



## **GOLDFIELDS GAS PIPELINE**

### **Proposed Revised Access Arrangement Information**

28 August 2014



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## **GOLDFIELDS GAS PIPELINE**

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## 1 Introduction

The Goldfields Gas Pipeline (GGP), as it was configured at the time the Gas Pipelines Access (Western Australia) Act 1998 came into effect, was a covered pipeline. It was subject to the scheme of access regulation of the National Third Party Access Code for Natural Gas Pipeline Systems (Code), which was implemented by the 1998 Act.

In 2006, the capacity of the GGP was expanded by installation of a second compressor at Paraburdoo. In 2009, compressors were installed at Wyloo West and Ned's Creek, further increasing the capacity of the pipeline. Elections were made, pursuant to the extensions and expansions policy of the Access Arrangement for the GGP (GGP Access Arrangement) which had been approved by the Western Australian Economic Regulation Authority (ERA) on 14 July 2005, that the additional capacity provided by the compressors at Paraburdoo, at Wyloo West and at Ned's Creek would not be covered.

In January 2010, the National Gas Access (WA) Act 2009 came into effect, replacing the scheme of access regulation of the Code with the scheme of the National Gas Law (NGL) and the National Gas Rules (NGR).

A transmission pipeline which was covered under the Code (an old scheme covered transmission pipeline) is deemed, by clause 6 of Schedule 3 to the NGL, to be a covered pipeline on commencement of the NGL.

Those parts of the GGP which were a covered pipeline under the Code are now a covered pipeline under the access regime of the NGL and the NGR.

Goldfields Gas Transmission Pty Ltd is a covered pipeline service provider, and is the complying service provider for the GGP (Service Provider).

### 1.1 Covered Pipeline

"Pipeline" is defined in the GGP Access Arrangement.

The Covered Pipeline is the Pipeline and associated infrastructure as at 1 January 2015, excluding the assets identified in the variations to Pipeline Licence 24 listed in the following paragraph, but including any extension or expansion of the capacity of the Pipeline which Service Provider has elected should be treated as part of the Covered Pipeline for any purpose under the NGL and, in respect of which, the ERA has consented to Service Provider's election.

The variations to Pipeline Licence 24 referred to in the preceding paragraph, and short descriptions of those variations, are listed in Table 1.

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**Table 1: Variations to Pipeline Licence 24**

PL 24 Variation	Date	Description
9P/05-6	23 January 2006	Solar Centaur C40 compressor package and associated infrastructure at existing compressor station site at Paraburdoo (Paraburdoo Unit 2)
3P/07-8	7 May 2008	Solar Centaur C50 gas compressor package and associated infrastructure at existing scraper station site at Wyloo West
STP-PLV-0014	30 August 2012	Custody transfer meter station and connection point on the Newman Lateral at Yarnima Custody transfer meter station and connection point on the GGP at Boonamichi Well
2P/08-9	3 November 2008	Solar Centaur C50 gas compressor package and associated infrastructure at existing scraper station site at Ned's Creek
STP-PLV-0015	5 September 2012	Solar Centaur C50 gas compressor package and associated infrastructure at existing compressor station site at Yarraloola Solar Centaur C50 compressor package and associated infrastructure at existing compressor station site at Paraburdoo
STP-PLV-0016	7 September 2012	Two Solar Centaur C50 gas compressor packages and associated infrastructure at existing scraper station site at Turee Creek

Pipeline Licence 24 is available from the Petroleum and Geothermal Register which can be accessed from the website of the Western Australian Department of Mines and Petroleum (<http://www.dmp.wa.gov.au/3959.aspx>).

## 1.2 Description of the Covered Pipeline

The GGP extends from Yarraloola, in the Pilbara region of Western Australia, to Kalgoorlie, in the Goldfields/Esperance region. The Covered Pipeline and its associated infrastructure include:

- (a) DN 400 mm main pipeline section (Yarraloola to start of Newman Lateral), and DN 350 mm main pipeline section (start of Newman Lateral to Kalgoorlie);
- (b) DN 200 mm Newman Lateral;
- (c) corrosion mitigation by trilaminate pipe coating and impressed current cathodic protection;
- (d) compressor stations at Yarraloola, Paraburdoo, Ilgarari and Wiluna;
- (e) custody transfer metering at Yarraloola, and at various delivery points along the pipeline
- (f) Perth head office;

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- (g) gas control centre, Perth head office, and backup gas control centre, Kewdale;
- (h) maintenance bases and depots in Karratha, Newman, Leinster, and Kalgoorlie;
- (i) Supervisory Control and Data Acquisition (SCADA) system;
- (j) satellite data communications system;
- (k) satellite telephone system; and
- (l) operations, maintenance, commercial, quality, safety, and environmental management systems.

