

# EXECUTIVE SUMMARY [LECG SUBMISSION ON BEHALF OF DUKE]

## Introduction

### *Promoting free and fair trade*

The attached report responds to the National Competition Council's (NCC) 8 May 2000 draft recommendation for coverage or regulation of Duke Energy International's (DEI) Eastern Gas Pipeline (EGP) under the *National Third Party Access Code for Natural Gas Pipelines* (the Code). This report considers the criteria contained in the Code and provides DEI's perspective on their applicability to the EGP and the question of coverage before the National Competition Council (NCC) and the Senator the Honourable Nick Minchin, Minister for Science, Resources and Industry.

The Code has its legislative foundations in the February 1994 COAG (Council of Australian Governments) agreement to general principles of competition policy reform, and more specifically, to proposals for the development of "free and fair trade" in natural gas.

The public policy rationale for competition reform is to develop competitive markets to enhance the social welfare of Australians. At its core, competition reform is aimed at creating institutional structures that increasingly rely on decentralised competitive forces rather than centralised administered decision-making to deliver socially beneficial outcomes.

This policy rationale is also true for the Code which seeks to develop a competitive national market in natural gas and to ensure that access to gas pipelines is provided on fair and reasonable conditions. The achievement of these goals through regulation is only necessary where there is a lack of competition.

### *Robust competition will exist with the development of the EGP*

The development of the EGP by DEI realises these competition policy goals by promoting, for the first time, competitive markets and competitive tensions between basins and pipelines across South Eastern Australia.

The competition stimulated by the EGP will continue well into the foreseeable future as there will be substantial excess capacity relative to demand in South Eastern Australian markets. In addition, because the EGP itself will have significant excess capacity it needs to grow the gas market in order to achieve a return on investment. DEI therefore has strong incentives to compete for market share. This issue is crucial to the consideration of the coverage decision.

Moreover, the Code is predicated on the basis that a pipeline owner has incentives to restrict access. This is not the case with the EGP. Regardless of the regulatory environment an open access policy will apply to the EGP.

***Therefore, the relevant question facing the NCC and the Minister is whether market outcomes and national welfare will be better served under the Code or via robust competition?***

## Uncertainty

Public policy-making inevitably involves a choice between imperfect worlds in which decisions have to be made at a point where actual outcomes remain uncertain. In this regard, the NCC has to choose between regulating EGP or not by determining whether it will be covered by the Code. The NCC accepts that, in both cases, the outcomes are uncertain. This report investigates how best to reduce that uncertainty and, as a consequence, how to arrive at a decision that is more likely to enhance social welfare by examining both:

- how to interpret and analyse the law and facts relevant to the case; and
- the detailed facts and economic analysis relevant to the criteria set out in the Natural Gas Pipelines Law and the Code and used to determine whether coverage should be applied or not..

## Statement of criteria

The NCC must, under the Code, recommend to the Minister that a pipeline should be covered if the four criteria are ***all*** satisfied, but cannot, to any extent, recommend coverage if it concludes that one or more of those criteria have not been satisfied. The criteria are:

- (a) Access or increased access under the terms of the Code to services provided by means of the pipeline would promote competition in at least one market other than the market for the services provided by means of the pipeline;
- (b) It would be uneconomic for anyone to develop another pipeline to provide the services provided by means of the pipeline;
- (c) Access or increased access under the Code could be provided without undue risk to human health or safety; and
- (d) Access or increased access under the Code would not be contrary to the public interest.

This report highlights:

- The high likelihood that criteria (a) and (b) do not hold;
- That there is considerable uncertainty about whether there is a problem in this case that needs to be addressed by NCC;
- The amount of work yet to be undertaken by NCC to clarify this issue beyond reasonable doubt;
- The large potential consequences of a wrong recommendation;
- The probability that a much better recommendation can be made at some later stage; and
- That the public good can be maximised by not recommending coverage now, and instead for the NCC to “wait and see” how the market develops.

## Uncertainty and the law

Why is the law so tightly restrictive? Essentially, because a wrong recommendation to the Minister by the NCC may impose very large potential costs on firms, industries, and the public. This report begins by establishing the legal and economic reasons for the strictness of the law.

The report addresses the questions: What initial presumption should exist as to coverage or no-coverage? Who should bear the burden of proof? What standard of proof is appropriate, and how should that standard be applied? It concludes:

- (a) The NCC should begin by presuming no-coverage. This is the assumption most consistent with the law's requirement that the NCC cannot make any recommendation if only **one** of the criteria holds.
- (b) The burden of proof should be on the NCC to show that each condition holds separately. The NCC, as the party making the inquiry and the recommendation, bears few of the potential costs of its recommendations. It therefore stands in need of incentives to ensure that it will make the right recommendation.
- (c) The standard of proof required of the NCC has to be kept high, to create incentives for better decision-making and to minimise the costs of regulation. There are four criteria, all of which must be satisfied. To deliver at least 50% probability across all four criteria, the standard of proof required for each single criterion is much greater than 50%. Under the simplest assumptions, it is in fact 84% ( $84\% \times 84\% \times 84\% \times 84\% = 50\%$ ). A standard best described by analogy as satisfaction "beyond any reasonable doubt".<sup>1 2</sup>

To meet that high evidentiary threshold, the NCC must take time over its recommendations. It must punctiliously ensure it has and uses all the information that may be of value.

## Economic costs of regulation under the Code

Any incorrect recommendation by the NCC gives rise to several different types of direct costs. All those costs have to be factored into the NCC recommendations and the evidentiary rules that surround them. An incorrect recommendation will impose costs on Government, Ministers, the legal system and State treasuries. It will have profound effects on industry behaviour and will put at risk future investment in natural gas pipelines and other infrastructure and is likely to create large economic inefficiencies.

---

<sup>1</sup> The simplest assumption is of equal and independent probabilities. If the NCC is more than 84% sure of the satisfaction of one criterion, such as (c), the probabilities required for the other three criteria will be about 80%.

<sup>2</sup> The test of whether the NCC is satisfied with the criteria is not merely one of whether on balance coverage is desirable or convenient, the test is whether coverage is essential and the NCC must be satisfied that coverage is essential in terms of each of the criteria 'clearly, access to the facility should be essential, rather than merely convenient'. (National Competition Policy; Report by the Independent Committee of Inquiry, August 1993 (Hilmer Report) page 251)

As the “gatekeeper” of the Code, the NCC is at risk of making an incorrect recommendation in this case. Its draft recommendation has not provided proof beyond reasonable doubt. It did not identify the economic theory relevant to the case on each criterion, or ensure that the most relevant facts were all systematically examined. Therefore, the risk of error is high.

### **Management of uncertainty**

If the structure of the NCC’s task is examined, it becomes clear that:

- The pipeline services market may be, in varying degree, competitive or collusive.
- The NCC can recommend coverage or no-coverage, and it can also reverse its recommendation at some later date.
- If the market is not regulated, and a firm exercises market power, the NCC’s error is self-correcting — new information emerges, and the NCC can impose regulation when necessary.
- If NCC recommends coverage, but errs in doing so, no information will emerge about the way firms would behave without regulation. The error is not self-correcting.
- Where outcomes are uncertain, a recommendation that is self-correcting deserves to be valued more highly than a decision that will not correct itself.

The key issues for the NCC to consider are:

- What is the probability that the market will prove, competitive, not collusive?
- What are the costs and benefits of regulating a market when it is competitive *and* when it is collusive?
- Would it be better, in fact, to wait and see what actually happens before acting, because regulating now may prevent better information from emerging later?

At the heart of the matter, the NCC has to examine the balance of costs and benefits involved in a trade-off.

Failure to regulate a market that later proves to be collusive involves a short-term cost to society until that incorrect decision is rectified. By contrast, when a market that would have proved to be competitive is unnecessarily regulated, new information does not emerge to correct that erroneous recommendation, and an enduring cost is imposed on society.

Faced with uncertainty in an imperfect world, it is the responsibility of the NCC to tackle those probabilities head on, using the best available techniques and information, then deciding in favour of the option most likely, on balance, to do the least harm.

## **Criteria (a) and (b): market power, natural monopoly**

This report sets out the systematic steps that NCC should take to reach valid conclusions. After applying the recommended method, the report concludes that criteria (a) and (b) do not hold on any part of the pipeline.

On criterion (a), this paper analyses and establishes the technical conditions that have to exist in relation to derived demand for the services for a pipeline to enable the pipeline to affect other markets. It demonstrates grounds for serious doubt about the existence of those conditions in this case. It concludes that no basis can be established to the standard of proof required by the law that DEI would be capable of exercising significant market power to adversely affect other markets.

The key facts in relation to criterion (a) are:

- DEI's Eastern Gas Pipeline faces competition in the Sydney and ACT markets from EAPL's Moomba to Sydney pipeline;
- both EGP and EAPL have excess capacity which will be continue to be available, with no new investment until at least 2005;
- EGP's independence from production and distribution;
- the potential entry of new pipelines (e.g. the proposed PNG-Brisbane pipeline being extended to Sydney);
- the existence of the Interconnect pipeline from Victoria;
- the ability of gas producers to delay production or divert to other markets (e.g. Victoria and Tasmania) or use the Interconnect (at expanded capacity) to deliver to Sydney; and
- the ability of gas users to switch to electricity over the short- and medium-term.

Together, these factors must place a strong constraint on EGP for any attempt to exercise market power.

In its draft recommendation, NCC's focus in criterion (b) was on an assertion that EGP was a natural monopoly. The NCC further presumed that only regulation can hold prices at or near competitive market levels and prevent the entry into the market of an additional inefficient pipeline operator.

However, the NCC's logic is fallacious. It is not so straightforward. NCC failed to address incentive issues. Investors have little incentive to replicate the costs of even inefficient natural monopolies. These incentives need to be assessed. Regulating to prevent an unlikely occurrence merely imposes deadweight losses. Where private incentives are aligned to social efficiency, public intervention requires careful attention. This is the case here. There are only weak incentives for anyone to incur the high costs required to duplicate DEI's pipeline and DEI has very strong incentives to contain its prices at a level that deters entry.

The NCC also fails to examine other relevant facts. Natural monopoly is not the only relevant fact in assessing inefficiency under criterion (b). The economics of the respective competing basins and the ability of the basins combined with their pipeline transport services to service the final market in full in the future are also relevant.

The NCC did not identify the methodology or the facts necessary to assess the likelihood that criterion (b) is likely to hold, nor did it address the social costs and benefits that would ensue to the required standard of proof. The evidence relied upon by the NCC is ambiguous at best and may well, on the its own admission, weaken its case.

- On criterion (b), the key facts are:
  - EGP is not able to serve the whole Sydney/ACT market;
  - EGP and the gas producers in the Gippsland Basin in this context face stiff competition; and
  - private incentives for anyone to develop a new pipeline are low.

In what follows we consider these arguments on (a) and (b) in more detail in relation to the two services distinguished by the NCC.

#### *Services from Longford to Sydney/ACT – criterion (a)*

Particular problems exist for the NCC. The pipeline is not in operation. No one can, at this stage, determine *a priori* whether DEI will behave competitively or otherwise. It is, however, clear that the Sydney market will drive DEI's competitive behaviour:

#### Disciplines against unilateral market power by DEI

DEI, an independent pipeline owner, has no interest in gas production or distribution. As the *Report by the Independent Committee of Inquiry into National Competition Policy* (the Hilmer Report) observes, “where the owner of the facility is not competing in upstream or downstream markets, the owner of the facility will usually have little incentive to deny access, for *maximising competition* in vertically related markets maximises its own profits”<sup>3</sup>.

The pipeline will have substantial excess capacity. High fixed costs further drive DEI to price competitively, grow the market and improve utilisation. DEI will be disciplined in this by EAPL.

Gas producers also have an option to send gas to Sydney through the Interconnect via the Victorian transmission system and the EAPL pipeline. The Interconnect is price competitive. DEI presently uses it to transport gas from Longford to Sydney. It costs between \$0.80/GJ to \$0.85/GJ at a 100% load factor, compared with the price of \$0.86/GJ set out in DEI's Undertaking for transport from Longford to Sydney via the EGP.

---

<sup>3</sup> See Hilmer Report, August 1993 page 240; Areeda P & Hovencamp H, *Antitrust Law* (1990 Supp) at 779-780.

Doing virtual swaps of gas using backhaul increases the possible flow from Longford to Sydney using the Interconnect to 27.2 TJ/day, or 9.93 PJ/year. Prospective new investment can lift the Interconnect's northbound capacity to 80 TJ/day (29.2 PJ/year). With swaps, that rises further to 100 TJ/day, or 36 PJ/year.

The NCC has noted that peak day deliveries by EAPL in 1998 totalled about 94% of capacity, but this view was based on a misunderstanding. Peak deliveries on pipelines normally exceed steady state capacity because gas can be derived from linepack to meet peaks.

DEI is also disciplined by the ability of gas producers to resist exploitation without loss of value to themselves by leaving gas in the ground.

DEI's pricing is further disciplined by the price at which potential competitors such as the proposed PNG project could deliver to Sydney. A PNG-Brisbane pipeline is planned to come on line in 2005, with a delivered base price of \$2.50/GJ in Brisbane. A Brisbane-Sydney transport cost of less than \$0.70/GJ would deliver PNG gas to Sydney at competitive market prices.

The Sydney pipeline services market is therefore contestable, with EAPL and the Interconnect as existing players, and PNG, Timor Sea and Queensland as potential future players. The NCC acknowledged this in its draft report, but did not analyse the competitive tensions that these existing and new sources of gas placed on EGP.

#### Disciplines against collusion by DEI and EAPL

The possibility of collusion with EAPL is disciplined by the threat both companies face that dissatisfied customers could switch to electricity or encourage other new gas suppliers to come into the market, and by DEI's uniquely compelling need to grow the market.

A basis does not exist for stable collusive arrangements to be made between them. Both companies have economic options to boost their pipeline capacity further by using compressors. Full capacity on that basis may not be reached until 2020. The NCC has apparently ignored the ability of both EAPL and EGP to expand their current capacity. If each pipeline expanded its capacity to the maximum available using compressors, demand may still be no more than about 61% of that capacity by 2020. Expansion costs are modest relative to the original capital outlay.

The report concludes that if any opportunity exists at all for DEI to lift prices, it is very temporary, and even in that case, any price increase carries with it the risk that others might develop pipelines directly competitive with the partially utilised DEI pipeline.

Even very short-term price increases above market level, risk retaliation by the exploited gas producers. They have the capacity to retaliate by limiting production, damaging the economics of the DEI pipeline operation, and resuming only when DEI lowers its prices. This means gas supplies from the producing basins will be highly elastic in response to collusive action in the short-run.

The complexity of the actions and reactions of the market participants do not permit any party to predict whether the outcome will be competitive or collusive, but the information available to the NCC and the markets will improve over time as competition plays out. A wait-and-see approach therefore has high value.

#### Services south of ACT – criteria (a) and (b)

Only 20,000 customers live in the market served by EGP south of ACT. Investors have weak incentives to duplicate a natural monopoly pipeline which can already serve the whole market. No one is likely to waste money building an economically inefficient second pipeline. The waste that criterion (b) seeks to avoid is not a serious risk.

The NCC itself notes the strength of this argument against criterion (b) holding when it says: “*Natural monopoly characteristics...strongly curtail opportunities for construction of pipelines.*” (Page p42). The NCC emphasises one defining feature of a natural monopoly is continuous declining costs.

Turning to criterion (a), in respect of customers located south of ACT, the NCC concluded that DEI has strong incentives to behave monopolistically. The NCC did not elaborate a clear methodology in reaching its draft recommendation. It relied on a natural monopoly argument. Whatever it assumes on (b), evidence of natural monopoly in pipeline services is not sufficient to establish certainty beyond reasonable doubt that criterion (a) holds. The point is readily illustrated from criminal law. Opportunity is not enough to convict a person of murder. The prosecution has to establish both opportunity and motive, not just one or the other.

The NCC, to establish that criterion (a) holds, needs to show that DEI has incentive as well as opportunity. Excess capacity, opportunities for alternative pipelines, and basin owners’ ability to withhold gas are just some of the long list of factors which produce incentives which do not support the NCC’s conclusions.

#### **Criterion (d): Welfare Analysis**

Criterion (d) requires that:

“Access (or increased access) to the services provided by means of the pipeline would not be contrary to the public interest.”

The NCC argues that the Code is very flexible, and that regulation under it should therefore have little cost. DEI, by contrast, believes the costs are significant, and that the NCC must explicitly compare the size of the costs and benefits of coverage in comparison with those of no coverage, to form a view on this criterion.

#### Costs and Benefits of Regulation under the Code

The report analyses both the direct and indirect cost. If the whole pipeline were regulated, the cost to DEI, ACCC, other companies, court costs, and monitoring costs would be \$3.9 million. If part of the pipeline were regulated the costs would be \$2.4 million.

The indirect costs and benefits of regulation can be traced through the contracts and institutions that govern financial and physical resource flows through the energy industry. Regulatory effects are propagated through desired and undesired impacts on property rights, risk allocation, costs, information, and incentives. A properly conducted analysis will show how such distortions feed into production and usage.

This report makes a detailed analysis of impacts on allocative, productive and dynamic modes of efficiency for both coverage and no-coverage, in both competitive and collusive markets, for the markets north and south of ACT, across all key scenario variations.

The NCC considers that the evidence is equivocal on whether coverage would promote competition in areas to Sydney/ACT. In recognition of this uncertainty the NCC stated that one approach may be to recommend against coverage at this time, give competition a chance to develop, monitor the market, and see if coverage proves later to be warranted.

DEI endorses the NCC's wait-and-see suggestion. Our findings show that the net welfare losses that result from regulating a potentially competitive market are in the vicinity of \$5 million to \$11 million in present value terms.

#### Welfare analysis south of ACT

The welfare analysis for south of ACT shows that the present value of possible allocative-efficiency benefits of around \$0.1 million from regulation. In contrast we estimate the direct costs of regulation as being around \$1.9 million. This clearly shows that there are no net benefits from regulating south of ACT, hence criterion (d) is thus not met with respect to services provided South of ACT.

### **Conclusion**

The report highlights the amount of work still needed to be undertaken by the NCC on the key issues involved in this case. It indicates the extent of doubt about whether there is a problem here that needs to be addressed.

The report demonstrates the large potential consequences of a wrong recommendation. In the light of this analysis, it is difficult to avoid the conclusion that this is not the right time for NCC to make a recommendation for coverage of any part of the EGP.

If the pipeline is not covered, the threat of regulation will remain an important discipline on DEI. Once the pipeline becomes operational, the opportunity to compete will produce new information capable of permitting the NCC to consider the matter again with greatly reduced levels of uncertainty.

That information is vital. It will never emerge if a recommendation and decision to regulate is made now.

The weight of all the evidence is that the EGP will engender robust competition. DEI submits that the competitive tensions created by the development of the EGP reduces the potential for coverage to increase competition. Indeed, regulatory intervention via

a coverage recommendation would risk the development of a competitive, dynamic and innovative energy market in South Eastern Australia.

