PATREC RESEARCH FORUM
Murdoch University, 4 September 2007

THIRD PARTY ACCESS TO INFRASTRUCTURE: THE CASE OF THE MT NEWMAN RAIL LINE IN THE PILBARA

by
PAUL KOSHY* AND PETER KENYON•[1]

Australia is continuing to develop a legal and administrative framework for facilitating third party access to important infrastructure. This paper examines the workings of the organisation charged with assessing requests for access – the National Competition Council – in the context of the Council's Final Recommendation on an application by the Fortescue Metals Group for access to the Mt Newman Rail Line, owned and operated by BHP Billiton Iron Ore. The discussion draws on submissions to the Council and the recent literature on rail access in order to critique this decision. It concludes by observing that further research is needed to develop a methodology for a more formal approach to determine certain key questions.

Keywords: Competition Policy, Economic Regulation and Infrastructure, Transport Regulation.

JEL Code: L4, L5, L9

1. Introduction

It is often the case that a market is dominated by a single piece of infrastructure and some form of monopolistic power is conferred on the firm owning the infrastructure, both in the existing, as well as related, markets. This can occur to the extent that the firm exhibits quite marked pricing power or where it is uneconomic for other firms to duplicate the infrastructure.

To balance the rights of consumers with the infrastructure owner in such cases, Australia has developed a national system for *third party access* to key economic infrastructure. This system allows potential competitors to seek access to infrastructure as a means to introduce competition into affected markets. This typically occurs through the National Competition Council (NCC) ("the Council" hereafter), whereby the Council can recommend 'declaration' of access to infrastructure of national significance and, subsequent to approval by the Federal Treasurer, ultimately some form of oversight by the Australian Competition and Consumer Commission (ACCC).

This paper examines the powers and processes of the Council, to preside over the 'declaration' of infrastructure in Australia. It does so with particular reference to a

* Paul Koshy, John Curtin Institute of Public Policy, Curtin University of Technology, GPO Box U1987, WA, Australia, 6845. Email: p.koshy@curtin.edu.au.
• Peter Kenyon, School of Economics and Finance, Curtin Business School, Curtin University of Technology, GPO Box U1987, WA, Australia, 6845. Email: p.kenyon@curtin.edu.au.
[1] This paper is based in part on work undertaken by the authors for BHP Billiton, as part of a research consultancy project for that company's submissions to the National Competition Council in the case discussed. All opinions are those of the authors and do not reflect the opinions of BHP Billiton or its staff. Nevertheless we would like to thank Mr Peter Monk for his comments, which improved the paper.

recent application to the Council by the Fortescue Metals Group Limited ("FMG") for access to the Mt Newman Rail Line ("the Mt Newman Line") – owned and operated by BHP Billiton Iron Ore ("BHPBIO").

2. Third Party Access, the *Trade Practices Act* and Competition Policy

Third party access permits a potential market entrant to use an incumbent's infrastructure under specific, regulated, conditions (including price) in cases where this infrastructure is a 'natural monopoly'. A natural monopoly is characterised by a cost structure where at all scales of production it is more efficient to have output supplied by a single firm (or piece of infrastructure), rather than a group of competing firms (or infrastructure facilities).

Typical examples of natural monopoly facilities include telecommunications copper- wire networks, electricity distribution grids and rail lines. In each of these cases, the firm owning the infrastructure may be in a position to collect monopoly rents on its investment. The extent to which this occurs is often inhibited by the inherent 'contestability' of the market. For instance, the monopolistic exploitation of a copper network in telecommunications will depend to a great extent on alternatives, notably the level of competition provided by mobile phone operators.

A low level of contestability in a market means that competition through access may be the only viable alternative to monopoly. Access is a 'set of rules' determined by government regulators to allow multiple users to use facilities owned by a service provider. It is a mandated alternative to a mutual and voluntary arrangement. Once the access arrangement has been established, potential users negotiate with the infrastructure owner to access infrastructure based on the parameters determined by the access arrangement.