Gas is received into the GGP from the following two separate receipt points at Yarraloola. One is close to the Harriet Joint Venture meter station near Compressor Station One on the Dampier to Bunbury Natural Gas Pipeline. The other is on the pipeline (GGP-DBNGP Interconnect Pipeline) between Compressor Station One on the Dampier to Bunbury Natural Gas Pipeline and Yarraloola.

Gas can be delivered from the Covered Pipeline to users at:

- (a) Paraburdoo;
- (b) Newman;
- (c) Plutonic;
- (d) Wiluna;
- (e) Jundee;
- (f) Mount Keith;
- (g) Cosmos;
- (h) Leinster;
- (i) Thunderbox;
- (j) Jaguar;
- (k) Leonora (Leonora, Murrin Murrin);
- (l) Cawse;
- (m) Parkeston;
- (n) Kalgoorlie; and
- (o) Kalgoorlie South.

### **1.3 Revisions to the GGP Access Arrangement**

Section 132 of NGL requires that a covered pipeline service provider submit, for approval by the ERA under the NGR, in the circumstances and within the time period specified by the NGR, revisions to a full access arrangement. Accordingly, Service Provider submitted to the ERA, on 15 August 2014, an access arrangement revision proposal for the GGP Access Arrangement which, as required by rule 52 of the NGR:

- (a) set out the amendments to the access arrangement that Service Provider proposed for the next access arrangement period; and
- (b) incorporated the text of the access arrangement in the revised form.<sup>1</sup>

### **1.4 Access arrangement information**

When submitting an access arrangement revision proposal for ERA approval, a service provider must submit, together with the proposal, access arrangement information for the access arrangement proposal (rule 43(1)).

This document – GGP Access Arrangement Information – sets out the access arrangement information which Service Provider is required to submit to the ERA with its revision proposal for the GGP Access Arrangement.

Access arrangement information for a full access arrangement proposal is to include, in accordance with rule 72(1) of the NGR:

- (a) if the access arrangement period commences at the end of an earlier access arrangement period:
  - (i) capital expenditure (by asset class) over the earlier access arrangement period;
  - (ii) operating expenditure by category over the earlier access arrangement period;
  - (iii) usage of the pipeline over the earlier access arrangement period showing, for a transmission pipeline, minimum, maximum and average demand, and user numbers for each receipt or delivery point;
- (b) derivation of the capital base, and a demonstration of how the capital base increased or diminished over the previous access arrangement period;
- (c) the projected capital base over the access arrangement period, including:
  - (i) a forecast of conforming capital expenditure for the period and the basis for the forecast; and

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<sup>1</sup> Subsequent references to specific rules of the NGR will be designated rule [number]. All references will be to Version 21 of the NGR.

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- (ii) a forecast of depreciation for the period including a demonstration of how the forecast is derived on the basis of the proposed depreciation method;
- (d) to the extent practicable, forecasts of pipeline capacity and utilisation of pipeline capacity over the access arrangement period and the basis on which the forecast has been derived;
- (e) a forecast of operating expenditure over the access arrangement period and the basis on which the forecast has been derived;
- (f) key performance indicators supporting expenditure to be incurred over the access arrangement period;
- (g) the proposed return on equity, return on debt and allowed rate of return, for each regulatory year of the access arrangement period, including any departure from the methodologies set out in the rate of return guidelines and the reasons for that departure;
- (ga) the proposed formula that is to be applied in accordance with rule 87(12);
- (h) the estimated cost of corporate income tax calculated in accordance with rule 87A, including the proposed value of imputation credits referred to in that rule;
- (i) any proposed carry-over of increments for efficiency gains or decrements for efficiency losses resulting from operation of an incentive mechanism in the previous access arrangement period, and a demonstration of how allowance is to be made for any such increments or decrements;
- (j) the proposed approach to the setting of tariffs including:
  - (i) the basis for reference tariffs, including the method used to allocate costs and a demonstration of the relationship between costs and tariffs; and
  - (ii) a description of any pricing principles employed but not otherwise disclosed;
- (k) the rationale for any proposed reference tariff variation mechanism;
- (l) the rationale for any proposed incentive mechanism; and
- (m) the total revenue expected to be derived from pipeline services for each regulatory year of the access arrangement period.

## **1.5 Total revenue and tariff model**

In addition to the information included in this GGP Access Arrangement Information, GGT has provided, as part of its proposal for revision of the GGP Access Arrangement, a tariff model which sets out the calculation of the total revenue and the proposed revised reference tariff.



