



# **Joint marketing of NWS domestic gas**

**A REPORT PREPARED FOR NWS PROJECT PARTICIPANTS**

31 March 2010

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## Executive Summary

1. Frontier Economics has been asked to prepare a report on the effects on competition of a continuation of the joint marketing of domestic gas by NWS Project participants – and on the public benefits or detriments that would arise from its continuation. Any investigation of the effects of these arrangements should focus on the effects of the arrangements on economic efficiency and on prices.
2. The marketing arrangements have the potential to affect economic efficiency in two principal ways: (i) they might prevent economically-efficient downstream projects from proceeding; and/or (ii) they might restrict supply to existing downstream projects.
3. Under the current arrangements, neither of these detrimental effects is likely to occur. Prices under the current arrangements are negotiated for each contract so the NWS Project participants will share in the surplus accruing from each of the contracts. All economically-efficient downstream projects are likely to proceed because prices are negotiated separately for each contract. No existing contract is likely to find supply restricted because contracts generally have a take-or-pay structure with the opportunity cost of extra units of supply priced at zero – up to the take-or-pay quantity.
4. If the present arrangements were abandoned, economic efficiency is likely to be harmed. There appears to be no way in which it could be promoted. It could be harmed by increasing the cost of supply because of the increased cost of negotiating solutions to the production externality problems. This increase in the cost of supply may well decrease the volume of domestic gas that is supplied.
5. If the present arrangements were abandoned, the effect on prices is not clear. Prices of existing contracts will not be affected. The prices of new contracts may increase or decrease. The cost of supply from any individual supplier is likely to increase; and the willingness to pay for supply by any individual supplier is likely to decrease because of the increased outside options available to any prospective purchaser. The net effect of these two offsetting forces is unclear.
6. Because the effect on prices of a change in arrangements on prices is unclear and because a change is likely to harm economic efficiency (including a possible decrease in supply), it is our opinion that the arrangements should not be said to lessen competition. Furthermore, it is likely that any change in arrangements will lead to net detriment to the public.

# 1 Introduction

7. Freehills on behalf of the North West Shelf (NWS) Project participants has asked Frontier prepare a report on:
  - a. the likely effects on competition of a continuation of joint marketing of domestic gas by the participants in the NWS Project in Western Australia; and
  - b. the nature and extent of any public benefits or detriments that are likely to arise from the continuation of joint marketing of domestic gas by the participants in the NWS Project in Western Australia.
8. We consider that the two issues are closely linked, and hence a conclusion in relation to the first issue is expected to determine the conclusion with respect to the second issue.
9. To examine the first of these issues we consider the impact of the joint marketing of domestic gas by NWS Project participants on competition in the Western Australian gas market compared to the outcomes expected if the these producers marketed their gas entitlements separately.
10. In assessing the impact on competition of these different marketing arrangements we consider first the ways in which competition works under joint marketing. We then consider how competition might work if these joint marketing arrangements were to end. By then comparing these two scenarios we are able to analyse how competition might be affected by joint marketing.
11. To examine the second issue we consider the overall public benefits and detriments that arise from joint marketing of domestic gas compared to separate marketing. In doing so we recognise the strong link between the impact on competition of an arrangement and the net public benefit it will deliver.

## 2 Competition under joint marketing

12. In this section of the report, we analyse the likely future for competition in the supply of domestic gas under the current arrangements of joint marketing. We first explain the principles that we adopt when analysing the effect of arrangements on competition; we then give our understanding of how joint marketing currently operates; and, finally, we move to an analysis of how competition would be likely to operate in the future in the presence of the joint venture.

### 2.1 Principles of competition

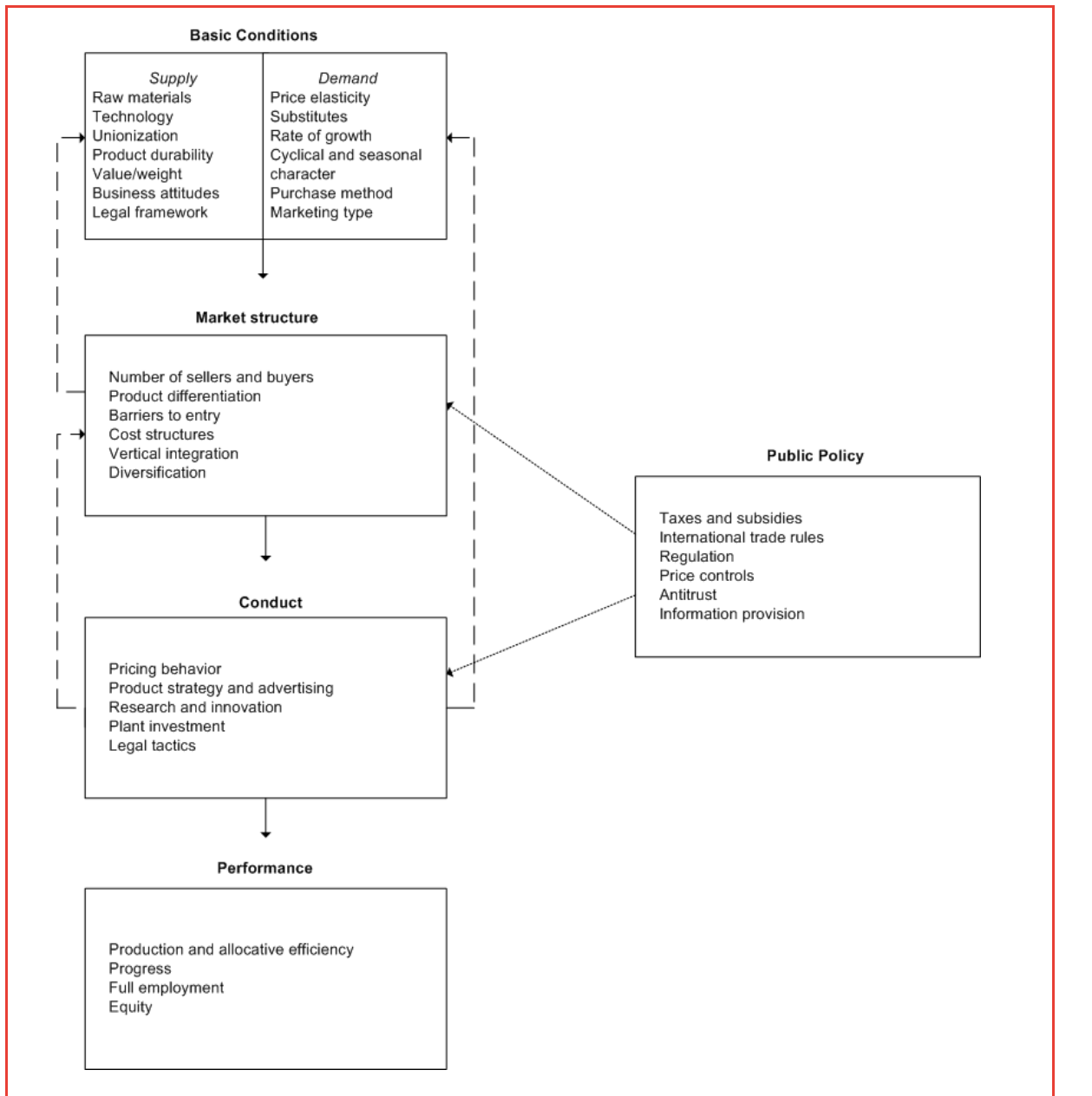
13. The word ‘competition’ does not have a single meaning in economics. It can refer to such very different notions as perfect competition, differentiated Bertrand competition, Cournotesque competition, effective competition, workable competition and predatory conduct.<sup>1</sup> Within the context of antitrust law, it tends to refer to rivalrous conduct and as the decision of the Australian Competition Tribunal (the Tribunal) in *QCM*A notes, patterns of conduct are (to a considerable extent) influenced by the structure of the market within which they occur.
14. Sophisticated versions of the structure-conduct-performance schema in the professional industrial organisation literature do not suppose a rigid one-way causal link from structure to conduct then to performance. Indeed the textbook by Scherer and Ross properly points to feedback loops in the other direction. This is summarised in the following diagram.<sup>2</sup>

