefit is unlikely to exceed the costs with the assumed emissions values, but the co-driver of the project is improved reliability. GGT

109 GGP-AA5-Attachment 10.13-SIB business case - Wiluna wet seals-1 January 2024-Confidential, page 5, 6

110 GGP-AA5-Attachment 10.13-SIB business case - Wiluna wet seals-1 January 2024-Confidential, page 7

111 GGP-AA5-Attachment 10.13-SIB business case - Wiluna wet seals-1 January 2024-Confidential, page 9-14

112 GGP-AA5-Attachment 10.13-SIB business case - Wiluna wet seals-1 January 2024-Confidential, page 10

113 $3.5 million based on the value estimated by the NSW Government

rejected Option 3 because the incremental cost of installing the blow-down recovery system was assessed to be less than the incremental benefit.

294. GGT selected Option 2 because it is the least-cost technically viable option, removes the risks associated with wet seals and brings the additional benefit of reducing GGT's safeguard mechanisms costs. We consider this to be the prudent choice.

We consider that the proposed capex satisfies the capex criteria

295. The capex forecast is based on cost estimates of $1.0 million for a new air system, $2.0 million to retrofit new dry gas seals, and $1.0 million for mobilisation, project management and installation (new pipework etc.). These appear to be high-level estimates, but based on our experience, are reasonable and result in a capex forecast that satisfies the capex criteria.

5.3.6 Physical security

Overview of GGT's proposal

296. As discussed in section 4, APA has undertaken an extensive assessment of its obligations and risks under the auspices of the SoCI Act and the mandatory CIRMP. APA has proposed a series of remedial actions at [redacted], which we also discuss in section 5.

297. GGT proposes to conclude the work commenced in the AA4 period in the AA5 period at a cost of [redacted] to the covered assets.[114]

Our assessment of AA5 physical security capex

298. GGT identifies [redacted] GGP comprises [redacted] The business case identifies the sequence of work and the costs per annum, [redacted]

299. Based on our assessment in section 4, we consider that the AA5 work also satisfies the capex criteria.

5.3.7 Hazardous area/compliance

Overview of GGT's proposal

300. As discussed in section 4, APA engaged an external party to undertake compliance inspections and from the results developed a program spread over the AA4 and AA5 periods to address the defects in priority order. The AA5 capex cost forecast is $0.8 million.

Our assessment of hazardous area compliance capex

301. Based on our assessment in section 4, we consider that the AA5 work also satisfies the capex criteria.

5.3.8 Reliability

Overview of GGT's proposal

302. GGT proposes $4.3 million AA5 capex to replace the GEA at Wiluna.[115] The business case proposes $18.0 million capex to undertake GEA replacements over the AA5 and AA6 periods, with $8.0 million to be incurred in the AA5 period. GGT advises that it is one of the

[114] The total program cost for the AA5 period is $16.0 million

[115] GGP-AA5-Attachment 10.15-SIB business case - GEA replacement program-1 Jan 24-Confidential, page 4; the balance is attributable to Wyloo West GEA replacement (100% uncovered)

oldest stations in its fleet and has the highest criticality. The reliability work at Paraburdoo and Ilgarari has been deferred by GGT until the AA6 period.

Our assessment of AA5 reliability capex

303. For the reasons given in section 4 regarding the replacement of the Yarraloola GEA, we support the rationale, timing, and cost for replacing the Wiluna GEA in the AA5 period as GGT has proposed.

304. The cost of the Yarraloola GEA replacement in the AA4 period increased significantly from the initial estimate to a final cost of $8.7 million, as discussed in section 4. We noted in our assessment in section 4 that the scope of work expanded during the project, going well beyond 'simple' replacement of the GEA. Given the business case for the whole program (i.e. including the AA4 and AA5 work) was finalised in late 2023, we assume that GGT with APA have had a close look at the required scope and cost of work for Wiluna cognisant of the Yarraloola project.

305. We consider that the proposed AA5 work is likely to satisfy the capex criteria.

5.3.9 Other SIB work[116]

Overview of GGT's proposal

306. GGT forecasts $1.2 million for miscellaneous capital and vehicles replacement in the AA5 period.

Our assessment of Other SIB AA5 capex

307. We discuss the basis for miscellaneous capital capex in the equivalent AA4 assessment and the basis for forecasting the annual cost. For the AA5 period, GGT propose $0.7 million to cover expenditure for minor works and to purchase instrumentation, tools (e.g. to replace failed equipment). Unlike the AA4 proposed conforming capex, there is no work on site accommodation upgrades or new metering stations proposed for the AA5 period.

308. GGT advises that most of its vehicles are leased, however it owns and operates a fleet of specialist vehicles (forklifts, trailers, and commercial trucks) which need to be replaced from time to time. GGT proposes a total of $0.5 million for vehicle replacement across the AA5 period, based on extrapolation of average historical costs, which we consider to be a reasonable approach for this category.

309. We consider that the proposed capex satisfies the capex criteria.

5.3.10 Buried pipework

Overview of GGT's proposal

310. The proposed AA5 program is a continuation of the work commenced in the AA4 period and discussed (and accepted) in section 4. The work is to relocate buried station piping that has shown a propensity for failure (causing environmental and safety hazards) to above ground.

311. Work commenced in the AA4 period at Yarraloola compressor station and will continue at other compressor station sites through to 2027. GGT identifies $4.7 million capex for the remedial work of which $2.1 million is allocated to covered assets.

Our assessment of Buried pipework AA5 capex

312. We consider that the proposed $2.1 million capex satisfies the capex criteria for the reasons given in section 4.

116 GGP Capital Expenditure Overview, pages 30-31

5.4 Assessment of Shared AA5 capex

5.4.1 GGT's proposal

313. GGT proposes Shared AA5 capex totalling $15.9 million. The expenditure comprises a range of ITOT projects and expenditure on cyber security. Almost 50% is referred to as 'other' and, on review of GGT's response to our information request, we find that this is an extrapolation of a range of such expenditure incurred in 2021 and which includes other IT projects that were in flight in that year as well as expenditure on properties, only one of which is in WA.[117]

5.4.2 Assessment

314. For the reasons described in section 4.4, we consider that it is not reasonable to include an allowance for a share of APA's expected corporate capex. As GGT has acknowledged in its proposal overview, it has not previously proposed inclusion of such expenditure and we consider that now doing so would 'double dip' on APA's corporate charge to GGT.

315. Excluding this amount will therefore result in a forecast capex allowance that is $15.9 million less than GGT has proposed.

5.5 EMCa adjustment summary

5.5.1 Compliance with capex criteria

316. Our assessment of GGT's proposed AA5 capex is based on GGT's AAI and supporting information. Our assessments are based on our review of this information, together with our observations from the onsite workshop that we held with GGT, and information supplied in response to EMCa information requests.

317. We have applied an experienced-based review of the information provided by GGT in justifying its projects, drawing heavily on our assessment of the projects that commenced during the AA4 period and which comprised a large proportion of the capex proposed for the AA5 period.

318. Key factors in our assessment of individual projects and programs have included:

- The extent to which GGT has demonstrated the current level of risk and the prudent attainment or otherwise of a lower level of risk via its proposed investment
- Existence or otherwise of adequate justification (such as evidenced option analysis and cost benefit analysis)
- The basis on which GGT has determined its cost estimates (including where it has applied contingency amounts)
- The degree to which the benefit of capex which is subsequently allocated to GGP from APA represents a benefit to customers connected to the GGP.

319. Our assessment of these key factors has led us to recommend adjustments in accordance with the capex criteria and which include considerations of the extent to which capex is 'conforming', existence of adequate justification and the basis on which GGT has determined its cost estimates (including where it has applied contingencies).

320. We have taken a strict view of our obligations to advise the ERA based on the information that GGT has provided us. It is possible therefore that further information from GGT may lead us to different conclusions in any subsequent reassessment.

117 GGT response to EMCa information request IR02, workbook for 'shared support capex adjustment'

5.5.2 Aggregate adjustment assessment

321. Our assessed adjustments to GGT's proposed AA5 capex allowance have been applied to each capex category.

322. With one exception, we find that the proposed AA4 SIB expenditure is likely to satisfy the capex criteria. The exception, as shown in Table 5.2, relates to the EoEL program for which we consider that GGT has inappropriately allocated $1.8 million capex to the GGP for work on what we consider to be reasonably classified as uncovered assets.

323. For the same reasons discussed in section 4, we find that the entire AA5 Shared capex component does not comply with the capex criteria. As shown in Table 5.2, we propose an adjustment to remove the proposed $15.9 million capex.

324. The aggregate impact of our assessed adjustments is a reduction to the proposed AA5 capex of $17.7 million, which represents 28% of GGT's estimated capex requirement of $62.9 million.