In this regard the welfare of Australians will best be enhanced via a recommendation for no coverage or a decision to wait to see how the energy market develops in the light of two pipelines and two basins competing to supply gas.

# EXECUTIVE SUMMARY

## TABLE OF CONTENTS

<b>1. METHOD</b>	<b>12</b>
UNCERTAINTY AND THE LAW	12
<i>Evidentiary Rules or Taking Uncertainty Seriously: “First Do No Harm”</i>	12
<i>The Economic Costs of Regulation under the Code</i>	13
THE ECONOMIC THEORY BEHIND THE CRITERIA	16
<i>Criterion (a)</i>	16
<i>Criterion (b)</i>	19
<i>Criterion (d)</i>	21
<i>The Option Value of Waiting and Seeing</i>	25
<i>Uncertainty about the Cost of Regulation</i>	25
<b>2. CRITERIA (A) AND (B)</b>	<b>26</b>
INTRODUCTION	26
PRODUCT DEFINITION AND THE CRITERIA	26
LONGFORD TO SYDNEY /ACT	26
<i>Criterion (a)</i>	26
<i>Conclusion on Criterion (a)</i>	37
<i>Criterion (b): That it would be uneconomic for anyone to develop another pipeline</i>	38
LONGFORD TO SOUTH OF ACT	40
<i>Key point of the NCC’s recommendation</i>	40
<i>Key areas of uncertainty/disagreement</i>	41
<b>3. WELFARE ANALYSIS: CRITERION (D)</b>	<b>42</b>
INTRODUCTION	42
<i>Key Issues in the NCC Draft Recommendation</i>	42
<i>Key Differences Between DEI and the NCC</i>	42
OVERVIEW OF ESTIMATION	43
DIRECT COSTS OF REGULATION UNDER THE CODE	44
<i>Costs Borne by DEI</i>	44
<i>Costs Borne by ACCC as Regulatory Agency</i>	45
<i>Lobbying Costs Borne by Other Companies</i>	45
<i>Court Costs</i>	45
<i>Monitoring Costs of No Coverage</i>	46
INDIRECT COST AND BENEFITS OF REGULATION UNDER THE CODE	46
ALLOCATION EFFICIENCY	47
<i>Sydney/ACT: Competitive Market</i>	48
<i>Sydney/ACT: Collusive Market</i>	51
<i>South of ACT</i>	57
<i>Summary of Allocation Efficiency Effects</i>	58
PRODUCTIVE EFFICIENCY	59
DYNAMIC EFFICIENCY	59
THE BENEFITS AND COSTS OF THE “WAIT AND SEE” APPROACH	61
CONCLUSION ON COSTS AND BENEFITS OF REGULATION UNDER THE CODE	62
<b>4. ANNEX I – DEFINING A MARKET</b>	<b>64</b>
GENERAL CONSIDERATIONS	64
<i>The Criteria</i>	64
THE SSNIP TEST	64
<i>Product Dimensions</i>	64
FUNCTIONAL DIMENSIONS	65
<b>5. ANNEX II – CRITERION (D) AND THE ROLE OF “WAIT AND SEE”</b>	<b>67</b>
<b>6. ANNEXURE III</b>	<b>70</b>

## 1. METHOD

### Uncertainty and the Law

1. The Code sets four criteria for the National Competition Council (NCC) to apply in making its decision. A very high burden of proof is therefore imposed on the NCC in that it can recommend coverage only if all four criteria are met.
2. In accepting that burden, the NCC faces considerable uncertainty about which of the *possible* future “states of the world” will *in fact* hold. These uncertainties can be illustrated as follows, for each criterion:
  - *For criterion (a)* – Will DEI be able, in fact, to exercise market power in gas transport services in the future, with an adverse affect on competition in some other market such as the Sydney delivered gas market?
  - *For criterion (b)* – Will it in fact be uneconomic for anyone to develop another pipeline in the future?
  - *For criterion (c)* – Are there significant health and safety risks on the Sydney-Longford route?
  - *For criterion (d)* – What are the welfare consequences of ‘the different states of the world’ decisions by the NCC, and which is most in the public interest?
3. This report sets out a simple decision-making technique which simplifies the NCC’s task of dealing with the uncertainty problems of this case – and also, potentially, of others. The tool, known as a decision tree, is used extensively to analyse the economics of information and uncertainty. We commend the method, it would improve the speed and the quality of decision-making in this and similar cases.

### *Evidentiary Rules or Taking Uncertainty Seriously: “First Do No Harm”*

4. This section presents economic and legal arguments to assess what the NCC has to establish under the law before recommending coverage, and why the criteria are law is so precise.
5. It then addresses:
  - The presumption that should be made, as to coverage or no coverage.
  - Who should bear the burden of proof?
  - What standard of proof should be applied, and how it should work?
6. On each of these we conclude that:
  - The NCC should initially presume no coverage.

- The burden of proof should be on the NCC to show clearly that each condition holds separately.
  - The standard of proof required of the NCC should be high to create incentives for better decision-making and minimise the costs of regulation.
7. In this framework of law, the NCC is a “gatekeeper”. It recommends to the Minister whether or not a pipeline should be covered under the *Code*, but does not administer any resultant regulation. The Minister decides on coverage, and the ACCC administers regulation.
  8. Under the *Code*, the NCC must recommend that a pipeline be covered (regulated) if the four criteria are *all* satisfied. Indeed, the NCC cannot to any extent recommend coverage if it concludes that one or more of those criteria have not been satisfied.
  9. The criteria are:
    - (a) Access or increased access under the Code to services provided by means of the pipeline would promote competition in at least one market other than the market for the services provided by means of the pipeline;
    - (b) It would be uneconomic for anyone to develop another pipeline to provide the services provided by means of the pipeline;
    - (c) Access or increased access under the Code could be provided without undue risk to human health or safety; and
    - (d) Access or increased access would not be contrary to the public interest (under the Code).
  10. It is easy to understand the economic reason for this very restrictive legal position under the legislation. Where the consequences of a decision are few and low-value, decision-making standards can, without harm, be equally low. The potential consequences, however, of an NCC recommendation are many, substantial, and involve, taking away private property rights.

*The Economic Costs of Regulation under the Code*

11. Any incorrect recommendation by the NCC gives rise to several different types of direct costs. All those costs have to be factored into the NCC recommendations and the evidentiary rules that surround them. The potential costs of incorrect recommendations include:
  - *Waste of Ministerial and staff time* – This should be measured not by the direct cost of their time, but by the opportunity cost or the value of more important matters they could deal with. Where the NCC recommendations for coverage are made, they place a considerable burden on Ministerial and staff time. The Minister has to reconsider the criteria;

- *Costs to the legal system* – Where the NCC ignores relevant facts, or fails to properly consider all relevant material, it could lead to the Minister making a decision in error. The Ministerial decision can be reviewed and appealed on a de novo basis to the Australian Competition Tribunal and ultimately the Federal Court. This will impose costs on the legal system, including the time of the senior judiciary who could have considered other more important legal matters;
  - *Costs to the ACCC* – An NCC ruling in favour of coverage commits the ACCC to apply the code to the facts of the case. Direct and opportunity costs are imposed on the time of the ACCC, with an additional risk that any failure by ACCC to implement the recommendation properly may lead to further subsequent legal activity;
  - *Costs to the States* – Fourthly, issues of interstate trade are involved, with a capacity to affect the Treasuries of a quite number of different State Governments.
12. The NCC’s uncertainty in making decisions is compounded by these costs.
  13. The costs of the NCC’s decision for industry itself must also be taken into account. They include the direct and opportunity costs of the time of senior staff in major corporations, firstly to appear in front of the NCC to assist it in making recommendation decisions, then again later, during the processes of review and administration.
  14. In addition, any recommendation has a long-run impact on industry behaviour. It influences or changes the incentives of firms making investment decisions, not only in this case, but also as a precedent affecting future cases. Private property is taken. Under common law, property rights include a right to contract for the sale of services one owns. Interference with that right lowers its value, and reduces the incentive of industry to engage in the sale of the services involved.
  15. The regulatory intervention that flows from the NCC, by impacting on property rights, changes market behaviour and social outcomes. Incentives to invest in new pipeline capacity, and the efficiency with which existing capacity is managed, depend on the quality of NCC decision-making, and the sense of certainty or uncertainty created for industry players. Good regulation gives parties the flexibility they need to evolve more efficient arrangements, creates incentives to do so, and then puts the decision-making in their hands.
  16. Finally, the NCC’s decisions have distributional consequences. Regulation inevitably encourages rent-seeking. Private parties will attempt to influence outcomes to win gains for themselves at the expense of society as a whole. The money and effort they outlay in their quest for distributional gain, and the inefficiency of the economic outcomes where they succeed, can significantly increase the social and economic cost of NCC decisions.

17. The potential magnitude of all those costs explains why the NCC is not permitted to make recommendations for coverage *unless* all four criteria hold. The requirement resembles the first rule of the Hippocratic oath observed by doctors: “First do no harm”.
18. Avoiding harm requires appropriate evidentiary rules. The following appear to be logical:
- The NCC should begin by presuming no coverage. This is the interpretation most consistent with the law’s requirement that, if only one of the criteria holds, the NCC cannot make a recommendation for coverage.
  - The burden of proof should be on the NCC to show clearly that each condition holds separately. The NCC, as the party making the inquiry and the recommendation, bears few of the potential costs of its decisions. It therefore stands in need of incentives to ensure that it will make the right decision.
  - To create incentives for better decision-making and minimise the costs of regulation, the standard of proof required of the NCC should be high. In this regard, the standard of proof required for a recommendation of coverage should be significantly greater than 50%.
  - There are, however, four criteria, all of which must be satisfied. To deliver at least 50% probability across all four criteria, the standard of proof required for each single criterion is much greater than 50%. Under the simplest assumptions, it is in fact 84% ( $84\% \times 84\% \times 84\% \times 84\% = 50\%$ ). A standard best described by analogy as satisfaction “beyond any reasonable doubt”.<sup>4 2</sup>
19. In short, the NCC must adduce facts, which establish that each particular criterion holds with a degree of certainty that puts the matter, with a likelihood greater than 84%, beyond reasonable doubt.
20. To deal with this high evidentiary threshold, the NCC will need to take time over decisions, and ensure it uses all information that may be of value.

---

<sup>4</sup> The simplest assumption is of equal and independent probabilities. If the NCC is more than 84% sure of the satisfaction of one criterion, such as (c), the probabilities required for the other three criteria will be somewhat less than 84%. Further, if the probabilities are not independent, the standard will be different. Let  $\text{pr}(A)$  denote the probability that criterion (a) is satisfied and  $\text{pr}(A \wedge B)$  denote the probability that both A and B are satisfied. Then  $\text{pr}(A \wedge B \wedge C \wedge D)$  can be written as  $\text{pr}(A | B \wedge C \wedge D) \times \text{pr}(B | C \wedge D) \times \text{pr}(C | D) \times \text{pr}(D)$ .

<sup>2</sup> The test of whether the NCC is satisfied with the criteria is not merely one of whether on balance coverage is desirable or convenient, the test is whether coverage is essential and the NCC must be satisfied that coverage is essential in terms of each of the criteria 'clearly, access to the facility should be essential, rather than merely convenient'. (National Competition Policy; Report by the Independent Committee of Inquiry, August 1993 (Hilmer Report) page 251)

## The Economic Theory behind the Criteria

In this section, economic theory is used to form a basis from which to assess the criteria, and address the key facts required to satisfy each criterion above the required threshold identified in the preceding section. We then compare the NCC's draft recommendation with the benchmark of economic analysis and identify relevant methodological weaknesses. More specifically:

- On criterion (a), the NCC did not establish the full set of competitive conditions that must hold for criterion (a) to apply, or examine in any adequate detail the facts relevant to those conditions.
- On criterion (b), the NCC's explanations for the existence of the criterion (natural monopoly) seem inadequate, and fail to identify the method and facts required to assess whether the conditions they presumed relevant do, in fact, hold in practice.

We consider the NCC is at risk of not providing proof beyond reasonable doubt. The NCC failed to establish the economic theory relevant to the case in any systematic way, or ensure that the facts were examined systematically. The NCC excluded relevant facts, included irrelevant facts, introduced relevant but unreliable facts, and misinterpreted the facts considered in its decision-making.

In these circumstances the risk of error is high. The NCC has not succeeded in achieving the required high standard of proof for each of the four relevant criteria.

The Code was established to address economic problems. If there were none to address, the Code would not be needed. Economic analysis is relevant to minimising the uncertainty faced by the NCC in making decisions, and the risk of error in applying the legislation. Economic analysis can also help by directing the attention of the NCC to the facts most likely to reduce uncertainty, and reliable means of evaluating those facts.

### *Criterion (a)*

*Access or increased access under the terms of the Code to services provided by means of the pipeline would promote competition in at least one market other than the market for services provided by means of the pipeline.*

21. The conditions derived from economic theory which are relevant to assessing whether criterion (a) applies in this case were not elaborated by the NCC, or examined on the facts in any systematic way.
22. If DEI is to use the service(s) it owns or controls to affect competition in markets for **other** services under criterion (a), whether acting alone or collusively with others, then DEI must have market power in the market(s) for the service(s) it owns or controls.

23. Wherever players in upstream or downstream markets have alternative options, they can sanction anti-competitive behaviour by DEI (at some cost to DEI but low cost to themselves). They may, for example, have low cost opportunities to not sell gas via DEI, not sell gas at all, not use gas, use gas sourced elsewhere, use other transport services or other transport providers. Given such alternatives, they can largely avoid, and therefore prevent, any of the constraints on competition that DEI could seek to impose.
24. Imagine, by way of illustration, a person who grows oranges. The grower can influence competition in the downstream market for orange cakes, for example, only if he has market power in that market. Suppose orange-cake manufacturers can buy the oranges they need from other growers in a competitive market. They cannot be held to ransom. No grower is able to control the market. DEI's ability to use its own services to affect competition in upstream or downstream markets will depend, in exactly the same way, on the competitive conditions in the market for the transport services that DEI owns.
25. Several static competitive conditions are relevant to any decision about whether Criterion (a) holds in relation to factor markets. They are known as the Marshall/Hicks laws on derived demand<sup>5</sup>. All five of these conditions need to be satisfied.

#### The Importance of Being Unimportant

26. Where a factor of production accounts for just a small proportion of the total cost of the final output (in this case delivered gas), then it may perhaps be able to exercise market power.
27. The usual test of a monopoly is, for example, whether it can get away with a small but sustained increase of, say, 5% in the price of its services. For an input that constitutes 90% of the cost of the final output (say, delivered gas), the 5% price rise will boost the final output price by 4.5%. By contrast, the same price rise in an input that accounts for only 5% of the final output cost will lift the output price by only 0.25%—it will therefore be correspondingly easier to achieve and sustain.
28. A **key fact** about DEI's market power will therefore be whether its transport service constitutes a large or small fraction of the total costs of the delivered gas. In respect of this, the fraction of total costs being considered depends upon whether the service is viewed as gas delivered to the city gate or the end user, for example DEIEGP accounts for 26% of the city gate price.<sup>6</sup> The NCC takes the view that the EGP accounts for 10% of the final delivered gas price (page 21 draft recommendation). Since Sydney is furthest from Longford, the answer is more important for Sydney than for south of ACT.

---

<sup>5</sup> Marshall (1920) Principles of Economics, 8<sup>th</sup> Edition MacMillan; Hicks (1932) The Theory of Wagers, MacMillan.

<sup>6</sup> Actual competition between pipelines serving the Greater Sydney region is at the junction of the pipelines ie Horsley Park for EGP and Wilton for EAPL.

29. However, DEI's ability to exercise market power is not solely determined by this condition and is constrained by how the facts of this case apply to the other four Marshall/Hicks conditions. Deeming that market power exists on the basis of this criterion alone is therefore misleading and fallacious.

Final Demand Must be Inelastic

30. If final demand for an output is highly elastic, then no matter what relationship an input has to the final total cost, potential customers can respond to pressure by reducing their purchases. The input supplier will have no significant market power. The *key fact* here is whether final demand for Longford gas is inelastic at the destination point. If not, DEI will be unable to exert significant market power.

Complementary Factors Must be in Inelastic Supply.

31. If an input increases its price when complementary inputs supplies are elastic or have other options, then it will be difficult to sustain the co-operation of the complementary input and harder to sustain the price increase. Gas supplied to DEI at Longford for onward transport by DEI must be in inelastic supply (e.g. low gas storage options) for DEI to have factor market power. Otherwise a price increase for transport on that leg will have a larger multiplier effect on final delivered price. The *key fact* is the elasticity of supply of complementary factors.

Technical Substitution Possibilities Must be Limited to Permit Factor Market Power

32. The fewer the technical alternatives for transporting gas to end users, the greater the scope for an input to exercise market power. For DEI to have input market power, there has to be little or no technical capacity to substitute alternative means of transporting gas to the right destinations. Where substitute capacity exists, DEI will have no significant market power. The *key fact* is whether other transport options are technically feasible.

Technically Substitutable Factors Must be in Elastic Supply

33. If factor market power exists, then technically substitutable factors have to be inelastic in supply with respect to the price of their services. Substitutable gas transport services or bypass options from Longford would have to be in inelastic supply over the relevant range. The *key fact* here is the cost of substituting alternative feasible options for transporting gas to a particular point. Those costs set a cap or constraint on what DEI can do in down stream markets.
34. These are the variables that need to be addressed in evaluating any factor market power available to DEI under criterion (a) in the markets defined by the NCC. The necessary competitive conditions were not identified by the NCC or applied in any systematic way. The probability is that relevant facts were excluded from its decision-making, increasing the risk of error.

35. This report will apply the conditions set out in this section to organise an analysis of the facts under the appropriate criteria in Chapter Two, aiming to ensure comprehensive treatment that brings to bear all the relevant and available information known to us.

*Criterion (b)*

*That it would be uneconomic for anyone to develop another pipeline to provide the services provided by means of the pipeline.*

36. The NCC argues that criterion (b) is directed at behaviour that involves developing a pipeline de nova or expanding an existing pipeline—by anyone—when it is uneconomic.
37. The meaning of the word *uneconomic* needs to be defined before this criterion can be used in any way that promotes the objectives of the Act. If the term is not defined, the NCC will not be able to identify or evaluate the facts required to examine whether the criterion holds with the 84% probability that has to be attained in this case.
38. The NCC has sought guidance on this from the Sydney Airports decision, and the view taken by Australian Competition Tribunal of the similarly worded declaration provisions in section 44G(2)(b) and 44H(4)(b) that:

“...the uneconomical to develop test should be construed in terms of the associated costs and benefits of development for society as a whole”<sup>7</sup>. (Australian Competition Tribunal 2000 p78), p34 of the NCC Draft Recommendation.