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The tariff model sets out, in detail, the calculation of:

- (a) the projected capital base;
- (b) the return on the projected capital base;
- (c) depreciation;
- (d) the estimated cost of corporate income tax; and
- (e) the proposed revised reference tariff.

A public version of this tariff model, in which user-specific information has been aggregated to preclude undue harm to individual users of the Covered Pipeline, is available on the ERA's website.

## 2 Expenditure and pipeline usage over the earlier access arrangement period

Revisions to the GGP Access arrangement are to commence on 1 January 2015. They commence at the end of an earlier access arrangement period (which commenced on 20 August 2010). The access arrangement information therefore includes:

- (a) capital expenditure (by asset class) over the earlier access arrangement period;
- (b) operating expenditure by category over the earlier access arrangement period; and
- (c) usage of the pipeline over the earlier access arrangement period showing, for a transmission pipeline, minimum, maximum and average demand, and user numbers for each receipt or delivery point;

### 2.1 Capital expenditure by asset class

Capital expenditure, by asset class, over the period 2010 to 2014 is shown in Table 2. The expenditures for 2010 to 2013 are actual expenditures; the expenditure for 2014 is a forecast. The expenditures are presented on a nominal basis.

**Table 2: Capital expenditure by asset class: 2010-2014**

	2010 Actual \$ million	2011 Actual \$ million	2012 Actual \$ million	2013 Actual \$ million	2014 Forecast \$ million
Pipeline and laterals	-0.083	0.000	0.000	0.026	0.000
Main line valve and scraper stations	0.000	0.000	0.000	0.000	0.000
Compressor stations	0.431	0.047	0.259	0.580	0.909
Receipt and delivery point facilities	0.000	0.000	0.000	0.136	0.174
SCADA and communications	0.182	0.364	0.727	0.473	0.866
Cathodic protection	0.000	0.000	0.000	0.000	0.000
Maintenance bases and depots	0.089	0.000	0.000	1.320	0.091
Other depreciable assets	0.045	0.023	0.026	0.567	0.951
Non-depreciable assets	0.000	0.000	0.000	0.000	0.000
	<b>0.664</b>	<b>0.435</b>	<b>1.012</b>	<b>3.101</b>	<b>2.991</b>

### 2.2 Operating expenditure by category

Operating expenditure, by category, over the period 2010 to 2014 is shown in Table 3. The expenditures for 2010 to 2013 are actual expenditures; the expenditure for 2014 is a forecast. The expenditures are presented on a nominal basis.

**Table 3: Operating expenditure by category: 2010-2014**

	2010 Actual \$ million	2011 Actual \$ million	2012 Actual \$ million	2013 Actual \$ million	2014 Forecast \$ million
Pipeline operations	13.444	13.595	13.660	12.487	13.711
Commercial operations	1.046	1.032	1.845	2.470	2.069
Regulatory costs	2.117	1.362	0.421	0.775	2.284
Insurance	0.827	0.755	0.695	0.769	0.707
Corporate overheads	7.080	8.712	7.990	6.359	6.205
	<b>24.515</b>	<b>25.455</b>	<b>24.611</b>	<b>22.860</b>	<b>24.977</b>

## 2.3 Pipeline usage

Usage of the pipeline over the earlier access arrangement period is shown in Table 4.

**Table 4: Minimum, maximum and average demands by category<sup>1</sup>**

	2010 Actual TJ/d	2011 Actual TJ/d	2012 Actual TJ/d	2013 Actual TJ/d	2014 Forecast TJ/d
<b>Reserved capacity</b>					
Minimum	105.2	104.8	104.7	102.7	93.4
Maximum	106.1	105.5	105.6	106.7	102.0
Average	105.7	105.2	105.2	104.5	97.7
<b>Throughput</b>					
Minimum	84.0	81.3	80.6	80.6	77.8
Maximum	87.0	84.1	84.8	84.6	84.3
Average	85.6	82.4	82.5	83.5	81.1

1. Derived from quarterly source data.

Numbers of receipt points, delivery points and users are summarised in Table 5.

**Table 5: Numbers of receipt points, delivery points and users**

	2010	2011	2012	2013	2014
Receipt points	2	2	2	2	2
Delivery points	15	15	15	15	15
Users	9	9	9	10	8

The information in Tables 3 and 4 is necessarily aggregated to avoid disclosure of user sensitive information.

### **3 Derivation of the capital base at commencement of access arrangement period**

The opening capital base for the preceding access arrangement period was set at 20 August 2010.