325. Table 5.2 shows the AA5 capex project-level adjustments, aggregated by work program.

Table 5.2: AA5 Capex adjustment summary by driver & project/program - $m, real 2023

Category	2025	2026	2027	2028	2029	Total
Stay in Business (SIB) - as proposed						
Integrity	9.79	3.08	0.00	0.00	0.00	12.87
Rotating maintenance	0.45	0.17	1.69	0.43	0.33	3.08
End of equipment life	4.68	3.16	1.62	1.11	0.38	10.95
Net zero	4.00	0.00	0.00	0.00	0.00	4.00
Physical security	3.73	2.67	0.83	0.37	0.00	7.60
Hazardous area / compliance	0.68	0.15	0.00	0.00	0.00	0.84
Reliability	0.31	0.03	2.00	1.98	0.00	4.31
Other	0.29	0.29	0.15	0.15	0.30	1.18
Buried pipework	1.03	0.83	0.28	0.00	0.00	2.14
SIB sub-total	**24.96**	**10.38**	**6.57**	**4.04**	**1.01**	**46.96**
less adjustment						
End of equipment life	*-1.19*	*-0.61*	*0.00*	*0.00*	*0.00*	*-1.80*
SIB adjusted	**23.77**	**9.77**	**6.57**	**4.04**	**1.01**	**45.16**
Shared capex - as proposed	**5.29**	**3.50**	**2.55**	**2.37**	**2.21**	**15.93**
less adjustment						
IT/OT	*-2.81*	*-1.25*	*-0.47*	*-0.41*	*-0.24*	*-5.17*
Cyber	*-1.09*	*-0.86*	*-0.68*	*-0.57*	*-0.57*	*-3.77*
Other shared corporate	*-1.40*	*-1.40*	*-1.40*	*-1.40*	*-1.40*	*-6.99*
Shared capex adjusted	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
GGT Capex as proposed	**30.25**	**13.88**	**9.12**	**6.41**	**3.22**	**62.88**
EMCa adjustments	**-6.48**	**-4.11**	**-2.55**	**-2.37**	**-2.21**	**-17.72**
Total EMCa adjusted AA5 capex	**23.77**	**9.77**	**6.57**	**4.04**	**1.01**	**45.16**

Source: EMCa analysis derived from GGT responses to EMCa information request IR32 corrected and IR02

326. Table 5.3 presents an adjusted capex table for AA5 by asset category. This is based on the asset categorisation identified by GGT in workbooks that it provided in response to our information requests.

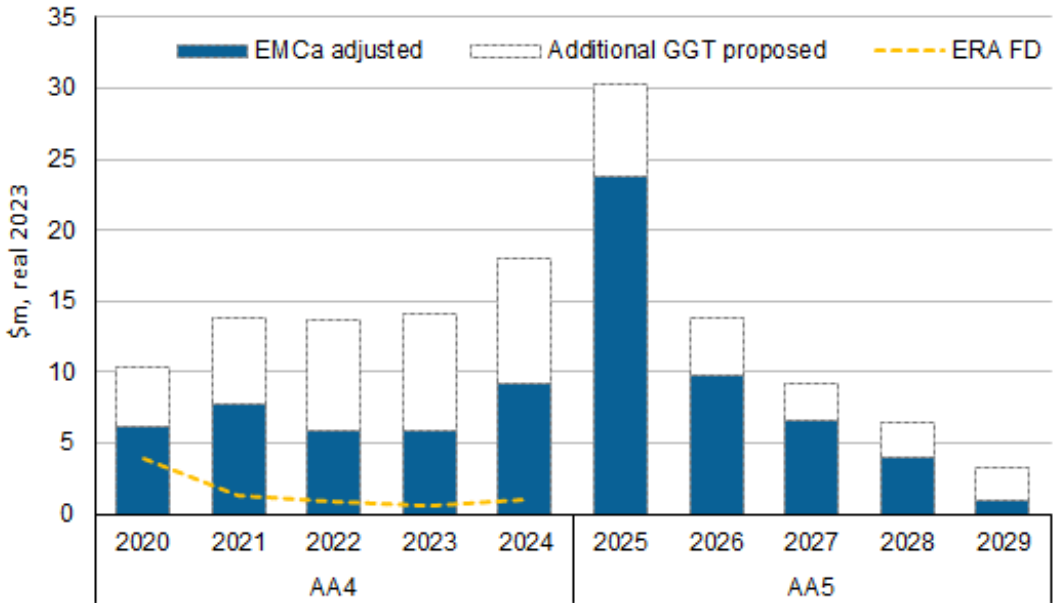
Table 5.3: AA5 summary adjusted capex by asset - $m, real 2023

Capex by asset	2025	2026	2027	2028	2029	Total
Stay in Business (SIB)						
Pipeline and laterals	0.0	0.0	0.1	0.1	0.0	**0.1**
Main line valve and scraper stations	1.9	1.4	1.2	1.2	0.4	**6.0**
Compressor stations	11.4	4.2	4.3	2.4	0.3	**22.6**
Receipt and delivery point facilities	0.1	0.5	0.4	0.0	0.0	**1.0**
SCADA and communications	0.1	0.0	0.0	0.0	0.0	**0.1**
Cathodic protection	0.2	0.2	0.1	0.0	0.0	**0.5**
Maintenance bases and depots	0.0	0.2	0.4	0.2	0.0	**0.8**
Other assets	10.1	3.4	0.1	0.1	0.3	**14.1**
SIB sub-total	**23.8**	**9.8**	**6.6**	**4.0**	**1.0**	**45.2**
Shared asset						
IT/OT	0.0	0.0	0.0	0.0	0.0	**0.0**
Cyber	0.0	0.0	0.0	0.0	0.0	**0.0**
Other shared corporate	0.0	0.0	0.0	0.0	0.0	**0.0**
SIB sub-total Shared asset	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total AA5 capex	**23.8**	**9.8**	**6.6**	**4.0**	**1.0**	**45.2**

Source: EMCa analysis derived from GGT responses to EMCa information requests IR32 corrected and IR02

327. Figure 5.3 shows the time trend of GGT capex across the two regulatory periods. For each year, the dotted grey bordered columns show the amount that GGT has proposed, while the blue segments of each column show the adjusted amounts that we consider to reasonably represent conforming capex.

Figure 5.3: Time trend of proposed and adjusted capex ($m, 2023)



Source: EMCa graph derived from GGT responses to EMCa information request IR32 corrected and IR02

6 ASSESSMENT OF AA5 OPEX

GGT has proposed an opex allowance of $130.8 million (in $2023) for AA5. This is $21 million higher than its expenditure in the current period,[118] and $31 million more than ERA's regulatory allowance for the period. The main drivers of GGT's proposed increase are higher base year expenditure, step changes totalling $7.0 million and real labour cost escalation.

GGT has made a number of negative adjustments to its 2022 base year actual opex. This bring it closer to its long-term trend level, however we consider that two further reductions are required to render this a reasonable estimate of its ongoing requirements.

Of the three step changes that GGT proposes, we consider that its proposed allowance for greenhouse gas offset expenditures resulting from the new Safeguard Mechanism obligations, is reasonable. We consider that its proposed step change increase for regulatory costs is overstated and that its proposed step change for ERP-related costs is not reasonable as it is not conforming opex. GGT's proposed trend factor for labour cost escalation is reasonable.

Based on our findings above, we consider that a reasonable estimate of GGT's AA5 opex requirement is $119.2 million. This is a reduction of $11.6 million, or just under 9%, relative to the amount that GGT has proposed.

6.1 Introduction

328. This section contains our assessment of the forecast opex allowance proposed by GGT for the AA5 period. We have undertaken the review using the assessment framework set out in Appendix A.

329. The results of our review and our overall assessment of whether the proposed opex satisfies the opex criteria for the purposes of determining the level of conforming opex under the NGR (WA) are set out below. Refer to the adjustment table in section 6.6 for the total adjustments that result from our findings.

6.2 GGT's proposed AA5 opex

6.2.1 Overview

330. GGT has proposed an AA5 opex allowance of $130.80 million (real $2023) based on a BST forecast. The proposed amount is $21 million higher than actual and estimated opex for the current AA period.[119]

331. GGT states in its proposal that "*the increase can be attributed to rising labour costs related to the maintenance of ageing assets, increased corporate expenses, primarily driven by information technology, and the necessary expenditure to meet new legislative requirements, such as SoCI*".

