



**MOOMBA TO ADELAIDE NATURAL GAS PIPELINE
(Moomba to Adelaide Pipeline System)**

**ATTACHMENT - FURTHER SUBMISSION
MAPS LATERAL PIPELINE ISSUES**

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**Epic Energy South Australia Pty Ltd
ACN 068 599 815
Level 8, 60 Collins Street
Melbourne Victoria 3000
CONTACT: Stephen Livens
TELEPHONE: (03) 8626 8407**



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1. Whyalla Lateral HNE issues

1.1 The hypothetical new entrant (HNE) price may be thought of as the maximum price that could be charged such that it would not be economically viable to duplicate the asset in order to bypass the existing service provider. The ability to sustainably raise prices significantly above this level would indicate the capturing of monopoly profits and therefore would be a potential basis for coverage or continued coverage of a pipeline. In order to calculate the HNE price, critical issues include establishing:

- a reasonable risk weighted rate of return;
- demand forecasts over a reasonable time frame;
- the optimum pipeline configuration; and
- the preferred approach to ensuring the return of capital.

2. WACC

2.1 The weighted average cost of capital (WACC) is the rate of return required to compensate investors for the risks associated with a particular investment. As the WACC is a forward looking concept, it is based on estimated future returns and future expected risks. As such, calculation of the expected return does not lend itself to establishing a single measure of required return but rather a distribution of returns.

2.2 Under the National Third Party Access Code for Natural Gas Pipeline Systems (the Code) service providers are faced by a price cap – that is, they must bear the volume risk associated with any variation between demand forecasts and actual demand. This creates greater cash flow volatility than would exist under a pure revenue cap and, as such, should be rewarded by a risk premium at the middle to higher end of the range.

2.3 Gas transmission companies in Australia are generally publicly listed firms traded on the Australian stock market. Investors in such firms will assess the performance of their investments in terms of post tax nominal returns. The simplest formulation is use of a plain vanilla WACC with all tax and dividend imputation allowances included within the cash flows. Using such a framework, a possible range for a reasonable risk premium for a gas transmission business is likely to be in the order of 300 to 400 basis points above the risk free rate. It is argued that proper consideration of the asymmetric risks faced by the Whyalla Lateral would suggest that a margin towards the upper end of the range is appropriate, but certainly not less than 350 basis points in order to adequately compensate investors.

2.4 It should be noted that Epic Energy's current regulated rate of return is 9.1% in post tax nominal terms based on a nominal risk free rate of 5.61% or a premium over the risk free rate of 349 basis points. As such, a 350 basis point margin is consistent with the current regulated rate of return.

3. Demand forecast

3.1 Two key issues for the Whyalla lateral are whether the HNE is assumed to service the entire demand and whether there is likely to be any significant growth in demand. For this analysis, it is assumed that the HNE would service all demand (24TJ/day) and that there will be no material increase in demand.

4. Optimised replacement cost

4.1 The asset that a HNE would construct would be based on an optimised design able to satisfy forecast demand over the medium to longer term. In terms of the Whyalla lateral, this design has been based on a uniform 8 inch pipeline with a single compressor at Whyte Yarcowie. This is a slight variation on the current configuration, which is based on a 6 inch pipeline to Port Pirie with an 8 inch pipeline from Port Pirie to Whyalla. Use of this revised design is considered optimal as the current pipeline configuration is a function of historical developments as outlined in para 5.31 of Epic Energy’s original revocation application.

4.2 The current replacement cost is estimated to be in the order of \$62 million based on current prices of X70 Grade pipe and recent construction quotes. A breakdown of the estimated cost is provided in the following table.

Port Pirie/Whyalla Lateral Replacement Cost

Category	Unit Cost	Units	Total
Land acquisition and environmental			2,550,000
Engineering (pipeline only)			1,500,000
X70 Grade Pipe 4.8 mm wall thickness (\$/tonne)	1,900	8,450	16,055,000
Pipeline construction (\$/km)	115,000	170	19,550,000
Meter Stations	1,500,000	5	7,500,000
Compressor Stations (1* 1500KW compressor)	5,000,000	1	5,000,000
Facilities - Mainline valves, SCADA, scraper stations etc			4,800,000
Owners costs (internal labour, insurance, finance, line pack etc)			1,350,000
Total project contingency			3,500,000
Total			61,805,000

5. Depreciation

5.1 The rate at which an investment is recovered (by way of depreciation) can have a critical impact on project risk. While it can be argued that, technically, the service potential of a gas pipeline declines only slowly (and therefore initial depreciation should be low), this fails to recognise project risk that will operate in the opposite direction encouraging relatively early return of investment to reduce the risk of future asset stranding. The net result is that a straight-line depreciation profile, although largely arbitrary, is likely to be a reasonable compromise between the slow technical decline in service potential (suggesting an annuity depreciation schedule) and the desire to minimise project risk (possible leading to a geometric depreciation schedule).