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<sup>1</sup> Maureen Brunt, *Economic Essays on Australian and New Zealand Competition Law*, International Competition Law Series, Vol 8, Kluwer Law International, p. 201.

<sup>2</sup> From F M Scherer and David Ross, *Industrial Market Structure and Economic Performance*, Houghton Mifflin, 3<sup>rd</sup> edition, 1990, p. 5.

Figure 1 Structure-Conduct-Performance schema



Source: Scherer and Ross, 1990, *Industrial Market Structure and Economic Performance*, 3rd edition, p. 5.

15. When making judgments about the effect of changes in the regulatory environment on competition, such as the authorisation of joint marketing arrangements, one will look to the effects of those changes on the structure, conduct and performance of the relevant market(s). As Professor Fisher has noted:

Often an examination of the actual activity of firms in the market and the results of their interaction can reveal whether the market is effectively competitive. Economists, however, have traditionally undertaken the analysis of the

competitiveness of a market by an examination of indicia of competition and monopoly categorized under the headings of market structure, market conduct, and market performance.<sup>3</sup>

16. Professor Brunt had an opportunity to address the relevance of economic efficiency to the lessening of competition when she was the lay member of the High Court of New Zealand.<sup>4</sup> The High Court (per Gallen J. and Dr M. Brunt) had this to say:

In applying s. 27, counsel for Clear invites us to disregard any positive contribution that efficiencies may make to the competitive process. He says the existence of authorisation in the New Zealand Act makes efficiencies relevant only in so far as they give rise to heightened barriers to entry and hence an enhancement of market power. We cannot accept this contention. It is contrary to a well-established line of authority in New Zealand law that receives its latest statement in *Port Nelson Limited v Commerce Commission* (1996) 7 TCLR 217 in relation to s.27 (at p.228):-

“The relevant inquiry is as to substantially lessening competition. That is not the same as substantially lessening the effectiveness of a particular competitor. Competition in a market is a much broader concept. It is defined in s 3(1) as meaning ‘workable and effective competition’. That encompasses a market framework which participants may enter and in which they may engage in rivalrous behaviour with the expectation of deriving advantage from greater efficiency. There appears to have been consistent acceptance of the elements of competition in *Re Queensland Co-operative Milling Association Limited; Re Defiance Holdings Limited* [(1976) 25 FLR 169; 8 ALR 481, 517; 1 ATPR 40-012, 17,247] at p188; p 515; p 17,246, and further quotation is unnecessary.”

17. In her academic writing, Professor Brunt quotes the High Court in *QWT* referring to competition as a process that operates to “protect the interest of consumers” and continues: “What we have been discussing is a concept of competition which is profound and goes to the heart of its role as the engine of efficiency and progress.”<sup>5</sup>
18. Competition is said to be an engine of efficiency and progress because in chasing profit opportunities, competing firms innovate and thereby create value. Economics defines value as the difference between the willingness to pay of purchasers and the opportunity cost of production. So an innovation can create value by: (i) creating some difference in a product that consumers value more highly than its predecessor; (ii) decreasing the cost of producing a product; or (iii) some combination of (i) and (ii). Conduct that creates value is said to promote economic efficiency.

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<sup>3</sup> Franklin M Fisher, John J McGowan and Joen E Greenwood, 1983, *Folded, Spindled, and Mutilated, Economic Analysis and U.S. v. IBM*, MIT Press, p. 39.

<sup>4</sup> *Clear Communications Limited v Sky Network Television Limited and others* (1996), High Court of New Zealand CP.19/96. Judgment of 1 August 1997 (unreported).

<sup>5</sup> Brunt, *op.cit.*, p. 201.



19. A memorable exposition of the principle that competition needs to be considered in conjunction with considerations of efficiency is to be found in the seminal paper by Professor Fisher, “Diagnosing Monopoly”.<sup>6</sup> Professor Fisher discusses how conduct that leads to a high market share may be justified within the context of the monopolisation provision of the Sherman Act. His answer is that it can be justified if the high market share has been gained by competitive conduct rather than by monopolistic restriction.
20. Professor Fisher proposes two tests for distinguishing between competitive conduct and monopolistic restriction. The first is that the conduct, to be suspect, should at least be more restrictive than necessary. The second points to the link between competition and efficiency:
- The second principle (and the one the overlooking of which leads to confusion) is that conduct should not be condemned if it is precisely the conduct which competition would lead us to expect. One has to be careful to distinguish between cases in which competition is forcing firms to react and cases in which firms are taking unnecessary action to forestall competition. The competitive model itself points to situations in which firms, faced with competition, will be forced to do certain things or lose business. Firms observed to be doing those things in those situations should not be regarded as monopolizing. They are engaging in conduct which competition makes ‘economically inevitable’.<sup>7</sup>
21. These observations of Professor Fisher have gained wide currency among economists when considering (in the context of behaviour that is alleged to substantially lessen competition or constitute monopolisation) the effect of conduct on competition.
22. The Tribunal has also noted the distinction between mere rivalrous behaviour and socially-beneficial rivalrous behaviour.<sup>8</sup> For competition to be promoted, the rivalrous behaviour that is promoted should be of a socially-beneficial kind.
23. In our opinion, the same considerations should apply in the context of regulation that imposes restrictions on conduct (such as a prohibition on joint marketing). When assessing the impact of regulation on competition, one should look at the effect of regulation on the structure, conduct and performance of the relevant market. The effect of regulation on competition should not be assessed simply with reference to particular structural indicators such as its effect on the number of participants or on barriers to