To derive the capital base at the commencement of the access arrangement period (1 January 2015):

- (a) in the period 20 August 2010 to 31 December 2010:
  - (i) conforming capital expenditure made during the period was added to the opening capital at the beginning of the period; and
  - (ii) depreciation during the period was subtracted; and
- (b) in the each year from 1 January 2011 to 31 December 2014:
  - (a) conforming capital expenditure made during the year was added to the opening capital at the beginning of the year; and
  - (b) depreciation during the year was subtracted.

The depreciation which was subtracted in deriving the capital base at the commencement of the access arrangement period was the forecast of depreciation used in determining the reference tariff applicable during the preceding access arrangement period.

During the period 20 August 2010 to 31 December 2014:

- (a) no amounts were added to the capital base under rules 82, 84 or 86;
- (b) no redundant assets were identified or removed from the capital base; and
- (c) there were no asset disposals requiring a reduction in the capital base.

The derivation of the capital base at commencement of access arrangement period is shown in Table 6.

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**Table 6: Derivation of the capital base at the commencement of the access arrangement period**

	2010 \$ million	2011 \$ million	2012 \$ million	2013 \$ million	2014 \$ million
Opening capital base	436.258	432.602	421.878	411.191	402.379
Capital expenditure	0.244	0.435	1.012	3.101	2.991
Depreciation	3.901	11.159	11.699	11.913	12.029
End of year value	432.602	421.878	411.191	402.379	393.341

## 4 Projected capital base over access arrangement period

### 4.1 Forecast of conforming capital expenditure

Forecast conforming capital expenditure for the access arrangement period is summarized in Table 7.

**Table 7: Forecast conforming capital expenditure: 2015-2019**

	2015	2016	2017	2018	2019
	\$ million	\$ million	\$ million	\$ million	\$ million
Pipeline and laterals	3.387	2.000	0.313	0.000	0.255
Main line valve and scraper stations	0.000	0.700	0.000	0.000	0.000
Compressor stations	1.070	0.899	0.000	0.242	0.344
Receipt and delivery point facilities	0.408	0.000	0.721	0.421	0.000
SCADA and communications	0.567	0.498	0.216	0.050	0.051
Cathodic protection	0.102	0.036	0.094	0.028	0.029
Maintenance bases and depots	0.658	0.000	0.000	0.000	0.000
Other assets	0.593	0.105	0.084	0.062	0.064
	<b>6.784</b>	<b>4.238</b>	<b>1.428</b>	<b>0.803</b>	<b>0.743</b>

The capital expenditure forecast has been developed as the forecast costs of a number of specific capital projects required for the ongoing safe and reliable operation of the pipeline

### 4.2 Forecast of depreciation

Forecast depreciation for the access arrangement period is summarized in Table 8.

**Table 8: Forecast depreciation: 2015-2019**

	2015	2016	2017	2018	2019
	\$ million	\$ million	\$ million	\$ million	\$ million
Pipeline and laterals	6.811	6.811	6.860	6.888	6.893
Main line valve and scraper stations	0.207	0.207	0.207	0.221	0.221
Compressor stations	2.622	2.680	2.716	2.746	2.746
Receipt and delivery point facilities	0.109	0.120	0.133	0.133	0.157
SCADA and communications	0.169	0.305	0.341	0.370	0.371
Cathodic protection	0.119	0.119	0.126	0.128	0.133
Maintenance bases and depots	0.178	0.210	0.223	0.223	0.223
Other assets	0.133	0.265	0.301	0.282	0.259
	<b>10.349</b>	<b>10.716</b>	<b>10.906</b>	<b>10.991</b>	<b>11.003</b>

The depreciation in Table 8 comprises:

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- (a) depreciation on the initial capital base, and on the assets created by the capital expenditures which were added to that initial capital base during the period from 2000 to 2014; and
- (b) depreciation on the assets expected to be created by the capital expenditure forecast to be made during the period 2015 to 2019.

Each of these two components of depreciation has been calculated using the straight line method.

Depreciation is calculated for each of eight asset classes. For the assets in each class, depreciation is calculated by dividing the value of the assets in the class, at the time of their inclusion in the capital base, by the expected economic life of the assets in the class.

Since the actual capital expenditure for the period 2010 to 2014 was less than forecast, an adjustment has been made for “over-depreciation”. The components of the over-depreciation adjustment are shown in Table 9.

**Table 9: Over-depreciation adjustment: 2014**

	\$ million
Pipeline and laterals	0.083
Main line valve and scraper stations	0.005
Compressor stations	0.318
Receipt and delivery point facilities	0.021
SCADA and communications	0.012
Cathodic protection	0.631
Maintenance bases and depots	0.002
Other assets	2.138
	<b>3.211</b>

The over-depreciation adjustment shown in Table 9 is added to the opening capital base at 1 January 2015 (reflected in the discrepancy between the closing capital base in Table 6 and the opening capital base shown in Table 10), and is subtracted from the total revenue for that year.