5.2 The remaining issue becomes one of establishing the period over which straight-line depreciation will be applied. Again, this is likely to be a compromise between the potential engineering life of the pipeline and associated facilities and the desire for some degree of accelerated depreciation. For this analysis, a depreciation period of 60 years was adopted.

6. HNE price assumptions

6.1 The main assumptions used in calculating the HNE price are presented in the following tables. The first table outlines the general cost of capital assumptions.

HNE cost of capital assumptions

Category	Value
Risk free rate	5.4%
Risk Premium	3.5%
Post Tax Nominal (Plain Vanilla) WACC	8.9%
Real WACC	6.2%
Inflation	2.5%
Debt Proportion	60%
Debt premium	1.20%
Debt Cost	6.60%
Gamma	0.5
Corporate Tax rate	30%

6.2 The next table presents the assumptions underpinning the Whyalla lateral HNE price calculation.

Whyalla Lateral HNE price-modelling assumptions

Category	Value
Optimised Replacement Cost (\$m)	62
Weighted Average Asset Life (yrs)	60
Annual Operating and Maintenance Costs (\$m)	1.0
Firm Contracted Capacity (TJ/day)	24
Annualised Contracted Capacity (PJ/yr)	8.8

7. HNE price modelling results

7.1 Before the above assumptions can be applied to the calculation of a HNE price, one more critical decision remains, which is the price profile that is to be applied. At one extreme, an annual price could be calculated taking account of the depreciated replacement cost in that year together with current year demand and operating costs etc. This is likely to result in a relatively volatile price profile, possibly characterised by declining unit tariffs over time. Alternatively, a smoothed price profile may be established with the aim of delivering the same investment return on average but possibly with lower early returns and higher later returns. A smoothed profile is likely to be attractive from a marketing

perspective in terms of providing a degree of certainty with respect to transport tariffs over time.

7.2 Applying the above assumptions within a post tax nominal modelling framework suggests a HNE price for the Whyalla lateral in 2005 of between 0.66/GJ for a single year to 0.62/GJ for a smoothed 20 year price subject to 95% CPI escalator, as outlined in the following table.

Whyalla Lateral HNE price

Component	Value
Contracted Capacity (TJ/day)	24
2005 single year price (\$/GJ)	\$0.66
Contracted Capacity - Average over 20 years (TJ/day)	24
20 yr real terms smoothed price (\$/GJ) Escalated at 95% of CPI	\$0.62

8. Sensitivity analysis

8.1 The above analysis indicated a point estimate for the HNE price given a number of key assumptions. Clearly, the value of any of these assumptions is open to debate and the impact of varying these values is the subject of this sensitivity analysis. The following table indicates the impact on the HNE price of:

- changing the WACC by plus or minus 50 basis points, that is, to a range from 300 to 400 basis points above the risk free rate;
- an increase (or decrease) in demand (or pipeline throughput) of 10% with no change in capital invested or O&M costs;
- a change in the optimised replacement cost of plus or minus 10%;
- a change in the period over which the capital invested is recovered of plus or minus 20 years (this is the equivalent of either a 40 year or 80 year depreciation period); and
- the impact of combining all of the above factors into a worst (low) or best (high) case scenario.

HNE price sensitivity analysis \$/GJ

	Low 1yr	Low 20yr	High 1yr	High 20yr
Base Case Price	\$0.66	\$0.62	\$0.66	\$0.62
Price - WACC +/- 50bp	\$0.60	\$0.56	\$0.73	\$0.68
Price - Demand +/- 10%	\$0.60	\$0.56	\$0.74	\$0.68
Price - ORC +/- 10%	\$0.61	\$0.57	\$0.72	\$0.67
Price - Life +/- 20 yrs	\$0.64	\$0.60	\$0.72	\$0.65
Price Range (incorporating all changes)	\$0.48	\$0.45	\$0.96	\$0.86

8.2 The results of this analysis suggest that under a combination of factors minimising the 20 year smoothed price, the price will still be at least \$0.45/GJ (or 72% of the base case HNE price), while a corresponding selection of values maximising the price would see the 20 year smoothed HNE price increase to around \$0.86/GJ or over 145% of the base case HNE price.

9. Comparison with current tariffs

9.1 The current tariffs applying to the Whyalla Lateral are detailed in the following table.

Whyalla Lateral current tariffs vs. 20 Year Smoothed HNE price

	Tariff
Whyalla Lateral 2005 \$/GJ	\$0.20
Whyalla Lateral 20 Yr HNE Price	\$0.62
Whyalla Lateral current price as % of HNE price	33%

9.2 The above table highlights the fact that the 20 year smoothed HNE price is over three times higher than the rolled forward regulated lateral surcharge. Even adopting the lowest price from the sensitivity analysis still suggests the HNE price is some 2.25 times higher than the rolled forward reference tariff.

9.3 The above analysis clearly suggests an extremely low likelihood that Epic Energy could raise prices sufficiently to indicate monopoly pricing, that is, at a level greater than the HNE price.