



## **Broadening the Gas Specification on Pipelines in Western Australia**

Submission to Office of Energy

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## 1 EXECUTIVE SUMMARY

### 1.1 Proposal for change in the specification of gas quality for Western Australian pipelines

This submission is provided in response to the Western Australian Office of Energy's request for comments on the topic of broadening the gas quality specification for natural gas pipelines in Western Australia.<sup>1</sup>

In its Issues Paper, the Office of Energy states that the Western Australian Government is considering whether the gas quality specification for gas pipelines should be determined by Government regulation. The Office of Energy is not seeking comment on a new gas specification per se, but contemplates that a regulated specification would be consistent with the Australian Standard for natural gas (AS 4564 – 2005). The Australian Standard has been established as a standard for the safe use of natural gas appliances and that applies to natural gas pipelines and distribution systems throughout eastern Australia.

BHP Billiton strongly supports the Australian Standard as the appropriate gas quality specification for pipelines and distribution systems in Western Australia. In particular, BHP Billiton considers that the introduction of a broader gas specification for the Dampier Bunbury Natural Gas Pipeline ("DBNGP") and the Alinta distribution networks will create significant benefits for the State's economy.

BHP Billiton submits that Government regulation is the most practical means of introducing the Australian Standard specification within a timeframe that will allow the capture of economic benefits from the early and least-cost development of much needed gas supplies for the Western Australian gas market. Moreover, the full benefit of this change will only be achieved if Government commits in the very near future to regulation of the gas quality specification, allowing sufficient implementation time for the new specification to take effect by 2012.

### 1.2 Broadening to the Australian Standard Specification

Most other gas transmission and distribution systems throughout Australia operate safely and reliably with gas specifications consistent with the Australian Standard. These include; Goldfields Gas Pipeline, Moomba to Sydney Pipeline, Victorian Principle Transmission System and the low pressure distribution systems in South Australia, Victoria, New South Wales and Queensland.

To implement a broader specification will involve changing the gas quality specification that currently applies to the gas distribution network that is established by Government under the Western Australian *Gas Standards (Gas Supply and System Safety) Regulations 2000* (Gas Standards Regulations)<sup>2</sup> and changing the gas quality specification that currently applies under contracts between the owners of gas pipelines and the users of these pipelines, principally for the DBNGP.

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<sup>1</sup> Office of Energy, 30 September 2008, Broadening the Gas Specification on Pipeline in Western Australia: Issues Paper.

<sup>2</sup> It should be noted that the Alinta distribution system access arrangement already contemplates that shipment of gas with a specification that is consistent with the Australian Standard. The shipment of gas of this quality is only constrained by the existing Regulations.

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The change to the Australian Standard specification would principally require changing the permissible range for the Wobbe Index to 46.0 – 51.5 and either abandoning the specification for the minimum and maximum higher heating value or setting the permissible range at 35.1 to 42.3 MJ/m<sup>3</sup> (aligned with the Wobbe Index).

### 1.3 Benefits of a change in the gas quality specification

The adoption of a gas specification that is consistent with the Australian Standard will deliver significant benefits to the Western Australian economy and community through enabling additional gas supplies, stimulating increased competition and increasing energy supply security. The potential public benefits from a broader gas quality specification have previously been identified by participants in the gas industry and by the Western Australian Government as evident by past initiatives such as adopting the “broadest specification” as a future objective in the *Dampier to Bunbury Pipeline Regulations 1998* and regulatory intervention to broaden the gas quality specification under the access arrangement for the DBNGP.

BHP Billiton identifies the following benefits that can be achieved with the adoption of a broader gas specification:

1. Quicker delivery of gas supply projects to market: The specification change will allow new gas sources to be developed to meet demand in a faster time frame. With the gas quality specification set at the Australian Standard, less processing capability is required to bring gas to market resulting in less time to plan, develop and implement gas processing facilities.
2. More gas supply delivered to market: As a result of lower cost and less time to develop, some gas resources may be developed with a broader gas specification which would otherwise be “marginal” or uneconomic.
3. Increased supply security: By enabling an increased number of supply sources, Western Australia will benefit from increased security of gas supply.
4. Lower project development costs with less energy consumed in processing: A significant amount of Western Australia’s discovered, undeveloped, gas resource have small amounts nitrogen that need to be removed if the heating value is to comply with current specifications. Nitrogen removal is very capital and energy intensive. Changing the gas pipeline specification to the Australian Standard reduces the cost for development due to fewer processing facilities being required. It also means that less energy is consumed for processing the raw gas.

An immediate example of the benefits of a broader specification is that it would enable the timely and most efficient development of the Macedon gas field, a near shore resource approximately 100km west of Onslow. Macedon gas meets the Australian Standard but does not meet the current DBNGP and distribution system specifications without special additional processing to remove nitrogen. The development of this field would add more than 15 per cent of additional gas production capacity to the State’s current domestic gas supply and, importantly, provide an additional injection point for gas that is independent of other existing gas production facilities. With the adoption of the Australian Standard specification, the Macedon field may be brought into operation earlier, bringing forward the date for much needed additional gas supply to Western Australia.

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The Macedon field is not unique. BHP Billiton has identified vast quantities of discovered gas (> 10Tcf) offshore Western Australia that comply with the Australian Standard but that do not comply with current the DBNGP specification.

#### **1.4 Barriers to implementing the Australian Standard gas specification**

The key barriers to the implementation of the broader gas quality specification consistent with the Australian Standard have been the subject of considerable prior industry and Government discussion. The primary barriers are considered by BHP Billiton to be:

- The potential reduction in pipeline capacity resulting from lower energy density gas, which would necessitate an expansion of the pipeline to maintain the same firm energy transmission capability. (Although BHP Billiton believes that the impact on firm capacity is relatively minor and could be addressed through capacity planning and commercial arrangements provided a broader specification is applied);
- Contractual commitments within existing DBNGP shipping contracts which present barriers to broader specification gas being accepted or delivered unless there is a change of law;
- The existence of old (pre-1980) gas appliances in buildings serviced by the gas distribution network, for which supply of gas at the lower limits of a broader specification may give rise to safety risks. This issue has recently been re-evaluated by Energy Safety WA. Its September 2008 paper "Report on survey to determine the number of pre-1980 domestic gas appliances connected to the Perth metropolitan natural gas distribution system" provides estimates of costs to resolve this issue.

#### **1.5 Government regulation of the gas specification provides the only effective solution**

Some parties have suggested that arrangements could be settled by commercial negotiation for transport of gas outside the current gas specification. This has not, however, occurred to any material extent and BHP Billiton contends that the nature of the legacy issues and the number of divergent interests that would need to be accommodated in commercial arrangements makes this outcome improbable and inefficient without Government action to regulate the gas specification.

The key issue that prevents a commercial solution is that, in the absence of negotiated changes to all shipping contracts for the DBNGP, out-of-specification gas can only be supplied to the DBNGP if the blended gas stream in the DBNGP still meets the current gas specification (which is narrower than the Australian Standard). No individual producer or shipper can reasonably take the risk that changes to the pipeline's blended gas composition, that are outside of their control, will preclude their gas from being received into the DBNGP.

It is inefficient and impractical to rely on an individual producer or shipper to reach commercial agreements with a multitude of unrelated parties in order to achieve certainty that they can transport their gas on the State's primary gas transmission line.

Furthermore, supply of out-of-specification gas to the DBNGP may only be undertaken within the constraint of ensuring consistency of the blended gas stream in the DBNGP with the gas specification for the Alinta

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distribution system, even if a supplier of out-of-specification gas is not contracted for gas delivery to the distribution system.

## **1.6 Recommended way forward**

BHP Billiton recommends immediate action by the Western Australian Government to introduce a broader gas quality specification in order to ensure the efficient and optimal development of Western Australia's gas industry.

### **(a) Required Government regulatory action**

In order to introduce a broader gas quality specification regulatory action is required. This action should comprise:

- Establishing, by regulation, an inlet and outlet point gas specification for the DBNGP consistent with the Australian Standard and a capacity impact cost allocation principle;
- Amendment of the *Gas Standards (Gas Supply and System Safety) Regulations 2000* to provide a gas quality specification for the Western Australian gas distribution system consistent with the Australian Standard;
- Establishing a programme for identification of and compulsory upgrading or replacement of old gas appliances that pose a safety risk at a broader gas specification.

### **(b) Costs of implementation**

Notwithstanding the broader benefits to the State's economy and gas consumers that may be expected with the introduction of a broader specification, BHP Billiton recommends that the costs of implementation and transition associated with firm transmission pipeline capacity and old domestic appliances are borne primarily by those parties that will gain the most direct benefits from the introduction of the broader specification. The primary costs of implementation fall into the two areas discussed below.

#### *Loss of DBNGP Capacity*

The over-arching principle should be that the introduction of a broader specification should not conflict with the pipeline owner's provision of firm (T1) service.

Implementation of the principle should be flexible and be capable of implementation in two ways;

- 1) Parties that wish to introduce broader specification gas on the DBNGP may agree with the pipeline owner on the most effective arrangements to underwrite the physical capacity required to maintain existing firm service capability.
- 2) Alternatively parties wishing to introduce broader specification gas on to the pipeline should be able to contract for standard (T1) pipeline capacity to offset the impact of introducing that gas at its actual specification compared to the existing minimum specification. This contracting for capacity could be with either the pipeline owners or shippers that hold capacity they no longer require.

Disputes concerning the amount of capacity required to offset the impact on firm (T1) service could be referred to the Gas Disputes Arbitrator.

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This is an efficient, “user pays” solution for the market and should provide sufficient competitive tension to ensure efficient outcomes.