### **4.3 Projected capital base over the access arrangement period**

Projection of the capital base forward over the access arrangement period is shown in Table 10.

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**Table 10: Projected capital base: 2015-2019**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
	\$ million	\$ million	\$ million	\$ million	\$ million
Opening capital base	396.552	392.988	386.510	377.031	366.843
Capital expenditure	6.784	4.238	1.428	0.803	0.743
Depreciation	10.349	10.716	10.906	10.991	11.003
End of year asset value	392.988	386.510	377.031	366.843	356.584



## 5 Forecasts of pipeline capacity and capacity utilisation

The forecasts of pipeline capacity and utilisation – throughput – used in reference tariff determination are shown in Table 11.

**Table 11: Forecast capacity and throughput: 2015-2019**

	2015	2016	2017	2018	2019
	TJ/d	TJ/d	TJ/d	TJ/d	TJ/d
Capacity	94.79	105.33	105.04	105.04	105.04
Throughput	71.42	78.04	78.04	78.04	78.04

The forecasts shown in Table 11 have been derived from:

- (a) user capacity entitlements in existing gas transportation agreements; and
- (c) user advice on, and Service Provider estimates of, pipeline throughput.

## 6 Forecast of operating expenditure

Forecast operating expenditure for the period 1 January 2015 to 31 December 2019, is shown in Table 12.

**Table 12: Forecast operating expenditure: 2015-2019**

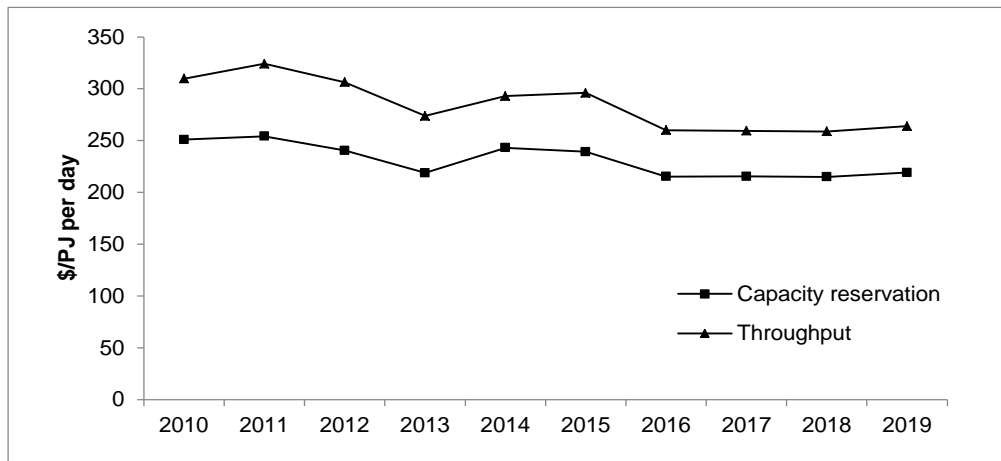
	2015	2016	2017	2018	2019
	\$ million	\$ million	\$ million	\$ million	\$ million
Pipeline operations	13.227	14.063	14.927	14.874	14.953
Commercial operations	2.619	2.731	2.816	2.901	2.988
Regulatory costs	2.301	1.275	0.859	1.330	2.297
Insurance	0.739	0.761	0.784	0.808	0.832
Corporate overheads	6.391	6.583	6.781	6.984	7.194
	<b>25.277</b>	<b>25.413</b>	<b>26.168</b>	<b>26.897</b>	<b>28.263</b>

The forecast has been derived from projections of operating expenditure for the GGP for the period 2015 to 2019 prepared for, and approved by the Goldfields Gas Transmission Joint Venture. Comparison of the forecast with expenditure in a representative base year, 2012, shows important efficiency gains.

## 7 Key performance indicators

Figure 1 shows actual and forecast unit operating costs (\$/PJ per day, for capacity reservation and throughput), in real December 2013 dollars, over the period 2010 to 2019.