39. This is a standard definition of efficiency in welfare economics. The NCC later confirmed its decision to use the welfare economics meaning of the word ‘efficiency’ for the term ‘uneconomic’ when it commented:

“Criterion (b) would appear to be designed to identify for potential coverage pipelines where the development of competing pipelines would be **inefficient**”—(Australian Competition Tribunal 2000 p78), p38 of the NCC Draft Recommendation.

40. On that basis, the task the NCC has set for itself, **before it can recommend coverage**, implies these four steps:

- *Step 1.* Consider all relevant firms that may develop a new pipeline or expand an old pipeline, over the relevant future, in the absence of coverage. This is required by the term “anyone” in criterion (b), and by the forward-looking perspective the NCC has to take *before it makes a coverage decision*;

---

<sup>7</sup> The citation continues “...if uneconomical is interpreted in a private sense then the practical effect would often be to frustrate the underlying intent of the Act....this view is given weight by Professor Williams’ evidence of the precise impact, in terms of efficient resource allocation of adopting a narrow view” without reading Professor Williams’ evidence the meaning appears unclear.

- *Step 2.* Assess the **likelihood** of any one of these firms developing a new pipeline, or expanding an old pipeline, to provide services offered by the existing pipeline. If the likelihood is less than 84%, go no further. If it is greater than 84%, proceed to:
  - *Step 3.* Assess the **likelihood** that the outcome of a firm developing such a pipeline would be inefficient, in which case the pipeline would be *uneconomic for society as a whole*.
  - *Step 4.* Finally, establish whether the combined likelihood of those two previous steps, (2) and (3), exceeds 84% by multiplying them together.
41. Any decision taken by the NCC will be impaired unless the NCC has taken each of those four steps, using relevant and reliable available information. This is a very strict test for coverage decisions, but it is logically imposed by the NCC's own interpretation of the wording of the section. Moreover, it is very properly strict. Recommending coverage takes away private property rights. This risks significant adverse economic consequences if it is not exercised with extreme care, not least because it will establish a precedent.
42. The NCC tends to emphasise the existence of a so called "natural monopoly" as the key to criterion (b) and looks at cost curves to determine this without assessing in detail whether in particular step 2 and step 3 hold. The appropriate analytical techniques for testing whether steps 2 and 3 hold in a full analysis are:
- *Incentive analysis* for Step 2. The incentives for anyone to duplicate an incumbent natural monopoly's assets need to be assessed. The incentives appear low in general but need to be assessed in the particular case. Investors have weak incentives to replicate a natural monopoly's assets and a natural monopoly has strong incentives to contain their prices at a level that does not encourage entry. When private incentives are already aligned to social objectives in this way, there is rarely a problem. Regulating merely creates deadweight loss.
  - *Social cost-benefit analysis* for Step 3. Note that this is implied in the Sydney Airports test. The problem with cost duplication in the natural monopoly theory, is not the only issue relevant here. The optimal depletion rates of competing gas basins that involve non-renewable resources, and the extent to which any one basin and its pipeline together can optimally serve the whole relevant final market are also of importance. In this case the relevant final market is for delivered gas in Sydney.

**Criterion (d)**

***That access or increased access to the services provided by means of the pipeline would not be contrary to the public interest.***

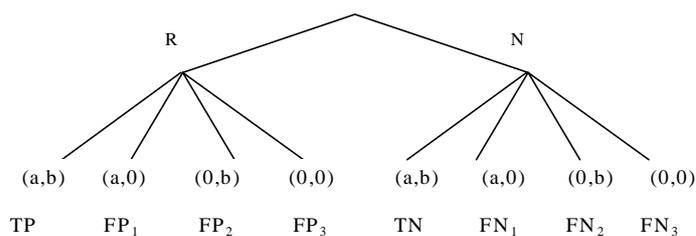
43. In considering criterion (d), we use a framework that employs the comparative-institutional method adopted by the NCC within a simple model of decision-making that *incorporates uncertainty*.<sup>8</sup> The great virtue of the technique is that it enhances understanding in particular decision situations. This section explains the technique and, in doing so, sets up the analysis undertaken in Chapter 5.
44. In principle, the analysis under (d) should incorporate uncertainty at least about whether criterion (a) holds and about whether criterion (b) holds. Cases before the NCC might involve any one of the following four possible states of the world with respect to criteria (a) and (b):

		Does (b) hold?	
		Yes	No
Does (a) hold?	Yes	(a, b)	(a, 0)
	No	(0, b)	(0, 0)

45. One can therefore represent the general decision problem facing the NCC using a decision tree in criterion (d).
46. In the first branching of the tree NCC is shown to face a choice between regulation under the code (R) and no regulation (N). The next level down on the tree shows the four possible states of the world, which might hold under criteria (a) and (b). When the NCC decides to regulate it cannot be sure (a) and (b) hold. The situation where they do is indicated on the left – the case of a so called “true positive (TP). Under regulation there are three other cases possible, all so called “false positives” (FP). Similarly when the NCC decides not to regulate (N) it may enjoy a “true negative” (TN). It may however also risk being in the situation of a “false negative” (FN).

---

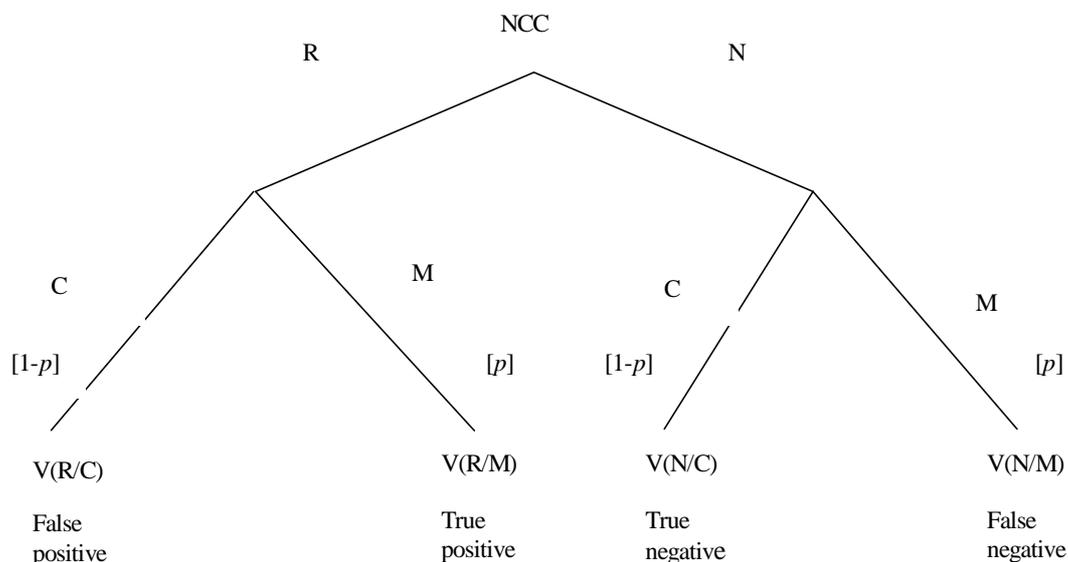
<sup>8</sup> Variants and extensions of the model of decision making under uncertainty developed here has been applied and is being applied in many contexts since its discovery 50 years ago. It was used by the military in the second world war, has been used by investors in gas pipelines, and is being used currently by bidders in 3G auctions currently being run around the world.



In our analysis of criterion (d), we simplify by considering uncertainty only about criterion (a).

### The Simplest Model

47. The diagram below offers a representation of the NCC's decision with respect to criterion (d)<sup>9</sup> using a simpler decision tree that in essence focuses only on the question, does criterion (a) hold. This is the basis on which we conduct our analysis of criteria (d)'s public interest test. This approach can help the NCC to reduce the risk of making incorrect decisions, and provide an overarching rationale for the analysis of criterion (d).
48. To gain familiarity with the decision tree in the diagram, look at it from the top down. Again the first branching shows the NCC with a choice between regulation under the Code (R), and no regulation under the Code (N).



<sup>9</sup> Ignoring for the moment the value of the wait-and-see option and uncertainty about the costs of regulation.

49. The next level down on the tree shows that, flowing from each of those two NCC decisions, there are two possible market-structure outcomes. In the first case, DEI is forced to compete (*C*). In the second case, DEI can achieve a monopolistic outcome (*M*), either by unilateral action or tacit collusion with Eastern Australian Pipeline (EAPL).
50. In the diagram, the probability that the firms will collude is represented as  $p$ , where  $p$  is some value between 0 and 1. A value of 1 signifies that DEI will certainly collude and a value of 0 means DEI will certainly compete. Mathematically, the probability of their not colluding is  $(1 - p)$ . If the NCC thinks the probability of collusion is, for example, 40% (0.4), the probability of competition is  $1 - 0.4$ , which equals 0.6 or, putting it in more familiar terms, 60%.
51. At the bottom of the tree, the diagram uses the symbol  $V$  to represent the values—in other words, the benefit net of costs—of the four possible stylised potential outcomes. Those four potential outcomes of an NCC decision can be described in more detail as:
- *False positive*  
This is the situation where the NCC recommends coverage, but that is the wrong decision. The symbols  $V(R|C)$  represent the value ( $V$ ) of regulation ( $R$ ) in a situation where the firms would have competed ( $C$ ) anyway, even in the absence of the regulation;
  - *True positive*  
This is the situation where the NCC recommends coverage and it is the right decision. The symbols  $V(R|M)$  represent the value ( $V$ ) of regulation ( $R$ ) in a situation where a monopolistic outcome ( $M$ ) would have emerged in the absence of the regulation;
  - *True negative*  
This is the situation where the NCC does *not* recommend coverage, and was right in making that decision. The symbols  $V(N|C)$  represent the value ( $V$ ) of not regulating ( $N$ ) in a situation where the firms will compete ( $C$ ) without any need for regulation;
  - *False negative*  
This is the situation the NCC does *not* recommend coverage, and that is the wrong decision. The symbols  $V(N|M)$  represent the value ( $V$ ) of not regulating ( $N$ ) where a monopolistic outcome ( $M$ ) is going to emerge, in the absence of such regulation.
52. The diagram in this form assumes that the NCC's choice of coverage or no-coverage does not affect the probability of collusion. The role played by the access arrangement is demonstrated in the way it affects economic and social payoffs, which are represented in the scenarios of the diagram by the four different possible values ( $V$ ) emerging from it.

53. The NCC will inevitably remain uncertain about whether firms are going to compete (*C*) or collude (*M*). It can, however, form a judgement about the relative probabilities of those outcomes. This report attempts to help the NCC judge the most likely outcome—competition or monopoly—by analysing facts we could obtain relevant to the probability of monopoly or collusion (*p*), and whether the value of *p* is closer to 0, or 1.
54. It is possible, under certain assumptions, to spell out a reasonably intuitive rule that the NCC should follow in deciding whether criterion (d) satisfied:
- Criterion (d) is satisfied if and only if the *odds* that the firms will behave collusively exceed the ratio between the benefit of *not* regulating a competitive market and the benefit of regulating a collusive market.
55. In sum, the NCC will have to form judgements about three issues:
- *p*, which is the probability of the collusive market in the absence of regulation;
  - $V(N|C) - V(R|C)$ , the benefit of not regulating a competitive market; and
  - $V(R|M) - V(N|M)$ , the benefit of regulating a collusive market.
56. For the mathematically inclined, the box below demonstrates the algebra, which is worth a look and less complicated than it seems at first glance.

### ALGEBRA OF THE DECISION-RULE

Assume the NCC wants to maximise the expected value of the outcomes.<sup>10</sup> It should decide that criterion (d) is satisfied if and only if

$$pV\langle R|M \rangle + (1-p)V\langle R|C \rangle > pV\langle N|M \rangle + (1-p)V\langle N|C \rangle$$

Under certain assumptions,<sup>11</sup> this can be re-expressed as a formula relating the probability of collusion to the values of the various outcomes:

$$\frac{p}{1-p} > \frac{V\langle N|C \rangle - V\langle R|C \rangle}{V\langle R|M \rangle - V\langle N|M \rangle}$$

The values on the right-hand side of the inequality have a simple interpretation:

- $V(N|C) - V(R|C)$  is the benefit of *not* regulating under the Code when firms will behave competitively (i.e. of not regulating a competitive market).
- $V(R|M) - V(N|M)$  is the benefit of regulated under the Code when firms would otherwise collude (i.e. of regulating a collusive market).

<sup>10</sup> That is, assuming risk-neutrality. We also ignore the possibility that the values are equal, and the complications introduced by the possibility that the Minister may not accept the NCC's recommendation.

<sup>11</sup> Relating to the signs of the various terms in the first formula.

### *The Option Value of Waiting and Seeing*

57. The preceding discussion assumed that coverage–no coverage decisions are made once for all time. A decision recommending coverage now can, of course, be revoked by a subsequent decision. In the same way, a decision now against coverage does not prevent a further decision later in favour of coverage. This does not change the decision framework already outlined, but it does affect evaluation of the expression  $V(R|M) - V(N|M)$ . To understand what this involves, the decision tree should be extended downwards one more level.
58. At each point at the bottom of the tree, the NCC has an opportunity to reconsider its own recommendations about coverage. If the original recommendation was *not* to cover DEI, the NCC will have more information later. It will have been able to examine the actual behaviour of DEI in the absence of regulation. On the other hand, if coverage *was* recommended in the original decision, the NCC will be unable, in all probability, to learn anything about the extent to which firms would compete in the absence of coverage. It may have no new information for any second decision. Waiting thus has benefits. It also has potential costs, since it runs the risk of not regulating in the collusive case during the waiting period.
59. As with any investment, the larger the magnitude and period of initial investments the larger must be the expected future payoff to justify accepting the “wait and see” proposition. Thus, if relevant information will take a long period to come available and the risks and costs of collusive behaviour during these initial periods is high then the “wait and see” option will have low value.
60. Recognising the value of the wait-and-see approach in the algebraic decision rule lowers  $V(R|M) - V(N|M)$ , which increases the magnitude of the whole right-hand side of the inequality. This in turn boosts the threshold that the probability-of-collusion estimate has to exceed before a decision to regulate can become the optimal response to uncertainty.

### *Uncertainty about the Cost of Regulation*

61. The NCC, in pondering the benefits of not regulating a competitive market ( $V(N|C) - V(R|C)$ ) and the benefits of regulating a collusive market ( $V(R|M) - V(N|M)$ ), needs in particular to consider the extent of the costs imposed by regulation. Exactly as there is uncertainty about whether firms will compete or collude, there will also be uncertainty about whether regulating will impose high costs or low costs.

## 2. CRITERIA (A) AND (B)

### Introduction

62. The key question addressed in this section is whether criteria (a) and (b) hold on the facts of this case with respect to the services provided by DEI.
63. We begin by discussing the NCC's definition of the relevant services offered by DEI, which are the subject of this case, and then apply our analysis of competitive conditions to the services provided to Sydney/ACT and south of ACT, respectively.

### Product definition and the criteria

64. DEI offers a large number of inputs into the gas industry, but the focus of this case is on its point to point gas pipeline services.
65. The relevant point to point gas pipeline services are those originating at Longford, with relevant destination points being anywhere along the Longford to Sydney (via ACT) route. Thus there are many pipeline services offered by the EGP using the one pipeline, and are defined by geographical segments.
66. *A priori* this does not mean these segments are in different markets or face different competitive conditions for purposes of criterion (a). Market definition is a different task from product definition. In Annex I we review the classic method for conducting market definition. The way to do this is to start with a narrow definition of product service, and then add the products, inputs, services, suppliers, users, and uses that may be relevant from a competitive point of view.
67. The NCC focuses separately on the Longford to Sydney/ACT services and the Longford to south of ACT services. This paper follows the same approach. So we start with an assumption in each section that the two pipeline services above are in their own separate market space.

### Longford to Sydney /ACT

68. This section aims to reinforce and develop the analysis for Sydney/ACT services provided in the initial submission.

#### *Criterion (a):*

*Access or increased access under the terms of the Code to services provided by means of the pipeline would promote competition in at least one market other than the market for services provided by means of the pipeline.*

#### The NCC's key concerns on criterion (a) to Sydney/ACT

69. In the context of DEI's services provided in the Sydney/ACT off-take, DEI understands that the NCC's concern is that they cannot, a priori, determine whether DEI will behave competitively.

70. Appropriately, following the comparative institutions method, the NCC has specified two conflicting models of behaviour - competition versus collusion - and is seeking further evidence that will allow a more informed judgement as to which model is most likely to apply in this market.
71. In terms of competitive behaviour, the NCC views the key factor in favour of competition as being the existence of substantial excess capacity, which provides DEI with strong incentives to price competitively to maximise through-put on the EGP. The NCC also recognises that DEI has no interest in gas production or distribution.
72. In terms of collusive behaviour, the NCC views relevant factors as including:
- It is a concentrated market with only two pipelines serving the Sydney/ACT market;
  - Pricing is transparent, increasing the ability to maintain collusive agreements;
  - The EAPL's extensive long-term contracts make it difficult for another pipeline to pick up market share by dropping prices;
  - The NCC points out that EAPL may not have strong incentives to compete with the EGP because they have little spare capacity and long-term contracts that inhibit their ability to compete;
  - Also, depletion of Cooper Basin reserves may reduce the Cooper Basin producers' incentives to compete in the NSW market, giving increased market power to Gippsland Basin producers strengthening the market power of the EGP.
73. If these factors are sufficient to result in tacit collusion, such behaviour would act as a barrier to entry to the gas sales market to Sydney/ACT.
74. Given uncertainty about what applies in this case, the NCC concludes that on the evidence available it cannot yet draw a firm conclusion whether to cover or not cover.

#### Points of Agreement and Disagreement.

75. We agree with the comparative institutions method. We also agree with the NCC that if it is uncertain whether anti-competitive effects will emerge (e.g. because of collusion) it should wait and see. This wait and see option should be adopted until it has actual evidence of anti-competitive behaviour.
76. We also agree with the NCC that EAPL's pipeline is in the same final end user market (Sydney). It is a very close substitute, probably a perfect substitute. This is a key factor against any conclusion that DEI might be able to act unilaterally to impose anti-competitive effects in the Sydney delivered gas market. If it did, EAPL would compete, and under cut, to maintain and/or grow

its market share. To avoid this DEI would have to collude with EAPL (which is considered below).

77. Therefore the NCC should treat the collusion option with a low probability, which we outline in the next section.
78. Before doing that we will map out the reasons why unilateral anti-competitive action by DEI is out of the question. In particular, we emphasise that DEI is constrained by factors other than EAPL which can too easily be lost sight of. Indeed, we suspect these other factors may be stronger than the EAPL threat in creating incentives for DEI to act *competitively* in other markets.