*Upgrading or replacement of old gas appliances*

BHP Billiton recommends that a special-purpose fund is established and administered by the Western Australian Government, to meet the direct cost of the necessary servicing, upgrading or replacement of pre-1980 gas appliances which pose a safety risk in the household sector. The estimated direct cost of the old-appliance programme (c.\$20 million) should be met by gas producers or shippers who propose to make use of the broader specification within 10 years of its introduction. Parties that did not contribute towards the fund at its establishment would be levied with a future fee if they subsequently wished to utilise the broader specification. These additional proceeds (if any) would be rebated to initial contributors.

**(c) Timing for implementation**

An early commitment by the Government to broaden gas quality specifications from January 2012 is essential for the timely development of domestic gas resources to meet demand. Such a commitment will facilitate commercial negotiation of gas supply and gas transportation contracts. It will also facilitate appropriate revision of the access arrangement for the DBNGP under the National Gas Code or National Gas Rules, due to occur in 2010, and it will allow sufficient time for a programme to deal pre-1980 gas appliances to be implemented.

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## 2 REGULATORY HISTORY

### 2.1 Introduction and overview

The quality of gas able to be transported through the DBNGP has previously been determined or influenced by forms of regulation that have included:

- Pipeline-specific regulations in the period from 1994 to 2004, under which a gas-quality specification was established by law; and
- Since 2004, approval by the Western Australian economic regulator (the Economic Regulation Authority) of a gas quality specification that forms part of a set of terms and conditions for a set of regulated gas transmission services that a pipeline user may insist on obtaining from the DBNGP owner.

Since 1995, the Western Australian Government and subsequently the Economic Regulation Authority have given attention to broadening the gas-quality specification for the DBNGP to allow a broader range of gas qualities (including gas of lower energy density and higher concentration of inert component gases) to be received into, and transported in, the pipeline. To date, this attention has achieved only limited success, amounting to the dropping of a minimum required LPG content with the end of relevant contractual obligations and a reduction in the minimum higher heating value from 37.3 MJ/m<sup>3</sup> to 37.0 MJ/m<sup>3</sup>.

Reasons for the limited success in broadening the gas quality specification are as follows.

- State Government actions prior to 2004 were directed at determining the broadest gas quality specification that could reasonably be achieved for the DBNGP. The State Government did not, however, use regulatory powers to impose this specification on the pipeline owners and users. It was recognised by the State Government that there were conflicting interests of pipeline users in broadening the gas quality specification and other practical matters to be addressed in accommodating a broader gas quality specification, including a phasing out or modification of some old gas appliances. The State Government considered that the conflicting interests and practical matters would be better addressed and resolved through commercial initiatives of the interested parties rather than regulatory intervention.
- Subsequent to 2005, economic regulation of gas transmission in the DBNGP has provided rights for any new user of the DBNGP to insist on obtaining a transmission service for gas of a broader specification. The gas specification requirements are still, however, more stringent than established by an Australian Standard for gas that applies throughout the eastern states of Australia. Introduction of the Australian Standard is currently constrained by gas quality requirements set by Government regulation for the Alinta distribution systems.

BHP Billiton submits that the Australian Standard is an appropriate gas quality specification for gas pipelines and distribution systems in Western Australia. Other sections of this submission address the benefits to introduction of this standard and the barriers to its introduction.

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## 2.2 Relevant gas quality specifications

The range of gas quality specifications that have been applied to the DBNGP or that are relevant to a consideration of gas quality in the DBNGP are:

- An “operating specification” established by law in Western Australia under the *Dampier to Bunbury Pipeline Regulations 1998* and applying from 1998 to 2004;
- A “broadest specification” also established under the *Dampier to Bunbury Pipeline Regulations 1998* and constituting an aspirational target for the gas quality specification in the pipeline;
- A gas quality specification for the Alinta distribution networks in the south west of Western Australia, established by law under the *Gas Standards (Gas Supply and System Safety) Regulations 2000* (Gas Standards Regulations);
- A gas quality specification established as an Australian Standard for natural gas;
- A gas quality specification established as a term of gas transmission contracts for the DBNGP; and
- A gas quality specification established for by regulation for gas transmission “reference services” for the DBNGP.

These gas quality specifications are set out in the following tables. The significance of each of these specifications is explained in the remaining sections of this chapter.

Component	Dampier to Bunbury Pipeline Regulations 1998						Gas Standards Regulations 2000	Australian Standard 4654—2005	DBNGP Access A'ment and Standard Shipper Contracts
	(Receipt Points)		Delivery Points at or upstream of LPG Plant		Delivery Points downstream of LPG Plant				
	Operating specification	Broadest specification	Operating specification	Broadest specification	Operating specification	Broadest specification			
Maximum carbon dioxide (mol %)	3.6	3.6	4.0	4.0	4.0	4.0	n/a	n/a	4.0
Maximum inert gases (mol %)	5.0	6.5	5.5	7.0	5.5	7.0	n/a	7.0	7.0
Minimum higher heating value (MJ/m <sup>3</sup> )	37.3	35.1	37.2	35.1	37.2	35.1	37.0	n/a	37.0
Maximum higher heating value (MJ/m <sup>3</sup> )	41	42.3	42.3	42.3	42.3	42.3	42.3	n/a	42.3
Minimum Wobbe Index	47.3	46.0	47.5	46.0	47.5	46.0	46.5	46.0	46.5
Maximum Wobbe Index	51	51.5	51.0	51.5	51.0	51.5	51.0	52.0	51.0
Maximum total sulphur (mg/m <sup>3</sup> ) - Unodorised	10	10	50	10	50	10	50	50	10
Odorised	n/a	20	60	20	60	20			20
Maximum Hydrogen Sulphide (mg/m <sup>3</sup> )	2	2	10	2	10	2	n/a	5.7	2
Maximum Oxygen (mol %)	0.2	0.2	0.2	0.2	0.2	0.2	n/a	0.2	0.2
Maximum Water (mg/m <sup>3</sup> )	48	48	100	48	100	48	n/a	112	48
Hydrocarbon dewpoint over the pressure range 2.5 to 8.72 MPa absolute	< 0 °C	< 0 °C	< 0 °C	< 0 °C	< 0 °C	< 0 °C	n/a	< 0 °C	< 0 °C
Maximum radioactive components (Bq/m <sup>3</sup> )	600	600	600	600	600	600	n/a	n/a	600
Minimum extractable LPGs (t/TJ)	1.45	1.45 until 1 July 2005 0 after 1 July 2005	n/a	n/a	n/a	n/a	n/a	n/a	0

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## 2.3 Review of the DBNGP gas quality specification 1995

A regulated gas quality specification for the DBNGP was first established when third-party access was introduced for the pipeline. The *Gas Transmission Regulations 1994* included a gas quality specification based on the quality of gas able to be delivered from the North West Shelf Project. This specification comprised three separate specifications for different categories of gas:

- Category A Gas – the specification for gas injected into the DBNGP;
- Category B Gas – the specification for gas delivered at outlet points at locations upstream of the Kwinana LPG plant; and
- Category C Gas – the specification for gas delivered at outlet points at locations downstream of the Kwinana LPG plant.<sup>3</sup>

In 1994 and 1995, the Western Australian Government undertook a review of the gas quality specification, an account of which was documented in 2005 by the Economic Regulation Authority. The account is reproduced in Box 1.

### **Box 1: History of regulation of the gas quality specification for the DBNGP 1994 to 1998 as documented by the Economic Regulation Authority<sup>4</sup>**

In July 1994, an Industry Forum on gas quality was held in Perth (organised by the Office of Energy) for the purpose of canvassing views of stakeholders on the gas quality specification for the DBNGP. The Forum revealed that there were differences in views in respect of a number of matters relating to gas quality in the DBNGP:

- LPG requirements for transmission in the pipeline;
- Maximum concentrations of inert gases (particularly carbon dioxide and nitrogen);
- The ability to co-mingle gas to meet gas quality specifications;
- Constraints on changes to the gas quality specification arising from old residential appliances;
- Gas specifications of the “Wobbe Index” and “higher heating value”.

In September 1994, a Standing Committee on Gas Quality was established by the Minister for Energy with the purpose of assisting in the development of a new gas quality specification for the DBNGP and to assist in the resolution of differences in views revealed by the Industry Forum. The Office of Energy coordinated the business of the Standing Committee and provided a report to the Minister for Energy in November 1995.

Amongst other things, the Office of Energy recommended to the Minister that actions be undertaken to allow for

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<sup>3</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia.

<sup>4</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Draft Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, paragraphs 395 to 399 pages 95 and 96. This account was exposed to public scrutiny through the Authority’s programme of public consultation for its determination on proposed revisions to the access arrangement for the DBNGP under the National Third Party Access Code for Natural Gas Pipeline Systems. The account was not contested by any of a large number of parties making submissions on the matter of the gas quality specification.

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a future widening of the gas quality specification for the DBNGP. In making this recommendation, the Office of Energy recognised that a widening of the gas quality specification was constrained by terms of existing contracts for gas transmission.

The Office of Energy took the view in its report that the widening of the gas quality specification should occur through either the re-negotiation of existing gas supply contracts or after expiry of those contracts. The Office of Energy recommended a wider gas quality specification and recommended that changes be made to the regulations then applying to the DBNGP (the Gas Transmission Regulations 1994) so that contractual constraints to the widening of the gas quality specification would be phased out over time by re-negotiation of pre-existing contracts or as these contracts expired.