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<sup>6</sup> F.M. Fisher, “Diagnosing Monopoly”, reprinted in *Industrial Organization, Economics, and the Law: Essays by Franklin M Fisher*, edited by John Monz, pp. 3-32.

<sup>7</sup> *ibid.*, p 27. A further excellent, if somewhat technical, treatment of the relationship between competition and efficiency is Joseph Farrell and Carl Shapiro, 1990, “Horizontal Mergers: An Equilibrium Analysis”, *American Economic Review*, vol 80, March, pp. 106-126.

<sup>8</sup> *Application by Chime Communications Pty Ltd* [2008] A CompT 4 (22 December 2008) para 56.

entry. Rather, reference should be made to a broader range of structural indicators (including cost conditions), conduct indicators (such as investment plans) and performance measures (such as changes in prices, changes in product range or quality, and/or other productive and allocative efficiencies so gained). If regulation produces market structures and conduct that ultimately delivers less efficiency than is the case without the regulation, the regulation should not be said to promote competition.<sup>9</sup> It would be contrary to competition because it would destroy the very outcomes that competition produces.

24. In summary, competition can generally be thought of as rivalrous behaviour. However, competition should only be said to be promoted if the rivalry that is promoted by that policy is of a socially-beneficial kind. Regulation that prohibits joint marketing should not be said to promote competition if it promotes rivalry to the detriment of economic efficiency.

## 2.2 The broader environment in which joint marketing of gas occurs

25. Key to considering the impact of joint marketing of domestic gas on competition, is a consideration of a number of wider institutional and other external factors that contribute to the structure of the market in which joint marketing operates.
26. Broadly, these factors set some important boundaries or constraints in which joint marketing operates and the likely impact of any transition to individual marketing on the quantity and price of domestic gas.
27. These key factors are:
- a. The trade-off between the production of domestic gas and the production of LNG
  - b. Joint production of domestic gas by the NWS Project participants
  - c. Existing gas supply agreements
  - d. State-imposed supply obligations on other producers
28. Each of these is discussed in turn below. The implication of each for the quantity and prices of domestic gas with and without joint marketing are discussed later in the section.

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<sup>9</sup> An obvious source of inefficiency relevant to the current applications might be increased transactions costs arising from separate marketing.

## 2.2.1 The trade-off between the production of domestic gas and the production of LNG

29. The NWS Project explores for and extracts hydrocarbons from a number of off-shore production fields in the Carnarvon Basin. Crude oil is produced and transferred to ships directly from the Cossack Pioneer. The gas and associated liquids are brought ashore in a single stream via pipeline to the on-shore processing plant at Karratha. It then passes through some integrated facilities. The condensate is extracted and exported. The LPG is also extracted and exported – apart from some that remains in Domgas and is extracted for domestic sale by Wesfarmers at a plant in Kwinana.
30. Most of the natural gas is converted into LNG in the LNG plant comprising 5 LNG trains (used to produce 16.3 mtpa of LNG for export). The remainder finds its way through the Domgas plant via pipelines for sale within WA.
31. Under the Ratified State Agreement (RSA), between the founding participants in the NWS Project and the State of Western Australia, the JV participants had a legislative obligation to supply a total of 5,064 PJ of gas to the Western Australian market. This is additional to the vast majority of the gas from the NWS Project that JV participants are able to export in the form of LNG. The constraint imposed by the RSA is no longer binding.<sup>10</sup> The aggregate volume of gas reserved for WA domestic use is expected to be fully delivered by around 2014 under existing contractual obligations. Nevertheless, as we explain below, there are strong commercial incentives for the JV participants to continue to sell and actively market domestic gas.
32. The firm capacity of the Domgas plant is advised by Woodside, as Operator to be currently approximately 600 TJs per day. This is based on Woodside's technical assessment of the long run maximum safe and reliable rate at which the plant can be operated on a year round basis to ensure contractual commitments are met.
33. Current contractual commitments do not take up the firm capacity of the Domgas plant. For this reason, the opportunity cost of selling domestic gas is the reduction in quantity of gas available for conversion into LNG for export. If the firm capacity of the Domgas plant were reached, the opportunity cost would increase. If extra production required extra investment to expand capacity, the opportunity cost of that supply would have to include the incremental capital cost.

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<sup>10</sup> That is, the constraint has been satisfied by decisions that have been made in the past. The constraint will not affect future decisions.

## 2.2.2 Joint production of gas

34. The production of gas for the WA market (and other markets) by the NWS Project participants occurs on a joint venture basis. This means that there is joint ownership of the production facilities including the onshore gas processing plant at Karratha which is used to supply all of the domestic gas from the NWS Project.
35. Domestic production occurs by way of the Domgas Joint Venture (DGJV) and the Incremental Pipeline Gas Joint Venture (IPGJV). The production activities and requirements of these entities are governed by a broader NWS Project Agreement (NPA). This includes specification of a daily production limit on the DGJV of 414TJ per day. Nevertheless, production of contracted domestic gas from the NWS Project is presently greater than this and the balance is met from the IPGJV. It is anticipated that new contracts will be supplied by the IPGJV.
36. The participants in these joint ventures and their ownership interests are shown in the table below.

Table 1: DGJV and IPGJV ownership interests

Company	Domgas JV	IPGJV
Woodside	50%	16.67%
Shell	8.33%	16.67%
BHP Billiton	8.33%	16.67%
BP	16.67%	16.67%
ChevronTexaco	16.67%	16.67%
MIMI	0%	16.67%

37. The ownerships interests shown in Table 1 entitle the companies to the corresponding share of the gas produced by the relevant joint venture.
38. In this report, the DGJV and the IPGJV, as appropriate to the context, are collectively referred to as the JV participants.