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118 We derive this from GGT's current period expenditure as reported in AAI, table 4. This differs from figures derived from GGP's overview document, where it states that this is $19 million higher than in the current period which would imply current period expenditure of $111.8m. (GGP Proposal Overview Public Amended pg.76)

119 See reference to discrepancy in GGT documentation, as per reference above.

332. Table 6.1 summarises GGT's derivation of its forecast and shows the BST components.

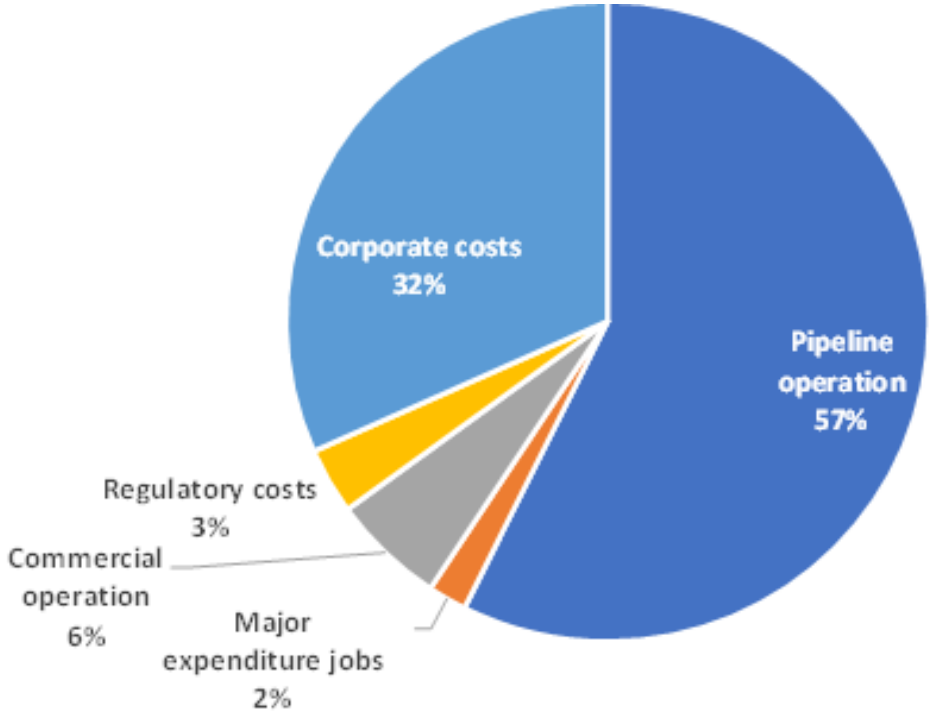
Table 6.1: GGT's proposed AA5 opex by category - $m, real 2023.

Forecast operating expenditure	2025	2026	2027	2028	2029	Total
Base year adjusted opex	23.51	23.51	23.51	23.51	23.51	**117.57**
Add: Separate forecasts						
SoCI	0.69	0.75	0.76	0.76	0.76	**3.71**
Baseline forecast opex	24.20	24.26	24.27	24.27	24.27	**121.28**
Add: Step changes						
Safeguard mechanism initiatives	0.55	0.70	0.73	0.73	0.77	3.48
AA6 regulatory proposal	0.00	0.18	0.28	0.85	0.28	1.59
Enterprise resource planning (ERP)	0.47	0.43	0.38	0.33	0.32	1.93
Add: Real labour cost escalation						
Labour cost escalation	0.30	0.40	0.50	0.60	0.71	2.51
Total forecast opex	**25.52**	**25.98**	**26.16**	**26.79**	**26.35**	**130.80**

Source: GGP AA5 opex model, attachment 11.1

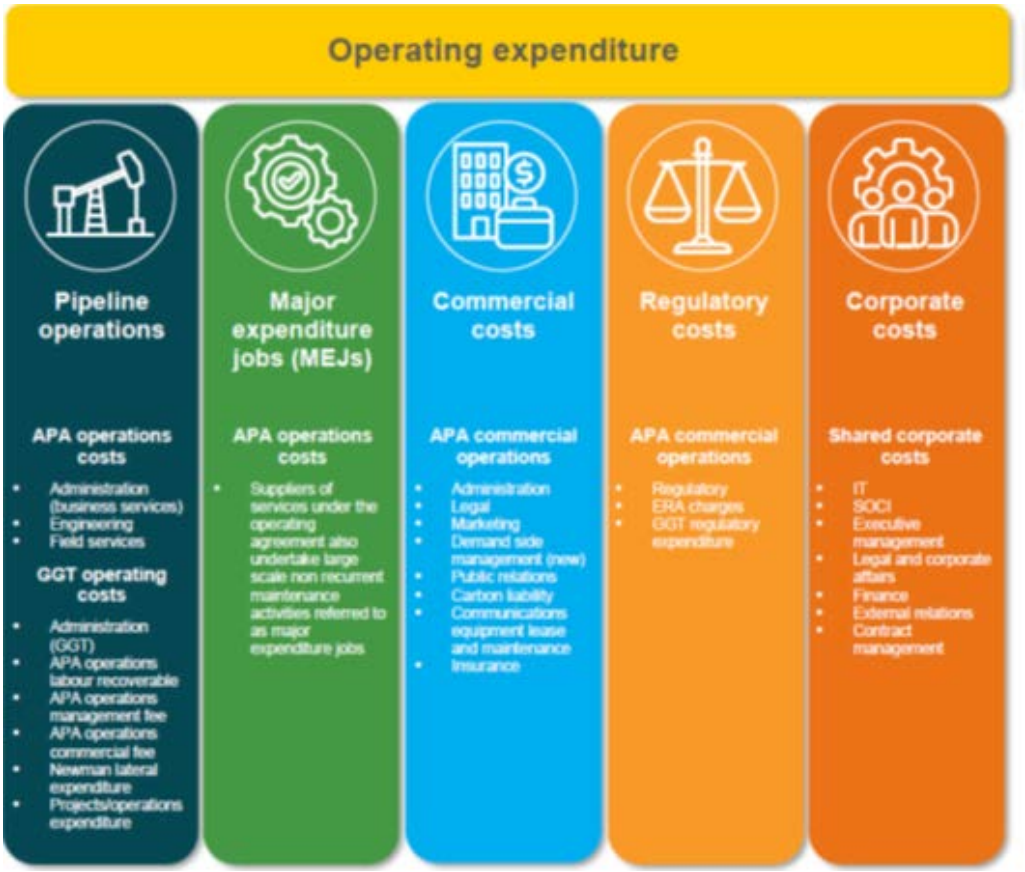
333. Figure 6.1 shows GGP's AA5 proposed opex by category and Figure 6.2 shows GGT's description of the expenditure components in each category.

Figure 6.1: GGT's proposed AA5 opex by category



Source: GGT proposal pg. 76

Figure 6.2: Opex category's components



Source: Source: GGP AA5 proposal pg.79

334. In Table 6.2 we compare yearly average GGP opex for AA5, AA4, and AA3. The AA4 average is based on three years actual 2020 - 2022 as provided by GGP in its response to our information request.

Table 6.2: GGT's proposed AA5 opex yearly average compared with GGT AA3 and AA4 - $m, real 2023

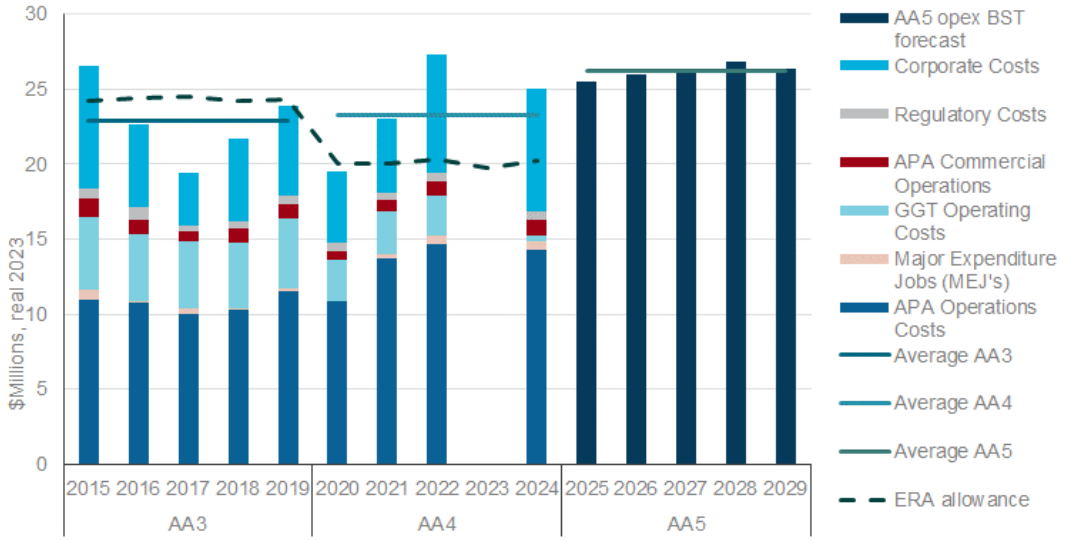
Category	AA3	AA4	AA5
Pipeline operation	15.26	15.82	15.00
Major expenditure jobs	0.27	0.28	0.51
Commercial operation	0.97	0.77	1.49
Regulatory costs	0.60	0.77	0.87
Corporate costs	5.71	6.46	8.28
Yearly average GGT opex	**22.83**	**24.11**	**26.16**

Source: Source: GGP opex model, attachment 11.1 and GGP response to EMCa information requests IR22 - IR25

335. We provide the historical and forecast opex in Figure 6.3 to show the overview of GGT's opex long term trend. When compared with a relatively flat historical trend (though with annual fluctuations), GGT's proposed AA5 opex represents a clear trend upwards.

336. From the graph, it can also be seen that ERA's determination for the AA4 was significantly lower than its AA3 determination and GGT's actual AA3 expenditure, and significantly lower than GGT's actual expenditure to date in the current period. As GGT has noted in its AA5 submission, this is essentially because its submission for the current period, and therefore ERA's determination, were based on its 2017 actual expenditure as the 'base year', and this was below trend average levels.

Figure 6.3: GGT's historical and forecast opex - $m, real 2023.



Source: GGP opex model, attachment 11.1 and GGP response EMCa information requests IR22 - IR25. GGT didn't provide 2023 figures.

6.3 Assessment of base year opex

337. In the following sections we provide our assessment of GGT's proposed base year adjusted efficient opex. We summarise our proposed adjustments in section 6.6.