The result of the recommendations of the Office of Energy was that a new gas quality specification was included in new regulations relating to the DBNGP (the Dampier to Bunbury Pipeline Regulations 1998) that were introduced in 1998 in association with the privatisation of the DBNGP. These regulations included an “Operating Specification” for gas quality at Receipt Points and Delivery Points, but also included a wider specification designated the “Broadest Specification”. Under provisions of the regulations, the Broadest Specification comprised limits on the extent to which the Operating Specification for the DBNGP could be widened, except in certain special circumstances.

The operating specification introduced in the Dampier to Bunbury Pipeline Regulations 1998 provided for a “broader” specification of gas quality in only one parameter: an increase in the maximum concentration of inert gases (by 0.5 mole per cent) for reason of allowing a access to the pipeline by a greater number of gas sources without expensive gas treatment.<sup>5</sup> The 1998 regulations provided for narrower specifications for sulphur content and water content for the purposes of aligning the gas quality specifications for inlet and outlet points on the pipeline.<sup>6</sup>

The Dampier to Bunbury Pipeline Regulations 1998 also contained a further gas quality specification referred to as the “broadest specification”. This specification included substantially broader limits on concentrations of inert gases, the minimum and maximum higher heating value and the Wobbe index. Reasons for the parameter values included in the broadest specification were as follows.

- The maximum concentration of inert gases was increased by 1.5 mole per cent to allow for gas from a greater number of gas sources to be able to have access to the DBNGP without treatment to remove inert gases.<sup>7</sup>

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<sup>5</sup> The term “broader” in this respect means a wider range between minimum and maximum values for individual parameters than the pre-existing specification.

<sup>6</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, p 13.

<sup>7</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, p 35.

- The minimum higher heating value was reduced and the maximum higher heating value increased with recognition that a broader range could be tolerated by gas-using equipment (subject to removal of some older equipment from use) and for consistency with national and international practice.<sup>8</sup>
- The minimum Wobbe index was reduced and the maximum Wobbe Index was increased to accord with tolerance limits of gas-using equipment.<sup>9</sup>
- A sunset date of 1 July 2005 was placed on maintenance of the requirement for a minimum LPG content on gas injected into the pipeline, consistent with the date of expiry of a contract requirement for the pipeline owner to ensure a minimum LPG content for the purposes of the Kwinana LPG plant.

Under the *Dampier to Bunbury Pipeline Regulations 1998*, the broadest specification had effect only to limit the extent to which the owner of the pipeline and a user of the pipeline could agree on a gas quality specification other than the operating specification. Any broader policy intent of including the broadest specification in the regulations is not clear from the regulations themselves, but is evident from the studies leading to inclusion of the Broadest Specification in the 1998 regulations. The 1995 review of the gas quality specification undertaken by the Office of Energy recommended that the gas quality specification ultimately be changed to the broadest specification, but only as this became possible within the constraints of the need to modify or replace older gas appliances and of protecting the rights of parties under existing contracts.<sup>10</sup> The Office of Energy also premised its recommendations to the Government on any change to a broader gas specification being achieved by commercial negotiations amongst industry participants rather than by regulatory prescription.<sup>11</sup>

## 2.4 DBNGP Access Arrangement 2004

The gas quality specification under the *Dampier Bunbury Pipeline Regulations 1998* ceased to have effect in January 2004 when an approved access arrangement came into effect under the National Access Code for Natural Gas Pipeline Systems. Under the access arrangement, a gas quality specification was included as an element of terms and conditions for a “reference service”. This gas quality specification was the same as the operating specification established under the 1998 regulations.<sup>12</sup> At the time of assessment and approval of the Access Arrangement, several parties made submissions to the then Independent Gas Pipelines Access Regulator variously supporting or opposing a broader gas quality specification on grounds of:

<sup>8</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, p 23.

<sup>9</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, pp 24 to 28.

<sup>10</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, pp 7 to 12.

<sup>11</sup> Office of Energy, Western Australia, November 2005. Review of the Gas Quality Specification for the Dampier to Bunbury Natural Gas Pipeline Western Australia, p 16.

<sup>12</sup> Independent Gas Pipelines Access Regulator Western Australia, 30 December 2003, Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, Annexure B Access Contract Terms and Conditions, Section 2.

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- A broader gas quality specification being supported so as to eliminate the requirement for gas to contain a minimum content of LPG and to allow gas from a greater number of sources to be transported via the DBNGP; and
  - A broader gas quality specification being opposed on the basis that it would reduce the quality of gas as a feedstock in chemical manufacturing processes or that it would deprive some users of contractual rights to take delivery of gas of a specified quantity.<sup>13</sup>

The pipeline owner at that time also indicated a desire to change the gas specification to the broader specification, but indicated that this would require consideration of a range of issues including current contractual obligations in respect of gas quality and a reduction in the capacity of the DBNGP if the broader gas quality specification allows transmission of gas of lower energy density.<sup>14</sup>

The Regulator determined that it was reasonable for the gas quality specification in the access arrangement to be maintained the same as the operating specification under the *Dampier to Bunbury Pipeline Regulations 1998* for the initial access arrangement period (until 31 December 2004). The reason given by the Regulator for this determination was that the introduction of a wider gas quality specification was constrained by contractual obligations of the pipeline owner in respect of the quality of gas delivered to the Kwinana LPG plant, with this contractual obligation persisting until 1 July 2005. The Regulator indicated, however, that the gas quality specification and the widening of the specification would be matters to which consideration would need to be given at the time the access arrangement is reviewed.<sup>15</sup>

## **2.5 Revised DBNGP Access Arrangement 2005 and Standard Shipper Contracts**

In December 2004, the owners of the DBNGP proposed revisions to the access arrangement. The Economic Regulation Authority assessed these proposed revisions over the period December 2004 to December 2005.

In the proposed revisions to the access arrangement, the owners of the DBNGP proposed a gas quality specification for a reference gas-transmission service as part of the terms and conditions for that service. The proposed gas quality specification was the same as applying under the 2004 access arrangement (and the previous *Dampier to Bunbury Pipeline Regulations 1998*) except that the proposed specification no longer included a minimum content of LPG. The proposed gas quality specification was also the same as established by DBNGP under contracts entered into with all users of the DBNGP in 2004 —the “standard shipper contracts”.

The proposed revisions to the access arrangement included provisions for a broadening of the gas quality specification through a change in law that required the pipeline owner to receive gas into the pipeline with a level of one or more parameters outside of the established specification. The obligation of pipeline owner to change the specification would apply only where the change in the gas quality specification would not be contrary to any contract for supply of gas to the DBNGP or delivery of gas from the DBNGP. Further, a

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<sup>13</sup> Independent Gas Pipelines Access Regulator Western Australia, 23 May 2003, Final Decision pp 126 and 127, paragraphs 537 and 538.

<sup>14</sup> Independent Gas Pipelines Access Regulator Western Australia, 23 May 2003, Final Decision p 127, paragraph 539.

<sup>15</sup> Independent Gas Pipelines Access Regulator Western Australia, 23 May 2003, Final Decision p 127, paragraph 540.

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requirement for a change in the specification brought about by a change in law would not immediately require DBP to amend all its existing contractual arrangements if there was insufficient pipeline capacity.<sup>16</sup> These terms are also understood to be consistent with terms of the standard shipper contracts for the DBNGP.

The proposed revisions to the access arrangement also made provision for a user to request the pipeline owner to receive gas of a quality outside of the established specification subject to the out-of-specification gas still being within the limits of a “broadest specification” included in the proposed access arrangement, the pipeline owner’s costs not being materially increased, the pipeline owner still being capable of complying with gas quality specifications for the delivery of gas to other pipeline users, and there being no material effect on the capacity of the DBNGP to transport gas.<sup>17</sup> The “broadest specification” under the proposed revisions to the access arrangement was not the broadest specification of the Dampier to Bunbury Pipeline Regulations 1998, but was a narrower specification that was the same as the specification for delivery points proposed under the access arrangement.

In its determination on the proposed revisions to the access arrangement for the DBNGP, the Economic Regulation Authority made an assessment of whether the proposed gas quality specification and related terms and conditions in the access arrangement are reasonable. A programme of public consultation conducted as part of the Authority’s assessment of the proposed revisions to the access arrangement attracted substantial submissions on the matter of the gas quality specification. The content of these submissions was summarised by the Authority as indicated in Box 2.

**Box 2: Summary of the Economic Regulation Authority of submissions made on the gas quality specification contained in proposed revisions to the access arrangement for the DBNGP<sup>18</sup>**

In general, the submissions indicated that a wider gas quality specification is favoured by gas producers and some end-users of gas as an energy source. The reason given for this was that a wider specification would potentially reduce the costs of gas through expanding the potential sources of supply of gas to the DBNGP, increasing competition between these sources, and reducing gas processing costs. In addition, these parties also set out in submissions several reasons why the Authority should require a wider gas quality specification for a Reference Service under the Access Arrangement:

- The introduction of a wider gas quality specification has been anticipated since 1995, and has been expected by gas producers, users of the DBNGP and end-users of gas to occur on 1 July 2005 with the falling away of the regulatory requirement for a minimum concentration of LPGs in gas delivered to the DBNGP;

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<sup>16</sup> Economic Regulation Authority, 25 January 2005, Issues Paper: Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline (DBNGP), p. 9; Economic Regulation Authority, 2 November 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline (DBNGP), pp. 116, 117.

<sup>17</sup> Economic Regulation Authority, 25 January 2005, Issues Paper: Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline (DBNGP), p. 9; Economic Regulation Authority, 2 November 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline (DBNGP), pp. 116, 117.

<sup>18</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, pp 121, 122.