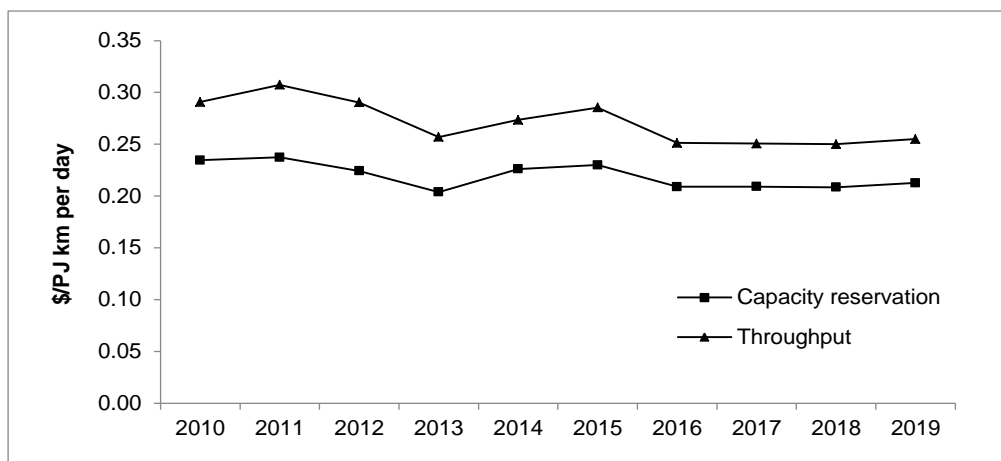
**Figure 1: Unit operating expenditure: \$/PJ per day (\$ December 2013)**



Unit operating costs expressed in \$/PJ per day of capacity reservation and/or throughput do not recognise the fact that the Covered Pipeline's outlets are distributed over 78% of its length.

Unit operating expenditure, expressed in \$/PJ km per day of capacity reservation and throughput are shown in Figure 2.

**Figure 2: Unit operating expenditure: \$/PJ km per day (\$ December 2013)**



## 8 Proposed return on equity, return on debt and allowed rate of return

Proposed returns on equity and on debt, in each year of the access arrangement period, are shown in Table 13.

The proposed allowed rate of return has been determined as a nominal vanilla weighted average of the return on equity and the return on debt, assuming a gearing of 60%.

**Table 13: Return on equity, return on debt and allowed rate of return**

Return on equity	12.28%
Return on debt	7.89%
Proposed allowed rate of return	9.64%

Determination of the allowed rate of return departed from the methodologies set out in the Rate of Return Guidelines in the following ways.

### 8.1 Nominal risk free rate of return

The nominal risk free rate of return used in estimating the return on equity and the return on debt was estimated from yields on Commonwealth Government bonds with terms to maturity of 10 years, and not with terms to maturity of five years as set out in the Rate of Return Guidelines.

Contrary to the view expressed in the Explanatory Statement to the Rate of Return Guidelines, the present value principle does not provide any reason for equating the term to maturity of the proxy for the risk free asset with the length of the regulatory period.

Furthermore, the view that the term to maturity of a proxy for the risk free asset should be equal to the length of the access arrangement period, is not supported by the academic and other studies to which the Explanatory Statement refers.

The term to maturity of the proxy for the risk free asset must be determined by reference to investor behaviour. Economic theory indicates that investors regard long term government bonds, rather than short term bonds, as the appropriate proxy for the risk free asset, and this theoretical view is supported by evidence from financial markets.

The Australian Energy Regulator has adopted Commonwealth Government bonds with terms to maturity of 10 years as the proxy for the risk free asset to be used in applying its Rate of Return Guideline.

## **8.2 Market risk premium**

The market risk premium used in estimation of the return on equity was estimated as the difference between an estimate of the expected return on the market and the estimate of the nominal risk free rate obtained from current yields on Commonwealth Government bonds with 10 years to maturity.

It was not estimated, in the way proposed in the Rate of Return Guidelines, as a long term average of differences between the return on the expected return on market and the risk free rate of return.

The Sharpe-Lintner Capital Asset Pricing Model (Sharpe-Lintner CAPM) was used to estimate the return on equity. The market risk premium of the Sharpe-Lintner CAPM is not the persistent difference between the expected return on the market portfolio and the risk free rate of return, as might be measured by an average of historical risk premiums. The use of an average of historical risk premiums, as the Rate of Return Guidelines propose implies a model of equity returns which is not the Sharpe-Lintner CAPM, and leads to error.

## **8.3 Return on debt**

The return on debt was estimated using a trailing average method. It was not estimated using the “on the day” method of the Rate of Return Guidelines.

Application of the on-the-day approach in the way indicated in the Rate of Return Guidelines does not, at the present time, satisfy the requirements of rule 87, nor does it yield a return on debt which contributes to achievement of the national gas objective.

Use of the trailing average method yields a return on debt which should provide the opportunity to recover the efficiently incurred costs of providing the reference service. The ability to recover efficiently incurred costs provides, in turn, incentives for further efficient investment in the pipeline, and for the efficient provision of pipeline services. This is in the long term interests of consumers of natural gas, and will contribute to achievement of the national gas objective.