## 2.2.3 Existing gas supply agreements

39. Ongoing contracts to supply domestic gas that have been entered into by the DGJV and the IPGJV will play a critical role in forming the future of the WA domestic gas market with or without joint marketing of domestic gas. This is because several large Gas Supply Agreements (GSAs) have been entered into

that will remain ongoing for many years into the future and these more than fulfil the State imposed domestic gas supply obligation.<sup>11</sup>

40. Details of the number, volume and expiry dates of GSAs and the domestic gas supply capacity of the NWS Project are shown in the chart contained in confidential Appendix A.
41. Because the State-imposed supply obligations will be more than satisfied under existing contracts, the effects of joint marketing should be analysed on the assumption that the State agreements are non-binding. There is an obligation to agree with the relevant Minister how domestic gas requirements will be met by the JV participants. Nevertheless, it appears that the commercial interests of the JV participants are aligned with those of the State. For this reason, we shall assume that the future supply by the JV participants will be governed by purely commercial considerations.

#### 2.2.4 State-imposed supply obligations on other producers

42. Although the State agreements are no longer binding on the NWS Project, the WA Government has imposed similar obligations on other gas export projects; and these may well be binding in the near future.
43. To date, these other obligations have been applied to the yet to be constructed Gorgon and Pluto projects. In the former case the amount reserved for domestic supply is 2000 PJ. There is also a requirement to deliver at least 300TJ of gas per day. This gas is due to come on stream from the end of 2015 onwards but will take several years to reach the required minimum supply rate.<sup>12</sup>
44. In the case of the Pluto Project, 15 per cent of the Project's produced LNG is to be reserved for domestic use subject to commercial viability and the meeting of export milestones. The Pluto gas had been expected to be available for the domestic market by around 2015 or 2016<sup>13</sup>, although there is now some doubt about this timing.<sup>14</sup>

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<sup>11</sup> We understand that contracts negotiated under the previous ACCC authorisation would be expected to continue if a new authorisation were denied or if joint marketing in the interim period were found to be in breach of the TPA. However we also understand that particular provisions subject to adjustment over time may be at risk by any such findings.

<sup>12</sup> Concept Economics, 2008, *Marketing of natural gas in the Western Australian domestic gas market*, pp. 4-5 (Annexure 2 of Allens Arthur Robinson, 2009, *Submission to the Australian Competition and Consumer Commission in support of application for interim and final authorization – Gorgon gas project*, 20 May.)

<sup>13</sup> Resource Investment Strategy Consultants (RISC), 2007, *Update of competitive conditions in the Western Australian gas market*, Report for Freehills & NWSJV, July, pp. 10-11, 20.

<sup>14</sup> Wood Mackenzie, 2009, *Western Australia Gas Market Study*, Final Report, 30 November 2009, p. 31.

45. In addition to these projects the ACCC has identified a number of other projects that could be supplying domestic gas both before and beyond these timeframes.<sup>15</sup>
46. The timing of supply from the Gorgon Project in particular is likely to have an important bearing on the quantity and price of domestic gas sold by the NWS Project JV participants. Indeed the Gorgon Project participants have already been granted authorisation from the ACCC to enable them to commence joint marketing of this project's domestic gas to WA customers (following earlier interim authorisation granted in June 2009).<sup>16</sup> For this reason, the Gorgon Project might be expected to have an even more immediate competitive effect on the domestic gas market as the participants in that project seek to secure customer contracts for when the gas is ready to come on-stream.

### 2.3 The nature of joint marketing of domestic gas

47. We are advised that the NWS Project participants have always jointly marketed all their domestic gas entitlements and have never marketed these separately. Further, the vast majority of domestic gas is sold by the JV participants under long term contracts negotiated with large buyers.
48. We understand that in collectively negotiating such contracts the JV participants collectively agree on all of the terms and conditions including price. However each JV participant separately enters into a contract with respect to its share of the delivered gas (under the common terms and conditions), which are then consolidated into a single document. The gas supplied under the aggregate of the individual contracts is delivered by the NWS Project operator as a single, common stream of gas. It is understood that most of this domestic gas (in combination with some LPG for domestic use) is presently delivered via the Dampier to Bunbury Natural Gas Pipeline (DBNGP).

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<sup>15</sup> ACCC, 2009, *Determination on applications for authorisation in respect of joint marketing and sale of gas from the Gorgon Gas Project for supply in Western Australia*, 5 November, p. 16.

<sup>16</sup> *Ibid.*

## 2.4 The supply of domestic gas under the joint venture

### 2.4.1 The cost of supplying domestic gas

49. The opportunity cost of any particular decision will depend on the particular decision that is made and the constraints that confront the maker of that decision. The opportunity cost of entering into a contract to supply domestic gas will depend on the size of that contract and on whether or not entering into the contract will leave any excess capacity in the Domgas plant.
50. As we noted above, the onshore facilities of the NWS Project consist of “common” property that provides for initial processing of gas that then passes through the LNG or the domestic gas facilities. Because offshore gas can be used for LNG or domestic gas, any decision to sell more of one of these products will lessen the amount of the other that can be supplied. In particular, a decision to sell more domestic gas will lessen the amount of LNG that can be supplied at some time in the future. If entering into the contemplated contract leaves the Domgas Plant with excess capacity, the opportunity cost to the JV participants of supplying more domestic gas is the present value of revenue forgone by not being able to sell as much LNG in the future.
51. At present, the five LNG trains are running at full capacity. This is required by current contracts until at least 2013. During the period 2013 to 2023, we have assumed there will be sufficient offshore gas to continue the trains operating at full capacity. The investment in the trains was undertaken on this assumption.
52. We are informed by the JV participants that it is very unlikely that there will be any expansion of on-shore LNG capacity. Investment is very lumpy – any expansion of capacity would require the building of one extra new train at a capital cost of around \$5 billion.<sup>17</sup> This could not be justified on the basis of current reserves.
53. If entering into a new domestic gas contract left the Domgas Plant with excess capacity, the opportunity cost of entering into that contract would be merely the revenue forgone by not selling it as LNG. For illustrative purposes, if we assume that the current LNG price of around \$8 per GJ<sup>18</sup> is the best estimate of the expected LNG price in 2024 and apply a real rate of

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<sup>17</sup> This is an indicative estimate of today’s cost and would depend on the size of the train and other factors.