- The widening of the gas quality specification of the DBNGP would allow alignment with the gas quality specifications for the GGP, Parmelia Pipeline and AlintaGas Distribution Systems, thus improving prospects for gas trading and use of the Mondarra gas storage facility;
- The widening of the gas quality specification would alter the specification to be close to a national gas quality standard;
- There are no technical or safety issues preventing adoption of a wider gas quality specification that is the same as the Broadest Specification previously set out in the Dampier to Bunbury Pipeline Regulations 1998;
- While a widening of the gas quality specification to the Broadest Specification set out in the Dampier to Bunbury Pipeline Regulations 1998 would have the effect of reducing the Capacity of the pipeline, the effect is relatively small; and
- Any resultant reduction in the cost of gas as an energy source would promote the use of gas over other fuels with corresponding reductions in greenhouse gas emissions.

Furthermore, one party has also indicated that not implementing the Broadest Specification would be to the financial detriment of the State of Western Australia due to the State receiving lower revenues from condensate, LPG and LNG production than if the Broader Specification were to be introduced. There has not been, however, any submission from the State that this is either the case or that it is a matter about which the State is concerned.

A wider gas quality specification was opposed by some end users of gas as an energy source and end users of gas as a production feedstock. These parties indicated that a wider gas quality specification – particularly a lower minimum limit on the energy content of gas and a higher allowable concentration of inert gases – will cause additional costs to be incurred by end users of gas through costs of gas pre-treatment where gas is used as a production feedstock or by adverse effects on the use of gas in gas-fired turbines for electricity generation. The parties opposing a widening of the gas quality specification also made a number of counter arguments against the cited benefits by variously contending that:

- Current Users of the DBNGP have just re-negotiated contracts for gas transmission with provisions that make possible a widening of the gas quality specification and there is no necessary role of the Authority in making a determination that displaces these contract provisions;
- A widening of the gas quality specification would require some modification of domestic gas appliances;
- The widening of the gas quality specification was always intended to be subject to further consultation and commercial negotiation amongst interested parties and the Access Arrangement is not the appropriate vehicle for implementing a wider gas quality specification;
- The benefits of a wider gas specification in increasing the potential sources of gas for supply to the DBNGP are over-stated, as options currently exist for blending of gas from multiple sources such that the current gas quality specification can be met;

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- There is no current need for alignment of gas quality specifications for the DBNGP, Goldfields Gas Pipeline, Parmelia Pipeline and the AlintaGas distribution systems; and
  - A widening of the gas quality specification would reduce the Capacity of the DBNGP and increase costs of gas transmission to Users.

The Economic Regulation Authority determined that the gas quality specification that would be established by the proposed revisions to the access arrangement to the DBNGP is not reasonable and the Authority required amendments to the proposed revisions to include a gas quality specification that includes limits for each gas quality parameter set at the most stringent of the standards established by either the Broadest Specification of the *Dampier to Bunbury Pipeline Regulations 1998* or the *Gas Standard Regulations 2000*.<sup>19</sup>

In making its determination, the Authority took the following matters into account.

- The effect of the broader gas quality specification on the capacity of the DBNGP to transport gas would be a reduction in capacity of no more than one per cent, at least during the access arrangement period from 2005 to 2010, and this effect is not material and is unlikely to affect the ability of the owner of the DBNGP to meet contractual obligations for the delivery of gas.<sup>20</sup>
- The owner of the DBNGP may incur additional costs as a result of a broader gas quality specification. It was open to the owner to address this additional cost in cost forecasts applied in the determination of regulated tariffs for gas transmission. That the owner did not do so cannot be relied upon as a reason why there should be no change to the gas quality specification.<sup>21</sup>
- Existing contracts with users of the DBNGP appeared to the Authority to allow the owner of the DBNGP to adjust pipeline tariffs to recover costs arising from any expansion in pipeline capacity necessary to accommodate a broader gas quality specification.<sup>22</sup>
- There is not reasonable likelihood that introduction of the broader gas quality specification under the access arrangement would create a potential for the owner of the DBNGP to be unable to meet contractual commitments in the quality of delivered gas, at least in the period 2005 to 2010 while most users of the DBNGP remain bound by existing contracts for gas transmission.<sup>23</sup>
- A broader gas quality specification would be in the public interest by facilitating development of new gas fields and increasing competition in the upstream gas market, and the public benefits of this would

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<sup>19</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, pp 127, 137.

<sup>20</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, pp 131 to 133.

<sup>21</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p 132.

<sup>22</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p 132.

<sup>23</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p 133.

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outweigh any costs arising from a reduction in pipeline capacity and increases in costs of gas transmission.<sup>24</sup>

- While a broader gas quality specification may give rise to addition costs for some users of gas as a production feedstock, the Authority considered that the effects on these parties were unlikely to be as severe as the parties had claimed. One of these parties was the Kwinana LPG plant and the Authority considered that the ending (in July 1995) of contractual obligations of the owner of the DBNGP in respect of the quality of gas delivered to this plant means that there is no reason to maintain a gas quality specification that facilitates the operation of the plant (the difference in specifications for receipt points and delivery points).<sup>25</sup>

The implication of the broader gas specification being included in the terms and conditions for reference services under the access arrangement for the DBNGP is that, subject to available capacity in the pipeline, a new user of the DBNGP is able to insist on obtaining a reference service on these terms and conditions, including the gas quality specification, at the relevant reference tariff for the service.

BHP Billiton understands that, subsequent to the determination by the Economic Regulation Authority to broaden the gas quality specification operating under the access arrangement for the DBNGP, the gas quality operating under the standard shipper contract applying to at least most of the users of the DBNGP has been broadened to the same specification.

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<sup>24</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p 133.

<sup>25</sup> Economic Regulation Authority of Western Australia, 11 May 2005, Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline, p 134.

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### 3 THE APPROPRAITE BROADER SPECIFICATION

BHP Billiton strongly supports the Australian Standard as the appropriate gas quality specification for pipelines and distribution systems in Western Australia.

#### 3.1 Australian Standard

The Australian Standard has been established as a standard for the safe use of natural gas appliances and it is the statutory standard for most natural gas pipelines and distributions systems in Queensland, South Australia, Victoria and New South Wales.

The Australian Standard was derived taking into account:

- Consistency with overseas practice, with manufacturers of gas appliances in Australia and many overseas locations (Canada, Japan, New Zealand, UK and USA) designing appliances to operate safely with gases within the range of the specification;
- Achieving a balance between optimising the performance of appliances (requiring a narrow specification) and maximising available gas supply (requiring a broad specification);
- Safe operation of the present population of gas appliances in Australia; and
- Effects of particular components in a natural gas stream on operation and corrosion of gas pipelines (particularly oxygen, sulphur and water).

The Australian Standard is broader than the specification currently contained in the access arrangement for the DBNGP and non regulated shipper contracts. The key areas of difference are; Wobbe Index, Higher Heating Value and the limitation of carbon dioxide in the total inert gas allowance.

#### 3.2 Gas Standards Regulations

The Western Australian *Gas Standards (Gas Supply and System Safety) Regulations 2000* (Gas Standards Regulations) establish a gas-quality standard for supply of natural gas to a customer through a distribution system or for use for domestic purposes in an industrial facility. The Gas Standards Regulations are administered by the Energy Safety division of the Western Australian Department of Consumer and Employment Protection.

The gas-quality specification established under the Gas Standards Regulations is narrower than the Australian Standard Specification on the parameter of the Wobbe Index and also includes a range for Higher Heating Value, which is absent from the Australian Standard.

Energy Safety is in the process of amending the Gas Standards Regulations to reflect the gas-quality specification of Australian Standard 4564-2005 including broadening the Wobbe index. However the regulations will continue to include a minimum Higher Heating Value of 37.0 MJ/m<sup>3</sup>, this parameter will not be lowered until

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older appliances that may have safety compromised by a lower Higher Heating Value are either upgraded or replaced.<sup>26</sup>

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<sup>26</sup> Issues Paper, p. 9.

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## 4 BENEFITS OF A CHANGE IN THE GAS QUALITY SPECIFICATION

### 4.1 Introduction and overview

The adoption of a gas specification that is consistent with the Australian Standard will deliver significant benefits to the Western Australian economy and community through enabling additional gas supplies, stimulating increased competition and increasing energy supply security. The potential public benefits from a broader gas quality specification have previously been identified by participants in the gas industry and by the Western Australian Government as evident by past initiatives such as adopting the “broadest specification” as a future objective in the *Dampier to Bunbury Pipeline Regulations 1998*. It is further evident from a 2005 decision of the Western Australian Economic Regulation Authority, in establishing terms and conditions for a regulated gas transmission service on the DBNGP, to establish a gas-quality specification that is as close as possible to the 1998 broadest specification taking into account other regulatory constraints on gas quality in the Western Australian gas distribution network

The adoption of a gas specification that is consistent with the Australian Standard will deliver significant benefits to the Western Australian economy and community through enabling additional gas supplies, stimulating increased competition and increasing energy supply security. This will arise as a result of the following factors.

- Quicker delivery of gas supply projects to market: The specification change will allow new gas sources to be developed to meet demand in a faster time frame. With the gas quality specification set at the Australian Standard, less processing capability is required to bring gas to market resulting in less time to plan, develop and implement gas processing facilities.
- More gas supply delivered to market: As a result of lower cost and less time to develop, some gas resources may be developed with a broader gas specification which would otherwise be “marginal” or uneconomic.
- Increased supply security: By enabling an increased number of supply sources, Western Australia will benefit from increased security of gas supply.
- Lower project development costs with less energy consumed in processing: A significant amount of Western Australia’s discovered, undeveloped, gas resource have small amounts nitrogen that need to be removed if the heating value is to comply with current specifications. Nitrogen removal is very capital and energy intensive. Changing the gas pipeline specification to the Australian Standard reduces the cost for development due to fewer processing facilities being required. It also means that less energy is consumed for processing the raw gas.

