



PB ASSOCIATES

DAMPIER TO BUNBURY NATURAL GAS PIPELINE
Evaluation of the Impact of a Broader Gas Specification

Response to Comments made on PB's Report

Public Version

Prepared for

ECONOMIC REGULATION AUTHORITY



Economic Regulation Authority

PB Associates Quality System:

<i>Document Reference</i>	:	p:\ 158325A\158325A-rep-002 public version
<i>Report Revision</i>	:	2
<i>Report Status</i>	:	Final
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<i>Date Issued</i>	:	2 November 2005

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EXECUTIVE SUMMARY

The Economic Regulation Authority has provided a copy of a public version of PB Associates' (PB's) report *Dampier to Bunbury Natural Gas Pipeline - Evaluation of the Impact of a Broader Gas Specification* to interested parties who made submissions after the Draft Decision on the proposed changes in the gas specification. This report outlines PB's response to submissions made which have commented on PB's report.

The Authority has requested that PB respond to technical concerns raised by a change from the existing gas specification to the broadest gas specification proposed in Amendment #15 to the Draft Decision.

In the main body of this report PB has discussed the comments made in the relevant submissions and concludes that there is no new information presented that materially affects the conclusions drawn in its original report.

The following is a brief summary of the main issues raised in two of the submissions.

DBP's Submission #49

In Submission #49, DBP has introduced new material asserting that there are multiple issues arising from a broader gas specification.

DBP has asserted that the calculation of pipeline capacity should be based on extreme gas specification limits as a result of the proposed broadening of the gas specification. PB is of the opinion that this assertion is not supported due to the following:

- Gas producers have advised that their future gas compositions will not change dramatically from current levels; and
- A revision of the outer limits of a gas quality specification does not automatically result in the deterioration gas quality in the pipeline.

DBP has provided material that indicates that DBP has not fully taken into account the change in gas quality that resulted from removal of the obligation to transport LPG with the domestic gas. ***[deleted – confidential and commercial in confidence]***

[deleted – confidential and commercial in confidence]

CSBP's Submission

[deleted – confidential and commercial in confidence]

1. INTRODUCTION

1.1 GENERAL

PB Associates (PB) was engaged by the Economic Regulation Authority (the Authority) to undertake a technical evaluation of the issues associated with the impacts of a broader gas specification on the Dampier to Bunbury Natural Gas Pipeline (DBNGP), particularly on the pipeline capacity.

The outcome of that assessment was reported in PB's report Document¹ "Dampier to Bunbury Natural Gas Pipeline - Evaluation of the impact of a broader gas specification". The work undertaken in PB's report includes an independent capacity analysis of the DBNGP. The analysis includes operating scenarios using a range of gas compositions up to and including the leanest gas permitted by the broadest gas specification proposed by the Authority in Amendment 15. The report also addresses technical issues raised by organisations which made submissions to the Authority in response to its publication of a Draft Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline.

The Authority provided a copy of PB's report to the participants potentially impacted by the proposed changes in the gas specification². In response to the participants' review of PB's report the following submissions were received:

- Dampier Bunbury Pipeline operator (DBP) (2 submissions named #49)
- North West Shelf Gas
- BHP Billiton- Nickel West
- CSBP

This report presents PB's assessment of the additional information provided in each submission, with respect to the pipeline capacity issues addressed in PB's report.

The DBP submission is the most extensive of those submitted. For clarity this report addresses the DBP submission separately from those from other organisations.

¹ Document No. 158235A-rep-001. Different versions were issued to different participants, namely: "Revision 2 – Special release to DBP", issued to DBP and dated 22 August 2005 and "Revision 2 – Public Version", issued to remaining participants, dated 22 August 2005.

² Ibid.

2. DBP SUBMISSION #49 – DBP COMMENT ON THE PB REPORT

2.1 GENERAL

DBP's Submission #49 is made in response to the report³ prepared by PB Associates (PB). While the Submission addresses specific aspects of the PB report and to the operation of the DBNGP, it further makes comment on commercial and legal issues relating to the Authority's proposal to broaden the gas specification.

Whilst it is recognised that there may be commercial and legal issues resulting from the proposed broadening of the gas specification, PB cannot make comment on any such issues. The scope of the PB's brief and the resulting report are technical in nature and accordingly commercial and legal matters have not been considered.