6.3.1 Selection of the base year

338. GGT has used its actual opex from 2022 as its base year for AA5 proposed opex. As discussed below, it has adjusted the base opex to remove any 2022 non-recurrent expenditure.

339. At the time of preparing GGT's submission, 2022 represented the most recent available full-year actual expenditure and is appropriate as its base year starting point.

6.3.2 Adjustments to the base year

340. GGT's unadjusted AA5 base year forecast is $27.32 million.

341. GGT has proposed adjustments to the base year with the following expenditure categories:

- GGT has removed a total of $3.27 million for non-recurrent costs, as follows:
  - Payroll adjustment $0.59 million
  - Demand side management $0.29 million
  - APA operations and commercial management fees $2.39 million
- GGT has removed the cost for SoCI cyber ($0.76 million) as GGT has specifically forecast over the access arrangement
- GGT has added $0.21 million on its base year to cover additional costs as a result of the forecast increased covered capacity enabled by the NGI.

342. GGT's proposed adjusted 2022 base year is $23.51 million as shown in Table 6.3 below.

Table 6.3: GGT proposed adjusted 2022 base year - $m, real 2023

Base year	Amount
2022 opex base year	27.32
Add increase due to NGI	0.214
2022 base year (incl. NGI)	**27.54**
Separately forecast – remove SoCI	-0.76
Remove non-recurring costs	
Payroll adjustment	-0.59
Demand side management	-0.28
APA Operations Management Fee	-1.06
APA Commercial Management Fee	-1.34
Adjusted 2022 Base year	**23.51**

Source: EMCa table derived from GGP opex model, attachment 11.1

6.3.3 Base year opex assessment – general expenditure trend considerations

Comparison with historical opex

343. We sought to understand GGT's proposed adjusted base year through information requests[120]. In its responses, GGT provided a historical detailed opex breakdown including unadjusted actual 2022 opex as shown in Table 6.4.

344. The table shows that GGT's actual 2022 opex is significantly greater than its opex was in 2017, which GGT selected as its base year for the AA4 period.

Table 6.4: GGT historical opex - $m, real 2023

Category	2017	2018	2019	2020	2021	2022
Pipeline operation	14.44	14.69	16.15	13.56	16.50	17.41
Major expenditure jobs	0.39	0.06	0.19	0.03	0.30	0.50
Commercial operation	0.72	0.93	0.97	0.57	0.80	0.95
Regulatory costs	0.38	0.53	0.58	0.56	0.51	0.55
Corporate costs	3.51	5.44	5.97	4.80	4.94	7.91
Total opex	**19.44**	**21.65**	**23.85**	**19.52**	**23.04**	**27.32**

Source: EMCa table derived from EMCa information requests IR22 - IR25

345. We compared GGT's five-year average historical opex with GGT's 2022 actual unadjusted and GGT's adjusted 2022 base year opex, in Table 6.5.

120 EMCa information requests IR22 - IR25 & IR40, IR44 & IR45

Table 6.5: GGT five years average opex with 2022 actual unadjusted & adjusted - $m, real 2023

Category	Average 2017-2021	2022 actual	*Variance*	GGT adjusted 2022	*Variance*
Pipeline operation	15.07	17.41	*2.35*	14.52	*-0.55*
Major expenditure jobs	0.19	0.50	*0.30*	0.50	*0.30*
Commercial operation	0.80	0.95	*0.15*	0.79	*-0.01*
Regulatory costs	0.51	0.55	*0.04*	0.55	*0.04*
Corporate costs	4.93	7.91	*2.98*	7.15	*2.22*
TOTAL	**21.50**	**27.32**	***5.82***	**23.51**	***2.01***

Source: EMCa table derived from EMCa information requests IR22 - IR25

346. Table 6.5 shows that unadjusted 2022 opex is $5.8 million higher than the five-year average in the prior years. When we compared GGT's proposed adjusted 2022 base year with the five-year average historical, its proposed adjusted base year opex is still $2.01m higher and, if applied as base year adjusted opex, effectively results in an aggregate increase of $10.0 million over the five years of AA5.

347. The general principle of a BST opex forecast is that the base year 'revealed cost' should be a good starting point for assessment of an efficient sustained base requirement. However, we consider it necessary to test this assumption on a case-by-case basis.

348. An examination of GGT's opex since 2015, as shown in Figure 6.3, shows significant year-on-year variability in its opex, with swings of up to +/- $5 million evident in some years, relative to trend averages. The year 2017, which was GGT's base year for its initial proposal for AA4, can be seen to have been a low year relative to trend, but expenditure in 2022 presents as much higher than trend. Because of this variability, we have paid particular attention to GGT's 2022 expenditure by reference to prior expenditure trends, as we describe below.

Consideration of historical expenditures in assessing base year adjustments

349. For the reasons described above, in assessing its proposed 'adjusted base year' opex we consider it necessary to refer back to historical levels of expenditure in considering the reasonableness of this value as a basis for its AA5 forecast. We are mindful that GGT is a relatively stable operation, with a stable pipeline to be maintained and (historically) a stable customer basis. This context helps to underpin consideration of longer-term historical costs (converted to current real terms) as reasonable indicators of its future base requirement.

350. From this base requirement, we have then considered the case that GGT has made for increases in AA5, through retaining in its adjusted base year opex expenditures that represent a material increase on historical levels. Where we consider that this case has not been adequately made, we tend to default to consideration of those historical expenditures. Specifically, while checking for the possibility of anomalies, we have tended to default to consideration of average expenditures in the five years preceding 2022 in assessing the extent to which GGT's proposed adjusted base year opex is a reasonable foundation for its BST forecast.

6.3.4 Base year opex assessment - Pipeline Operation costs

Overview

351. GGT has provided the detailed components of the pipeline operation as shows in Table 6.6 and the detailed assessment of the expenditures are provided in the subsequent sections. This provides a disaggregation of the 'pipeline operation' opex category that was shown in Table 6.4.

Table 6.6: Pipeline operation opex - $m, real 2023

Category	2017	2018	2019	2020	2021	2022
APA Operations Costs						
Administration (Business Services)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Engineering (Engineering & Projects)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Operations (Field Services)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Payroll adjustment - covered portion	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
subtotal	**9.96**	**10.28**	**11.55**	**10.82**	**13.74**	**14.68**
GGT Operating Costs						
Administration	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
APA Operations Labour Recoverable	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
APA Operations Management Fee	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
APA Commercial Management Fee	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Newman	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Projects/Operations Contingency	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
subtotal	**4.48**	**4.41**	**4.60**	**2.74**	**2.76**	**2.73**
TOTAL	**14.44**	**14.69**	**16.15**	**13.56**	**16.50**	**17.41**

Source: EMCa table derived from GGT response to EMCa information requests IR22 - IR25

APA operations costs

352. As discussed in section 6.3.2, GGT has removed $0.59 million of the payroll adjustment because of the non-recurrent nature of the expenditure. This resulted in a total of $14.2 million of adjusted APA operations costs.

353. However, as shown in Table 6.7, the 2022 APA operations expenditure is $2.8 million higher than the yearly average of five years prior (2017-2021).

Table 6.7: Comparison of APA operations cost - $m, real 2023

Category	Yearly average 2017-2021	2022 adjusted	*variance*
Administration (Business Services)	[redacted]	[redacted]	[redacted]
Engineering (Engineering & Projects)	[redacted]	[redacted]	[redacted]
Operations (Field Services)	[redacted]	[redacted]	[redacted]
Payroll adjustment - covered portion	[redacted]	[redacted]	[redacted]
TOTAL	**11.27**	**14.09**	***2.82***

Source: EMCa table derived from GGT response to EMCa information requests IR22 - IR25

354. Of the increase in APA operating cost compared with the average five-years in the prior years, 95% is contributed by field service operation. In its AA5 proposal document, GGT has given the following explanations for this variance[121]:

- Increase in operation and maintenance costs as the maintenance activities occurred that were unforeseen and not planned at the time of GGT's 2019 revised AA
- Review conducted in 2021 and 2022 identified trends in equipment failures on the GGP, including:
  - Paraburdoo - In the 12-month period there was a significant increase in reported compressor and GEA incidents and near misses. There were 12 GEA events for

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the past 12-month period compared to 2021 and there were 14 compressor events compared to 9 in 2021

  - Ilgarari – There were 16 compressor events compared to 10 in 2021, 8 GEA events compared to 4 in 2021 and 6 high suction pressure events compared to 2 in 2021
  - Wiluna – Improvements were enacted in 2022 to mitigate systematic compressor failures due to varnishing and are expected to improve site performance, however, there have been three events since the improvement
- Higher contractor and contingent workers costs, outpacing WPI increases and the ERA's 2020-24 labour escalation factor. Due to the remoteness of maintenance activities along the GGP, contractors are required to stay onsite, which increases maintenance costs significantly.

355. Furthermore, in its response to an information request (EMCa IR22 - IR25), GGT states that APA operations are entirely contractor costs and have increased as increased operations and maintenance activity has occurred along the GGP.

356. In explaining 2022 as a high-point relative to previous years, we observe that several of the variances are explained in terms of contributory factors that were unusually high in that year. However, the explanations do not provide evidence that these activities will be sustained at this higher level through AA5 and, accordingly, we consider that GGT has not adequately justified the APA operations cost base that it has used.