An immediate example of the benefits of a broader specification is that it would enable the timely and most efficient development of the Macedon gas field, a near shore resource approximately 100 km west of Onslow. Macedon gas meets the Australian Standard but does not meet the current DBNGP and distribution system specifications without special additional processing to remove nitrogen. The development of this field would add more than 15 per cent of additional gas production capacity to the State’s current domestic gas supply and, importantly, provide an additional injection point for gas that is independent of other existing gas production

facilities. With the adoption of the Australian Standard specification, the Macedon field may be brought into operation earlier, bringing forward the date for much needed additional gas supply to Western Australia.

#### 4.2 The Quality of Gas Resources in the Southern Carnarvon Basin

The gas quality of the Macedon gas resource is typical of discovered accumulations in the Southern Carnarvon Basin (the area referred to as the Exmouth Plateau and Exmouth sub-basin). Typically, Southern Carnarvon Basin gases contain very high methane content with four to five per cent nitrogen, minimal associated liquids and less than 0.5 per cent carbon dioxide. Gas of this composition complies with broad gas quality specifications such as the Australian Standard with minimal processing. However it does not comply with the current specification for the DBNGP or the Gas Standards Regulations applying to the Alinta distribution system. As a consequence, the current specification for the DBNGP and the Gas Standards Regulations comprise a barrier to domestic marketing of gas from several potential sources in the Southern Carnarvon Basin. The following table demonstrates the consistency of gas quality across the Southern Carnarvon Basin. In aggregate there is more than 10Tcf of discovered gas resource in this area that complies with the Australian Standard but does not comply with the current DBNGP specification.

Gas Field	Description	Compliance with gas specifications		Reason for non-compliance
		Australian Standard	DBNGP Specification and Gas Standards Regulations	
Macedon	Gas field	Yes	No	HHV
Vincent	Oil field, gas cap	Yes	No	HHV
Ravensworth	Oil field, gas cap	Yes	No	HHV, Wobbe
Moodyne	Oil field, gas cap	Yes	No	HHV, Wobbe
Coniston	Oil field, gas cap	No	No	<b>DBP:</b> HHV, Wobbe, Inerts <b>Aust Std:</b> Wobbe, Inerts
Laverda	Oil field, gas cap	Yes	Yes	N/A
Enfield	Oil field, gas cap	No	No	<b>DBP:</b> HHV, Wobbe <b>Aust Std:</b> Wobbe
Eskdale	Oil field, gas cap	No	No	High HHV, Wobbe
Nimrod	Non commercial gas field	Yes	No	Wobbe
Tubridgi	Gas field	No	No	<b>DBP:</b> HHV, Wobbe <b>Aust Std:</b> Wobbe
Scarborough	Gas field	Yes	No	HHV
Jupiter	Gas field	Yes	No	HHV

1. Tubridgi gas was transported on the DBNGP for 10 years from 1994.
2. Gas quality information obtained from open file well-completion reports
3. The information contained in this table is all the publicly available information available to BHP Billiton. It is not a selective representation. The intent is to show the similarity of gas specifications across the vast area that is the Southern Carnarvon Basin.

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As illustrated above gas from the Macedon field is typical of the Southern Carnarvon Basin it does not meet the required minimum higher heating value for the DBNGP: Macedon gas has a higher heating value of 35.7 MJ/m<sup>3</sup> while the gas quality specification for the DBNGP has a minimum higher heating value of 37 MJ/m<sup>3</sup>.<sup>27</sup> In the absence of a change in the gas quality specification, there would be a need to remove nitrogen from Macedon gas in order to increase its higher heating value. This would add significant additional capital cost, potentially delay project start-up by 12 months, reduce gas sales due to energy consumed in the removal process, increase the operating costs to run and maintain the facility, and materially increase the project's emissions footprint. A broader gas specification would enable the timely and efficient development of the Macedon gas field, which would increase the supply of gas to the Western Australian market by 15 per cent through a new injection point into the DBNGP.

### 4.3 Supply – demand imbalance

#### 4.3.1 Gas demand

Annual growth in aggregate demand for natural gas in Western Australia for the period 2007 to 2020 has been estimated to be in circa three per cent, consistent with recent historical growth,<sup>28</sup> of circa 4.0 per cent.<sup>29</sup> This growth rate equates to an increase in annual gas demand from ~1000 terajoules per day in 2007 to ~1700 terajoules per day in 2020.

The aggregate growth in demand understates growth in demand for new gas contracts, which has to include growth in demand from new gas users as well as existing users renewing gas contracts. Annual demand for gas supply contracts has been forecast to be increasing at an average annual rate of 20 per cent until 2020.<sup>30</sup> The graphs below illustrate the material increase in demand relative to existing supply.

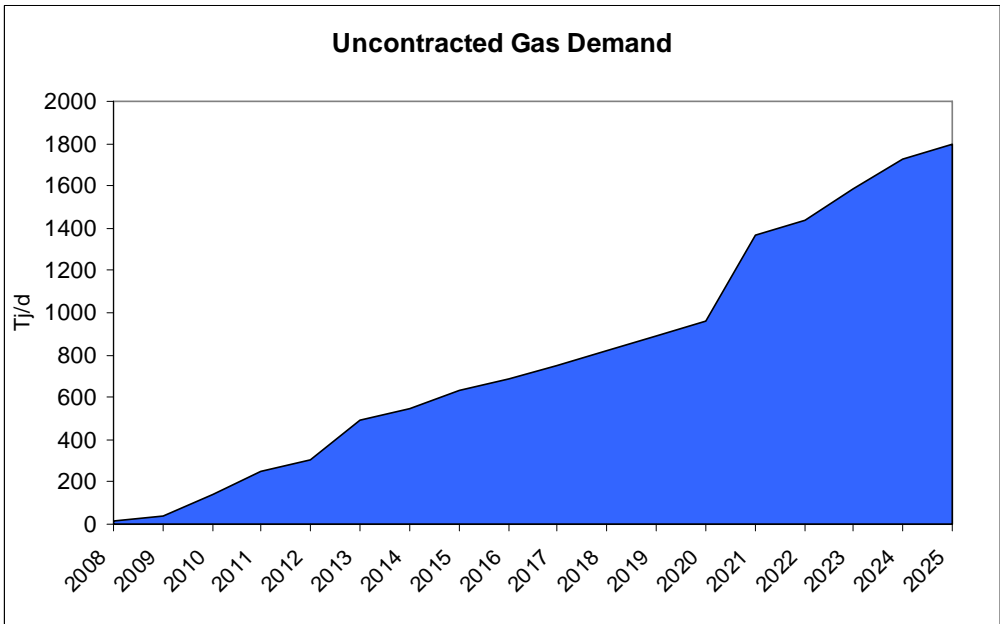
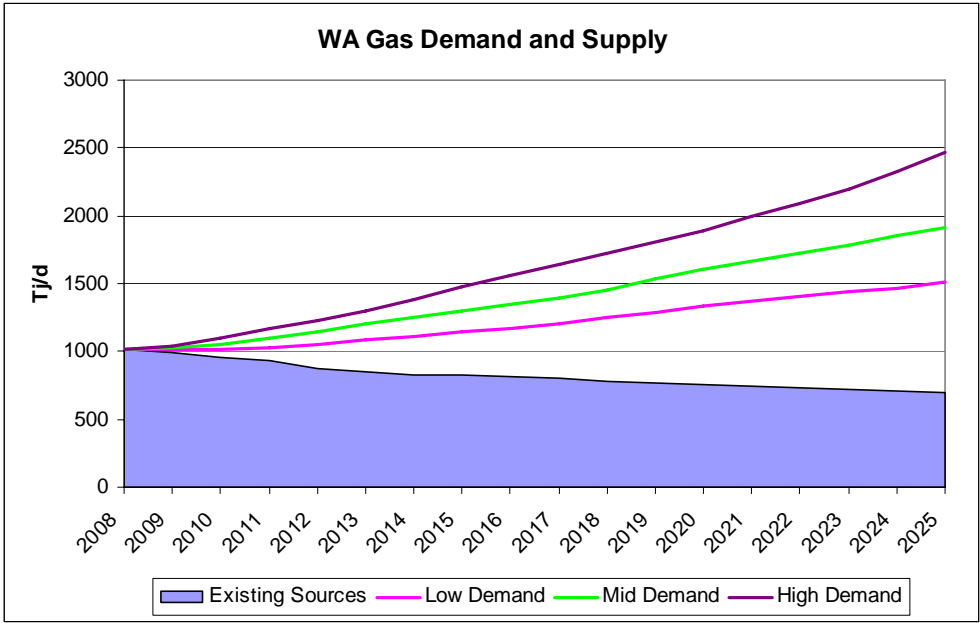
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<sup>27</sup> McLennan Magasanik Associates, July 2007, Natural Gas in Australia: Report to the Joint Working Group on Natural Gas Supply, Ministerial Council on Energy and Ministerial Council on Mineral and Petroleum Resources, p 70, citing BHP Billiton 28 October 2005, Application for revocation of pipeline coverage under the National Access Code for Natural Gas Pipeline Systems – Tubridgi Pipeline (PL16) and Griffin Pipeline (PL19).