In Australia, Part IIIA of the *Trade Practices Act 1974* (TPA) outlines a legislative regime to facilitate third party access at the national level for all industries, whereby parties seek access to 'essential facilities' of 'national significance'. This process is initiated by an application to the Council (as set out in NCC 2006a), seeking to have the infrastructure 'declared' as an essential facility. Under the terms of the TPA, the Council can recommend the declaration of a facility if it is satisfied that *all* of the following criteria (a) through (f) (as set out in s.44G) are met:

a) Access (or increased access) to the service would promote competition in at least one market (whether or not in Australia), other than the market for the service;
b) It would be uneconomical for anyone to develop another facility to provide the service;
c) The facility is of national significance having regard to:
    - the size of the facility; or
    - the importance of the facility to constitutional trade or commerce; or
    - the importance of the facility to the national economy.
d) Access to the service can be provided without due risk to human health or safety;
e) Access to the service is not already the subject of an effective access regime; and

f) Access (or increased access) to the service would not be contrary to the public interest.

The Council assesses requests for declaration against these criteria on an individual case basis and within the four month period prescribed in s.44GA of the TPA. Following its investigations, it makes a recommendation to the relevant Minister, who can decide whether or not to declare the facility. Ministerial decisions on access are subject to appeal to the Australian Competition Tribunal.

Following the declaration of a service, parties can negotiate the terms and condition of access. This can be done through private arbitration which may involve the ACCC. As an alternative to the declaration process, owners or operators of infrastructure may also finalise with the ACCC an access undertaking to establish the terms and conditions of access to their facility. A facility covered by an agreement with the ACCC cannot be declared by the Council.

In addition to the TPA, third party access was an important part of the recommendations of the "Hilmer Report" (see, Independent Committee of Inquiry into Competition Policy in Australia, 1993) and subsequent COAG agreements. The principles underlying access are delineated by clause 6(1) of the *Competition Principles Agreement 1995.* Under these principles, legislation will be put forward to establish a regime for third party access to significant infrastructure facilities subject to a set of criteria reflecting those laid out in the TPA.

In these cases, legislation will be put forward by the Commonwealth Government. However, as outlined in clause 6(2) of the *Competition Principles Agreement 1995,* the Commonwealth regime is not intended to cover services provided by facilities covered by state-based access regimes unless the state-based regime is ineffective or substantial difficulties arise from the facility being situated in more than one jurisdiction. For state regimes to be effective, they must take account of the above criteria specified in clauses 6(3) and 6(4) of the *Competition Principles Agreement.* Effectiveness is assessed by the National Competition Council (NCC).

In practice, infrastructure can be 'declared' by the Federal Treasurer subject to advice from the Council on conformance with Part III of the TPA and the *Competition Principles Agreement 1995*.

3. The Approach Taken by the Council

As part off its deliberations, the Council makes distinct reference to the TPA in the sense that it reports back with specific regard to the criteria outlined in s.44G(2) (NCC 2002).

In particular, the Council is usually called upon to make extensive inquiries into three key criteria set out in s44G(2): (a) "promotion of competition", (b) "uneconomic to develop another facility" and (f) "in the public benefit".

Criteria (c) "national significance" and (d) "public health safety" are typically satisfied in the early stages of an application while (e) "an effective alternative access regime" is often the subject of the dispute between the two parties, but is really a technical legal argument.

In recommending declaration or otherwise, the Council draws on opinions from all parties submitting documentation as part of the case as well as recent decisions in the Federal Court of Australia and the Australian Competition Tribunal in determining and framing questions relating to a particular access case. Although it has no formal documentation on its procedures, the Council has made publicly available a document on the national access regime (NCC 2002). In this it state that as part of its deliberations – and ultimately, the draft and final recommendations to the Federal Treasurer – the Council assesses the case for declaration on the basis of evidence and conclusions about each criterion.

For two reasons the recent case where FMG sought access to the BHPBIO Mt Newman Line provides a very good introduction to the important economic issues upon which the Council must adjuduicate when making a decision whether or not to declare a facility as essential infrastructure. First, it raises most, if not all, of the critical considerations in assessing the arguments for and against the granting of third party access. Primarily these include the nature and definition of competition in a market and the relative costs and benefits of access compared to alternatives. Second, although the Council recommended that the rail line be 'declared' under Part IIIA, the Federal Treasurer allowed the recommendation to 'lapse' after the legislated 60 day period set aside for his consideration. Although the Treasurer did not give any reasons for this decision, the decision itself indicates that the arguments for and against declaration remain unresolved. FMG will shortly commence an appeal of this outcome before the Australian Competition Tribunal (ACT).