357. We consider that arguments relating to increased real labour costs are valid and that this higher cost level does represent an increase that will be sustained. In recognition of this, we propose allowing 50% of the 2022 increase of $2.8 million (compared with the historical expenditure average), and which therefore represents a $1.4 million reduction relative to the amount that GGT has proposed for APA operations cost.

GGT operating costs

358. GGT has removed two expenditures categories within GGT operating costs:

- APA Operations Management Fee - $1.1 million
- APA Commercial Management Fee - $1.3 million

359. As advised by GGT, these fees were payable to the operator of GGT, APA, under a joint venture with Alinta. GGT advises that in November 2023 APA acquired Alinta's portion of the GGT JV becoming 100% owner of the GGP operation. GGT has therefore removed these cost items from its forecast as APA is now the sole owner and operator of GGP.[122]

360. We consider that these deductions are reasonable and we take them into account in considering the significantly higher corporate costs charged to GGT, as described in section 6.3.6.

6.3.5 Base year opex assessment - Major expenditure jobs (MEJs)

361. GGT spent $0.5 million in 2022 for MEJs. This is $0.3 million higher than the yearly average of five-years prior (2017-2021) as shown in Table 6.8 below.

Table 6.8: Comparison between yearly average with adjusted 2022 - $m, real 2023

Category	Yearly average 2017-2021	2022 actual	*variance*
Major expenditure jobs (MEJs)	0.19	0.50	*0.30*

Source: EMCa table derived from GGT response to EMCa information requests IR22 - IR25

362. We could not find any explanation for the increase in 2022. In the absence of any explanation of the higher cost, GGT has not justified the 2022 figure. GGT has not provided

122 GGT proposal overview, page 87

a satisfactory explanation as to why this amount was higher in 2022 and would remain at this higher level for AA5. We therefore consider that the average historical figure should be applied, being a reduction of $0.3 million.

6.3.6 Base year opex assessment - Corporate costs

Overview

363. APA allocated $7.91 million corporate costs to GGT covered services in 2022 based on 'asset revenue'. GGT has removed $0.76 million for the cost of SoCI, and which it has separately forecast as discussed below.

Adjustment for expenditure resulting from SoCI act

364. APA engaged EY to conduct a gap analysis, identify uplift needs and assist in the design of an appropriate suite of security controls for SoCI Act obligations.

365. APA is working to achieve a defined maturity level as set out in the Australian Energy Sector Cyber Security Framework (AESCSF), amending personnel and supply chain standards and procedures from a security perspective. This includes the introduction of an AusCheck screening process for new and ongoing critical workers, employees or contractors, and supplier security risk assessments as well as identifying and remediating material risks.

366. The SoCI program commenced in 2022-23 and will continue over the 2025-29 period, forecasted to cost $3.7 million in total. This provides a similar, though slightly less, aggregate outcome over AA5 as retaining the amount in the base year would have resulted in $3.8 million over the AA5 period. The profile of the SoCI forecast is shown in the summary of EMCa adjustments, in Table 6.19.

367. We consider that the proposed amount is reasonable.

Base year corporate costs allowance (other than SoCI)

368. After removing SoCI cost from its base year corporate costs, the 2022 APA allocation of corporate costs to GGT is $7.15 million. This is $2.2 million higher than the yearly average of five-years prior (2017-2021) as shown in the Table 6.9

Table 6.9: GGT corporate cost - $m, real 2023

Category	Yearly average 2017-2021	2022 adjusted	*variance*
Corporate costs	4.93	7.15	*2.22*

Source: EMCa table derived from GGP AA5 opex model and GGT response to EMCa information requests IR22 - IR25

369. GGT states that since 2017, corporate costs have significantly increased including due to additional legislative obligations (SoCI), higher IT expenditures, higher insurance costs and higher costs relating to additional headcount and restructures at APA. While we acknowledge GGT's explanation, GGT has deducted 2022 SoCI expenditure (as described above).

370. GGT has also deducted $2.4 million from its 2022 base year opex to account for management fees that were previously disbursed to a JV entity, but which are now understood to be incorporated into APA's cost base since APA acquired its JV partner's interest. As discussed in paragraph 358, these management fees have been deducted from GGT's 2022 operating costs and our understanding is that the GGT-specific management services previously provided under the JV arrangement are now provided directly by APA and are charged as part of its 'corporate costs' allowance.

371. On balance, we consider that the higher level of corporate costs in the base year is essentially therefore offset by GGT's deduction of the management fees paid to the JV in that year and that its proposed corporate cost is reasonable.

6.3.7 Base year opex assessment – Other expenditure

Commercial operation costs

372. GGT's proposed adjusted 2022 figure for commercial operation is $0.8 million, after removing $0.3 million for demand side management. This is a similar amount to GGT's yearly average spent in previous five years 2017-2021.

373. GGT has added $0.1 million to this expenditure as a result of the additional customers and higher demands that it expects to service making use of the additional capacity provided by the NGI. This results in the total of $0.9m as an adjusted base year amount for commercial operation.

374. We consider that the adjusted 2022 opex for this expenditure is reasonable.

Regulatory Costs

375. GGT has spent $0.6m for regulatory costs in 2022 and has proposed no adjustment to this amount. This is a similar amount to GGT's yearly average spent in the period 2017-2021.

376. We consider that this base amount is reasonable. However, GGT has also proposed a step change for this category, which we assess in section 6.4.3.

6.3.8 Implications of EMCa assessment for efficient base year opex

377. In Table 6.10 provides the summary of GGT base year adjustments after our assessment. In summary:

- we have accepted the base year adjustments that GGT has proposed; and
- we consider that additional adjustments are required to APA operations costs and MEJs.

Table 6.10: Summary adjustments and adjusted base year - $m, real 2023

Base year	Amount
2022 actual	27.32
Add NGI forecast	0.21
2022 base year GNI adjusted	27.54
Remove separately forecast	
SoCI	-0.76
Remove non-recurring costs	
Payroll adjustment	-0.59
Demand side management	-0.28
APA Operations Management Fee	-1.06
APA Commercial Management Fee	-1.34
GGT adjusted base year	23.51
EMCa adjustments	
APA operations costs (50% of variance)	-1.38
MEJs	-0.30
EMCa adjusted base year	**21.83**

Source: EMCa calculation with information derived from GGP opex model, attachment 11.1

6.4 Assessment of step changes

6.4.1 GGT's proposal

378. GGT has proposed three step changes for AA5 opex as summarised in Table 6.11.

Table 6.11: GGT proposed step changes - $m, real 2023

Forecast operating expenditure	2025	2026	2027	2028	2029	Total
Safeguard mechanism initiatives	0.55	0.70	0.73	0.73	0.77	**3.48**
AA6 regulatory proposal	0.00	0.18	0.28	0.85	0.28	**1.59**
Enterprise resource planning (ERP)	0.47	0.43	0.38	0.33	0.32	**1.93**
Total steps changes	**1.02**	**1.31**	**1.39**	**1.91**	**1.37**	**7.00**

Source: GGP AA5 opex model, attachment 11.1

6.4.2 Assessment of proposed step change for safeguard mechanism initiatives – carbon offsets

379. The Safeguard Mechanism legislates limits, known as baselines, the greenhouse gas emissions of facilities subject to the Safeguard Mechanism. The intention is that these baselines will decline, predictably and gradually, on a trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050.

380. Baselines will decline from 1 July 2023. The decline rate will be set at 4.9 per cent each year to 2030.

381. The Safeguard Mechanism applies to industrial facilities emitting more than 100,000 tonnes of carbon dioxide equivalent (CO2-e) per year. There are around 215 Safeguard facilities, of which GGP is one, across the mining, manufacturing, transport, oil, gas, and waste sectors. These facilities produce around 28% of Australia's greenhouse gas emissions.

382. GGT has forecast a total of $3.5 million in opex over AA5. Its forecast is derived from the baseline (current) carbon emissions of the GGP, the required decline rate of emissions per year, the required carbon offsets required to meet this decline rate and the cost impact of purchasing these offsets.

383. GGT has provided options analysis[123] to identify the most prudent and efficient expenditure between capital improvement costs and the costs of purchasing Australian Carbon Credit Units (ACCUs) as shown in Table 6.12.

[123] GGP AA5 attachment 13.1

Table 6.12: GGT Safeguard mechanism initiatives options analysis

Source: GGP AA5 att. 13.1

384. From its modelling GGT identified option 2 as the optimal case with a total cost impact of $5.4 million. GGP's covered services allocation of $3.5 million for the cost of purchasing ACCU's is based on the ratio of TJ/day of covered contracted capacity, which is its cost allocation basis for opex (as described in its CAM).

385. The safeguard mechanism is a new obligation and GGP has factored in other initiatives to reduce the quantum of ACCUs to purchase. We consider that the step change and the amount is reasonable.