<sup>28</sup> McLennan Magasanik Associates, July 2007, Natural Gas in Australia: Report to the Joint Working Group on Natural Gas Supply, Ministerial Council on Energy and Ministerial Council on Mineral and Petroleum Resources, p 14. Recent historical growth excludes gas use for iron and steel production, which until 2005 comprised the BHP Billiton Direct Reduced Iron plant near Port Hedland.

<sup>29</sup> Core Collaborative 2020 Gas Outlook p 7; ABARE, December 2006, Australian Energy National and State Projections to 2029-30.

<sup>30</sup> McLennan Magasanik Associates, July 2007, Natural Gas in Australia: Report to the Joint Working Group on Natural Gas Supply, Ministerial Council on Energy and Ministerial Council on Mineral and Petroleum Resources, p 14. The incremental requirement for new gas supply is calculated as an average annual growth rate from a cumulative requirement of 2700 PJ of gas by 2020.



Source : Core Collaborative, Western Australia – 2025 Gas Outlook.

Moreover, a substantial part of the increase in gas demand will occur in regions of Western Australia that do not have access to primary energy sourced from coal. These regions energy options are limited to gas and diesel. Gas represents the most reliable form of primary energy in these areas and is vital to much of the Sates export industries.

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### 4.3.2 Gas supply

Up until 2006 the effect of the existing gas specification on the gas market was not evident as gas consumers in Western Australia had access to significant uncommitted domestic supply of gas at a quality that allowed producers to comply with the existing specifications at a relatively low cost.

Since 2006, there has been inadequate supply of gas, despite Western Australia's large undeveloped gas resources. This is driven by several factors:

- Increasing gas demand driven by increased activity in the mining and mineral-processing industries;
- Constraints on supply as some gas resources decline (in some instances earlier than expected);
- New gas sources have yet to be developed and the costs and timeframes of development are greater than for existing developments and for large resources tend to be linked to LNG developments in order to achieve economies of scale.

Given industry lead times little can be done to alleviate the tightness of supply in the short term. In the medium term (from 2012- ~2016) gas demand can be met from the development of new supply sources. Many of the potential new sources of supply within this time frame are fields that have been discovered for a long period of time. They have not been developed to date due to their gas composition characteristics. These characteristics whether they are at the level or composition of inert gases, or have a lack of associated liquid hydrocarbons, or all of these factors, have meant to date that an economic project cannot be achieved.

A broader specification will provide potential suppliers with an enhanced opportunity to develop new gas supplies to meet demand. This opportunity arises because less capital is needed to bring a project into the market than would otherwise be the case. Typically less capital means that a project is less complex and can be developed on a faster time frame than a more capital intense one.

### 4.4 Energy security

Currently, gas is marketed in Western Australia through two main gas production hubs — the North West Shelf and Varanus Island — representing the interests of a number of joint venture partners.

The unplanned interruption of gas supply at Varanus Island earlier this year has demonstrated the energy-security risks borne by Western Australian industry due to reliance on only two gas supply points. While underscored by this incident, the energy security risks arising from reliance on two gas production facilities are ever-present and arise due to a range of factors that can disrupt production including cyclones.

The cost of not having an energy supply chain secured via diversity only becomes apparent when a disruption such as the Varanus Island incident occurs. Economic modelling by the Western Australian Treasury demonstrated the impact on the Western Australian economy of the unplanned Varanus Island outage<sup>31</sup>. Treasury estimated that Western Australia's economic growth for 2007-08 would be reduced by 0.5 percentage points. This included employment growth being reduced by 0.7 percentage points and export growth by 1.3

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<sup>31</sup> Ministerial Media Statement by Eric Ripper Deputy Premier; Treasurer; Minister for State Development - 24 July 2008.

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percentage points. Long term the disruption was estimated to reduce Western Australia's economic value by \$1.8 billion (real) through to 2011-12.

Over the longer term, the introduction of a new production hub in the Southern Carnarvon Basin combined with a broader specification will provide incentive for the further exploration for and the development of new gas sources. The diversification of producers and supply locations will have the effect of reducing energy-security risks.

#### **4.5 Competition in wholesale gas markets**

There are currently a number of suppliers of gas to the Western Australian domestic market. Depending on the capacity available in their facilities and their access to uncommitted gas reserves to supply through those facilities they compete for business as existing buyers contracts expire or new projects require gas. The holders of undeveloped gas resources also compete with established suppliers to meet the needs of buyers.

If a broader gas quality specification is implemented, it would enable gas of the Southern Carnarvon Basin to enter the domestic Western Australian market at the least cost possible. This will facilitate the entry of new gas fields and gas consumers will ultimately benefit through increased supply security and competition between gas producers.

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## 5 BARRIERS TO CHANGE IN THE GAS QUALITY SPECIFICATION

### 5.1 Introduction and Overview

A broader gas quality specification consistent with the Australian Standard has not already been implemented in Western Australia (that would be consistent with other Australian jurisdictions) is an outcome of the particular history of determination of the gas quality specification for the main gas transmission pipeline in Western Australia – the Dampier to Bunbury Natural Gas Pipeline.

While the Western Australian Government included the broadest specification in the *Dampier to Bunbury Pipeline Regulations 1998* as an objective for a future gas quality specification, this specification was not imposed on the DBNGP owner. This was a result of recognition by the Government of:

- Contractual commitments of the DBNGP owner to supply gas of a quality higher than the broadest specification until at least 2005; and
- The existence of old (pre-1980) gas appliances in buildings serviced by the gas distribution network, for which supply of gas at the broadest specification would give rise to safety risks.

The Western Australian Government contemplated that the broadest specification would ultimately be implemented in a privatised gas industry by commercial processes and agreements.

The commercial processes and agreements for implementation of the broadest specification have not occurred. Barriers to a commercially negotiated outcome exist and comprise:

- The potential reduction in pipeline capacity resulting from lower energy density gas, which would necessitate an expansion of the pipeline to maintain the same firm energy transmission capability.;
- Contractual commitments within existing DBNGP shipping contracts which present barriers to broader specification gas being accepted or delivered unless there is a change of law;
- The existence of old (pre-1980) gas appliances in buildings serviced by the gas distribution network, for which supply of gas at the lower limits of a broader specification may give rise to safety risks. This issue has recently been re-evaluated by Energy Safety WA. Its September 2008 paper “Report on survey to determine the number of pre-1980 domestic gas appliances connected to the Perth metropolitan natural gas distribution system” provides estimates of costs to resolve this issue.

The circumstances of the DBNGP, the users of the pipeline and of end-users of gas give rise to divergent economic interests in implementing a broader gas quality specification and therefore create stakeholder misalignment.

### 5.2 Pipeline Capacity Issues

All firm capacity in the DBNGP pipeline is currently committed to shippers and the owners of the DBNGP will not expand the pipeline's firm capacity unless it is underwritten via a long term ship or pay contract. Therefore the introduction of lower energy density gas may impact on the pipeline's firm transportation obligations.

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BHP Billiton estimates that the actual impact on the DBNGP's firm capacity if a broader specification such as the Australian Standard was introduced is relatively small. Further it is highly unlikely that the full impact of a broader specification on capacity would ever eventuate. If a broader specification and capacity compensation framework applied then any issue associated with an impact on firm capacity could be resolved via commercial negotiation.

### **5.3 Contractual Terms for Gas Transmission in the DBNGP**

All users of the DBNGP obtain gas transmission services under contracts for services that were negotiated outside of the framework of the access arrangement for the pipeline.

Under the terms of their gas-transmission contracts, users of the DBNGP are required to comply with a gas quality specification established as a term of these contracts. While provision exists under the contracts for a user to supply the pipeline with out-of-specification gas if approved by the pipeline owner, this is difficult to achieve under the terms of the contracts.

The owner of the DBNGP does not have any unilateral right to alter the gas specification applying to users under the gas transmission contracts. The owner of the DBNGP is contractually bound to deliver gas to users within the contract gas-quality specification and to meet contract requirements for the quantities of gas able to be delivered. Accordingly, if the owner of the DBNGP agrees to accept out-of-specification gas from one user, it must do so within the constraints of:

- Opportunities to blend gas streams within the pipeline so that all gas delivered from the pipeline is within the gas quality specification; and
- Maintaining the capability of the pipeline to meet contractual obligations for volumes of gas transmission.

Due to these contractual terms, allowing some users the opportunity to supply broader specification gas to the DBNGP constitutes a substantial commercial risk to the owner of the DBNGP.

The contracts for gas transmission in the DBNGP do include provision for the gas quality specification to be changed by a change in law and serve to protect the interests of the pipeline owner if a change in law occurs that provides any user of the pipeline with a right to supply gas to the pipeline that is of a broader gas quality specification. Imposing a gas quality specification by regulation would therefore overcome the barriers that exist under the existing contracts for transmission of broader specification gas.

Furthermore, supply of out-of-specification gas to the DBNGP may only be undertaken within the constraint of ensuring consistency of the blended gas stream in the DBNGP with the gas specification change for the Alinta distribution systems, even if a supplier of out-of-specification gas is not contracted for gas delivery to the distribution systems.

### **5.4 Safety of Old Gas Appliances**

The introduction of a broader gas quality specification in the DBNGP is constrained by existence of old (pre-1980) gas appliances in buildings serviced by the Alinta distribution network, for which supply of gas at the lower limits of a broader specification may give rise to safety risks. The Energy Safety Division of the Western

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Australian Department of Consumer and Employment Protection has estimated that there are about 34,000 appliances that would require replacement or upgrading for safe operation with natural gas at the broader specification of the Australian Standard at a cost of about \$20 million.<sup>32</sup> The Energy Safety Division has also indicated that if and when upgrading or replacement of the old appliances is undertaken, it could remove any requirement for a minimum Higher Heating Value for gas entering the gas distribution system, consistent with the Australian Standard.<sup>33</sup>

As a result of the constraint on gas quality arising from the existence of old gas appliances supplied by the Alinta distribution systems, the broadening of the gas quality specification for the DBNGP would not in itself enable gas meeting the broader specification to be supplied to the DBNGP. The quality of gas supplied to the DBNGP is also constrained by the need to have the blended gas stream in the DBNGP comply with the gas-quality requirements for the distribution systems.