The DBP submission is in 7 parts, namely:

1. Introduction
2. Response to specific parts of the PB report
3. Preliminary technical issues relating to gas quality in the DBNGP
4. Amendment #15 is contrary to section 2.47 of the code
5. **[deleted – confidential and commercial in confidence]**
6. **[deleted – confidential and commercial in confidence]**
7. **[deleted – confidential and commercial in confidence]**

In this report PB responds to parts 2 and 3 while taking into consideration the information provided in Attachment 1. PB also makes comment on the parts 4 and 5 that are technical in nature and where this information is considered useful in assisting the Authority in appreciating the technical issues relating to this submission.

2.2 DBP SUBMISSION #49 – PART 1

The DBP assertion expressed in Submission #49 proposes that any broadening of the gas specification from the Operator's proposed "broad" specification (a maximum of 6% inerts⁴) to the Authority's proposed "broadest" specification (a maximum of 7% inerts) will trigger a major step change in gas quality from an "average" value (that is higher than the most extreme values in the gas specification) to the most extreme value⁵.

PB's report concluded that any broadening of the gas specification will likely have a marginal effect on the gas composition delivered for transport in the pipeline. **[deleted – confidential and commercial in confidence]**.

PB is of the opinion that the assertions made by DBP in respect of using gas specification outer limits for capacity assessment are unsupported (within the period of this access arrangement), based on the advice from the gas producers.

³ Document No. 158235A-rep-001 "Evaluation of the impact of a broader gas specification" Revision 2 – Special release to DBP, dated 22 August 2005.

⁴ Maximum content of inert gases in mole percentage.

⁵ Generally expressed in Submission #49 in Sections 1.9, 3.3 and 5.1 to 5.5 inclusive.

2.3 DBP SUBMISSION #49 – PART 2**2.3.1 PB Report Section 2.2 – DBP Para 2.5 to 2.7**

Para 2.5(a) This is not relevant to the PB report.

Para 2.5(b) The DBNGP was developed with a specification which was distorted to allow the development of an LPG production facility in the Perth region. That distortion has now been removed with termination of the Wesfarmers' contract, and the DBNGP now supplies a broad mix of gas users.

It is understood that one smaller gas user (CSBP) has a concern about the change in process efficiency resulting from natural gas with possible higher inert gas concentrations.

Para 2.7(e) ***[deleted – confidential and commercial in confidence]***

2.3.2 PB Report Section 2.3 – DBP Para 2.8 to 2.11

Para 2.10 ***[deleted – confidential and commercial in confidence]***

2.3.3 PB Report Section 2.4 – DBP Para 2.12 to 2.14

Para 2.13 ***[deleted – confidential and commercial in confidence]***

2.3.4 PB Report Section 2.6 – DBP Para 2.15 to 2.19

General Comment Section 2.6 was written in response to an issue raised by DBP ***[deleted – confidential and commercial in confidence]*** The specific reference was not made in the PB report for reasons of confidentiality.

[deleted – confidential and commercial in confidence]

Para 2.18, 2.19 The assertions given may be technically correct, but are not relevant to the matters addressed in the PB report.

2.3.5 PB Report Section 2.7.1 – DBP Para 2.20 to 2.22

Para 2.20 PB is aware that industrial users consume the greatest percentage of gas transported through the DBNGP. However the number of commercial and residential consumers is several orders of magnitude greater than the number of industrial consumers.

While PB recognises that there is no requirement to align the gas specification with AS 4564, it is a desirable objective.

2.3.6 PB Report Section 2.7.2 – DBP Para 2.23 to 2.28 – System Use Gas

Para 2.23-2.27 This section of the PB report states that when a pipeline has excess capacity, a reduction in average gas HHV causes an increase in fuel gas consumption to deliver the same energy (because pipeline hydraulics are governed by volume, not energy).

Conversely, when there is no excess capacity and the HHV is reduced, the pipeline is unable to deliver the energy.

The DBP response appears to support this position.

Para 2.28 The PB report noted that gas transportation contracts in many Australian gas pipelines provide for the shipper to supply “system use gas”, principally compressor fuel gas, while for the DBNGP, the fuel gas is supplied by the Operator. This could cause the DBNGP operator to resist any change that could reduce the average gas HHV, because it would result in an increase in direct operating costs.

DBP responds that this is not an issue because any increase in fuel gas cost is recoverable through the Total Revenue calculation. Since this is not a technical issue, this matter is left for assessment by others.