<sup>18</sup> Figure from Australian Energy Regulator, *State of the Energy Market*, 2008, p 245, Figure 8.13.



discount of 8 per cent, that opportunity cost would be \$2.52 per GJ.<sup>19</sup> However, the price that would be achieved in 2024 is highly uncertain. If one compares entering into a contract to sell domestic gas at a certain price now with the uncertain revenue to be got from converting the offshore gas to LNG and selling it in 2024, the opportunity cost of processing and selling domestic gas today would be significantly less than \$2.52 per GJ.<sup>20</sup>

54. This illustrative calculation assumes that the contract would leave the Domgas Plant with some excess capacity. As can be seen from the stack of contracts in Appendix A, this would only be true at present for very small contracts of limited duration. This means that entering into any long-term contract to supply a significant quantity of gas may well foreclose the option of selling gas to another potential buyer. In that case, the opportunity cost of selling now may be the cost of losing that option.
55. The overwhelming majority (around 95 per cent) of domestic gas is by means of long-term contracts to large customers in Western Australia.<sup>21</sup> Indeed, the five largest customers for domestic gas supplied by the JV participants currently account for 94 per cent of contracted gas.<sup>22</sup> Although the opportunity cost of supply will vary with the size of the contract and whether it would leave the Domgas Plant with excess capacity, the JV participants have a strong incentive to enter into any contract with a downstream project that would be viable if it paid a price for the gas that at least covered the opportunity cost incurred by the JV participants.
56. Each contract is individually negotiated with prices and other terms negotiated between the IPGJV and the downstream project. Standard economics would lead one to expect that any downstream project that was viable with a price for domestic gas above the opportunity cost of supply would be able to enter into a contract for supply by the IPGJV at a price that would ensure the downstream project was viable.

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<sup>19</sup> These prices are all in 2009 dollars.

<sup>20</sup> These numbers should not be interpreted as representing the actual prices faced by, and profitability of, the Domgas Plant. We note also that the example ignores the loss (of around 15 per cent) of gas when it is converted into LNG. It also ignores the costs and benefits of the LPG and liquids that are extracted along with the natural gas. If these flows are also taken into account, the financial incentive to extract gas now increases – and makes the entering into sales of domestic gas even more attractive.

<sup>21</sup> Gorgon Participants, 2009, *Submission to the ACCC in response to third party submissions regarding the application for final authorisation*, 31 July, p. 6.

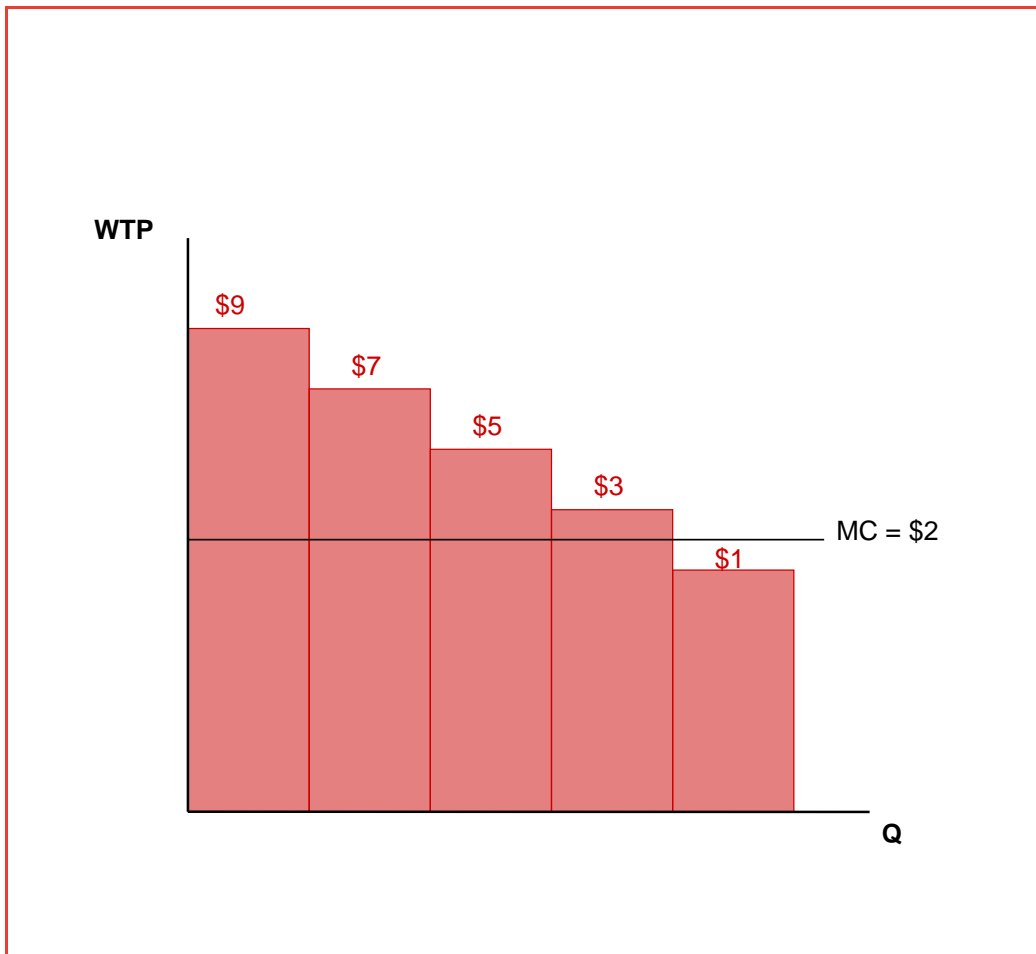
<sup>22</sup> Based on NWSG daily supply quantities for November 2009.



## 2.4.2 Will economically-efficient investment in downstream projects be deterred by the price of gas?

57. There are two principal dimensions to the supply of domestic gas that bear on economic efficiency. These are:
  - a. no economically efficient downstream investment project should be deterred because the price of domestic gas is too high; and
  - b. once the downstream investment project has been undertaken, it should be confronted with a unit price of gas that reflects the marginal cost of supply so that the downstream project uses gas at the economically-efficient rate.
58. Economic theory would lead one to expect that negotiations between any downstream project and the IPGJV would lead to economic efficiency of both of these kinds.
59. In the first place, no economically-efficient downstream project will be deterred by a price for gas being too high. The IPGJV will maximise its profits by supplying each downstream project that is expected to yield revenue in excess of the opportunity cost to the IPGJV of supplying gas. That is, so long as the downstream project was expected to yield a surplus over the opportunity cost of production, the two parties would be able to agree on terms of supply that divided the surplus between the parties.
60. This reasoning leaves some discretion as to the prices at which supply might be forthcoming. The normal assumption is that price arrived at in a two party negotiation will divide the surplus arising from the transaction equally between the parties – assuming that they are equal in their bargaining power. This is illustrated in Box 1 below.