6.4.3 Assessment of proposed step change for AA6 regulatory proposal preparation costs

386. GGT has proposed a step change to account for its forecast costs for preparing the next Access Arrangement (AA6) regulatory proposal, which will apply from 1 January 2030 to 31 December 2034. GGT claims that a step change amount is required because its regulatory costs in its 2022 base year do not adequately cover the required amount. GGT claims that this is because its regulatory process for its AA5 submission was in its infancy in this year, and because of an increase in costs due to additional legislative requirements and higher ERA expectations, particularly around stakeholder engagement.[124]

387. GGT provided a bottom-up expenditure forecast which is based on what it claims are its actual and estimated costs for its current preparation of the 2025-29 Access Arrangement, including internal headcount charges, consultancy fees, project management fees and stakeholder management resources. We show GGT's build-up of these costs, which form the basis for its proposed step change, in Table 6.13. GGT's bottom-up regulatory step-change proposal amounts to an average of $318,000 per year.

[124] GGP AA5 proposal overview, page 90

Table 6.13: GGT forecast of AA6 regulatory proposal preparation - $m, real 2023

	2025	2026	2027	2028	2029	Total
Project management	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Stakeholder engagement & reports	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Technical support -Capex / SIB	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Technical support - ITOT/ SoCI	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Technical support - Opex	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Tariff structure reform (set fee)	[redacted]	[redacted]	[redacted]			[redacted]
GGP model improvement (set fee)	[redacted]	[redacted]	[redacted]			[redacted]
Legal compliance check (set fee)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: GGT AA5 att. 11.2

388. GGT also provided information on the resource and costing basis for its proposed step change, as shown in Table 6.14.

Table 6.14: GGT forecast - Number of days

	Consulting fee $/day	2025	2026	2027	2028	2029	Total
Project management	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Stakeholder engagement	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]
Technical support -SIB	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]
Technical support - ITOT	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]
Technical support - Opex	[redacted]			[redacted]	[redacted]	[redacted]	[redacted]
Total consulting days		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: GGT AA5 att. 11.2

389. In response to an information request, GGT provided disaggregated historical regulatory expenditure from 2015.[125] In real terms ($2023), this averaged $0.58 million per year to 2021. GGT's 2022 regulatory expenditure was very close to this, at $0.55 million.

390. These averages include ERA charges, however GGT's information only disaggregates these from 2018. From 2018 to 2021, ERA's regulatory charges to GGT averaged $0.45 million, which is more than the base year charges of $0.36 million, while its non-ERA regulatory costs averaged $0.09 million over the period, compared with its 2022 cost of $0.19 million.

391. We consider that the regulatory expenditure information that GGT has provided does not support its contention that its regulatory expenditure in its base year was markedly below trend. In proposing a step change of $1.6 million, GGT has not made a base year adjustment to remove the expenditure of $0.55 million that it did incur, meaning that its proposed step change would be additional to the $2.75 million ($0.55 million x 5 years) that is included on account of being retained within its base year opex. GGT also has not provided evidence to support its contention that its bottom-up forecast of $1.6 million is required, either in addition to the amount included in its base year or instead of the amount

125 GGP response to EMCa information requests IR22 - IR25

included in its base year. For example, GGT has not provided costing specific to the additional obligations that it refers to in its regulatory proposal.

392. We would, however, expect there to be a cyclical pattern to regulatory expenditure and we would expect GGT to incur higher costs on average than it did in its 2022 base year, which is the third year of its regulatory cycle.

393. In lieu of satisfactory evidence from GGT, we consider that it would be reasonable to allow a step change that would provide a 21% higher allowance for regulatory costs, to account for the cyclical nature of regulatory expenditure. We have derived this figure from examination of the cyclical pattern of GGT's proposed bottom-up expenditure and from the cyclical variation evident in its current period expenditure. This provides for an allowance that is also greater than GGT's average incurred costs from 2018 to 2021, and we consider that this can also be assumed to provide for the increased obligations that GGT has referred to.

394. Table 6.15 shows that taking these factors into account would provide for a step change of $0.59 million. This represents 37% of the $1.6 million step change that GGT has proposed.

Table 6.15: Calculation of proposed adjusted regulatory allowance step change

Regulatory cost component	Included in base year ($m)	Adjustment to allow for regulatory cycle (%)	Adjustment to allow for regulatory cycle (annual average $m)	Step change allowance for regulatory cycle (5 years $m)
EMCa adjusted step change	0.55	21%	0.12	**0.590**

Source: EMCa calculations, derived from GGT response to EMCa information requests IR 22 -IR25

395. In our proposed aggregate opex adjustment (in section 6.4.5) we apply the adjusted percentage to GGT's proposed step change, and which results in a sculpting of the annual cost profile that aligns with GGT's step change proposal.

6.4.4 Assessment of proposed step change for enterprise resource planning (ERP) upgrade-related expenditures

396. APA is undertaking a transformation of ERP landscape to replace its ageing legacy system. GGT explains that the legacy system lacks process and data maturity and is incapable of scaling to meet needs and address operational risks.

397. As we describe in sections 4.4 and 5.4, we consider that corporate costs are adequately represented by APA's corporate charge to GGT, noting that this was considerably higher in 2022 than in previous years. Accordingly, we consider that it is not reasonable to include an additional opex allowance for the operational costs of systems that support these functions.

398. Further to this, we reviewed GGT's calculation of its proposed step change, including a preliminary draft APA business case that GGT provided. We observe first that the preliminary draft business case provided was incomplete and included 'placeholder' instances where it appeared information was yet to be added. We consider it is unlikely that a project of such magnitude would yet have been approved on the basis of preliminary information such as was provided.

399. Secondly, we observe that most of the opex for APA's preferred option was also present in the 'business as usual' base case, and therefore would not be additional. Any net additional opex incurred by APA would therefore be considerably less than GGT had proposed, before accounting for any opex efficiency benefits that might be unlocked.

400. The determining factor in our consideration is, however, the position described in paragraph 397 and on this basis, we consider that GGT's proposed ERP step change should not allowed as conforming opex.

6.4.5 Implications of EMCa assessment for proposed step changes

401. Table 6.16 provides a summary of GGT proposed and EMCa adjusted step changes. In summary, we consider that GGT's proposed step change for costs related to the safeguard mechanism is reasonable, but that its proposed step changes for AA6 regulatory proposal preparation costs and for its ERP upgrade are overstated.

Table 6.16: GGT proposed and EMCa adjusted step changes - $m, real 2023

Step changes	GGT proposed	*EMCa adjustment*	EMCa adjusted
Safeguard mechanism initiatives	3.48	*0.00*	3.48
AA6 regulatory proposal	1.59	*-1.00*	0.59
ERP	1.93	*-1.93*	0.00
Total	**7.00**	***-2.93***	**4.07**

Source: EMCa table derived from GGP AA5 Opex Model, Att. 11.1

6.5 Assessment of rate of change (trend)

6.5.1 GGT's proposal

402. GGT has not proposed an output growth trend factor nor a productivity improvement trend factor for its opex BST forecast. GGT has proposed an allowance for real labour cost escalation, which we discuss below.

6.5.2 Real cost escalation factors

403. In its AA5 proposal, GGT proposes labour cost escalation using the same method as applied in previous ERA AA4 final decision, where GGT uses the forecast Western Australia Wage Price Index (WPI) and forecast inflation. This resulted in an increase of an average 0.67% per annum.

404. In Table 6.17 below, we show GGT's derivation of this factor.

Table 6.17: Real labour escalation inputs and outcomes

Real labour cost escalation	Average per annum
Annual Average of Western Australian WPI	3.50%
Equals Nominal Labour Escalation Forecast per annum	3.50%
Less Forecast Inflation/CPI per annum	2.81%
Equals labour escalation factor	**0.67%**

Source: EMCa table derived from GGP proposal table 11-10

405. GGT has not proposed to escalate materials costs.

6.5.3 Assessment and implications

406. We consider that GGT's approach for the calculation of labour cost escalation is reasonable, noting that it reflects the approach that ERA adopted for AA4.

407. In aggregate, we therefore consider that GGT's proposed trend factors are reasonable.

6.6 EMCa adjustment summary

6.6.1 Source of adjustments

408. Our assessment of adjustments results from:

- Base year:
  - Reduction of $1.4 million APA Operations cost as part of Pipeline operation opex category
  - Reduction of $0.3 million for MEJ's.
- Step changes:
  - Reduction of $1.2 million for AA6 regulatory proposal
  - Reduction of $1.4 million for ERP.

409. While we accept the real cost escalation proposed by GGT, there is a reduction of $0.29 million as result of our proposed adjustments to expenditures that attracted real labour escalation (operation field services and MEJ's) in GGT's 2022 base year (as above).

6.6.2 Aggregate adjustment assessment

410. In Table 6.18, we summarise GGT's proposed expenditure and the adjustments that we propose to provide an alternative forecast that reflects our findings.

Table 6.18: Summary of GGT AA5 opex forecast compared with EMCa adjusted opex - $m, real 2023

Forecast operating expenditure	GGT Proposed	*EMCa adjustments*	EMCa adjusted
Starting: base year operating expenditure	117.57	*-8.40*	109.17
Add: Separate forecasts			
SoCI	3.71	*0.00*	3.71
Equals: Baseline forecast operating expenditure	121.28	*-8.40*	112.88
Add: Step changes			
Safeguard mechanism initiatives	3.48	*0.00*	3.48
AA6 regulatory proposal	1.59	-1.00	0.59
Enterprise resource planning (ERP)	1.93	-1.93	0.00
Add: Real labour cost escalation			
Labour cost escalation	2.51	*-0.29*	2.23
Total forecast opex	**130.80**	***-11.62***	**119.18**

Source: EMCa table derived from GGT AA5 opex model att. 11.1

411. In Table 6.19 we show the derivation of the EMCa adjusted forecast, identifying the BST components on an annual basis.