It is generally accepted by government and industry that any action to compulsorily require the upgrading or replacement of the old appliances is a necessarily an initiative of the Government due to the need to utilise coercive powers of regulation. Government action would also facilitate coordination in addressing the problem of old appliances and change in the gas quality specification of the DBNGP.

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<sup>32</sup> Energy Safety Division, Department of Consumer and Employment Protection, September 2008, Report on survey to determine the number of pre-1980 domestic gas appliances connected to the Perth metropolitan natural gas distribution system.

<sup>33</sup> Economic Regulation Authority, 2 November 2007, Letter to Dr Jim Limerick department of Industry and Resources, re. Report of the Joint Working Group on Natural Gas Supply, ERA reference D/07/630.

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## 6 GOVERNMENT REGULATION THE ONLY EFFECTIVE SOLUTION

The uneven distribution of costs and benefits means that a broader gas quality specification can only be implemented by either a commercial solution, such that those who accrue benefits compensate or otherwise reward those that incur costs, or be imposed by Government with a mechanism for financing the costs.

BHP Billiton submits that commercial negotiation is not a feasible mechanism for achieving a change in the gas quality specification within a time frame consistent with developing the Macedon gas field and other gas fields at the earliest opportunity. Commercial negotiation is impeded by the relatively large numbers of necessary parties to any such negotiation, differing interests of these parties (including interests of some parties in maintaining a narrow gas quality specification) and opportunities that may be taken by parties in any negotiation for rent seeking. Any one of the twenty plus shippers on the DBNGP could exercise a power of veto in commercial negotiations.

The key issue that prevents a commercial solution is that, in the absence of negotiated changes to all shipping contracts for the DBNGP, out-of-specification gas can only be supplied to the DBNGP if the blended gas stream in the DBNGP still meets the current gas specification (which is narrower than the Australian Standard). No individual producer or shipper can reasonably take the risk that changes to the pipeline's blended gas composition, that are outside of their control, will preclude their gas from being received into the DBNGP.

However, it is inefficient and impractical to rely on an individual producer or shipper to reach commercial agreements with a multitude of unrelated parties in order to achieve certainty that they can transport their gas on the State's primary gas transmission line.

Furthermore, supply of out-of-specification gas to the DBNGP may only be undertaken within the constraint of ensuring consistency of the blended gas stream in the DBNGP with the gas specification for the Alinta distribution system, even if a supplier of out-of-specification gas is not contracted for gas delivery to the distribution system.

Given the nature of the legacy issues and the number of divergent interests that would need to be accommodated in commercial arrangements the only effective course of action is for Government introduce a gas specification and cost allocation principles covering DBNGP firm capacity via regulation.

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## 7 IMPLEMENTATION OF A BROADER GAS QUALITY SPECIFICATION

### 7.1 Introduction and overview

There are two key areas that need to be addressed if a broader gas quality specification is to be implemented within a time frame that would allow supply of gas to the Western Australian market from broader specification gas fields in the medium term 2012+.

- The introduction of and changes to regulatory instruments.
- A mechanism must be established to finance costs that will be incurred as a result of a change in the gas quality specification.

#### 7.1.1 Required Regulatory Action

BHP Billiton recommends that regulatory action by the Western Australian Government to broaden the gas quality specification should comprise:

- Establishing, by regulation, a gas specification for the DBNGP consistent with the Australian Standard and a capacity impact cost allocation principle;
- Amendment of the *Gas Standards (Gas Supply and System Safety) Regulations 2000* to provide a gas quality specification for the Western Australian gas distribution system consistent with the Australian Standard;
- Establishing, using powers available to the Government, a programme for identification and compulsory upgrading or replacement of old gas appliances.

#### 7.1.2 The Allocation of Costs

On the financing of the costs that will be incurred as a result of a change in the gas quality specification, BHP Billiton supports mechanisms for attribution of costs to parties that will accrue direct benefits from the broader specification.

### 7.2 Costs associated with pipeline capacity

BHP Billiton supports the recovery of costs from pipeline users or suppliers wanting to transport or supply gas outside of the existing gas specification.

The over-arching principle should be that the introduction of a broader specification should not conflict with the pipeline owner's provision of firm (T1) service.

Implementation of the principle should be flexible and be capable of implementation in two ways;

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- Parties that wish to introduce broader specification gas on the DBNGP may agree with the pipeline owner on the most effective arrangements to underwrite the physical capacity required to maintain existing firm service capability.
  - Alternatively parties wishing to introduce broader specification gas on to the pipeline should be able to contract for standard (T1) pipeline capacity to offset the impact of introducing that gas at its actual specification compared to the existing minimum specification. This contracting for capacity could be with either the pipeline owners or shippers that hold capacity they no longer require.

Disputes concerning the amount of capacity required to offset the impact on firm (T1) service could be referred to the Gas Disputes Arbitrator.

This is an efficient, “user pays” solution for the market and should provide sufficient competitive tension to ensure efficient outcomes.

If Government introduced a broader gas quality specification and an overriding cost allocation principle then any cost associated with the loss of firm pipeline capacity associated with the introduction of broader specification gas could be worked out by commercial negotiation.

### **7.3 Old gas appliances**

If a strictly user-pays principle were to be applied to recovering the costs of a programme of upgrading and replacement of old gas appliances, it would imply a sharing of costs between the owners of the appliances (as private beneficiaries of upgraded or new appliances) and producers and consumers of gas more generally that accrue the benefits from increases supplies of gas and greater competition in the gas market that would result from introduction of a broader gas quality specification.

BHP Billiton submits, however, that recovery of costs from these parties could only be achieved through processes of consultation that would take a substantial time to complete and would risk considerably extending the time necessary to agree and implement a programme of appliance upgrading and replacement.

For reasons of timeliness in achieving a change in the gas quality specification that supports the earliest possible development of additional gas sources, BHP Billiton supports the recovery of costs directly from the gas producers or shippers that make use of the broader gas quality specification. To allow for producers and shippers making use of the specification over time, BHP Billiton supports a scheme involving:

- Establishing a special-purpose fund to be administered by the Western Australian Government;
- Financing the fund by contributions from gas producers or shippers seeking to make use of the broader gas quality specification; and
- For a period of, say, 10 years from the commencement of the fund, gas producers or shippers not contributing towards the fund at its establishment being levied with fees if they subsequently wish to utilise the broader specification, with these fees rebated to initial contributors.

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#### 7.4 Timing for Implementation

- An early commitment by the Government to broaden gas quality specifications from January 2012 is essential for the timely development of domestic gas resources to meet demand. Such a commitment will facilitate commercial negotiation of gas supply and gas transportation contracts. It will also facilitate appropriate revision of the access arrangement for the DBNGP under the National Gas Code or National Gas Rules, due to occur in 2010, and it will allow sufficient time for a programme to deal pre-1980 gas appliances to be implemented

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## Appendix A

### Responses to Questions Posed in the Issues Paper

#### Question 3.1

**Are there any potential impacts to a broadening of the gas specification to your organisation and if so, what is the magnitude of those impacts?**

BHP Billiton holds interests in a number of major gas resources off shore Western Australia and is also a major gas consumer we believe that a broadening of gas specifications will provide many benefits.

As a holder of gas resources, a broader specification will facilitate the development of these resources. For example BHP Billiton is currently in the process of planning for development of the Macedon gas field in a joint venture with Apache Energy. Macedon gas has a higher heating value of 35.7 MJ/m<sup>3</sup> while the gas quality specification for the DBNGP has a minimum higher heating value of 37 MJ/m<sup>3</sup>.<sup>34</sup> In the absence of a change in the gas quality specification, there would be a need to remove nitrogen from Macedon gas in order to lift its higher heating value. This would add significant additional capital cost, potentially delay project start-up by 12 months, significantly reduce gas sales due to energy consumed in the removal process, increase the operating costs to run and maintain the facility, and materially increase the project's emissions foot print.

Like all other gas users in Western Australia, BHP Billiton's gas-consuming businesses in Western Australia would ultimately benefit from increased gas supplies, increased upstream competition in gas markets and increased security of supply that would all result from a broader gas specification enabling development of new gas sources for the Western Australian Market.

#### Question 4.1

**What comments or views would you like considered in deciding whether Government should regulate the gas specification on pipelines or whether it should be left to commercial negotiation?**

As outlined in the body of our submission we recommend that Government act to introduce a broader specification by regulation. Given the many divergent interests it is not practical or efficient to assume a commercially negotiate solution will be found.

#### Question 5.2<sup>35</sup>

**What comments or views would you like considered in deciding whether [setting the gas specification by regulation to the limit required by a new field] is the preferred option? If this option was adopted, which party should bear the increased costs to the pipeline owner from a) the impact of the new gas**

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<sup>34</sup> McLennan Magasanik Associates, July 2007, Natural Gas in Australia: Report to the Joint Working Group on Natural Gas Supply, Ministerial Council on Energy and Ministerial Council on Mineral and Petroleum Resources, p 70, citing BHP Billiton 28 October 2005, Application for revocation of pipeline coverage under the National Access Code for Natural Gas Pipeline Systems – Tubridgi Pipeline (PL16) and Griffin Pipeline (PL19).