## Box 1: Individual negotiations



61. Suppose that the marginal cost of supply is \$2 per GJ – and that this is the opportunity cost of supply because there is excess capacity in the Domgas Plant. Downstream projects are arrayed from those with the highest willingness to pay (WTP) at the left to those with the lowest WTP at the right. The far right downstream project has a WTP for gas below the marginal cost of supply; it will not be supplied; and it would be economically inefficient for it to be supplied. Each of the other downstream projects will be supplied.
62. The price for the first downstream project will be somewhere between \$9 per GJ and \$2 per GJ. If the parties have equal bargaining power, one might predict a price half way between these two - \$5.50. Similarly, the prices for the other downstream projects might be \$4.50, \$3.50 and \$2.50.
63. This simple example illustrates a standard prediction from the literature of the economics of negotiations: that if a single seller and a single buyer are free to negotiate the price at which they agree to co-operate to enter into a

## Competition under joint marketing

contract that generates value, they will generally be able to agree on a price and the contract will proceed.

64. Because the JV participants are free to negotiate prices that are specific to individual downstream investment projects, one would expect all that no downstream, economically-efficient downstream investment project would be deterred because the price of gas was too high.

### **2.4.3 Will the price of extra units of gas deter the use of economically-efficient units of gas?**

65. The discussion of the numerical example in the preceding section suggested that the gas used by any downstream investment project would be purchased at a standard price per unit. We understand that this is not true of domestic gas from the NWS.
66. Furthermore, it may not be economically-efficient for gas to be sold this way. Once a downstream investment project has been commenced, the downstream project will use gas at an economically efficient rate if it uses every unit of gas for which the WTP of the buyer exceeds the opportunity cost of the supplier. This will occur if the user is confronted with a unit price of gas that reflects the marginal cost of supply so that the downstream project uses gas at the economically-efficient rate.
67. As we noted above, the marginal cost of supplying extra units of gas may be significantly less than the average prices that are agreed in individual contracts. These contracts can still produce an economically-efficient rate of utilisation of gas – providing the NWS Project participants charge a price for incremental units of gas that is close to the social opportunity cost of supplying those incremental units.
68. One form of contract that can produce this result is a take-or-pay contract. This can combine a lump-sum amount that is attractive to the seller with a very low charge for incremental units – at least up to the take-or-pay quantity.
69. Economic theory predicts that individual negotiations between a buyer and seller would lead to an outcome approximating this result: it would be in the interests of both parties to maximise the surplus produced by the downstream project. This would be achieved if the contract took the form of a lump-sum payment (in the form of a take-or-pay quantity) and a price for incremental units that reflected the marginal opportunity of supply by the IPGJV.
70. Frontier Economics asked Freehills and NWS Project participants for some details of the structure of contracts. We were informed that the largest contracts are fixed-price, take-or-pay contracts. In general, these contracts allow for a lower take-off of gas in any particular period and for the deficit to

be made up at a later period. In general, these contracts do not provide for any take-off in excess of the contracted take-or-pay quantity. For these contracts, the cost to the purchaser of using incremental quantities of gas is zero up to the take-or-pay quantity.

71. The effect of these take-or-pay contracts is that the cost borne by purchasers for incremental amounts (at least up to the contracted amount) is likely to be very low; and that this means it will not depart greatly from the social cost of providing those incremental units.
72. That is, downstream projects are likely to negotiate contracts to purchase domestic gas that both allow economically-efficient downstream projects to proceed and give the downstream projects incentives to utilise gas at an economically efficient rate.

## 2.5 The prices of domestic gas under the joint venture

73. In section 2.1 above, we stated that any assessment of the impact of an arrangement on competition should consider the effect of that arrangement on economic efficiency. For the reasons given in the preceding section, we have formed the opinion that the joint marketing of domestic gas from the NWS Project is unlikely to give rise to any inefficiency. Indeed, the incentives facing both potential buyers and potential suppliers of gas are such as to lead to economically efficient contracts to supply domestic gas.
74. As we noted above, the willingness of the IPGJV to sell domestic gas will depend on the other options available to JV participants: the other option for JV participants is likely to be leaving gas under the sea and selling it in the form of LNG in 2024 or later. In a similar way, the willingness of potential downstream projects to pay (WTP) for domestic gas will be influenced by the other options available to them. These are likely to take three forms. In the first place, the downstream projects could move offshore. Their ability to do this will depend on the nature of the project.
75. The second option is to acquire gas from an existing supplier. There are presently a number of suppliers of gas to the WA domestic market. Of these the NWS Project accounts for 67 per cent of sales, but other suppliers include Apache (18 per cent of sales), Santos (10 per cent), Origin (1 per cent), AWE (1 per cent) and others (3 per cent).<sup>23</sup>

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<sup>23</sup> Wood Mackenzie, 2009, *Western Australia Gas Market Study*, Final Report, 30 November 2009, p. 21.

76. The third alternative source of domestic gas is supply by the fields that are in the process of development. As we noted in section 2.2.4 above, the Gorgon project is likely to be supplying domestic gas around 2016 and the Pluto project sometime thereafter. Supply from these fields would require either that the downstream development wait until 2016 or that it enter into a supply contract now for supply from 2016 and obtain supply in the interim from the NWS or other supplier. The availability of each of these alternative sources of supply will increase the bargaining power of potential developments in negotiating with the IPGJV.
77. Although these outside options will influence the WTP of the downstream projects – and, thus, the prices they are likely to have to pay for gas supplied by the IPGJV, the prices will be negotiated as one-on-one bargains. This means that the quantities supplied are likely to be economically efficient. The availability of increased outside options for downstream projects will merely decrease their WTP (and thus the price) of gas supplied by the IPGJV.