DEI is an independent pipeline owner

79. We note the NCC's recognition that DEI has no interest in gas production or distribution. Quite clearly they are only in pipeline services from Longford to Sydney. We would emphasise that this is very significant under criterion (a), and should therefore increase doubt about criterion (a) holding.
80. As the *Report by the Independent Committee of Inquiry into National Competition Policy* (the Hilmer Report) observes, 'where the owner of the facility is not competing in upstream or downstream markets, the owner of the facility will usually have little incentive to deny access, for *maximising competition* in vertically related markets maximises its own profits'.<sup>12</sup>
81. This condition blunts DEI's incentive to behave anti-competitively in upstream or downstream markets. They will want these markets to be as competitive and efficient as possible, as then greater wealth will be created and part of that will pass to DEI. Since the demand for pipeline services derives from demand for delivered gas, any action that increases consumption volumes flows through to greater demand or volumes on DEI's pipeline – i.e. its demand curve for pipeline services shifts out - improving its own economics.
82. A further important point is that DEI is keenly interested in options that can improve its economics. It has invested in a high fixed cost facility with most capacity being uncontracted<sup>13</sup>. The rational objective is to grow the upstream and downstream markets to increase its throughput, not its market share *per se*. It will be volume focused not market share focused.

---

<sup>12</sup> See Hilmer Report, August 1993 page 240; Areeda P & Hovencamp H, *Antitrust Law* (1990 Supp) at 779-780.

<sup>13</sup> The vast majority of the EGP's and EAPL's costs are capital charges or fixed costs. For example, the EAPL pipeline costs are split between capital charges 98.2% and O&M costs 1.8%. Of the O&M costs only 40.2% are variable. The costs most likely to be variable are labour and materials.

Final demand - end users of gas have other options

83. The NCC acknowledges the possibility of entry by third party owned *pipelines* from other gas basins<sup>14</sup>. These may include Western Australia, Queensland, Timor, and Papua New Guinea. This limits DEI to a strategy of growing volume at low rather than high prices. End user ability to substitute these pipelines (by writing contingent forward contracts now to speed up entry) mitigates any incentive DEI may have to act anti-competitively in its own pipeline services over any extended period of time.
84. The impact of end users switching to make this threat of entry by other gas pipelines (and basins) a reality was not considered sufficiently by the NCC in our view. In essence, these pipelines are an effective constraint on the EGP implying that these services are in the *same market* as DEI's pipeline service.
85. PNG gas is worth examining in detail as an example of this. PNG gas is owned by Chevron and is a by-product of their oil exploration. The owners of the gas have no interests in the Cooper Basin or Gippsland Basin and have no alternative uses for the gas in PNG, hence they have strong incentives to develop the Sydney market for their gas. Moreover, the price differential between the 60c/GJ is at well head in PNG (where the gas has few uses) compared to \$2.50GJ in Cooper and Gippsland Basins is substantial. Reserves are understood to be considerable, in the region of 4400PJ.
86. Wholesale gas from PNG can be contracted forward to finance early investment in a pipeline. Indeed a pipeline from PNG to Brisbane is planned to come on line in 2005 with an estimated transport cost to Brisbane of \$1.90 and a Brisbane delivered price of \$2.50.
87. For Sydney, the current basic price of delivered gas is in the region of \$3.20. Thus a transport cost of less than 70c from Brisbane to Sydney would enable a delivered PNG gas price to compete effectively in Sydney. This appears commercially feasible since Sydney is about the same distance from Brisbane as it is from Melbourne, indicating that the cost of constructing a transmission pipeline to Sydney from Brisbane should be about \$500m. Hence, PNG gas can compete in the Sydney market with DEI and the Gippsland Basin gas. The increased flow of gas would improve the economics of the PNG to Brisbane leg of the pipeline.
88. Thus, any attempt by DEI to raise prices, or even possibly even failing to let them fall, could bring forward the construction of a possible PNG pipeline.
89. We emphasise that this scope for action by end users in concert with pipeline owners and developers is a very significant deterrent to unilateral action by DEI, and should therefore increase doubt about criterion (a) holding. The EGP's pipeline service into Sydney is in a contestable pipeline service market that includes EAPL as an actual player, and Papua New Guinea Western Australia, Timor and Queensland as potential future players.

---

<sup>14</sup> NCC, Draft Recommendation P58

Complementary inputs are in elastic supply – Gippsland Gas producers options

90. A further factor that casts doubt on the possibility of anti-competitive behaviour relates to the options available to Gippsland producers. The foregoing suggests that at best price hikes by DEI can only be temporary, as higher prices would induce others to develop pipelines in competition with DEI. But this still leaves the possibility that DEI may act opportunistically to capture revenue through short run increases.
91. The response of gas suppliers then needs to be factored in. Gas is a non-renewable resource stored underground, so gas owners always have the option of keeping their gas in the ground and selling it at another date<sup>15</sup> once the temporary increase in transport prices have been reversed. The critical issue is the extent to which gas owners will cut back their extraction of gas in response to temporarily high charges.
92. The relevant analysis, based on the Hotelling Rule, implies that it is profitable for gas owners to reduce production sharply in the face of a temporary rise in pipeline charges<sup>16</sup>. This is because their return to gas (net of pipeline services costs) will be greater in the future when the increased pipeline charges have been reversed<sup>17</sup>. Indeed, if gas owners face constant marginal extraction costs they will shut down production until the price rise is reversed.
93. Gas producers also have a range of other options in response to anti-competitive behaviour for example, delay production or divert gas to other markets (eg Victoria and in the future Tasmania). In addition, Gippsland basin producers have the option of sending the gas to Sydney via the Interconnect. The Interconnect allows the transport of Gippsland Basin gas from Longford to Sydney via the Victorian transmission system and EAPL-Moomba-Sydney Pipeline (MSP) pipelines. It appears that the NCC has not given due consideration to the impact of the Interconnect on DEI's ability to exercise market power.

---

<sup>15</sup> It may be insightful to compare gas with land, which are both fixed natural resources. If land owners do not use their land this year, they forgo production and profits that can not be recouped next year. But if gas owners do not use their gas this year then they have gas available to use next year, and so the economics of storable natural resources is fundamentally different than the economics of other natural resources such as land.

<sup>16</sup> The Hotelling rule is a fundamental building block in natural resource economics. See Hotelling, H (1931) "Economics of Exhaustible Resources", in *Journal of Political Economy*, Vol 39 pp137-175. Other references include "Natural Resource Economics", by John Conrad and Colin Clark 1994, and "Handbook in Natural Resources and Energy Economics" edited by Allen Kneese and James Sweeny.

<sup>17</sup> The simplest situation is where marginal extraction costs are constant, it is costless to cease production, and producers have reasonable expectations about future gas prices, stocks of gas are substitutes. Under these circumstances, gas owners will shut down their production of gas if DEI raises its prices above competitive levels, and restart production only when stocks of cheaper sources of delivered gas have been depleted. DEI would earn less revenue while continuing to face large and growing interest bills for the costs it has incurred installing the pipeline. Under this case, gas supply through DEI's pipes would be infinitely elastic, making it impossible for DEI to extract monopoly profits with the assistance of gas owners. In reality gas owners may not face constant marginal extraction costs. The normal case is that marginal extraction costs decline with reductions in gas production.

94. The Interconnect was built jointly by East Australian Pipeline Limited (EAPL) and the Gas Transmission Corporation (which was purchased subsequently by GPU GasNet). The current configuration of the Interconnect allows a minimum capacity of 13.5TJ/d flowing north.
95. However, the potential flow of gas between Longford and Sydney is not simply determined by the physical northward flow of capacity. The ability to do virtual swaps (using backhaul) enables up to 27.2TJ/d (equivalent to 9.93PJ per annum) to be sold from Longford north through the Interconnect.
96. The total capacity of the Interconnect can be increased to 100TJ/d. EAPL's application to the ACCC for Access Arrangements included capital to develop the Uranquinty Compressor station in 2002 at a cost of \$13.9 million. This compressor will increase the capacity of the Interconnect northbound flow to 80TJ per day (29.2PJ per annum)<sup>18</sup>. Further, taking into account the potential for swaps this would allow potential flows of gas from Longford to Sydney via the Interconnect to be up to 100TJ/d (36PJ per annum).
97. The key point is that it is early in the life of the Interconnect and as the new contracts develop this will significantly enhance the potential capacity for transporting gas from Longford to Sydney. Moreover, the Interconnect prices are highly competitive. DEI is currently transporting gas from Longford to Sydney using the Interconnect at a cost of ..... per GJ. This compares to DEI's Undertaking price on the EGP of 87.5c per GJ for same start and end points.

[Commercial-in-Confidence material removed]

98. Most of the substantial capital expenditure to expand the Interconnect is required in the Victorian network rather than the NSW network. Estimates made in 1997 of incremental capital cost, (but not verified) are:

---

<sup>18</sup> This is provided that the GPU Gas Net I is able to maintain a discharge pressure of 7400kPg at Springhurst. EAP, Access Arrangement Information, Supplementary Information, 28 October 1999, p28.

Available Capacity (PJ/a)	20	35	45	90
GPU GasNet	\$m	\$m	\$m	\$m
Interconnect (based on actual)	0	0	0	0
Network augmentation (based on actual)	30	110	144	178
EAPL				
Interconnect (based on actual)	0	0	0	0
Network augmentation	0	0	23	55
Totals	30	110	167	232
Estimated annual operating cost	0.6	2.2	3.0	4.5

#### How likely is collusion?

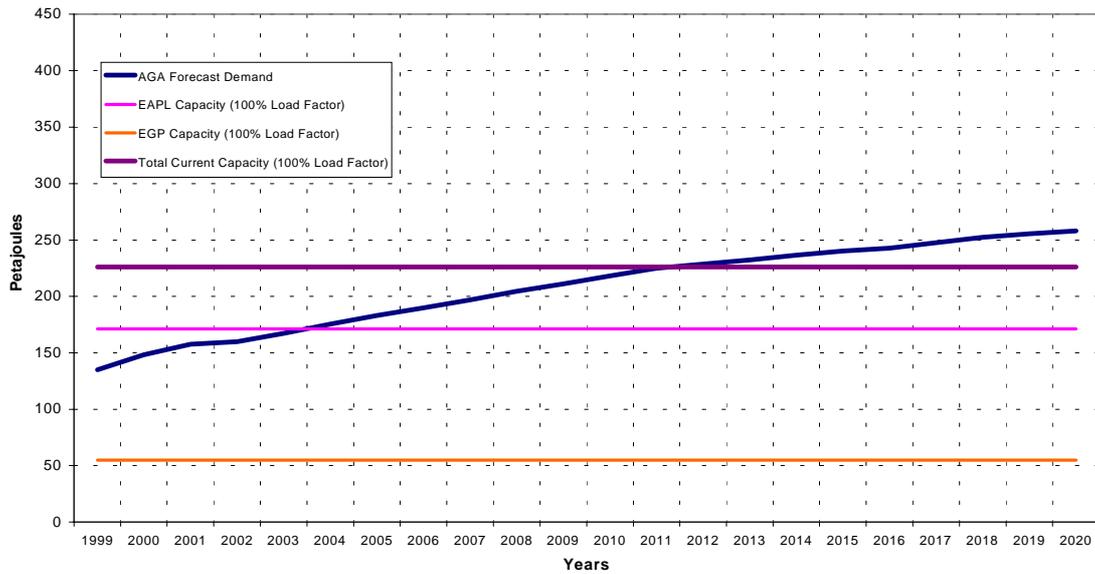
99. In the context of the NCC's analysis of DEI's services from Longford to Sydney/ACT, we see the crucial issue at stake in criterion (a) is the need to assess the probability of collusive behaviour by EAPL and DEI. This involves two key concerns.
- First, the extent of EAPL and DEI's *joint* market power in pipeline services which would enable them to adversely affect other markets.
  - Second, the incentives of EAPL and DEI to exercise that power.
100. On the first point, for DEI and EAPL to collude and acquire market power in pipeline services to Sydney requires certain competitive conditions to hold. The very factors discussed above that constrain DEI from acting unilaterally to restrain competition in other markets, clearly also restrain DEI and EAPL doing so together. This includes the threat of end users switching to gas from PNG, Timor, Western Australia or Queensland. The further factor to emphasise here, and one not closely examined by the NCC, is the opportunities for consumers to switch from delivered gas to electricity. Significant scope for switching provides strong competitive pressure over the medium term.
101. Apart from the competitive constraints derived from the market place, there are significant statutory provisions contained within Part IV of the *Trade Practices Act* ("TPA") dealing with the regulation of collusive conduct and misuse of market power and anti-competitive conduct generally. The ACCC as the competition regulator has extensive power to enquire into complaints, call for documents, examine individuals on oath or otherwise and take proceedings for a range of extensive remedies including orders for the imposition of substantial fines (pecuniary penalties) of up to \$10million for a corporation for each offense and up to \$500,000 for individuals for each offense. Attached to this submission is a commentary on the regulatory oversight of anti-competitive conduct. Although the NCC has expressed the view in its draft recommendation

that the TPA insufficiently deals with anti-competitive conduct, our analysis of the enforcement of Part IV of the TPA demonstrates that the regulatory oversight of anti-competitive conduct is very extensive and contains significant disincentive to engage in such conduct. The recent cases (over the last five to seven years) clearly demonstrates the effectiveness of the regulatory oversight of anti-competitive conduct."

102. However, a key issue is the instability of any attempt to collude tacitly. Not only have they got weak incentives to collude, but if they did, it would be quite possible and likely they would "cheat" on any explicit deal. This would especially be the case for large contracts that come up for renegotiation on an infrequent basis.
103. The "Prisoner's Dilemma" model of the collusive option, for example, starkly presents one theoretical view. It is a one period game theory model, and applied to the current market context it unambiguously implies that collusion cannot be sustained. Each party would cheat on the agreement and compete by dropping their price to grab market share in a "blitzkrieg" fashion, catching the other with their prices up. DEI would have the strongest incentive to do this, as it is the new market entrant needing to acquire a share of a growing market. In principle, EAPL could "pay" DEI to shut this option down. But this cannot be enforced since EAPL would be prevented from merging or acquiring DEI.
104. The key fact that reinforces DEI's incentive is the existence of excess capacity. The NCC's Draft Recommendation (page 32) states that

"... on current configurations of the Eastern Gas Pipeline and the Moomba to Sydney pipeline there is excess transport capacity to Sydney. However, the amount of excess capacity, and the time taken for it to be absorbed by natural growth in the market is difficult to predict. A best estimate would suggest capacity constraints will emerge around 2010, although it is possible that peak seasonal demands might give rise to constraints as early as 2005." (NCC Draft Recommendation page 32)
105. These capacity constraints hold only in the absence of new capital investment in the respective pipelines. This point should not be ignored by the NCC.

**Figure 1: Forecast Demand relative to Current Capacity**



106. The NCC notes that in 1998, peak day deliveries under existing contracts totalled approximately 161PJ pa or about 94% of capacity. However, this represents a misunderstanding by the NCC. In fact, the peak deliveries on most pipelines exceed the steady state delivery capacity because gas can be derived from linepack to meet the peaks. Moreover, peak periods that may result in capacity constraints are generally temporary and short-lived. Peak demand capacity constraints are therefore unlikely to result in either EGP or EAPL having an extended opportunity to exert market power.

107. The NCC has also expressed concern that long-term ‘take-or-pay’ contracts have reduced uncontracted capacity available to third parties to around 9.9 PJ on some segments of the EAPL-MSP. However, while true in the very short term, this is likely to change significantly as long-term ‘take-or-pay’ contracts for capacity (together with the ‘take-or-pay’ contracts for Cooper Basin gas) ramp down over the period to 2006/7. DEI understands<sup>19</sup> that the ‘take-or-pay’ contracts for the whole of NSW and the Sydney basin respectively are as follows:

**Gas supply contracts with the Cooper Basin**

	Whole of NSW	Sydney Load
2000	118PJ	95PJ
2001	118PJ	95PJ
2002	106PJ	85PJ
2003	96PJ	76PJ
2004	86PJ	69PJ

<sup>19</sup> From EAPL information and industry expertise/knowledge.

2005	77PJ	62PJ
2006	70PJ	56PJ

**Gas transport agreement with EAPL**

	Whole of NSW	Sydney Load
2000	425TJ/d (155PJ)	346TJ/d (126PJ)
2001	425TJ/d (155PJ)	346TJ/d (126PJ)
2002	425TJ/d (155PJ)	346TJ/d (126PJ)
2003	399TJ/d (145PJ)	319TJ/d (116PJ)
2004	359TJ/d (131PJ)	279TJ/d (101PJ)
2005	323TJ/d (117PJ)	243TJ/d (88PJ)
2006	292TJ/d (106PJ)	211TJ/d (77PJ)
2007	162TJ/d (59PJ)	81TJ/d (29PJ)

108. The extent of spare capacity expected in the Sydney market is further highlighted in the following table.

[Commercial-in-Confidence material removed]

109. This table indicates that there will be substantial capacity to meet forecast demand in Sydney up until at least 2005-06 taking account of peaks in demand. For example, assuming a 66% load factor (based on historical information<sup>20</sup>) the demand in the Sydney market of 99PJ requires capacity of 410.7TJ/d or 150PJ annually. In this respect, total current estimated capacity into the Sydney market of 542TJ/d or 197PJ at a 66% load factor would serve a Sydney market demand of 130PJ.
110. We are concerned that the NCC's analysis appears to ignore the ability for both EAPL-MSP and the EGP to augment their current capacity quite substantially and at low cost. In particular:
- EAPL-MSP when fully compressed and operating at 100% load factor has sufficient capacity to serve the entire NSW market beyond 2020.
  - With the addition of EGP, demand as a proportion of capacity may reach only around 61 percent by 2020.
111. At commencement of operations the EGP will have an estimated pipeline capacity of 55PJ. The EGP has been constructed to provide a total estimated capacity of 110PJ, which may be achieved by increasing the number of compressor units from two to nine at four stations. The cost of constructing these additional compressor units is estimated at around ... per PJ (see table also). These costs are low relative to the initial investment.

[Commercial-in-confidence material removed]

112. Empirical and theoretical analysis suggests that the most likely outcome in capital intensive industries with excess capacity is vigorous competition. As the current capacities of these pipelines are adequate to cater for demand for several years, and given that capacity can be augmented relatively easily and at relatively low costs, competition resulting from excess capacity should prevail for the foreseeable future.
113. The issue of whether the market would be competitive or collusive, and the role of excess capacity in determining this outcome, figures prominently in this paper and in the NCC's own considerations. The difficulty for the NCC, and for this submission, is that the relevant multi-period framework from game

---

<sup>20</sup> The load factor of the NSW market is reasonable high because the temperature sensitive domestic and commercial sectors are relatively small compared to the industrial sector. By comparison, the load factor for the Victorian market is around 50%.

theory provides only very general guidance on the factors that may sustain or undermine collusion.