<sup>35</sup> The Office of Energy's Issues Paper does not include a Question 5.1.

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**field's broader specification gas and b) existing producers supplying at that broader specification?**

**Does your organisation support this option?**

Setting the gas quality specification to a specification required by a new field is an unnecessarily complicated and detailed intervention by Government.

BHP Billiton submits that the gas quality specification should be set at the broadest specification that has been established as being consistent with the safe operation of gas appliances that would utilise gas from the Alinta distribution network. This is the gas quality specification established by Australian Standard 4564—2005.

BHP Billiton supports a user-pays mechanism of meeting any costs that would be incurred by owners of gas pipelines in accommodating the broader gas quality specification. If Government introduces a gas specification and overriding cost allocation principle for the DBNGP then charging arrangements for the recovery of any costs of pipeline augmentation due to the introduction of broader specification gas could be determined by commercial negotiation.

**Question 5.3:**

**What comments or views would you like considered in deciding whether [setting the quantity and the specification of gas that can be supplied from a specific inlet point] is the preferred option? If this option were adopted, which party should bear the increased costs to the pipeline owner? Would your organisation view Government as providing preferential treatment to specific gas fields? Does your organisation support this option?**

Provided that the user pays principle outlined in 5.2 applied then this approach could work although BHP Billiton advocates a comprehensive introduction of a broader specification combined with a user pay principle to ensure efficient outcomes.

**Question 5.4**

**What comments or views would you like considered in deciding whether [setting the gas specification by regulation to the blended average specification] is the preferred option? If this option was adopted, which party should bear the increased costs to the pipeline owner? Does your organisation support this option?**

BHP Billiton does not believe that this option is viable for the reasons outlined in the issues paper.

**Question 5.5**

**What comments or views would you like considered in deciding whether [setting the gas specification by regulation at the inlet and outlet to the ultimate final specification] is the preferred option? If this option was adopted, which party should bear the increased costs to the pipeline owner? Does your organisation support this option?**

As outlined in our response to Section 5.2 BHP Billiton strongly supports this option as the most practical and pragmatic outcome. Provided it was combined with a user pays approach economic efficiency would be ensured.

**Question 5.6**

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**What comments or views would you like considered in deciding whether [setting the gas specification at the outlet and leave the inlet specification to commercial negotiation] is the preferred option? Does your organisation support this option?**

As described in the body of our submission BHP Billiton does not believe that this approach is appropriate as it is neither practical nor efficient and has been demonstrated not to work.

**Question 5.7**

**What comments or views would you like considered in deciding whether [setting the gas specification at the outlet to the lower limit required by a gas field and leaving the inlet specification to commercial negotiation] is the preferred option? Does your organisation support this option?**

BHP Billiton believes that this is an unnecessarily complex approach and it may allow the DBNGP to achieve inappropriate returns.

**Question 5.8**

**Are there any other options or variants of the above options that should be considered? If so, what are the features and the advantages of those options?**

No

**Question 6.1**

**If Government were to undertake only [a change in the gas specification under the Gas Standards (Gas Supply and System Safety Regulations to match the Australian Standard while maintaining a minimum Higher Heating Value consistent with safety of older appliances] would it facilitate industry in developing new gas fields at the least cost? Would it enable the parties that incurred increased costs to be compensated?**

No, just this change he would have a minimal impact on the introduction of fields with a broader specification.

**What are the advantages and disadvantages of Government taking no other action other than amending the Gas Standards (Gas Supply and System Safety) Regulations 2000? Does your organisation support this option?**

Amending the gas specification that applies to the Alinta distribution system while doing nothing else would only remove one of the barriers to the introduction of broad specification gas. As outlined in the body of our submission BHP Billiton does not believe this action alone would assist in the introduction of gas supply from broader specification fields in the medium term.

**Question 6.2**

**What comments, issues or views would you like considered in respect to the impact on the Gas Distribution Systems and its recovery of costs?**

It is not evident what, if any, effect a change in the gas quality specification to the Australian Standard would have on the capacity of the distribution networks. The access arrangement for the distribution systems would automatically allow for gas with an energy density at the minimum consistent with the Australian Standard in the event that the gas quality specification under the Gas Standards Regulations were relaxed to be consistent with

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the Australian Standard.<sup>36</sup> As such, it is likely that the owner of the distribution systems has already factored any costs associated with a broader gas quality specification into investment decisions in the distribution systems.

To the extent that there is a requirement for investment in augmentation of the distribution networks to accommodate a gas quality specification at the Australian Standard, the owners of the networks would have the ability to recover these costs through regulated tariffs established under the access arrangement. Under either the National Access Code for Natural Gas Pipeline Systems of the National Gas Rules, the owner of a regulated distribution network would have the ability to recover costs through regulated prices where the costs are incurred to maintain the capacity of the network and the reliability of services in the face of a change in the gas quality specification.

As the users of the network and end customer of gas would benefit from the broader gas quality specification (through increased supply, security and competition in gas supplies) it is reasonable that any costs incurred are recovered in this manner.

#### **Question 7.1**

**What comments would you like considered in deciding whether [the option of owners of old appliances contributing to the cost of the appliance replacement] is to be considered?**

In principle, there would be economic efficiency arguments for requiring the owners of old appliances to contribute to the cost of upgrading or replacing appliances to the extent that the owners benefit. This would be of particular relevance if the owner of an appliance to be replaced desired more than just a basic model. However, there is a substantial risk that any programme of appliance upgrading and replacement that requires a contribution from appliance owners would take a substantial amount of time to develop and implement. This would potentially delay implementation of a broader gas quality specification and consequently a loss of benefits of the broader specification.

#### **Question 7.2**

**What comments would you like considered in deciding whether [government funding of appliance replacement] is to be considered?**

While there are likely to be public benefits associated with the upgrading and replacement of old appliances that would, in principle, justify some government contribution to the cost of appliance replacement, full government funding of a programme of replacement would increase the time to develop and implement the programme. This would potentially delay implementation of a broader gas quality specification and a loss of benefits of the broader specification. Therefore BHP Billiton advocates a shared approach where those that directly benefit from the broader specification pay the direct costs while Government funds other the associated costs.

#### **Question 7.3**

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<sup>36</sup> AlintaGas Networks, 10 August 2005, National Third Party Access Code for Natural Gas Pipeline Systems: AlintaGas Networks Pty Ltd's Access Arrangement for the Mid-West and South-West Gas Distribution Systems, clause 22 and schedule 6.

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**What comments or views would you like considered in deciding whether [funding of appliance replacement by owners of gas fields with broader specification gas] is a suitable option?**

**Does your organisation support this option?**

BHP Billiton supports the funding of a programme of replacement of old appliances by gas producers or shippers utilising a broader gas quality specification to supply gas to the Western Australian market.

BHP Billiton recommends that a special-purpose fund be established and administered by the Western Australian Government, but with the fund financed by the gas industry. For example, the estimated direct cost of the old-appliance programme (c.\$20 million) could be met by gas producers or shippers who propose to make use of the broader specification within 10 years of its introduction. Parties that did not contribute towards the fund at its establishment could be levied with a future fee if they subsequently wished to utilise the broader specification and these fees rebated to initial contributors.

**Question 7.4**

**What would be a suitable combination of parties contributing to the replacement programme and the relative proportions?**

See responses to Questions 7.2 to 7.3.

**Question 7.5:**

**What comments or views would you like considered in deciding whether [a levy on gas transmission pipelines] is a suitable option [to meet the costs incurred for appliance replacement]?**

**Does your organisation support this option?**

See responses to Questions 7.2 to 7.3.

**Question 7.6**

**Are there any other options or variants of the above options [for funding the replacement of appliances] that should be considered? If so, what are the features and the advantages of those options?**

There are many possible funding options that could be developed and implemented. In the interests of simplicity and time savings BHP Billiton recommends the option detailed in the body of our submission.

**Question 8.1:**

**What comments or views would you like considered in deciding whether [leaving adversely affected parties to bear costs of adverse effects] is the best option? Does your organisation support this option?**

It has not been established that any gas users would be adversely affected by a broader gas quality specification. During the Economic Regulation Authority's deliberations on the gas quality specification during its assessment of proposed revisions to the access arrangement for the DBNGP, submissions were made by some users of gas as a production feedstock that adverse effects on production processes would occur due a higher level of inert gases in the gas supply. However, Standards Australia has considered that problems of

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levels of inert gases where gas is used as a production feedstock would only occur where the level of inert gases was much higher than the limit established under the Australian Standard.<sup>37</sup>

In any case, a broadening of the gas quality specification has been contemplated by Government and by the gas industry since at least the mid-1990s. As outlined in the body of our submission BHP Billiton believes that consumers will achieve substantial competition and security of supply benefits if a broader specification is introduced. These benefits should more than offset any minor adverse impacts.

**Question 8.2:**

**If your organisation will incur a material and significant increase in costs due to the gas specification proposed in column 9 of Appendix 2, how could that specification be amended to limit or eliminate any increase in costs to your organisation? What comments would you like considered in deciding whether this is a valid option?**

BHP Billiton makes no response to this question.

**Question 8.3:**

**What comments or views would you like considered in deciding [a legislated right for adversely affected parties to seek compensation from gas producers] this is a suitable option? Does your organisation support this option?**

Given that no material net negative impact from a broader gas specification has ever been publicly demonstrated by any user in Western Australia BHP Billiton does not believe that a legislated right for parties to seek compensation is required.

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<sup>37</sup> Standards Australia, Project AG-10 Committee Report MTG-001:2003-12-16 Natural Gas Quality Specifications