### **3 Comparison of competition in supply of domestic gas with and without joint marketing**

78. Section 2 of this report attempted to show how competition in the supply of domestic gas was likely to operate in the future if joint marketing by the JV participants is to be retained. In this section we analyse how these patterns of competition would be likely to change if joint marketing were to be abandoned. This section then serves as an analysis of the effects of joint marketing. It compares the factual scenario (whereby the current joint marketing arrangements continue in the future) with the counterfactual scenario (whereby the current joint marketing arrangements are abandoned).
79. In section 2, we analysed the factors that were likely to influence future negotiations between the JV participants marketing jointly and potential new purchasers of domestic gas. In this section, we return to these factors and analyse how they are likely to be affected by the abandonment of joint marketing.

#### **3.1 The present domestic gas contracts will continue**

80. Section 2.2.3 above presented information about the current contractual obligations of the NWS producers to sell domestic gas. That section showed that current Domgas commitments fall just under the firm capacity of the plant, but that there will be scope for major new contracts to be entered into after 2013 when a large existing contract will expire.

#### **3.2 LNG trains will continue at full capacity**

81. If joint marketing were to continue, the opportunity cost of entering into new contracts to supply domestic gas would be the discounted price of LNG that would be sold at some time around 2023 when the onshore deliverability will fall below the capacity of the LNG plant. Between now and 2023, it is highly unlikely that the current capacity of the LNG plant (5 trains producing 16 mtpa) will be increased.

### 3.3 Will abandonment of joint marketing cause a change in opportunity cost of supply?

82. For the reasons given above, the abandonment of joint marketing would be unlikely to affect the discounted price of LNG sold upon the exhaustion of NWS reserves. However, other aspects of separate marketing may well affect the opportunity cost of supply of the JV participants.
83. Joint marketing lowers the supply costs of the individual sellers. Here we focus on the supply costs associated with the marketing of gas, as opposed to those supply cost advantages that are derived from joint production.<sup>24</sup>
84. In the absence of coordination of supply via joint marketing there would need to be additional mechanisms utilised to enable individual participants to combine joint production with individual contractual commitments. There is a range of means by which this could be achieved. These include (alternatively or in combination):
- a. gas balancing arrangements with other participants;
  - b. access to and use of a robust spot market for domestic gas; and/or
  - c. the use of storage facilities to offset gas shortfalls or surpluses in supply requirements.
85. The avoidance or reduced reliance on these arrangements where they impose higher costs on market participants is therefore a key benefit of joint marketing.
86. We are advised that the cost of major storage facilities is very expensive and would add substantially to the costs of domestic gas. Incurring this cost would increase the opportunity cost of supply of domestic gas by the JV participants. This would decrease the efficiency of production and increase the prices of new domestic gas contracts.
87. In relation to reliance on gas balancing arrangements, there is first the possibility of negative production externalities from separate marketing to overcome. This is particularly the case where the contract commitments of individual project participants start to push up against the capacity of the plant. To illustrate suppose 30 per cent of capacity is uncontracted supply at time t. Suppose now that JV participant A signs a 10 year contract with a

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<sup>24</sup> We note that since the production of domgas occurs jointly, the JV participants have identical production costs; so there cannot be a social benefit in shifting production from one producer to another as is usually the case in competition.

customer that takes up 20 per cent of capacity, thus raising the commitments to 90 per cent. Then participant B, who was secretly negotiating with buyer B to sign 15 per cent of capacity at time  $t+1$ , would be unable to meet this commitment.

88. Thus, under separate marketing each contract imposes a production externality on the other JV participants that usually does not exist when separate firms each own their individual production capacity. Joint marketing avoids these problems by internalising any potential effects, by pooling information about up-coming opportunities (rather than having to operate with secrecy).
89. While the production externality problem might be dealt with by negotiation, this can be costly. It is claimed that gas balancing arrangements can lead to significant dispute among the gas producing venturers.<sup>25</sup> Indeed, these problems have been borne out with the separate marketing of gas from the Pohokura gas field in New Zealand. It is reported that three years after gas was due to be produced (in mid 2006) the Pohokura venturers have not been able to agree on gas balancing arrangements, including being subject to outstanding litigation between the parties.<sup>26</sup>
90. In relation to the use of the spot market as a means of balancing gas commitments under separate marketing, we understand that the spot market for gas in WA is highly undeveloped compared to other jurisdictions. The Gorgon participants assumed, consistent with the estimates of the DGJV, that around 5 per cent of the WA gas market is composed of short-term gas sales compared to 90 per cent in the UK and US markets.<sup>27</sup> This points to a likely relatively low level of liquidity in the WA spot market that would be expected to generate a higher degree of risk in placing reliance on this market as a means of addressing gas shortfalls or surpluses by individual JV participants in supplying the contract market.
91. We note that the ACCC in its Authorisation for joint marketing for the Gorgon Gas Project acknowledges a lack of storage facilities and absence of robust spot and secondary market for domgas, that in turn limit the practicality of introducing gas balancing arrangements in the WA gas market.<sup>28</sup> It also has acknowledged that “the Pohokura experience reinforces

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<sup>25</sup> J. D. Dinnage, 1998, “Joint Activities Among Gas Producers: The Competition Man Cometh” in *Journal of Energy and Natural Resources Law*, Vol. 16, No. 3, p. 258.

<sup>26</sup> Letter from Allens Arthur Robinson to ACCC on behalf of the Gorgon Gas Project Participants, 24 August 2009, pp. 3-4.

<sup>27</sup> Gorgon Participants, *Op. cit.* p. 6.

<sup>28</sup> ACCC, 2009, *Op cit.*, pp. 33-34, 40.



the greater risks involved in seeking to separately market gas in an immature market”.<sup>29</sup>

92. In addition to the increased costs of co-ordinating the production and the marketing functions by the use of the mechanisms outlined above, there are likely to be increased problems of incentives relating to incremental investment. For example, if a participant can exhaust its allocation of gas for domestic supply, it would no longer be interested in contributing to maintenance and ongoing investments in the Domgas infrastructure, as it has effectively become an LNG-only producer. Since the production and investment decisions would probably still have to be made jointly, this would introduce divergent incentives among JV participants.
93. A somewhat similar issue would arise if there were a shortage of infrastructure to get gas to market (for example the pipeline is capacity constrained). If any one of the JV participants were unable to secure access to this infrastructure to sell its share of the gas it might use its veto rights over joint production to withhold the flow of gas supplies to other JV participants.<sup>30</sup>
94. For the reasons given in this section, it is likely that the abandonment of joint marketing would increase the opportunity costs of supply of domestic gas. This will tend to increase the prices and decrease the quantities of domestic gas that will be supplied to any new downstream projects that may seek to negotiate supply arrangements separately with JV participants.