114. In particular, the *Folk Theorem* of infinitely repeated games predicts that players, if sufficiently patient, will be able to sustain collusion with prices above the competitive level. Prices may be sustained as high as the monopoly level. Conditions that have been shown to support tacit collusion include small number of players (or ability to co-ordinate punishments), easy detection of “cheating”, and ability of players to react quickly to punish non-co-operative behaviour.
115. However, the precise role of excess capacity is also somewhat ambiguous in these models. There are countervailing forces:
  - Large excess capacity undermines collusion to the extent that it provides each firm with the opportunity to serve a large increase in market share in response to a price undercut;
  - Large excess capacity reinforces collusion to the extent that it provides a tool for retaliation by other players (although the fact that very low marginal costs make such retaliation highly costly to both parties tends to undermine the credibility of this threat).
116. We are not aware of any robust evidence showing that one effect dominates the other either in the majority of cases or on the facts of this particular case.

*Conclusion on Criterion (a)*

117. For the EGP from Longford to Sydney/ACT we contend, on the facts applying to this case, that the NCC cannot be satisfied beyond a reasonable doubt that criterion (a) is satisfied.
118. First, we have identified a number of economic facts that rule out unilateral anti-competitive action by DEI.
119. Second, we have shown that EGP and EAPL have weak incentives to collude. In addition, it is our view that on balance excess capacity will promote rather than hinder competition. In particular, circumstances are quite likely to arise where large contracts come up for renegotiation on an infrequent basis and thereby attract fierce competition from DEI and EAPL and their respective gas basin producers. The incentive to “cheat” to secure a large contract is highly likely to overwhelm any fear of retaliatory actions.
120. In addition, market dynamics in the retail sector are also moving in a direction favourable to competition. AGL’s retail company will be one step further removed from the EAPL once that company is subsumed by Australian Pipeline Trust. It will wish to maintain security of supply and at least negotiate seriously with other parties to keep EAPL honest.

***Criterion (b): That it would be uneconomic for anyone to develop another pipeline***

121. The NCC argues that criterion (b) is directed at behaviour that involves developing a pipeline de nova or expanding an existing pipeline—by anyone—when it is uneconomic.
122. The meaning of the word ***uneconomic*** needs to be defined before this criterion can be used in any way that promotes the objectives of the Act. If the term is not defined, the NCC will not be able to identify or evaluate the facts required to examine whether the criterion holds with the 84% probability that has to be attained.
123. The NCC has sought guidance on this from the Sydney Airports decision, and the view taken by Australian Competition Tribunal of the similarly worded declaration provisions in section 44G(2)(b) and 44H(4)(b) that:
- “...the uneconomical to develop test should be construed in terms of the associated costs and benefits of development for society as a whole”. (Australian Competition Tribunal 2000 p78), p34 of the NCC Draft Recommendation.
124. This is a standard definition of efficiency in welfare economics. The NCC later confirmed its decision to use the welfare economics meaning of the word ‘efficiency’ for the term ‘uneconomic’ when it commented:
- “Criterion (b) would appear to be designed to identify for potential coverage pipelines where the development of competing pipelines would be **inefficient**”.—(Australian Competition Tribunal 2000 p78), p38 of the NCC Draft Recommendation.
125. On that basis, the task the NCC has set for itself, **before it can recommend coverage**, implies these four steps:
- Step 1. Consider all relevant firms, over the relevant future, in the absence of coverage. This is required by the term “anyone” in criterion (b), and by the forward-looking perspective the NCC has to take *before it makes a coverage decision*;
  - Step 2. Assess the **likelihood** of any one of these firms developing a new pipeline, or expanding an old pipeline, to provide services offered by the existing pipeline. If the likelihood is less than 84%, go no further. If it is greater than 84%, proceed to the next step;
  - Step 3. Assess the **likelihood** that the outcome of a firm developing such a pipeline would be inefficient, in which case the pipeline would be *uneconomic for society as a whole*;
  - Step 4. Finally, establish whether the combined likelihood of those two previous requirements, in Steps 2 and 3, exceeds 84% by multiplying them together.
126. Any decision taken by the NCC will be impaired unless the NCC has taken each of those four steps, using relevant and reliable available information. This is a very strict test for coverage decisions, but it is logically imposed by the NCC’s

own interpretation of the wording of the section. Moreover, it is very properly strict. Recommending coverage takes away private property rights. This risks significant adverse economic consequences if it is not exercised with extreme care, not least because it will establish a precedent.

127. How should this simple methodology above be applied? The NCC tends to emphasise the existence of a so-called “natural monopoly” as the key to criterion (b) and looks at cost curves to determine this without assessing in detail whether in particular step 2 and step 3 both apply. The appropriate analytical techniques for the key steps 2 and 3 in a full analysis are:

- *Incentive analysis* for Step (2). The incentives for anyone to duplicate an incumbent natural monopoly’s assets appear low. In particular because natural monopolies have very strong incentives to contain their prices at a level that deters entry, and when private incentives are already aligned to social in this way, there is rarely a problem. Regulating merely causes a deadweight loss;
- *Social cost-benefit analysis* for Step (3). The problem of cost duplication in the natural monopoly case, is not the only relevant issue. The other issue which requires consideration is the optimal depletion rates of competing gas basins with non-renewable resources, and the extent to which any one basin and its pipeline can optimally serve the whole relevant final market, in this case in the market for delivered gas in Sydney. Note that this is implied in the Sydney Airports test.

128. In general a natural monopoly situation makes it highly unlikely that anyone would have a *private* incentive to develop an *inefficient* pipeline—they would get slaughtered by the incumbent. When private and social incentives are thus aligned, economic problems are rare. To regulate merely creates and imposes deadweight losses. This explains the strictness of the test in criterion (b).

129. The consistent central problem in the NCC methodology that gives rise to this outcome is their failure to identify and apply relevant incentive analysis. As a result, they end up continuously ignoring certain critical economic relationships between key variables.

#### Applying the criteria

130. The NCC concludes that it would be uneconomic to develop a new pipeline to provide the services of the EGP, noting that the EGP will be characterised by high construction costs and low operating costs. It therefore concludes that “it will almost always be cheaper to transport gas through the EGP (up to the point of full developable capacity) than it will be to develop another pipeline to transport gas along the route of the EGP”<sup>21</sup>.

---

<sup>21</sup> Again, we assume that the NCC meant to use the term “develop”, rather than the term “build”.

131. This is not strictly correct. As noted above, the NCC considers the term ‘develop’ to include an existing pipeline, whether or not the pipeline needs enhancement. Therefore, under the NCC’s definition of the relevant service, the Interconnect provides an existing service from Longford to Sydney. With these services providing direct competition to the EGP, it is not at all obvious that “it will almost always be cheaper to transport gas through the Eastern Gas Pipeline”.
132. On this basis, the economic cost of ‘developing’ (using the NCC’s definition outlined above) the Interconnect pipeline to provide the services provided by the EGP is practically nil. This could be justified by a drop in the price of delivered gas that causes a significant increase in demand<sup>22</sup>. This scenario is certainly conceivable under the NCC’s belief that existing excess capacity will be eliminated by 2005.

### **Longford to South of ACT**

133. In terms of criterion (a), we find that the very small population of less than 20,000 people in relevant areas makes the possible gains too small to warrant particular discriminatory attention by DEI. Their main focus must surely be on the much larger Sydney/ACT market. (We will also show in Chapter 3 that the costs of regulation outweigh any possible benefit to the small population of users.)

Our focus therefore in this section is to assess whether criterion (b) holds with respect to Longford south of ACT.

#### *Key point of the NCC’s recommendation*

134. The NCC did not elaborate a clear methodology for decision making but it did focus on certain facts. In particular the NCC focused on evidence of natural monopoly which arises from the nature of the cost curves of pipelines, as follows:

“The rationale for the Victorian, NSW and Commonwealth Gas Access Acts and the National Code is that access regulations should be limited to infrastructure where competing facilities are not economically viable. As such access regulation should normally be confined to infrastructure exhibiting **natural monopoly characteristics** – that’s is, where a single facility can meet market demand at less cost than two or more facilities” .p33

---

<sup>22</sup> As noted above and described fully in DEI’s submission, prices for firm forward haul have fallen by around 23%. AGA estimate the point elasticity of a 1% change in the price of gas will cause manufacturers (industry accounts for 68% of gas consumption in NSW) to change gas consumption by 1.06%. This suggests that a 5% change in transport prices would result in 0.8% change in consumption, and the price reductions to date should increase demand by nearly 4%. Further price falls can be expected to stimulate additional demand. Should it be required, current capacity on both the Interconnect and the EGP can be augmented at relatively low incremental cost.

*Key areas of uncertainty/disagreement*

135. We are concerned that the NCC does not explain the basis of its view using a clear method. According to our method described earlier, the relevance of natural monopolies must either relate to:

- Step (2), the *likelihood* of people developing or expanding pipelines (e.g. incentives); or
- Step (3), the *likelihood* of inefficiency (i.e. social costs and benefits); or
- Both requirements.

Step (2) - likelihood of people developing or expanding pipelines

136. Given the size of this market, the likelihood of any party either developing a new pipeline, or expanding an old pipeline, to compete with the EGP surely must be very low.

137. At one point the NCC in effect, and probably inadvertently, notes this very strong point about criterion (b) when it says that:

“...natural monopoly characteristics...strongly curtail opportunities for construction of pipelines” p42.

138. *If* the EGP has a natural monopoly position in south of ACT – on which we believe there is reasonable doubt - the admission above by the NCC alone suggests a very low likelihood that anyone would develop or expand a pipeline. Logically this means that the situation covered by criterion (b) is unlikely to hold.

Step 3 – likelihood of an inefficient outcome were a pipeline developed

139. Having said this, one must assume there must be an offsetting effect through Step (3) whereby a natural monopoly increases the likelihood of inefficiency if someone develops or expands a pipeline - or our second condition. The analysis here runs parallel to that developed for Longford to Sydney/ACT. The NCC has not undertaken this analysis.

### 3. WELFARE ANALYSIS: CRITERION (D)

*That access (or increased access) to the services provided by means of the pipeline would not be contrary to the public interest*

#### **Introduction**

In this section we consider whether criterion (d) is satisfied, taking into account uncertainty about the state of the world and the effects of coverage in these states. The uncertainty is about the nature of the market in which DEI operates – and, in particular, uncertainty about whether criterion (a) is satisfied. The effects considered include both the possible economic benefits of regulation, in terms of increased allocative efficiency, and its direct and indirect costs.

#### *Key Issues in the NCC Draft Recommendation*

140. In considering criterion (d), the NCC adopts a comparative-institutional approach, noting that:

“The NCC recognises that inevitably any regulatory model would have some shortcomings that would cause it to fall short of the results achieved in a competitive market, but that regulation of a pipeline is justified where the results under regulation would improve on the results without regulation.”

141. The NCC further notes that consideration of the results may encompass questions of equity and regional development as well as those of economic efficiency. But in the consideration of this particular case the NCC does not consider such effects in this case. It does, however, consider the issue of the potential value of a “uniform” approach to regulation.

142. The NCC does not explicitly address the question of the magnitude of potential benefits and costs of regulation. But it does state that “many of the criticisms levelled by DEI and others against the National Code have not been substantiated.”

143. It argues instead that the Code is very flexible and regulation under the Code should therefore have little cost.

144. The NCC concludes that criterion (d) is met.

#### *Key Differences Between DEI and the NCC*

145. DEI and the NCC agree on the need to consider the results with and without regulation (that is, on the need for a comparative-institutional analysis). In addition, DEI, like the NCC, is not aware of any environment, regional-development, or equity issues that need to be considered.

146. There are two areas of apparent substantive disagreement between DEI and the NCC where further analysis is warranted:

- The first is whether uniformity of regulatory application is *per se* a benefit? The NCC has itself recognised that a consideration of whether the pipeline and its services should be covered involves a "with or without" analysis of the market which necessarily means that the real question is a transactional consideration of the criteria as they apply in the circumstances of the particular case and not one of simply seeking to achieve the same outcome in every case.
- The second is whether regulation under the Code has significant costs. DEI believes that regulatory costs are significant and that the NCC is required to compare explicitly the magnitudes of costs and benefits of coverage versus no coverage in forming a view on criterion (d).

147. We consider this last issue in some detail in this section, applying our methodological framework for comparing the likely costs and benefits of regulation, given uncertainty about the state of the world set out in Chapter 3.<sup>23</sup>

### Overview of Estimation

148. The goal of the chapter is to estimate the costs and benefits of regulation and therefore to put numbers on the key values mentioned in Chapter 2:

- The value of not regulating a competitive market:  $V(N/C) - V(R/C)$
- The value of regulating a collusive market:  $V(R/M) - V(N/M)$ .

149. With these estimates, we can deduce an estimate of the threshold probability of collusion above which it is reasonable to conclude that criterion (d) is satisfied.

150. Given the complexity of the world and the time available, our estimates are necessarily approximate but they provide an excellent guide to the possible cost. They may even be conservative.

151. We consider the costs and benefits under the following headings:

- Direct costs of regulation (the administrative and compliance costs)
- The indirect costs and benefits (the benefits of possibly lower prices, the costs in terms of efficiency etc) which we further decompose into three categories: allocative efficiency, production efficiency, and dynamic efficiency.

---

<sup>23</sup> The primary relevant uncertainty is about whether criteria a and b hold. In principle, uncertainty about each criterion should be entertained independently: that is, we should consider the possibility that (a) holds but (b) does not; that (b) holds but (a) does not, and so on. To simplify the analysis, given the limited time, we assume that there are just two states of the world:

- Both criterion (a) and criterion (b) hold—which we describe, for convenience as the “collusive” or “monopolistic” state of the world.
- Either criterion (a) or criterion (b) does not hold—which we describe, for convenience, as the “competitive” state of the world. (In the subsequent quantitative modeling, we assume for simplicity that neither holds).

152. For reasons discussed later, we also need to consider both the case in which the EAPL-MSP is assumed covered and the case in which EAPL-MSP is covered if and only if the EGP is covered. In this case, we estimate the costs and benefits of regulating the *two* pipelines.

153. Thus, overall we attempt to provide estimates of all the cells in the following table:

	Benefits (Costs) of Coverage Versus No Coverage NPV (\$m)	
	EAPL-MSP Assumed Covered	EAPL-MSP and EGP Covered or Not Covered Together
Competitive market: Direct costs/benefits of regulation Indirect costs/benefits of regulation	X	x
Collusive market: Direct costs/benefits of regulation Indirect costs/benefits of regulation	Y	y

### Direct Costs of Regulation Under the Code

154. In this section we estimate the magnitude of the direct costs of regulation—that is, the out-of-pocket costs borne by the ACCC, DEI, and other parties to the regulatory process. The direct costs of regulation can be broken down as follows.

#### *Costs Borne by DEI*

155. We estimate that the direct costs to DEI, if the whole pipeline were to be regulated, would be in the order of:<sup>24</sup>

- \$1 million to establish the Access Arrangement under the Gas Code (based of the Australian Gas Associations estimates of the costs for negotiating larger access arrangements, particularly for transmission pipelines);
- \$500,000 every five years as part of their re-negotiation of the Access Arrangement;

---

<sup>24</sup> By way of comparison, we estimate that the total cost DEI has incurred to date in addressing the regulation of the EGP amounts to \$800,000. This includes the preparation of the ACCC Undertaking and the subsequent NCC process to date.

- \$100,000 per year to comply with the requirements of an access arrangement.

156. These costs flow from (among other things):

- Demands on in-house senior management resources;
- Costly outside specialist advice; and
- Lengthy processes to arrive at final Access Arrangements.

157. The costs to DEI of coverage of a section of its transmission pipeline are likely to be of the same order as those required for the whole pipeline. The same basic process and information requirements and ongoing compliance costs are required regardless of whether all or a portion of the pipeline is covered. To err on the side of caution we have assumed the costs to DEI of putting in place and reviewing an access arrangement for south of ACT is half that of the full-coverage rate, though the ongoing compliance costs remain the same as for coverage of the whole pipeline.

#### *Costs Borne by ACCC as Regulatory Agency*

158. DEI cannot observe the direct costs to the ACCC, but the ACCC would probably face costs similar to DEI's, both in terms of time and the need to hire consultants with specific industry and legal expertise. The costs to the ACCC of establishing and reviewing an access arrangement for a large transmission pipeline are likely, taking a conservative estimate, to be \$250,000. This compares to the total cost of \$15 million<sup>25</sup> to run the 'Improvement in Market Conduct' division of the ACCC that has responsibility for regulating the gas sector. The costs to the ACCC of ongoing monitoring are likely to be relatively small, and these costs are largely born by DEI. We assume the ACCC's costs for partial coverage reduce in the same proportion as DEI's.

#### *Lobbying Costs Borne by Other Companies*

159. If the EGP is covered there will be both public consultations and the opportunity for submissions on the draft access arrangement. Experience from the process of covering other significant national transmission pipelines suggests that the costs borne by other parties will be at least \$100,000 at the beginning, and at each review. We assume no lobbying costs in the case of partial coverage.

#### *Court Costs*

160. There is also the risk of possible court action in respect of disputed regulatory outcomes of these processes. While difficult to assess, court costs are potentially quite large for all parties involved. We estimated *expected* court costs, for the case of full coverage only, of \$500,000.

---

<sup>25</sup> ACCC Annual Report 1998-99

### *Monitoring Costs of No Coverage*

161. If the EGP is not covered, some costs will still be incurred as DEI's performance is monitored to see whether the decision should be revised. We estimate these at roughly \$100,000 per year for full coverage and half that for partial coverage.

### **ESTIMATED INCREMENTAL DIRECT COSTS OF REGULATION (PRESENT VALUE IN MILLIONS OF DOLLARS)**

	Partial Coverage (\$m)	Coverage (\$m)
DEI Costs	1.7	2.5
ACCC Costs	0.6	0.9
Court Costs	0.0	0.5
Others' Lobbying Costs	0.0	0.4
Less Monitoring Costs Incurred with No Coverage	-0.4	-0.9
Total incremental costs	1.9	3.4

(When we consider the case in which coverage of the EAPL-MSP is also at issue, we assume these direct costs of regulation are doubled.)

### **Indirect Cost and Benefits of Regulation under the Code**

162. The indirect costs and benefits of regulation may be traced through the contracts and institutions that govern the financial and physical flows of resources through the energy industry. The transmission of regulatory effects occurs through desired and undesired impacts on property rights, risk allocation, costs, information, and incentives. Hence, properly conducted, the analysis would show how distortions in one market (e.g. gas transport) feed through into other output and input markets (such as gas production and usage).
163. This section provides a conservative estimate of these effects by conducting a high-level evaluation of impacts on allocation, production, and dynamic efficiency. These impacts are derived under alternative assumptions about firm behaviour, in particular whether EAPL and DEI compete aggressively for market share or engage in tacit collusion to maintain prices above competitive levels. Where appropriate, the analysis also considers how the efficiency impacts vary across alternative tariff-setting approaches.
164. As pointed out in the NCC's Draft Recommendation, the *National Third Party Access Code for Natural Gas Pipeline Systems* provides the ACCC with considerable flexibility in the setting of reference tariffs. A key point, however, is that all approaches are based on concepts inherent in a cost of service methodology.