## **8.4 Debt risk premium**

Each term of the trailing average used to estimate the return on debt has, in turn, been estimated as the sum of:

- (a) risk free rate of return;
- (b) debt risk premium; and
- (c) allowances for debt raising and hedging costs.

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The debt risk premium was estimated using the corporate credit spreads which have been published by the Reserve Bank of Australia since December 2013. It has not been estimated using the bond yield approach of the Rate of Return Guidelines.

Use of the bond yield approach, in the way proposed in the Rate of Return Guidelines, will not lead to an estimate of the return on debt which meets the requirements of rule 87 because:

- (a) the term to maturity of the debt used to estimate the debt risk premium is arbitrarily chosen; it is not the term to maturity of the debt issued by the benchmark efficient entity; and
- (b) no consideration is given to the issue of debt in offshore markets, when the benchmark efficient entity would be expected to issue at least a part of its debt in those markets.

## **9 Formula to be applied in accordance with rule 87(12)**

The allowed rate of return is to be updated annually.

The formula to be applied in accordance with rule 87(12) – the formula which varies the total revenue as allowed rate of return is varied – is embedded in the formula for annual scheduled variation of the reference tariff, which is part of the reference tariff variation mechanism of the GGP Access Arrangement.

The formula which is embedded in the reference tariff variation mechanism of the GGP Access Arrangement is the formula set out and described in the paragraphs 78 to 82 of the ERA's December 2013 Rate of Return Guidelines.

## 10 Estimated cost of corporate income tax

The cost of tax in each regulatory year has been estimated by multiplying an estimate of annual taxable income in the year by the expected statutory income tax rate.

Annual taxable income has been estimated as total revenue in each regulatory year less expenses allowed for income tax purposes. These expenses are:

- (a) the cost of debt financing – the return on debt from the total revenue calculation;
- (b) operating expenses – the forecasts of operating expenditure from the total revenue calculation; and
- (c) tax depreciation – depreciation on the historical cost of the assets comprising the GGP which may be depreciated for tax purposes (the tax asset base), calculated using the straight line method with the asset lives determined for taxation purposes by the Australian Taxation Office.

The cost of tax has been estimated from taxable income estimated, in turn, as the difference between:

- (a) the total revenue; and
- (b) expenses allowed for income tax purposes which are:
  - (i) in the case of the cost of debt financing and operating expenses, the costs used to determine the total revenue of the benchmark efficient service provider; and
  - (ii) in the case of tax depreciation, calculated by applying the rules for depreciation established by the Australian Taxation Office to a tax asset base determined using the capital expenditures of the benchmark efficient service provider.

Rule 87A requires that the estimated cost of corporate income tax be reduced by an amount which represents the value of the imputation or franking credits available under the dividend imputation provisions of Australian taxation law. The value of those credits has been estimated using an estimate of 0.25 for the factor gamma ( $\gamma$ ) in the formula of rule 87A(1).

The estimates of the cost of tax in each year of the access arrangement period, and the corresponding estimates of the value of imputation credits, are shown in the summary of total revenue set out in Table 16 below.



## **11 Increments or decrements from operation of an incentive mechanism**

No incentive mechanism operated in the earlier access arrangement period which gave rise to increments for efficiency gains, or decrements for efficiency losses, to be carried over and included in the total revenue for the access arrangement period.

## 12 Approach to setting the reference tariff

The three-part reference tariff, which has been in place since the GGP Access Arrangement was approved by the ERA in 2005, has been retained. This three-part tariff comprises:

- (a) toll charge (a price per GJ of contracted capacity (MDQ));
- (b) capacity reservation charge (a price per GJ MDQ kilometre); and
- (c) throughput charge (a price for GJ kilometre).

The toll charge and the capacity reservation charge are effectively access fees recovering the fixed costs of the Covered Pipeline. The throughput charge recovers variable costs.

By structuring the capacity reservation and throughput charges as distance-related charges, Service Provider has sought to make the reference tariff reflective of the costs of the resources used to provide pipeline services to individual users at different locations along the GGP.

The reference tariff has been established assuming allocation of the total revenue (section 15 of the GGP Access Arrangement Information) to the components of the reference tariff in the proportions shown in Table 14.

**Table 14: Allocation of total revenue to reference tariff components**

	Proportion
Toll charge	11.3%
Capacity reservation charge	72.2%
Throughput charge	16.5%

The toll charge of the proposed reference tariff has been calculated as the price during the period 2015 to 2019 which sets the present value of the forecast revenue from the charge equal to 11.3% of the present value of the total revenue. The discount rate used in calculating the present values of the forecast revenue and the total revenue is the proposed allowed rate of return (9.64%).