### 3.4 Will abandonment of joint marketing affect transactions costs?

95. Under separate marketing it is likely that large customers will have to negotiate, manage and coordinate multiple supply agreements. They can also be expected to face reduced certainty of supply due to potential bargaining difficulties among suppliers as outlined above, giving rise to higher contract risk and the possibility of factoring in additional contingency costs. We note that the absence of any significant spot market for the sale of domestic gas in WA also limits the options available for gas customers to secure gas supplies to avoid or minimise these types of contracting costs.<sup>31</sup>

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<sup>29</sup> *Ibid*, p. 44.

<sup>30</sup> Dinnage, *Op. cit.*, p. 257.

<sup>31</sup> Further, spot domgas prices in the WA market have in recent years been substantially above contract gas prices. AER, *Op. cit.*, p. 245, Figure 8.13.

96. We expect that transaction costs will increase as a result of the abandonment of joint marketing. These may militate against the signing of what would otherwise be value-creating contracts. That is, an arrangement that increases transactions cost will tend to decrease production of domestic gas and reduce economic efficiency. For example, in making a decision about whether to expand capacity of the pipeline the pipeline operator will no longer have access to a single entity from which it can source information on supply and customer demands and undertake the requisite negotiations. In dealing with multiple parties it is likely to face greater uncertainty for the purposes of underwriting an expansion in capacity than previously and face the attendant complications and risks in managing gas supplies individually that have been outlined in section 3.3.

### **3.5 Will abandonment of joint marketing cause WTP to change?**

97. Although the abandonment of joint marketing is likely to increase the opportunity cost of supply of domestic gas, it may also decrease the WTP for gas from any single source of supply. The reason for this is that the abandonment of joint marketing will increase the number of alternative sources of supply that would be available for any potential purchaser.
98. As we noted in section 2.5, the availability of alternative sources of supply will decrease the WTP of a prospective purchaser for supply from a particular supplier. The availability of extra alternative sources of supply will decrease the WTP of a prospective purchaser and decrease the price that it will have to pay.
99. Even if the abandonment of joint negotiations might have some effect on the WTP for gas from a particular supplier (or group of suppliers) the net effect of the abandonment of joint negotiations on price will have to take account the effects on (i) the opportunity cost of supply; (ii) WTP; and (iii) the costs of negotiating and enforcing contracts. It may be that the net effect of these changes is to reduce prices; but prices will only be reduced on those contracts that are renewed. Other efficient contracts may not be renewed because of the increases in transactions costs.

## 4 The benefits and detriments of joint compared to individual marketing of Domgas

100. Section 2 of this report analysed the likely outcomes of future negotiations on quantities and prices of domestic gas supplied by the NWS suppliers if the joint marketing arrangements were to continue. Section 3 asked how future negotiations were likely to be affected if the joint marketing arrangements were abandoned. This final section of the report uses a comparison of the analyses in sections 2 and 3 to draw three general lessons about the overall benefits and detriments to the public arising from the joint marketing arrangements.

### ***Lesson 1: Any change in arrangements will affect only incremental contracts***

101. The first general lesson that follows from the analysis of sections 2 and 3 above is that the abandonment of joint marketing will not affect the contracts currently in place. Only incremental contracts will be affected.

102. These incremental contracts amount to only approximately 5 to 10 percent of firm plant capacity for the next several years, but increasing to around 25 percent of capacity after 2013 (and even further in years thereafter).

### ***Lesson 2: Joint marketing promotes economic efficiency***

103. The second lesson that can be drawn from the analysis in sections 2 and 3 is that joint marketing unambiguously promotes economic efficiency.

104. The individual negotiation of large contracts with flexible pricing arrangements means that contracts can be expected to be struck that:

- a. allow all efficient downstream projects to proceed; and
- b. create incentives for an efficient rate of utilisation of gas in those downstream projects.

105. The abandonment of joint marketing is likely to affect negotiations in two ways:

- a. it will increase costs of supply; and
- b. it will increase transactions costs – the costs of negotiating and enforcing contracts.

106. These increased costs may well reduce the quantity of domestic gas that is produced and supplied.

107. In contrast to these ways in which the abandonment of joint marketing is likely to decrease supply and decrease economic efficiency, we can see no ways in which the abandonment of joint marketing is likely to promote supply and promote economic efficiency. We are left to conclude that joint marketing unambiguously promotes economic efficiency.

### **Lesson 3: The effect of joint marketing on prices is ambiguous**

108. Prices are negotiated separately with each user. The abandonment of joint marketing is likely to reduce supply and reduce economic efficiency. However, the contracts that continue to be renewed may be renewed at prices that are lower than would be the case under joint marketing. The prices that are arrived at will depend on the willingness to sell of the seller and the willingness to pay of the buyer.

109. The abandonment of joint marketing is likely to increase the opportunity cost of supply. This increase in the price at which producers are willing to sell is likely, taken by itself, to increase negotiated prices.

110. The abandonment of joint marketing is likely to decrease the willingness to pay for supply from any particular supplier – because the number of alternative suppliers will have increased. This decrease in willingness to pay is likely, taken by itself, to decrease negotiated prices.

111. The net effect of the likely increase in the price at which producers are willing to sell and decrease in willingness to pay for supply for any particular supplier is ambiguous. There are two offsetting effects on contracts that would be renegotiated after the abandonment of joint marketing are difficult to quantify. It is impossible to predict the effect on prices of these contracts with any confidence.

112. While the ACCC reached a similar conclusion in respect to its Authorisation of joint marketing for the Gorgon Gas Project, it also stated, however, that it did not consider that joint marketing would be likely to result in significant public detriment in the form of higher prices.<sup>32</sup>

### **Conclusion: effect on competition and the net benefit to the public**

113. We conclude that the arrangements for the joint marketing of domestic gas produced by the NWS Project cannot be said to lessen competition. We do this because the future of the WA gas market with the arrangements is likely to be more economically efficient than without them; and the effect of the arrangements on the prices of domestic gas negotiated in the future is impossible to predict. Due to the positive impact of the arrangements on

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<sup>32</sup> ACCC, 2009, *Op. cit.* p 72

efficiency and competition, we also conclude that the overall net benefit to the public of the arrangements is likely to be positive.

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