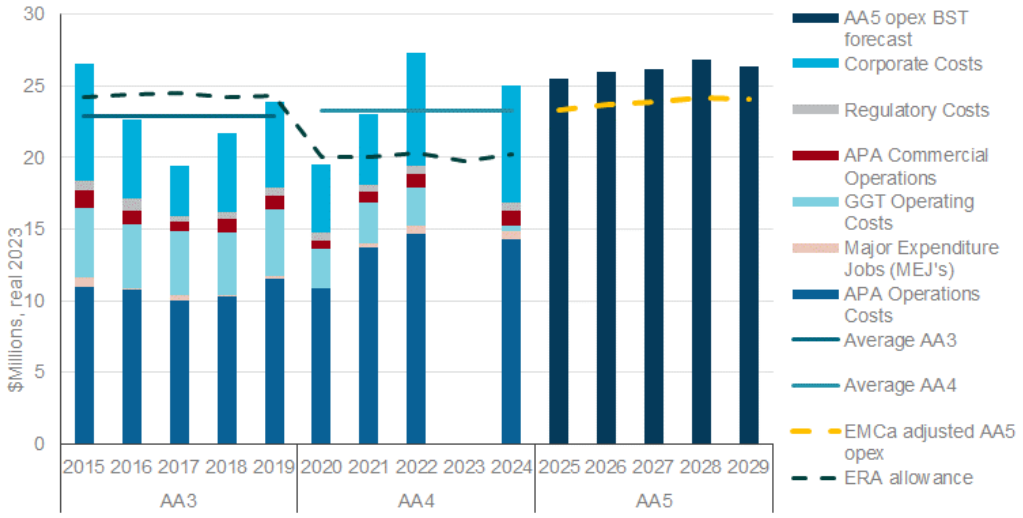
Table 6.19: Summary EMCa adjusted AA5 opex year by year - $m, real 2023

Forecast operating expenditure	2025	2026	2027	2028	2029	Total
Base year operating expenditure	**21.83**	**21.83**	**21.83**	**21.83**	**21.83**	**109.17**
Add: Separate forecasts						
SoCI	0.69	0.75	0.76	0.76	0.76	**3.71**
Baseline forecast operating expenditure	**22.52**	**22.58**	**22.59**	**22.59**	**22.59**	**112.88**
Add: Step changes						
Safeguard mechanism initiatives	0.55	0.70	0.73	0.73	0.77	**3.48**
AA6 regulatory proposal	0.00	0.07	0.10	0.31	0.10	**0.59**
Enterprise resource planning (ERP)	0.00	0.00	0.00	0.00	0.00	**0.00**
Add: Real labour cost escalation						
Labour cost escalation	0.27	0.35	0.45	0.54	0.63	**2.23**
Total forecast opex	**23.34**	**23.71**	**23.87**	**24.17**	**24.09**	**119.18**

Source: EMCa table derived from GGT AA5 opex model att. 11.1

412. Figure 6.4 illustrates GGT's proposed opex and the EMCa adjusted opex, by reference to historical trend expenditure. The adjusted expenditure represents a slight increase on average expenditure in the current periods, driven mainly by costs resulting from introduction of safeguard mechanism obligations and, to a lesser extent, real labour cost escalation.[126]

Figure 6.4: GGT's historical, forecast opex and EMCa adjusted - $m, real 2023



Source: EMCa graph derived from EMCa information request IR22 - IR25 and GGT AA5 opex model att. 11.1. GGT didn't provide 2023 figures

126 SoCI presents as an increase but is essentially offset by GGT's adjustment which removes 2022 expenditure from the 'base year'.

APPENDIX A - REVIEW FRAMEWORK

413. In this appendix we firstly provide a summary of the requirements of the NGL[127] and the NGR,[128] and describe the review framework (based on the requirements of the NGL and NGR) that we have applied in our assessment of the capex and opex proposals included in GGT's revised access arrangement.

414. We have not been requested by the ERA to document compliance of the capex and opex proposals with the individual rules and tests included in the NGR as a part of our assessment.

A.1 National Gas Law and National Gas Rules

415. As the owner (service provider) of a covered pipeline, GGT 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) GGT provides through the GGP.

416. 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.

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

A.2 Capex provisions

418. By virtue of the operation of rules 77(2)(b) and 78(b),[129] the ERA is required to carry out both:

- an ex post assessment of the capex incurred (or to be incurred) by GGT in AA4 to determine whether it satisfies the conforming capex criteria in rule 79(1); and
- an ex ante assessment of the capex GGT proposes to incur in AA5 to determine whether it is likely to satisfy the conforming capex criteria in rule 79(1).

419. 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 sustainable cost of delivering pipeline services' (the 'prudent service provider test') (r. 79(1)(a)), and
- the capex must be justifiable on one of the following grounds (r. 79(1)(b)):

127 The National Gas Access (WA) Act 2009 adopts a modified version of the National Gas Law (National Gas Access (Western Australia) Law).

128 Under the National Gas Access (Western Australia) Law, the National Gas Rules applying to Western Australia is version 1 of the National Gas Rules, as amended by the AEMC in accordance with its rule making power under section 74 of the National Gas Access (Western Australia) Law.

129 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 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.

- the overall economic value of the expenditure is positive (the 'economic value test') (r. 79(2)(a));[130] or
- the present value (PV) of the expected incremental revenue exceeds the PV of the capex (the 'incremental revenue test') (r. 79(2)(b));[131] or
- the capex is necessary to:
  - maintain and improve the safety of services (r. 79(2)(c)(i)); or
  - maintain the integrity of services (r. 79(2)(c)(ii)); or
  - comply with a regulatory obligation or requirement (r. 79(2)(c)(iii)); or
  - maintain the service provider's capacity to meet levels of demand for services existing at the time the capex is incurred (r. 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 (r. 79(2)(d)).

420. Finally, 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.

A.2.1 Conforming capex vs non-conforming capex

421. Where the capex proposed by GGT (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
- 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)).

422. In this context that while non-conforming capex cannot be recovered through the reference tariff(s), GGT may still undertake this form of capex and either:

- recover that expenditure, or a portion thereof, through a surcharge (r. 83) or a capital contribution (r. 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 (r. 84).

A.2.2 Administrative guidance about the value of greenhouse gas emissions

423. The National Gas Access (WA) Act 2009[132] clause 137 states that in relation to valuing greenhouse gas emissions, :

- (1) This clause applies if—

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130 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.

131 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.

132 Current version starting 25 January 2024

a. administrative guidance is issued by a government or regulatory entity about considering or applying the amended objective; and

b. the guidance includes the value, or a method of working out the value, of greenhouse gas emissions or greenhouse gas emissions reduction; and

c. the guidance is consistent with any MCE statement.

- (2) The value or method stated in the administrative guidance must be complied with by the government or regulatory entity in considering or applying the amended objective.
- (3) This clause applies until a Regulation or Rule takes effect for the matter described in subclause (1).
- (4) In this clause— MCE statement means a statement issued by the MCE that states the value, or a method of or guidance for working out the value, of greenhouse gas emissions or greenhouse gas emissions reduction, that is to be used by a government or regulatory entity in considering or applying the amended objective until a Regulation or Rule mentioned in subclause (3) takes effect.

424. The MCE statement about the interim value of greenhouse gas emissions reduction,[133] sates that '[t]he VER is the 2022-23 average of the generic Australian Carbon Credit Unit spot price (AUD$33/tonne CO2-e) with a growth rate of 10% p.a. averaged with a linear interpolation of:

1. From 2024-2029: the IPCC Fifth Assessment Report Representative Concentration Pathway 2.6 (commonly referred to as RCP2.6) scenario, median marginal cost of abatement figures,8 converted into 2023 AUD dollars.
2. From 2030-2050: the IPCC Sixth Assessment Report Category 2 (commonly referred to as C2) emissions scenario median marginal cost of abatement figures9, converted into 2023 AUD dollars.
3. Beyond 2050, the 2050 value should apply.'

425. The MCE statement also refers to sensitivity analyses of upper and lower bounds 25% above/below the VER value, with the decision on whether to undertake a sensitivity analysis at the discretion of the regulatory entity.

A.3 Opex provisions

426. The criteria the ERA is required to consider when assessing GGT'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.*

427. 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.