2.3.7 PB Report Section 2.7.2 – DBP Para 2.29 to 2.31

General Comment *[deleted – confidential and commercial in confidence]*

2.3.8 PB Report Section 2.7.3 – DBP Para 2.32 to 2.34

General Comment *[deleted – confidential and commercial in confidence]*

2.3.9 PB Report Appendix 1 – Pipeline Modelling

Para 2.35 DBP advises they generally agree with the capacity calculations provided in the PB report.

Para 2.36 *[deleted – confidential and commercial in confidence]*

2.4 DBP SUBMISSION #49 – PART 3

2.4.1 General

This part of the DBP submission relates to technical issues of gas quality in the DBNGP, and it references paragraphs in Section 2.3 (Characteristics of Natural Gas), Section 2.4 (The DBP Gas Specification) and Appendix 1 Section 1.1 (Modelling Basis).

[deleted – confidential and commercial in confidence]

2.4.2 DBP Para 3.3

Para 3.3(d) *[deleted – confidential and commercial in confidence]*

Para 3.3(d) *[deleted – confidential and commercial in confidence]*

[deleted – confidential and commercial in confidence]

2.4.3 DBP Para 3.12 to 3.21

[deleted – confidential and commercial in confidence]

2.5 DBP SUBMISSION #49 – PART 4

[deleted – confidential and commercial in confidence]

2.6 DBP SUBMISSION #49 – PART 5

[deleted – confidential and commercial in confidence]

3. DBP SUBMISSION #49 – RESPONSE TO 3RD PARTY SUBMISSIONS

[deleted – confidential and commercial in confidence]

4. OTHER SUBMISSIONS TO PB REPORT

4.1 GENERAL

This section responds to comments made by other organisations to the PB report.

4.2 SUBMISSION BY NORTH WEST SHELF GAS

North West Shelf Gas supports the findings presented in the PB report.

4.3 SUBMISSION BY BHP BILLITON – NICKEL WEST

BHP Billiton supports the findings presented in the PB report.

BHP Billiton draws attention to an error in Table 2.2 of the PB report. This table is in error in that the HHV values stated in the table are in fact molecular weight values of the components. PB will revise the table to incorporate the correct values. However since the table is included for information and is not used in any calculation, the error does not materially affect any finding in the report.

4.4 SUBMISSION BY CSBP

CSBP uses natural gas to produce ammonia. Part of the ammonia combined with additional natural gas and other components is used to form sodium cyanide by an associated company, Australian Goldfields Reagents.

The CSBP submission advises of their concern that the economic operation of their process will be impacted by a change to the broadest specification gas, and draws the Authority's attention to previous submissions by them.

CSBP advised in their submission of May 26 that a change to the broadest specification gas has the potential to "add to the ammonia production cost" and would "add significant cost to the manufacture of sodium cyanide". In that submission, CSBP also raises a number of other commercial issues.

PB understands that the current position with respect to the gas specifications is summarised in the following table:

Parameter	Standard Shipper contract		Proposed broader specification		Amendment #15 proposed "broadest" specification	
	Receipt	Delivery	Receipt	Delivery	Receipt	Delivery
CO2 (maximum mol %)	3.6	4.0	4.0	4.0	4.0	4.0
Inert gas (maximum mol%)	5.5	6.0	6.0	6.0	7.0	7.0
HHV Maximum (MJ/scm)	42.3		42.3		42.3	
HHV Minimum (MJ/scm)	37.3		37.3		37.0	
Wobbe Maximum (MJ/scm)	51		51		51.0	
Wobbe (Minimum (MJ/scm)	47.3		47.3		46.5	

CSBP have unfortunately not provided information on which part of the proposed broadest gas specification impacts on the economics of the operation of their facility, or

provided information to quantify this impact. The above comparison suggests that the concern would arise from either:

1. An increase from the permitted quantity of inert gases from 6% to 7%, or;
2. A reduction in the permitted HHV from 37.3 MJ/scm to 37.0 MJ/scm, or;
3. A more general concern related to the overall change in availability reaction components (hydrogen in the case of the ammonia plant and carbon in the case of the cyanide plant), or some change in reactor efficiency as a result of an increased gas velocity in the reactors as a result of the lower gas HHV and increased nitrogen.

Because CSBP is supplied downstream of the LPG extraction plant, the gas quality they receive should be relatively unchanged as a result of the removal of the LPG content obligation in the domestic gas on 1 July 2005. It is further possible that, if the LPG extraction plant should close, the quality of their gas may improve.

[deleted – confidential and commercial in confidence]