165. In one manner or another, the reference tariff is designed to provide the asset owner with regulated revenue streams that recoup the efficient cost of delivering the service across the projected life of the asset. The approach is to identify the cost of the capital deployed by the asset owner (normally financed by a mix of debt and equity and therefore a function of the weighted average cost of that capital - WACC) and the non-capital costs, and determine the theoretical efficient cost of providing the services so as to provide the asset owner with that degree of revenue which accommodates only efficient cost. That notion necessarily involves an assessment of the appropriate rate of return on the capital, the depreciation rate of that capital and the operating, maintenance and other non capital costs directly incurred in providing the natural gas transportation services.
166. Within this framework, the regulator may set tariffs using either a ‘standard’ approach or the ‘loss capitalisation’ (or ‘negative depreciation’) approach:
- The standard approach is where tariffs are set for each (five year) review period to cover the efficient cost of service during that period, taking account of expected utilisation rates during that period. This approach results in initially high tariffs that decline over time;
  - The loss capitalisation approach is where tariffs are set lower than in the standard approach and the resulting losses are capitalised into the next tariff review period. This is sometimes also referred to as the “negative depreciation approach”.<sup>26</sup> Depending on the extent of losses permitted, this approach may result in tariffs being held approximately constant across review periods or possibly even increasing over time.

### **Allocation Efficiency**

167. Allocation efficiency effects occur when use of pipeline services change when the pipeline is covered. For the purposes of our assessment, we assume that use will change only if prices differ. Also, for the sake of tractability with the available information, the analysis assumes one generic service, perhaps best thought of as the firm forward haul service from Longford to Sydney.<sup>27</sup>
168. We consider the three cases of competition and collusion for areas to Sydney/ACT and the monopoly model for areas south of ACT.

---

<sup>26</sup> See the ACCC decision on the Central West Pipeline.

<sup>27</sup> In principle, an estimate of allocative efficiency effects first requires a decision to be made on the relevant services offered by DEI. Every offering that has its own price could be considered a service for the purpose of the analysis. If there are  $X$  categories of consumer,  $Y$  destinations (ACT, Sydney, etc.), and  $Z$  types of service (firm, interruptible, etc.), there are  $X \times Y \times Z$  services.

*Sydney/ACT: Competitive Market*

169. It is not practical to design a highly detailed model of a competitive market within the time available. Therefore the aim in this section is to estimate a lower bound on the magnitude of allocative efficiency loss caused by price regulation of a competitive market.

170. Consistent with the focus on estimating the lower bound on allocative inefficiency, the following assumptions are made to keep the analysis as simple as possible:

- *High substitutability between sources of delivered gas*

Delivered gas from one gas basin is perfectly substitutable with gas from another basin, with zero switching cost. This assumption has the implication that the price of delivered gas in Sydney will be the same irrespective of the source and means of transport of that gas;

- *Liquid secondary market for pipeline capacity*

Users who have contracted rights for the use of pipeline capacity are able to trade these rights on a liquid secondary market. The existence of such a market within a competitive model has two implications: first, it reinforces the competitiveness of the market since at any point in time there is a greater number of suppliers of capacity; second it serves to minimise the extent of allocative inefficiencies caused by price regulation since the secondary market facilitates the transfer of capacity rights to those with highest value use of those rights;

- *Highly elastic supply of commodity gas*

To assume a perfectly elastic supply of complementary factors means that any change in the price of pipeline services is reflected proportionately in the price of delivered gas. This is purely a simplifying assumption so that the calculations need consider only the elasticity of final demand and ignore any direct impacts on gas producers.<sup>28</sup>

171. The regulatory assumptions are as follows:

- *Verifiable costs*

That the efficient cost-of-service level is verifiable to the regulator and that the equilibrium risk-free rate and risk level are each known so that the regulator may determine an appropriate weighted-average cost of capital (WACC) when determining the reference tariff;

- *Price caps*

Although not stated explicitly in the Code, the reference tariff determined by the regulated revenue is assumed to be a maximum price that may be charged by

---

<sup>28</sup> If this assumption were weakened so that the supply of commodity gas is moderately elastic then the calculations would also have to take into account the distortions impacting directly on the gas production market. It is not clear whether this would produce a higher or lower estimate of efficiency loss.

the pipeline owner (unless the buyer agrees otherwise). The pipeline owner may trade at market prices less than the reference tariff;

- *Regulator maximises net welfare*

The Code provides the ACCC with considerable flexibility in setting reference tariffs, provided such tariffs are consistent with the objectives and conditions in Section 8 of the Code. Since the particular tariff rule that would be applied to the EGP is not known at this time, it is assumed that the ACCC would apply a profile for tariffs that maximises net welfare of Australians subject to the ‘cost of service’ and other constraints of Section 8.

- *Case-by-case decisions*

The NCC’s decision whether to recommend cover on a pipeline must be made on a case-by-case basis. The decision is being made in the context that the EAPL-MSP is covered. However, to be comprehensive, our analysis also includes the case where a joint decision is made between cover and not cover of both the EGP and the EAPL-MSP;

- *Legally binding Undertaking*

That the Undertaking previously submitted to the ACCC by DEI was sufficiently complete such that it would have been legally binding had it been accepted by the ACCC. This is intended as a simplifying assumption rather than an assessment of legal position.

#### Prices When the EGP is Not Covered

172. The task in this part is to determine competitive market prices when EGP is uncovered (given that EAPL-MSP is already covered). In this respect, DEI’s Undertaking may be interpreted as a “first offer” in a complex multi-round regulatory and market process. We have assumed that had the Undertaking been accepted by the ACCC it would have been binding. Therefore, DEI would not have proposed the Undertaking unless it was expected to provide at least an adequate expected rate of return on assets. It is therefore reasonable to conclude that the Undertaking represents an upper bound on the level of competitive prices.

173. In the case where EAPL-MSP is not covered, prices would also be at competitive levels.

#### Prices When the EGP is Covered

174. Given the profile of market prices when EGP is not covered, there are three possible scenarios for the reference tariff on the EGP:

- The reference tariff is above the “uncovered” market price throughout the entire life of the pipeline;
- The reference tariff is always below the uncovered price;

- The reference tariff is initially higher (lower) than the uncovered price but reduces below (above) the uncovered price at some future date (but with the NPV of expected revenue net of costs being zero).
175. In the first case, the reference tariff is always above the uncovered price and therefore is not binding. A decision to cover EGP has no impact on market prices or allocative efficiency (since the level of usage would not change if coverage were removed).
176. In the second case, the reference tariff is always below the uncovered price and this increases allocative efficiency provided the tariff is above short-run marginal cost and demand is less than capacity.<sup>29</sup> Congestion due to demand exceeding capacity at the tariff level would not reduce allocative efficiency since the secondary market would reallocate capacity to its highest value uses.
177. However, given that tariffs are set on an efficient cost of service level, the profile described is possible only if the WACC assumed by the ACCC is below the equilibrium market WACC that would arise from competitive outcomes. This is contrary to the objectives of the Code and amounts to “regulatory takings”. Such an approach would deter investment in regulated investments to the detriment of the long run welfare of Australians.
178. In the third case, the tariff is below the uncovered price for some periods and above during other periods. Again, allocative efficiency may be improved but only through a below-market WACC. This follows since the market price prevailing in each period would be the lesser of the tariff and the uncovered price. Thus, because the NPV of revenue assumed when setting the tariff cannot be fulfilled, the actual WACC achieved will be below the market WACC.

### Summary

179. In summary, as might be expected, for the case of the competitive model with a liquid secondary market and accurate information, allocative efficiency would be unaffected by a decision to cover the EGP provided the ACCC does not force a below-market WACC.<sup>30</sup> We therefore conclude that coverage has minimal allocative efficiency effects and that this applies irrespective of whether EAPL-MSP is or is not covered.
180. However, if the regulator has inaccurate information on the variables above it follows that mistakes may be made and that the probability of such mistakes may deter investment in regulated industries to some extent, to the detriment of the long run welfare of Australians. This adds weight to the principle of cautionary regulatory behaviour. Nevertheless, for the purposes of this case we do not attempt to estimate the magnitude of such losses.

---

<sup>29</sup> Strictly, a tariff below short run marginal cost may still improve efficiency provided the deadweight loss created is less than the deadweight loss created by the price above marginal cost.

<sup>30</sup> If the ACC does impose a below-market WACC the costs in terms of dynamic efficiency may be large.

*Sydney/ACT: Collusive Market*

181. In this section it is assumed that EAPL and DEI engage in tacit collusion and that, for some reason, the Trade Practices Act does not prevent the problem. Analogous with the previous section, a range of additional assumptions is made to enable conclusions to be drawn. In contrast to the competition model, these assumptions enable the calculations to derive an *upper* bound on the gains to allocative efficiency from a coverage order.

182. The analysis first considers the impact of regulation on allocative efficiency when the EAPL-MSP is already covered and then considers the case where a joint decision on coverage is being made for both the EGP and the EAPL-MSP.

183. Specific assumptions are:

- High substitutability between sources of delivered gas (same as previous section);
- Absence of secondary market for pipeline capacity;
- Primary contracts for capacity specify a “no resale” clause so that a secondary market cannot develop to undermine collusion;<sup>31</sup>
- Highly elastic supply of commodity gas (same as previous section);
- Market power;

The extent of collusion is sufficiently strong so as to enable EAPL and DEI to behave as would a monopolist, but subject to any regulatory constraints imposed. Collusion is interpreted to mean that EAPL and DEI specify the same prices except in circumstances where a higher price by one company does not reduce returns to the other company (see below);

- Regulatory assumptions (same as previous section).

Prices When the EGP is Not Covered (EAPL-MSP Covered)

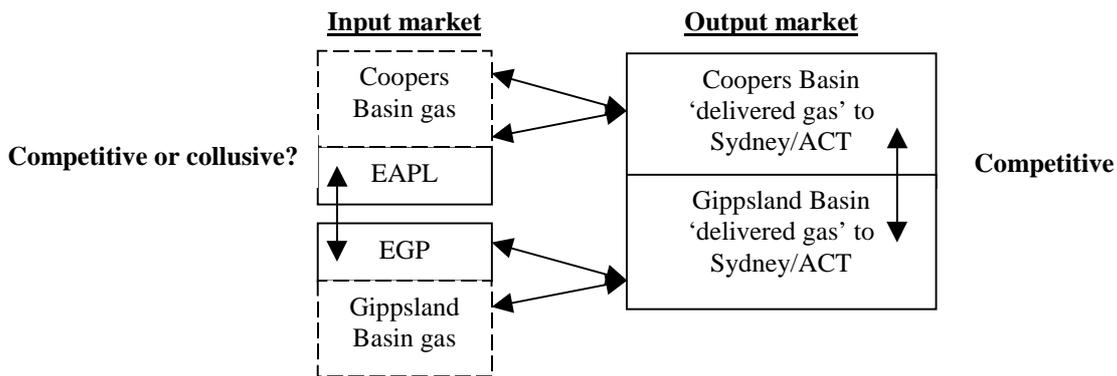
184. The fact that the EAPL-MSP is subject to coverage has an important impact on market prices. This applies both when the EGP is and is not covered. In effect, in certain circumstances, coverage of the EAPL-MSP serves as *de facto* coverage of the EGP. Hence, the EGP may be severely constrained in ability to set prices at the monopoly level, so that ordering explicit cover on the EGP achieves very little improvement in allocative efficiency.

---

<sup>31</sup> There are limits to this since ownership of capacity rights could still change hands through merger and acquisition in corporate control market.

185. The conditions required for this result to hold are high substitutability between delivered gas from alternative gas basins, high elasticity of supply of gas, and significant excess capacity. All three conditions are very close approximations to the facts of this case.
186. The key to understanding the result that coverage may do little to improve allocative efficiency is to observe that competition in the delivered gas market may serve as a substitute for competition in the gas transport market (particularly when one pipeline is already covered). This is illustrated in the Figure following Paragraph 183.
187. The first observation is that delivered gas from Cooper Basin is a distinct (but highly substitutable) product from delivered gas from the Gippsland Basin. Suppose for the sake of clarity that the Cooper and Gippsland basins supply fixed quantities of gas at fixed commodity prices (this assumption is relaxed below). Clearly, in the absence of any regulatory constraints, if EAPL and DEI collude to put up their prices for pipeline capacity this will be reflected in the prices of both delivered gas products.
188. However, now suppose (as is the case) that the EAPL-MSP is covered and the reference tariff is set below the collusive price. This provides suppliers of Cooper Basin delivered gas with a cost advantage so that they can undercut prices offered by suppliers of Gippsland Basin delivered gas. As highly substitutable products, competition in the output market will result in delivered gas prices from both basins being reduced to levels consistent with the tariff on the EAPL-MSP. Thus, if EAPL-MSP accounts for 20 percent of total price of delivered gas, then a tariff that reduces EAPL-MSP prices by 10 percent would lower delivered gas prices by 2 percent.

## Transmission of competition effects<sup>32</sup>



189. The lower price on Gippsland Basin delivered gas must be reflected back into input prices, namely EGP prices. Hence, a tariff cap on EAPL-MSP prices transmits through the competitive market for delivered gas to become a *de facto* cap on EGP prices.<sup>33</sup>
190. The example generalises readily to the case where Cooper and Gippsland gas supplies are treated as complementary inputs to delivered gas. The key requirement is that the elasticity of gas supply from the two basins be high relative to supply elasticities of EAPL-MSP and EGP services.<sup>34</sup>

### *Impact of Capacity Constraints*

191. One of the assumptions made in the above analysis was the existence of considerable excess capacity. While this is consistent with the facts at this time, the following shows that collusion could lead to monopoly-like pricing at a later date once excess capacity has diminished to low levels.
192. The key factor is the level of total demand relative to the EAPL-MSP capacity. By definition, once total demand exceeds EAPL-MSP capacity by a sufficient margin, any undercutting of price by the suppliers of Cooper gas will improve their market share by only a limited amount – the precise amount will depend on the distribution of demand between the EAPL-MSP and the EGP at that time.

<sup>32</sup> A missing element in this figure is the role of Distribution as an input factor. Distribution inserts itself in the value chain between EAPL and EGP and the final output market. The prices and services delivered by the distribution system operator have the ability to distort competition and encourage users to purchase the service of one transmission pipeline over another.

<sup>33</sup> This analysis raises the issue of whether the incentives for collusion are likely to break down when the EAPL is covered. Since the cost-of-service tariff applied to the EAPL prevents EAPL and probably also DEI from earning significant rents the benefits may be insufficient to discourage the companies cheating on the tacit deal. We view this as a further reason for viewing the probability of collusion as quite low.

<sup>34</sup> This assumption is highly plausible given the fixed cost nature of pipelines. Nevertheless, to the extent that gas supplies are less than perfectly elastic then a change in EAPL prices will have some impact on gas prices and impose less constraint on EGP prices.

193. Hence, if DEI were to raise the EGP price to monopoly levels the revenue to DEI will increase provided the proportionate increase in price exceeds the proportionate reduction in volume as EAPL-MSP utilisation increases to 100 percent.<sup>35</sup> Both DEI and EAPL would benefit from such collusion since DEI would earn rents on that proportion of demand in excess of EAPL-MSP capacity, while EAPL also would earn a higher return due to volume increasing to capacity at the tariff rate.
194. It would be possible to estimate the NPV of allocative inefficiency covering the period of monopoly-like behaviour. But the more important point is that with fully extended capacity such monopoly prices could not occur for at least 20 years.

#### Prices When the EGP is Covered (EAPL-MSP covered)

195. In the event that the NCC recommends coverage of the EGP then the ACCC will be required to specify or approve a reference tariff based on the efficient cost-of-service of the EGP. To the extent that the EGP has a different cost base to the EAPL-MSP the average tariff rate applied to each will differ. The profiles of the two tariffs may also differ due to different pricing approaches being accepted by the ACCC.
196. Applying the results of the discussion of the previous subsection, it follows that the lower of the two reference tariffs will tend to constrain the other pipeline's prices to below its own reference tariff – and hence below the equilibrium WACC assumed by the regulator.<sup>36</sup>
197. In summary, it is highly likely that coverage of the EAPL-MSP will enforce de facto coverage on the EGP, for all periods except where demand exceeds capacity by a significant margin. Hence we conclude that coverage will have no significant impact on allocative efficiency.

#### Prices When the EGP and the EAPL-MSP are Uncovered

198. Although the EAPL-MSP is currently covered, the NCC still may be interested in assessing allocative efficiency if both the EGP and the EAPL-MSP are uncovered *and* DEI and EAPL behave collusively.
199. We have made the assumption that collusion between DEI and EAPL is sufficiently strong to result in monopoly-like behaviour. However, this does not imply that such behaviour is unconstrained. Instead, provided an application is received from another party, the NCC always retains the option to recommend cover at a later date. And a credible threat to recommend cover at a later date

---

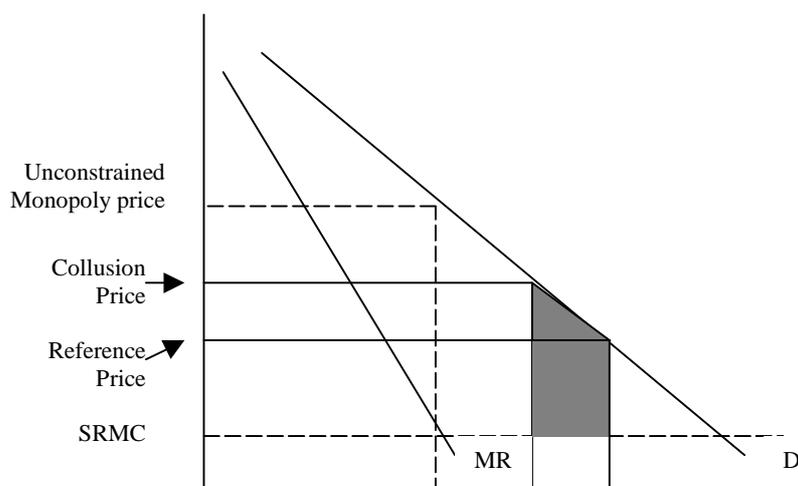
<sup>35</sup> In practice, the level of prices that DEI could charge would be constrained by the threat of cover being imposed. This is discussed more fully in the subsection on “Prices when the EGP and the EAPL are uncovered”.

<sup>36</sup> This analysis suggests there may difficulty in reconciling the cost-of-service approach applied on a case-by-case basis with market forces that tend to operate to close such gaps. DEI believes that this issue warrants detailed analysis by the NCC prior to any decision on coverage of the EGP.

would attenuate any incentive for DEI and EAPL to raise their prices to monopoly levels. Similar to the case above where the EAPL-MSP is covered, a credible threat of cover acts as *de facto* coverage.

200. In the face of this threat, the best approach for the colluding parties would be to strike a balance between higher prices and higher probability of losing all rents when the threat is turned into action. Thus, the allocative efficiency loss would be measured by the shaded area in following figure.