Similarly:

- (a) the capacity reservation charge has been calculated as the price during the period 2015 to 2019 which sets the present value of the forecast revenue from the charge equal to 72.2% of the present value of the total revenue; and
- (b) the throughput charge has been calculated as the price during the period 2015 to 2019 which sets the present value of the forecast revenue from the charge equal to 16.5% of the present value of the total revenue.

*Proposed Revised Access Arrangement Information*

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The proposed revised reference tariff for the Covered Pipeline is shown in Table 15.

**Table 15: Proposed revised reference tariff**

Toll charge	\$/GJ MDQ	0.235806
Capacity reservation charge	\$/GJ MDQ km	0.001459
Throughput charge	\$/GJ km	0.000442

## **13 Rationale for reference tariff variation mechanism**

The reference tariff is to vary over the course of the access arrangement period in accordance with the reference tariff variation mechanism of the proposed revised GGP Access Arrangement.

The reference tariff variation mechanism comprises:

- (a) a scheduled reference tariff variation mechanism; and
- (b) a cost pass-through variation of the reference tariff.

The scheduled reference tariff variation mechanism further provides for:

- (a) quarterly scheduled variation of the reference tariff; and
- (b) annual scheduled variation of the reference tariff.

### **13.1 Quarterly scheduled variation of the reference tariff**

The quarterly scheduled variation of the reference tariff replaces, at the commencement of each quarter, the inflation which was assumed for tariff determination, with a measure of actual inflation obtained from the change in the Consumer Price Index six months prior.

The reference tariff is varied accordingly, so that it more closely reflects variations in the costs which the tariff is to recover. The quarterly tariff variation mechanism is intended to maintain efficient cost recovery during the access arrangement period.

### **13.2 Annual scheduled variation of the reference tariff**

The operation of the annual scheduled reference tariff variation mechanism, at the commencement of each year during the access arrangement period:

- (a) effects the quarterly inflation adjustment of the reference tariff, in place of adjustment in accordance with the quarterly scheduled variation of reference tariffs;
- (b) allows the service provider flexibility to vary the individual components of the reference tariff, by up to 2.0%, within a constraint on the overall revenue which might be earned at the reference tariff (the weighted average tariff basket);
- (c) effects a change in the reference tariff following annual adjustment of the return on debt; and
- (c) provides for recovery, through a varied reference tariff, of regulatory costs which were unanticipated, and not taken into account in tariff determination at the time the revisions to the GGP Access Arrangement were approved.

The annual variation mechanism varies the reference tariff so that it more closely reflects variations in the costs which the tariff is to recover. The annual scheduled variation mechanism is intended to maintain efficient cost recovery during the access arrangement period.

### **13.3 Cost pass-through variation of the reference tariff**

The cost pass-through reference tariff variation mechanism is to ensure that costs resulting from material unforeseen or uncontrollable events affecting provision of the reference service can be recovered through the reference tariff. The events in respect of which costs may be “passed through” to a reference tariff variation are:

- (a) an insurance cap event;
- (b) an insurer credit risk event;
- (c) a natural disaster event;
- (d) a regulatory change event;
- (e) a service standard event;
- (f) a tax change event; and
- (g) a terrorism event.

Variation of the reference tariff to take into account changes in the costs of providing the reference service attributable to certain defined events ensures the tariff more closely reflects the costs which it is to recover. The cost pass-through variation mechanism is intended to maintain efficient cost recovery during the access arrangement period.

## **14 Rationale for new incentive mechanisms**

No new incentive mechanism has been included in the revised GGP Access Arrangement.

## 15 Total revenue

The total revenue for the period 2015 to 2019 is summarised in Table 16.

**Table 16: Total revenue: 2015-2019**

	2015	2016	2017	2018	2019
	\$ million	\$ million	\$ million	\$ million	\$ million
Return on equity	19.474	19.299	18.981	18.515	18.015
Return on debt	18.773	18.604	18.297	17.849	17.366
Depreciation	10.349	10.716	10.906	10.991	11.003
Over-depreciation prior period	-3.211	0.000	0.000	0.000	0.000
Operating expenditure	25.277	25.413	26.168	26.897	28.263
Cost of tax	0.591	3.677	9.994	10.132	10.030
Value of imputation credits	-0.148	-0.919	-2.498	-2.533	-2.507
<b>Total revenue</b>	<b>71.105</b>	<b>76.790</b>	<b>81.848</b>	<b>81.851</b>	<b>82.170</b>