A.4 Assessment framework

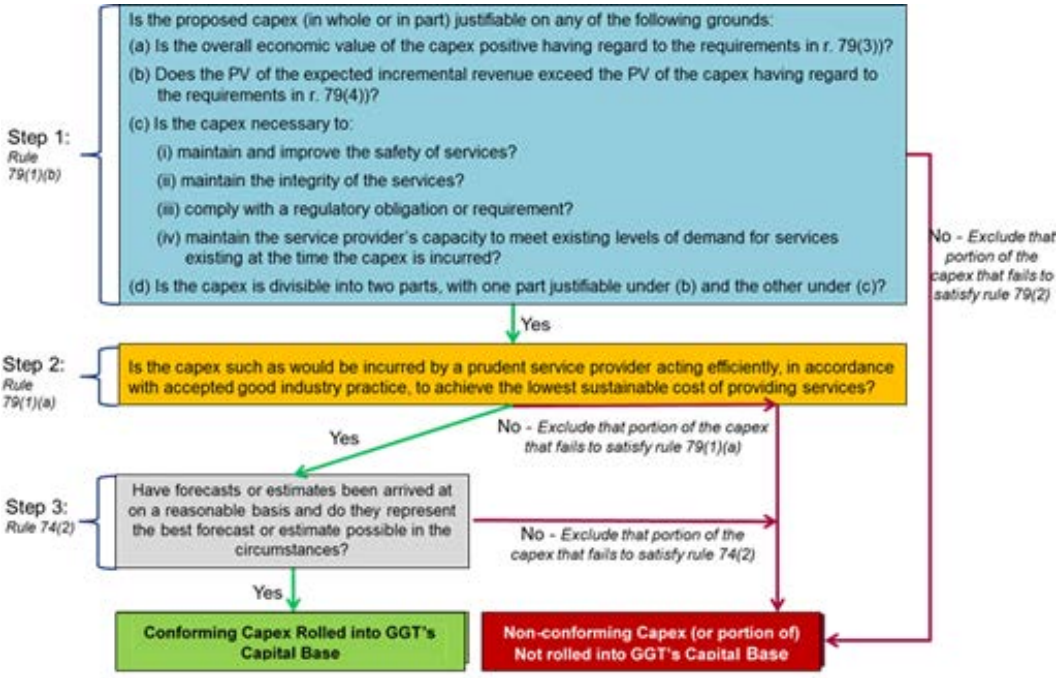
428. An overview of the frameworks we have used to assess GGT's capex and opex proposals is provided below.

[133] AEMC, Attachment 4 VER MCE Statement for Commission 200324.pdf, page 2

A.4.1 Capex assessment framework

429. The framework we have used to assess whether the capex incurred (or to be incurred) by GGT in AA4 and its proposed capex for AA5 can be considered conforming capex is depicted in the figure below.

Figure A.1: Capex assessment framework



Source: EMCa

430. As the figure above highlights, the framework consists of three steps, which are based on the specific requirements set out in rules 79 and 74(2). Where there is discretion as to which ground is relevant under rule 79(2), we have based our assessment on the grounds that GGT has identified, and we have reviewed the evidence GGT has provided in support of this ground. 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)?

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

432. For those capex projects (or a portion thereof) that GGT has claimed the economic value is positive (r. 79(2)(a)) or that the expenditure satisfies the incremental revenue test (r. 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 GGT provided in support of its claim and its underlying assumptions.

433. For those capex projects (or a portion thereof) where GGT 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 (r. 79(2)(c)), we have, amongst other things, had regard to:

- GGT's Asset Management Plan (AMP);
- the WAGN Gas Distribution System Safety Case (Safety Case) and the formal safety assessments (FSA) carried out by GGT;
- the Gas Standards (Gas Supply and System Safety) Regulations 2000;

- Australian Standards AS/NZS4645 (Gas Distribution Networks) and AS2885 (Pipelines – Gas and Liquid Petroleum Pipelines);
- other regulatory requirements that GGT is required to comply with; and
- the analysis GGT provided in support of its claim and its underlying assumptions.

434. As the figure above indicates, if the capex project in whole, or in part, is found to:

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

435. 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'.

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

- the project governance framework employed by GGT, the key elements of which are GGT'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 GGT on particular projects and the nature of any outsourcing arrangements it has entered into (e.g. competitive tender or related party transaction);
- GGT's capability to deliver the proposed projects efficiently in the time proposed;
- the extent to which GGT has adequately assessed and accounted for any benefits from productivity or efficiency enhancing programs (benefits realisation);
- the actual costs incurred by GGT in AA4 relative to what it has proposed for AA5;
- GGT's compliance with Australian standards: AS/NZS4645 and AS2885; and
- benchmarking of approaches and/or costs against other gas pipelines and/or regulated businesses provided by GGT.

437. As the figure above 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); and
- not satisfy the prudent service provider test, then 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)?

438. The final matter we have considered is whether the forecasts or estimates underlying those capex projects that are justifiable under rule 79(2) and 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).

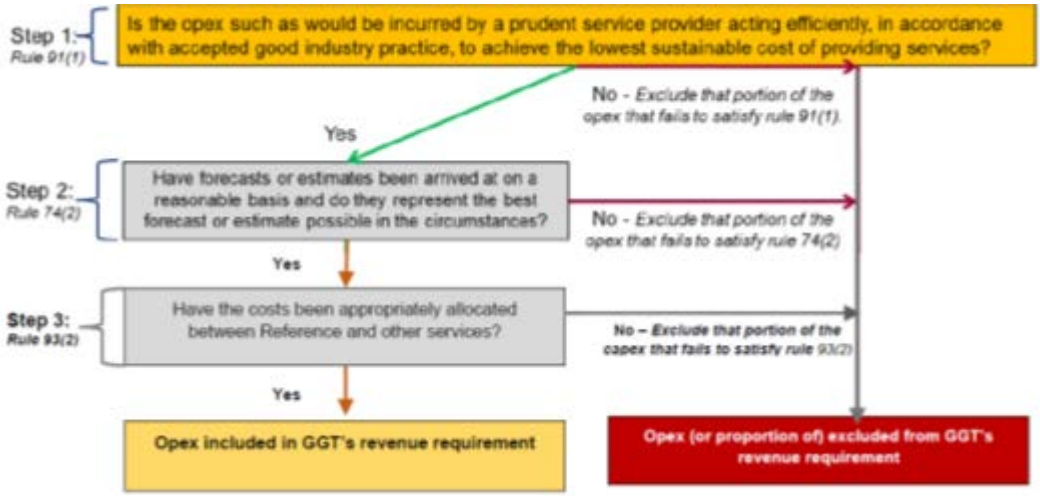
439. As the figure above highlights, where the forecasts and/or estimates are found to:

- satisfy this rule, the proposed expenditure has been deemed to comply with the conforming capex criteria; and
- not satisfy this rule, then 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 (r. 79(1)(a)).

A.4.2 Opex assessment framework

440. The figure below sets out the framework we have used to assess GGT's proposed AA5 opex.

Figure A.2: Opex assessment framework



Source: EMCa

441. 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 the earlier section of this Appendix, albeit focused on opex rather than capex.

442. The only additional matters that we have considered under Step 1 of this framework, which are not relevant to capex are:

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

APPENDIX B – CRITICAL INFRASTRUCTURE OBLIGATIONS

B.1 Amendments to the SoCI Act

443. The Security of Critical Infrastructure Act 2018 (SoCI Act) places obligations on specific entities in the electricity and other industries.

444. The Security Legislation Amendment (Critical Infrastructure) Act 2021 (SLACI Act) and the Security Legislation Amendment (Critical Infrastructure Protection) Act 2022 (SLACIP Act) amended the SoCI Act to strengthen the security and resilience of critical infrastructure by expanding the sectors and asset classes the SoCI Act applies to, and to introduce new obligations.

445. The amendments were made because '*Australia is facing increasing cyber security threats to essential services, businesses and all levels of government.* [134] Gas transmission assets may be classed as critical infrastructure within the framework under the Act. The new 'Positive Security Obligations' that apply to certain sets of critical infrastructure assets are:

- Register of Critical Infrastructure Assets; and
- Mandatory Cyber Incident Reporting.

446. On 2 April 2022, amendments to the SoCI Act introduced the following:

- A new obligation for responsible entities to create and maintain a Critical Infrastructure Risk Management Program (CIRMP);[135] and
- A new framework for enhanced cyber security obligations (ECSO) required for operators of systems of national significance (SoNS), Australia's most important critical infrastructure assets.[136]

B.2 CIRMP

B.2.1 The CIRMP Rules

447. Under the Security of Critical Infrastructure (Critical Infrastructure Risk Management Program) Rules 2023 (CIRMP Rules), a responsible entity must establish and maintain a process or system in the CIRMP to (a) comply with a framework contained in one of five documents referred to in the CIRMP, and (b) meet the corresponding condition for that document.[137] The CIRMP are required to be in place by 17 August 2024.[138]

B.2.2 Cyber security obligations

448. The 2020-21 Australian Energy Sector Cyber Security Framework (AESCSF) Framework Core published by AEMO is one of the five documents referred to in the CIRMP instrument and the condition that is required to be met is SP-1. Therefore SP-1 is the current legislative obligation that gas transmission entities must comply with if the entity is defined as a responsible entity and selects the AESCSF as the cyber security framework.

134 Department of Home Affairs, Cyber and Infrastructure Security Centre (CISC) website

135 CISC, Guidance for the Critical Infrastructure Risk Management Program

136 CISC Factsheet – Systems of National Significance and Enhanced Cyber Security Obligations

137 Federal Register of Legislation, Security of Critical Infrastructure (Critical infrastructure risk management program) Rules (LIN 23/006) 2023; subsection 8 (4)

138 CISC, Guidance for the Critical Infrastructure Risk Management Program, page 15