## Allocation Inefficiency of Collusion relative to Coverage



201. The more credible the regulatory threat the lower price level that will prevail. There are good reasons to expect the threat to be credible:

- An appropriate regulatory structure is in place;
- The NCC is obliged to consider an application from another party and to make its recommendation on the facts of the case;
- Buyers of pipeline services have strong incentives to monitor the prices and profitability of EAPL and DEI and apply for cover if they believe prices are excessive relative to the quality of services being offered;
- Other parts of government and public interest groups also have incentives to monitor;
- Prices are transparent and may be compared (with some adjustments) to tariffs applying to pipelines in Australia.

202. For all these reasons it would seem appropriate to assume that collusive behaviour would result in prices no greater than 10 percent above competitive prices. Prices much higher than would create strong incentives for buyers to apply for coverage and provide a fairly clear cut case for the NCC to make its decision. On this basis, our estimate of the allocative inefficiency is about \$21 million in present values.

### *South of ACT*

203. If, as NCC suggest, there is scope for monopolistic price behaviour by EGP in areas south of ACT, then coverage may result in reference tariffs for gas transport being lower than the prices that might occur if there was no coverage. As a consequence, coverage may in principle result in a more efficient allocation of scarce resources.
204. In practice, it is not at all clear that DEI would charge prices significantly higher than those established by regulation. DEI contends that the Undertaking prices do not in any way reflect monopoly pricing and notes that the Undertaking prices represent a substantial benefit to consumers south of ACT because EGP provides access to economies of scale in transportation and related services that consumers in the Longford-to-ACT region could not otherwise obtain.
205. For the sake of the argument, however, we assume that DEI does price somewhat higher under the no-coverage case than under the coverage case. As in the previous section, we assume that DEI's pricing if it is not covered is constrained by threat of regulation (as well as competition from electricity and other forms of gas transport). Thus the potential allocative efficiency gain is again the shaded area in the diagram above.
206. To calculate the allocative efficiency we need to know the prices both under regulation and the higher unconstrained price, as well as the quantities of gas supplied in the market and under both the marked-up and reference tariffs.
207. DEI's ACCC Undertaking provides prices for transport of gas south of ACT. There are two price zones south of ACT. In the first price zone, closest to Longford, the cost of transporting gas is 30c/GJ. In the second zone in rural NSW the price 65c/GJ. For simplicity we have assumed an average price of 47.5c/GJ across the two zones. Given that the pipeline is not yet in operation we cannot observe actual prices, and hence we have to make assumptions about plausible monopoly and reference tariffs based on DEI's Undertaking prices.
208. A reference tariff based on a stand-alone cost of service methodology, as set out in the Code, would result in transport prices that would be prohibitively high. Hence for illustrative purposes we have assumed that the regulator uses some allocative of joint and common costs to arrive at a reference tariff. We assume this reference tariff is 20 percent lower than DEI's Undertaking price, and that DEI Undertaking price reflects monopoly pricing.
209. In terms of the quantity of gas likely to be consumed south of ACT, DEI considers that the main demand is likely to arise from the new proposed local reticulation systems for Bairnsdale in Victoria and Cooma and Bombala in NSW<sup>37</sup>. The populations of these three townships are Bairnsdale, 10,890,

---

<sup>37</sup> Duke Energy in Bairnsdale is developing a small electricity peaking station consuming 1PJ per annum. Duke Energy have signed a long-term transport contract with EGP and are thus insulated from any changes to EGP transport prices in the medium term.

Cooma 7,150, and Boombala 1380.<sup>38</sup> Given these populations we anticipate that total demand for gas south of ACT is likely to be at an absolute maximum 2PJ (or 2,000,000 GJ) per annum.

210. To estimate the changes in quantities demanded as a result of changes in price we need estimates of the price elasticity of demand for gas transmission services. The only available evidence is the Australian Gas Association estimates of price elasticity for delivered residential gas of  $-0.78$ . We use this as a proxy of the price elasticity of demand for gas transmission services<sup>39</sup>. Gas transport prices are estimated to be only about 5-20% of total costs of retail gas, suggesting the elasticity for derived gas transmission demand may be in the region of  $-0.039$  to  $-0.16$ . To err on the side of caution we use the largest price elasticity in our calculations.
211. Given these assumptions if the service provided by EGP were to be regulated, and the reference tariff was to be 10% below those proposed by DEI. Applying the elasticity figure of  $-0.16$  to a 20% increase in price in the absence of regulation would result in the quantity demanded declining to 1,968,000 GJ per year giving the following formula to calculate the allocative efficiency gains:

$$0.5 (0.475/\text{GJ} - 0.4295/\text{GJ})(2,000,000 - 1,968,800\text{GJ}) + 0.38/\text{GJ}(2,000,000 - 1,968,800\text{GJ})$$

212. The potential allocative efficiency gains from the coverage of the EGP would be about \$14,000 per annum. Assuming a 10% discount rate, the present value of a 20-year stream of benefits of this size would be approximately \$120,000.<sup>40</sup>
213. While the exact extent of allocative efficiency gains or losses as a result can never be observed these figures provide an indication of the potential economic gains from regulating the pipeline south of ACT. These benefits are negligible.

#### *Summary of Allocation Efficiency Effects*

214. In summary, contrary to what may have been expected *a priori*, in the case of tacit collusion it is highly probable that ordering coverage on the EGP would have only a small to moderate effect on EGP prices relative to the case where the EGP is not covered. The reason for this is that other factors serve as *de facto* constraints on ability to exercise market power. If the EAPL-MSP remains covered the ability of DEI to raise EGP prices above the EAPL-MSP level would be severely constrained for many years. However, even if cover is removed from the EAPL-MSP then the existing strong threat of cover will serve to limit price increases. These small benefits need to be compared with the costs of imposing regulation.

---

<sup>38</sup> Source: Australian Bureau of Statistics. 1996 Census Data

<sup>39</sup> The  $-0.78$  price elasticity is a point elasticity estimate based on the impact of a 1% price increase. If prices and quantities increase by more than this then the elasticities are likely to change. However, it is difficult to assess how these elasticities might change.

<sup>40</sup> The results are of course sensitive to the assumptions made. If the elasticity was at the lower end of the range mentioned above, i.e.  $-0.039$ , for example, the present value of the gain would be about \$30,000. If the discount rate were 5%, the present value would be about \$175,000.

## **Productive Efficiency**

215. Productive efficiency is a measure of how few resources a firm uses to produce a given level of output. Pressures for productive efficiency are strongest when firms operate in competitive (or contestable) output and input markets and are subject to pressure to perform by the threat of being taken over by new owners. Firms that do not face these pressures are more susceptible to “organisational slack” creeping into their operations as a satisfactory level of profit may be achieved at less than full efficiency.
216. The Code recognises that the cost-of-service approach is vulnerable to weak incentives for production efficiency. To help mitigate this problem the Code provides for the regulator to develop or approve incentive mechanisms where by the pipeline owner may receive a share of revenue in excess of forecast or a share of costs less than forecast during a relevant period (section 8.44 – 8.46). DEI are not aware of any studies analysing the effectiveness of these measures in practice.
217. For gas pipelines the proportion of fixed cost to total cost is very high. For this reason, and given the availability of incentive mechanisms, the scope for productive inefficiencies from coverage will tend to be smaller than in some industries.<sup>41</sup> Nevertheless, they may not be insignificant. Suppose regulation lead to just a 5% increase in DEI’s operating costs over the 20-year period under consideration. Given DEI’s estimates of its operating costs, the cost in present values would be approximately \$5 million. If regulation’s effect were to lead to just a 1% increase in operating costs, the present value of the cost would be \$1 million. To be conservative, we use the latter estimate.
218. When we consider the case in which coverage of the EAPL-MSP is also at issue, we assume these productive-efficiency costs of regulation are doubled.

## **Dynamic Efficiency**

219. Dynamic efficiency is concerned with the speed with which an industry adopts superior new technology and produces improved new products and services. Adoption of new technology has supply-side effects through reductions in cost, while product innovation has demand-side effects by bringing the benefit of meeting buyer wants more fully.
220. Maintaining a clear distinction between production and product innovation is important in the case of gas pipelines where fixed costs account for a large proportion of total cost. These high fixed costs imply that scope for production innovation is likely to be limited once the pipeline has been constructed. In contrast, the scope for product innovation is much wider. Examples in DEI’s

---

<sup>41</sup> In drawing this conclusion, DEI wish to distinguish between productive efficiency as described in this section and issues concerning incentives for cost-padding of the capital base and unwarranted adjustments to the Depreciated Optimised Replacement Costs of assets. To the extent that these problems arise they lead to reference tariffs that are higher than a fully efficient cost-of-service, adding to problems of allocative efficiency.

previous submission to the NCC included Operational Balancing Agreements, Imbalance Trading, Parking and Lending, Peaking, Blending Services, and Commodity Linking and Pricing.

221. In terms of dynamic efficiency, price regulation has two fundamental problems:
- Tariffs are not based on firms' *ex ante* risk/return choices; and
  - Tariffs are based on costs rather than value created.
222. The first problem arises because investment in innovation is an inherently risky activity and no regulatory regime has yet been devised that replicates firms' *ex ante* risk/return choices. The key problem is that the firm's *ex ante* risk bearing is extremely difficult to verify *ex post*. For these reasons, the regulator specifies an *assumed* risk level when determining the WACC. Hence, irrespective of the precise approach to tariff setting, the result is to cause firms to focus on investments where costs are explicit and verifiable to regulators and risk is lower than the regulator's assumed WACC. Both the level and timing of investment may be distorted.
223. The second problem arises because the added value to users from successful product innovation is observed only highly imprecisely by regulators (if at all). And, importantly, value creation is rarely verifiable and therefore not able to be used as a basis for setting appropriate tariffs. Price regulation therefore relies on a "cost-plus" approach since more accurate and verifiable assessments of actual costs incurred are possible.
224. It may be argued by some that the Code does not discourage product innovations because such innovations typically lead to new services not covered by the defined reference services. They would argue that companies are not restricted in the prices they may charge for such services.
225. However, this argument ignores the fact that product innovations often will have a feed back effect on the value of reference services. For example, development of a secondary market for pipeline capacity – as DEI is currently facilitating - may be classed as a non-reference service. But in fact the liquidity effect created will also serve to increase buyer valuation of reference services such as firm forward haulage. Often, the same innovation may have positive impacts on the value of multiple services.
226. With binding revenue and/or price caps, the inability of pipeline owners to receive a share of these gains acts to reduce their incentive to invest in such services. This is compounded by the often highly risky nature R&D activity that requires the prospect of high returns to justify any investment.
227. Although it is hard to point to estimates on specific items, it is reasonable to provide for some reduction in dynamic efficiency as a result of price regulation. For the purposes of this submission, it is assumed that coverage will reduce growth of productivity by between ¼ to ½ percent per annum. Given DEI's assumed revenue profile without regulation, and a 1/4 per cent reduction, the

dynamic efficiency cost of regulation would be approximately \$700,000 in present values. When EAPL-MSP's coverage is also considered, we estimate that the dynamic costs are \$2.5 million in present values.

228. In addition to its effect on product innovation in the EGP, the NCC's decision will have a negative effect on DEI's and other companies' incentives to invest in building other pipelines. This effect would occur if the ACCC subsequently set reference prices that were too low to allow DEI to earn a return on its investment. The potential efficiency costs are very large, but difficult to estimate.

### **The Benefits and Costs of the "Wait and See" Approach**

229. The NCC considers that the evidence is equivocal on whether coverage would promote competition in areas to Sydney/ACT. In recognition of this uncertainty the NCC stated that one approach may to recommend against coverage at this time to allow time for competition to develop while also establishing arrangements to monitor the market so as to determine whether coverage is warranted at a later date.
230. DEI endorses this approach and seeks to show in this section that the net welfare gain from waiting is very high relative to the potential costs and risks of collusive behaviour.
231. To estimate the value of the option, we assume that if the DEI is not covered and the market turns out not to be competitive (i.e. criterion (a) holds) this is observed after two years. At that point, the decision not to cover is reviewed and the EGP is covered. Thus we assume the costs of not regulating the monopoly market ( $V(R/M)-V(N/M)$ ) are incurred only for two years, out of the 20 we model.
232. Annex discusses the methodology for valuing the option in detail.

## Conclusion on Costs and Benefits of Regulation Under the Code

233. We can summarise the analysis in the following tables.

**TABLE: NET WELFARE IMPACT OF COVERAGE OF EGP/EAPL TO SYDNEY/ACT**

	Benefits/Costs of Coverage Versus No Coverage NPV (\$m)	
	EAPL-MSP Assumed Covered	EAPL-MSP and EGP Covered
Competitive market:		
Direct costs/benefits of regulation	-3.4	-6.9
Indirect costs/benefits of regulation	-	-
- Allocation efficiency	-1.0	-2.0
- Productive efficiency	<u>-0.7</u>	<u>-2.5</u>
- Dynamic efficiency	-5.1	-11.4
Total: Net Benefit of Coverage (= $V(N/C)-V(R/C)$ )		
Collusive market:		
Direct costs/benefits of regulation	-3.4	-6.9
Indirect costs/benefits of regulation	0.0	21.2
- Allocation efficiency	-1.0	-2.0
- Productive efficiency	<u>-0.7</u>	<u>-2.5</u>
- Dynamic efficiency	-5.1	9.8
Total: Net Benefit of Coverage (= $V(R/M)-V(N/M)$ )		
No option to “wait and see”: Threshold probability of collusion before coverage is justified		54%
Option to “wait and see”: Threshold probability of collusion before coverage is justified		85%

**TABLE: NET WELFARE IMPACTS OF COVERAGE FOR SOUTH OF ACT**

	Benefit s (Costs) of Coverage Versus No Coverage NPV (\$m)
Direct costs/benefits of regulation	-1.9
Indirect costs/benefits of regulation	0.1
- Allocation efficiency	-
- Productive efficiency	-
- Dynamic efficiency	-
Total: Net Benefit of Coverage	-1.8

234. The tables show the estimates of the benefits (costs) of regulation under the four main scenarios discussed in the paper:
- EAPL-MSP assumed covered: competitive market
  - EAPL-MSP assumed covered: collusive/monopolist market
  - EAPL-MSP covered if and only if DEI is covered: competitive market
  - EAPL-MSP covered if and only if DEI is covered: collusive/monopolistic market
235. Our results show that if EAPL-MSP is assumed to be covered, regulation of EGP under the Code has no significant benefits but has significant costs. In present values, we estimate (very approximately) those costs to be about \$5 million dollars. The costs are also the same whether the market turns out to be competitive or collusive/monopolistic. Thus, under this assumption, the probability of the monopolistic/collusive market does not matter: criterion (d) is not satisfied.
236. If we assume that EAPL-MSP and EGP are covered, regulating under the Code has a net benefit if the market is monopolistic/collusive and a net cost if it is competitive. In this case, then, the probabilities of each state of the world matter. If we ignore the value of the wait-and-see option, we estimate that:
- The value/benefit from not regulating a competitive market under the Code is approximately \$11 million.
  - The value/benefit of regulating a collusive/monopolistic market under the Code is approximately \$10 million.
237. Thus the criterion is satisfied if and only if odds of the collusive/monopolistic market are higher than 11/10 – that is, if the probability of the collusive/monopolistic market is higher than 54 percent.
238. Taking into account the wait-and-see option, by applying the analysis presented in the Annex we estimate that the criterion is satisfied if and only if the probability of the collusive/monopolistic market is higher than 85 percent.
239. For South of ACT, our model is much simpler. Here we estimate the present value of possible allocative-efficiency benefits of around \$0.1 million. We assume there are no production or dynamic efficiency costs, but estimate the direct costs of regulation as being around \$1.9 million. Criterion (d) is thus not met with respect to services provided South of ACT.

## 4. ANNEX I – DEFINING A MARKET

### General Considerations

#### *The Criteria*

240. For competition purposes markets are usually defined using four criteria:

- (a) Product Dimension - defined by Contracts and property rights;
- (b) Time of Transactions;
- (c) Functional dimensions;
- (d) Geographic extent.

241. Thus a market broadly involves the demand for and supply of a particular product or group of closely substitutable products, the transactions of which may occur at particular times and not at others, at a particular functional level (e.g. wholesale or retail) and within the confines of a particular geographic area.

242. The product and geographical extent of a market can be defined by the so called “ssnip test” (see below). The time of transactions and function elements where relevant do not generally involve substitutability and therefore have to be defined in a more subjective way.

#### **The Ssnip Test**

243. The snip test for defining a markets boundaries as applied to product and geographic extent dimensions are defined by testing for substitutability in terms of the response to a change of relative prices of the good or service in question. A properly defined market may incorporate substitution possibilities on both demand and supply side.

244. From the buyers side they involve products that are not too different (product dimension) and not too far away (geographic dimension) and thus are products to which they could switch if a small yet significant non-transitory (ssnip) change in prices were to occur.

245. It will also include those suppliers currently in production who are likely in the event of a small yet significant sustained increase in prices to shift promptly to deliver a suitable alternative product, even though they do not do so currently (supply dimension).

246. The test for substitutability is done in the formal setting of the snip test.

#### *Product Dimensions*

247. The classical way of explaining the approach here in regard to product market definition the process starts initially with a narrowly defined product.

248. The question is then posed: if the price of the product were to be raised by a hypothetical supplier (e.g. monopolist) by 5% above the competitive level for last year:

- would so many buyers switch to buying alternative products (demand side substitutability); or

- would so much additional supply be added by new suppliers switching their production to the product in question (supply side substitutability) that the price rise would not be economically sustainable?

249. A product may also be defined by reference to the contractual relations created between parties. With many different ways existing for contracting for delivered gas, the product definition will vary from case to case. For example, one angle is when gas producers and pipeline owners are related horizontally or contracting as a team to deliver gas. Alternatively, the end user may contract with one of them or both of them or each separately.

#### Demand Side

250. Focusing on the demand side if no such switching by buyers is likely to occur in response to the price rise, then the product as defined has no close substitutes and it falls within a separate product Market. If significant switching is expected to occur to an alternative product then the close substitute to which suppliers would switch is added to the original product and the new enlarged product definition is then subjected to the same test. The process continues until no significant switching occurs in response to the increased price.
251. The product market thus arrived at should occupy the smallest area of product space consistent with the hypothetical monopolist being able to exert market power.

#### Supply Side

252. On the supply side firms not currently producing the product in questions but which could readily switch to doing so in the event of the 5% price rise would also be included as competitors in the defined product space.
253. In practice it is useful to initially define the product markets in terms of demand side substitutability only, and then to include supply side substitutability issues only when assessing potential entry and actual competition in the market so defined.

#### *Functional Dimensions*

254. For consumer goods, production and distribution normally takes place through a series of distinct functional levels: typically raw material extractions or production, component manufacture, assembly (or importation), wholesaling, retailing and final consumption.
255. Between each adjacent pairing of functions there is a market composed of suppliers on one side and buyers on the other. Thus between wholesaling and retailing there is the wholesale market, and between retailing and final consumption there is the retail market.

#### The Demand Dimension and the Ssnip Test

256. The concept of functional dimension gives rise to the distinction between final demand and derived demand. Derived demand can be expressed for:
- factors that contribute to the creation of a final product or service; and
  - complementary goods that add value to final products of services.
257. The important point is that products for which there is derived demand can not substitute for final product output.

258. This can be shown by the snip test. Factor market products are not substitutes for final market products. Electricity is an input to refrigerators but people would not substitute electricity for refrigerators if the price of refrigerators went up. If the price of refrigerators went up, at any price demand for electricity would shift in.
259. Similarly for complementary goods. Where the price of butter or spreads goes up by 5% this would not increase demand for bread, by definition it would depress it. Complementary final (or factor) products are not substitutes.
260. This illustrates the point that one can have related products that are not substitutes. They are therefore tradeable in separate markets. These markets will be related but not the same.

#### The Supply Side and Horizontal and Vertical Integration

261. Vertical integration can pose problems for market definition because it obscures from view internal transactions involving factor input or complementarity relationships. Thus vertical integration can obscure from view the existence of separable markets. It may also obscure from view cross-market competition effects.
262. Horizontal integration in one market can obscure the nature of transactions between complementary inputs. It can moreover have competitive effects in more than one market, even where these markets are clear to view. For example horizontal integration between two large retailers could have competitive impact upon both the wholesale and retail markets, because they are buyers in the wholesale market and sellers in the retail market.
263. Where all firms, including new entrants and potential entrants, vertically integrate across two functions perhaps because of economies of scope, a key issue is whether the two functions should be viewed as one for the purpose of market analysis. The temptation to do this however should be resisted. The reason in part is that where economies of scope at a point in time justify vertical integration this does not mean it does for all time. It needs to be tested. The separability of function on the demand side, should not be made more costly by supply side integration by letting the law ignore the existence of separate markets, and fail to examine cross market effect and issues.

## 5. ANNEX II – CRITERION (D) AND THE ROLE OF “WAIT AND SEE”

264. This Annex records a concise description of the decision problem facing the NCC at this time. It derives the key decision criterion for choosing between coverage and not coverage of the EGP given uncertainty and information flows about whether the market will be competitive or collusive.

265. The key variables are as follows:

$s = \{C, M\}$  is the state of nature, where C denotes a competitive market and M denotes a collusive or monopolistic market

$p$  is the probability of a collusive/monopolistic market and  $1-p$  is the probability of a competitive market

$d = \{R, N\}$  is the NCC's decision, where R denotes coverage or regulate and N denotes no coverage

$v(d/s)$  is the annual payoff to Australians in net welfare terms when the state is  $s$  and the regulation decision is  $d$

$\beta$  is the discount factor reflecting the social rate of time preference ( $\beta < 1$ )

266. Since regulating a competitive market should reduce welfare, we assume  $v(N/C) > v(R/C)$ . It may also be the case that regulating a collusive market could be more costly than the benefits, so it is an empirical question whether  $v(R/M) > v(N/M)$  or the reverse inequality.

267. The structure of information and decisions is as follows:

### Time $t = 0$ :

- The market could be competitive (i.e.  $s = C$ ) or collusive/monopolistic (i.e.  $s = M$ )
- The NCC does not know which state holds but has a view about the probability  $p$
- The NCC decides either to cover/regulate (i.e.  $d = R$ ) or to not cover (i.e.  $d = N$ )

### Time $t = T_1$ :

- Payoff  $v(d/s)$  has accrued for each period  $t = 0, \dots, T_1-1$
- The NCC observes the state of the market 's' if and only if it chose not to cover (i.e.  $d = N$ ) at time  $t = 0$
- The NCC reviews its earlier decision and changes the cover/not cover decision if this would increase the payoff. The cost of changing its decision is zero

### Time $t = T_2$ :

- The life of the pipeline comes to an end (or there is a fundamental change to technology or the competitive environment that require a completely new decision). This is considered beyond the scope of this construction and no salvage is assumed
- Payoffs  $v(d/s)$  accrue in each period  $t = T_1, \dots, T_2-1$

268. The analysis of this problem proceeds as follows. Begin with the decision at time  $T_1$  before considering the decision at time  $t = 0$ .

269. At time  $T_1$  the NCC will make a “final” decision on whether to cover or not cover the EGP based on the information it has available at that time (though, of course, other new information not specified above may come available at later dates and may lead to a change in decision):

- If the NCC chose coverage at time 0 then it has no new information and will not change its decision. Let the expected *annual* payoff from regulation when  $s$  is uncertain be  $V_0(R)$ , where:

$$V_0(R) = (1-p)v(R/C) + pv(R/M)$$

- If the NCC chose no coverage at time 0 then it receives new information by observing whether the market has behaved competitively or collusively. If the market behaved competitively then the best decision is to continue with the ‘no cover’ decision, with annual payoff of  $v(N/C)$  (since this exceeds  $v(R/C)$ ). If the market behaved collusively then the best decision is to switch to cover the EGP, with annual payoff  $v(R/M)$  (since this exceeds  $v(N/M)$ ). Given that this decision rule will be followed, the *ex ante* expected payoff for each period  $T_1$  to  $T_2$  is

$$V_1(N) = (1-p)v(N/C) + pv(R/M)$$

270. At time  $t = 0$  the NCC maximises welfare by choosing the decision that maximises the discounted expected value of payoffs. If it chooses coverage then the payoff is  $V_0(R)$  in every period. Therefore the total expected value of choosing cover is:

$$V(R) = \sum_{t=0}^{T_1-1} \beta^t V_0(R)$$

271. If the NCC chooses no coverage at time 0 then the expected payoff for each period 0 to  $T_1-1$  is:

$$V_0(N) = (1-p)v(N/C) + pv(N/M)$$

and the expected payoff for periods  $T_1$  to  $T_2-1$  is  $V_1(N)$ . Hence, total expected payoff is:

$$V(N) = \sum_{t=0}^{T_1-1} \beta^t V_0(N) + \sum_{t=T_1}^{T_2-1} \beta^t V_1(N)$$

#### The NCC decision

272. The NCC should choose “cover” if and only if:

$$V(R) \geq V(N)$$

Substituting in the value functions and re-arranging gives the condition:

$$\Leftrightarrow \sum_{t=0}^{T_1-1} \beta^t [V_1(N) - V_0(N)] \geq \sum_{t=0}^{T_2-1} \beta^t [V_1(N) - V_0(R)]$$

$$\Leftrightarrow \frac{p}{1-p} \geq \frac{\sum_{t=0}^{T_2-1} \beta^t b(C)}{\sum_{t=0}^{T_1-1} \beta^t b(M)} \text{-----}(1)$$

where:

- $b(M) = v(R/M) - v(N/M)$  is the annual net welfare benefit of regulating a collusive/monopolistic market. Note that  $b(M)$  may be positive or negative;
- $b(C) = v(N/C) - v(R/C)$  is the annual net welfare benefit of *not* regulating a competition market.  $b(C)$  will always have positive value.

### Option value

273. The value of the option to “wait and see” is subsumed in the above calculations. An explicit value may be derived as follows:

- The cost of delaying any decision to regulate until time  $T_1$  is the possibility that the market may be collusive and that welfare could be lost by not regulating. In expected value terms the cost is  $V_0(R) - V_0(N)$  per year for periods 0 to  $T_1 - 1$ ;
- The payoff from delaying the decision is the avoidance of regulating a competitive market,  $v(N/C) - v(R/C)$ , during  $T_1$  to  $T_2 - 1$ , while still being able to regulate a collusive market (with zero net gain compared for an earlier decision to regulate). With probability  $1-p$  it is a competitive market.

274. Hence, value of option is:

$$\text{Option value} = - \sum_{t=0}^{T_1-1} \beta^t [V_0(R) - V_0(N)] + (1-p) \sum_{t=T_1}^{T_2-1} \beta^t [v(N/C) - v(R/C)]$$

Substituting value equations for  $v_0(R)$  and  $v_0(N)$  gives:

$$\text{Option value} = -p \sum_{t=0}^{T_1-1} \beta^t b(M) + (1-p) \sum_{t=0}^{T_2-1} b(C) \text{-----}(2)$$

## 6. ANNEXURE III

### COMMENTARY ON THE REGULATORY OVERSIGHT OF ANTI-COMPETITIVE CONDUCT AND THE EXTENT TO WHICH REGULATORY OVERSIGHT CONSTRAINS COLLUSIVE CONDUCT

The TPA is arguably the single most significant piece of legislation regulating all commercial activity. Following the Hilmer Report, all businesses are subject to the anti-competitive provisions of the Act (Part IV). Businesses conducted by State and Territory Governments, statutory authorities and agencies and businesses conducted by partnerships or sole traders are all bound by the anti-competitive provisions.

The competition law which is contained in Part IV can be seen as aiming to preserve competition by controlling the abuse of market power by a single firm or by a group of firms.

There are two broad principles which underlie Part IV of the Trade Practices Act.

- (a) Any behaviour which has the purpose or effect or likely effect of substantially lessening competition in a market should be prohibited.
- (b) Such behaviour should be able to be authorised if the circumstances are such which would satisfy the public benefit test.

Part IV contains prohibitions of the following types of anti-competitive conduct:

- X Agreements that have the purpose or effect or likely effect of substantially lessening competition in a market (section 45);
- X Agreements that contain an exclusionary provision. eg primary boycotts and where competitors agree not to deal with another party (section 45 and 4D);
- X Price fixing agreements (section 45A);
- X Secondary boycotts. This refers to actions by two or more people which hinder or prevent a third person from supplying goods or services to a business, from acquiring goods or services from a business, or from engaging in interstate trade or commerce (section 45D);
- X Misuse of market power. This refers to a business taking advantage of a substantial degree of power which it has in a market, for the purpose of eliminating or substantially damaging a competitor, preventing the entry of a person into any market, or deterring or preventing a person from engaging in competitive conduct in any market (section 46);
- X Exclusive dealings. When one person trades with another and imposes restrictions on the others freedom to choose with whom, or in what, to deal (section 47);
- X Resale price maintenance. This is a practice engaged in where suppliers supply a minimum price to a reseller (section 48, and sections 96 - 100);

- X Mergers which have the effect or likely effect of substantially lessening competition (section 50).

These provisions apply to unincorporated bodies as well as corporations.

***Prohibition on collusion***

The prohibition on collusive conduct contained in section 45 is central to the operation of competition legislation and competition policy, which aims to improve consumer welfare through preserving competition. This is because concerted action by competitors with respect to price and structural aspects of the market is the most direct form of interference with the competitive forces in the market.

Chief Justice Mason and Justice Wilson in the Queensland Wire decision state that competition by its very nature is deliberate and ruthless. Competitors jockey for sales, the more effective competitors injuring the less effective by taking sales away. Competitors almost always try to "injure" each other in this way.

Central to the operation of Part IV and fundamental to achieving the policy objective of enhancing consumer welfare through the maintenance of a competitive environment underlying Part IV and the Act as a whole is the prohibition on collusion which is contained in a number of "section 45 sections", namely section 45, section 45A, section 45B, section 45C, section 45D and section 45 E.

These sections prohibit certain types of contracts, arrangements or understandings between competitors.

In many cases parallel or uniform conduct by competitors particularly in relation to prices has been used as circumstantial evidence. Parallel pricing may be evidence from which the Court may infer that the parties have reached an agreement to charge the same price. Where no explanation is given for parallel prices an inference may be drawn that an understanding exists. eg Trade Practices Commission v Nicholas Enterprises Pty Ltd (No.2) 1979 26ALR 609.

There may of course be uniform prices without collusion for example for "genuine commercial considerations or price leadership" and if these explanations are accepted by the Court then the inference of collusion will not be drawn.

Price leadership occurs in and as a result of concentrated or oligopolistic market structures. Thus when one raises prices, the others follow, without the need for any communication between them.

Of all forms of collusion which are harmful to competition the most harmful is fixing the price goods or services because it is the direct interference with the market mechanism. Because of this the legislation has made price fixing a per se offence - prohibited without any consideration of whether it does indeed have an anti-competitive purpose or effect.

**Experience of the ACCC**

Allan Fels<sup>42</sup> has said that the ACCC is widely acknowledged to have been extremely vigorous in applying the TPA to break up price fixing and other cartel agreements, the abuse of market power by monopolies, anti-competitive mergers, misleading and deceptive conduct and

---

<sup>42</sup> Chairman of the Australian Competition Commission

unconscionable conduct affecting small business and consumers. He has said that "*the ACCC has applied the law without fear or favour to the biggest and most powerful corporations and interests in the land.*"<sup>43</sup>

The ACCC is mindful of the need to administer the Act in a changing economy, one that is undergoing enormous micro-economic reform.

The Trade Practices Act has shown itself to be adaptable and Australian Competition Law has been recognised as attributes of considerable merit in industrialising countries of Asia.<sup>44</sup>

Over the past 25 years there has been a substantial change in business attitudes to Trade Practices legislation. Governments and business have recognised that Australian business can benefit from the more efficient allocation of resources which competition brings.

Section 45 of the TPA was designed to attack the long standing and common place behaviour such as restrictions on supply by collective boycotts and other collective exclusionary provisions.

*Allan Fels expresses the view that there has been a substantial improvement in business behaviour with regard to the restraint of trade provisions with section 45*<sup>45</sup>.

Given the high levels of concentration existing in many Australian markets, enforcement of section 45 is most important. The decision by the Government in 1993 to increase the penalties for price fixing from \$250,000 to \$10,000,000 is a significant sign that price fixing arrangements are seen as a most serious offence.

The Trade Practices Commission and the ACCC have given considerable priority to enforcement of the section 45 provisions. The Federal Court has recently imposed substantial monetary penalties on companies in breach of section 45. eg Heavy penalties were imposed on Mayne Nicholas Ltd, TNT Australia Pty Ltd and Ansett Transport Industries (Operations) Pty Ltd for price fixing and market sharing arrangements in the express freight market. Pioneer Concrete (Queensland) Pty Ltd, Boral Resources (Queensland) Pty Ltd and CSR Limited were each fined \$6.6 million in 1995 for price fixing in the pre-mix concrete market.

The Court has also been willing to impose penalties on firms attempting to induce price fixing (TPC v Tube Makers of Australia and Others (1983) 76FLR 455, TPC and Parkfield Operations Pty Ltd (1985) 5FCR 140).

Many price agreements between competitors were struck down in a range of goods and services including frozen vegetables, fibre board containers, beer, professional engineers and stockbroking.

*The Trade Practices Act has been described as a flexible and robust piece of legislation which has in general achieved the objective of creating a new culture of competition and competition law compliance in Australia.*

---

<sup>43</sup> **Media Release - ACCC not soft on applying Trade Practices Act - 7 August 1998**

<sup>44</sup> **Allan Fels and Ross Jones, "The Trade Practices Act: The First 25 Years," TPLJ, September 1999, p126 at 127**

<sup>45</sup> **ibid at p128**

## **Powers and Penalties under the Trade Practices Act 1974**

Section 155 of the TPA is the primary method used by the ACCC to obtain evidence for use of enforcement of the Act. The proper implementation of the section 155 notice is crucial to the successful enforcement of Part IV of the Act.

Section 155 of the TPA empowers the ACCC to make statutory demands for information and may request answers to written questions, request documents, request information to be obtained through oral examinations before a Commissioner or enter premises and obtain extracts of documents. A unique feature of the Act is the very significant fines which may be imposed by Courts for anti-competitive conduct. The Act provides for a maximum penalty for corporations of \$10,000,000.00 and, for persons, \$500,000.00 for each act which constitutes a breach.

Penalties may be imposed in 3 ways. Firstly, a business may suffer a penalty ordered by the Court (see Table 1). Secondly, a business may admit the breach to the ACCC and a joint submission may be made to the Court as to the penalty to be imposed (see Table 2). The court is not bound to accept the amount put forward in the joint submission and may still impose a different penalty, or the same penalty for its own reasons. Finally, a business may settle matters with the ACCC by giving certain undertakings. Usually these undertakings are given as to future conduct or payment of costs, in lieu of a further financial penalty.

### **Conclusion**

It is seen that the prohibitions contained in Part IV of the TPA and the penalties imposed as a result of a breach operate as a significant deterrent to firms engaging in collusive conduct. Further the risk of collusive conduct would be reduced if market conditions require competitive conduct between EAPL and Duke. In the circumstances, it cannot be definitively said that a coverage decision will restrict the operation of collusive conduct and thereby promote competition any better than a no coverage decision.

**TABLE 1**  
**TABLE OF PENALTIES AWARDED BY THE COURT IN RECENT CASES**

<b>Date</b>	<b>Parties involved</b>	<b>Contravening conduct</b>	<b>Penalties - companies</b>	<b>Penalties - individuals</b>	<b>Penalties - total</b>
27 March 1998	J McPhee & Son	Price fixing	\$750,000	Mr Webb, regional manager - \$15,000	\$765,000
27 March 1998	J McPhee & Son	Attempted price fixing	\$3,000,000	Mr Forde, Board member - \$100,000  Mr Morton, executive - \$80,000  Mr Holland, State general manager - \$60,000	\$3,240,000
27 February 1998	Cromford Pty Ltd	Attempted price fixing	\$40,000 (\$10,000 x 4 attempts)	Mr Jones, national sales manager - \$8000 (\$2000 x 4 attempts)	\$48,000
21 August 1998	Mayo International Pty Ltd	Resale price maintenance	\$46,500	Mr Le Court, managing director - \$20,000  Ms Shaw, sales representative - \$2000	\$68,500

**TABLE 2**  
**TABLE OF PENALTIES AWARDED FROM JOINT SUBMISSIONS**

<b>Date</b>	<b>Parties involved</b>	<b>Contravening conduct</b>	<b>Penalties - companies</b>	<b>Penalties - individuals</b>	<b>Penalties - total</b>
16 February 1999	Excel Concrete Pty Ltd	Price fixing	\$500,000	Mr Clark, manager - \$50,000	\$550,000
23 February 1998	W D & H O Wills (Australia) Ltd	Attempted price fixing	\$250,000		\$250,000
27 November 1998	Joyce Corporation Ltd	Price fixing Market sharing	\$850,000	Mr Windebank, State manager - \$100,000  Mr Pike, State sales manager - \$50,000	\$1,000,000
25 June 1999	Baker Bros (Australia) Pty Ltd	Market sharing and price fixing	\$50,000	Mr Andrew Baker, managing director - \$5,000  Mr Guy Baker, director - \$5,000	\$60,000
12 November 1999	Tubemakers of Australia Ltd	Price fixing Market sharing	\$1,750,000	Mr Pittard, marketing manager - paid costs	\$1,750,000
17 November 1999	Sundaze Australia Pty Ltd	Resale price maintenance	\$500,000 (\$120,000 + \$65,000 + [\$35,000 x 9 attempts] )	n/a	\$500,000