4. The Case of Access to the Mt Newman Line

On 13 June 2004, FMG applied to the Council to have a service provided by BHPBIO through use of part of the Mt Newman Line declared under Part IIIA of TPA. Declaration of the Mt Newman Line would provide FMG with a right to negotiate access under the terms of the TPA, which includes regulatory oversight by the ACCC.

As detailed in Figure 1 below the Mt Newman Line provides a transport link between BHPBIO's iron ore mining operation at Mt Newman and Port Hedland (NCC 2006). Presently, BHPBIO uses the Mt Newman Line to transport 100 mtpa (million tonnes per annum) of iron ore.

The Mt Newman Line is one of four major privately owned and operated rail lines (not shown) in the Pilbara which enable the transport of iron ore by their operators – BHPBIO and Rio Tinto Iron Ore (RTIO). Each rail line is part of a fully integrated iron ore mining and shipping supply-chain, which includes port infrastructure. FMG's application for access to that part of the Mt Newman Line highlighted in Figure 1 is intended to allow it to develop the Mindy Mindy iron ore deposit.

Insert Figure 1 here

Not shown in Figure 1, are FMG's major iron ore deposits in the Chichester Ranges (Cloud Break and Christmas Creek), which lie on the eastside of the Mt Newman Line and to the North of Mindy Mindy. FMG is undertaking to duplicate the Mt Newman Line to develop these deposits and states that its own rail line will be 'open access'.

To provide some indication of the overlap of the FMG and Mt Newman lines, Figure 2 (from an FMG submission and NCC, 2006) shows a graphical representation of the proposed rail corridor for the FMG Line (the dark blue line from Port Hedland to the FMG deposits at Cloud Break and Christmas Creek).

Despite its proximity to the Mindy Mindy deposit, FMG maintains that given the size of the proposed operations at Mindy Mindy, it is not economic to construct a spur line from the proposed line to secondary deposits. On this basis, FMG considered that access to the Mt Newman Line is critical to make the Mindy Mindy deposit economic.

Insert Figure 2 here

The FMG request for declaration explicitly refers to use the "Mt Newman Service to operate trains and rolling stock to transport iron ore and iron ore products from its proposed siding near Mindy Mindy to port facilities at Port Hedland" (NCC 2006a). So FMG is seeking access to the rail line to operate its own rail stock as part of its proposed iron ore operations at Mindy Mindy.

By way of comparison, BHPBIO (2006) has proposed three alternatives to direct access for the development of Mindy Mindy and other small independently–owned iron ore deposits in the Pilbara:

- *Joint development of a deposit:* Providing direct access to a vertically integrated processing, rail and port network, as is occurring between Rio and the Hopes Down Iron Ore Project;

- *A mine-gate arrangement:* Where ore is directly purchased prior to processing and transport, as was negotiated between BHPBIO and Cazaly Resources for the proposed development of the Shovelanna deposit (when ownership of that deposit rested with Cazaly); and

- *Utilising the Rail Transport Agreement (RTA):* to provide for access to rail infrastructure but not necessarily port infrastructure or the international iron ore market;

The first two options achieve access to rail and port infrastructure without unnecessarily disturbing the economic cost structure and efficiency of the Mt Newman Line itself, although calling upon the resources of BHPBIO elsewhere. The third option results in disturbances to the economic cost structure and efficiency of the Mt Newman Line, but the disturbance is deemed to be minimal compared with Access under Part IIIA of the TPA.

BHPBIO has maintained that access to the Mt Newman Line under Part IIIA of the TPA is the least efficient alternative in terms of accessing rail infrastructure in that it substantially disturbs the economic cost structure of the Mt Newman Line, thus reducing the efficiency of its iron ore operations.

BHPBIO also note, that in two recent instances – Hope Downs and Cazaly (not realised due to questions about tenement ownership) – access via joint development or a mine-gate agreement, both less intrusive than rail access, were proposed. For this reason, access is seen as being the most expensive option.

On 4 November 2005, the Council released its *Draft Recommendation* in response to FMG's request for declaration. This outlined the Council's preliminary view that the service provided by the Mt Newman Line met each of the criteria set out in s44G(2) of the TPA and that the service should be declared for 20 years.

Subsequent to this, the Council prepared a *Final Recommendation* for declaration in view of the findings of the draft. This recommendation was not 'taken up' by the designated Minister, in this case the Federal Treasurer over the prescribed time and FMG is currently preparing an appeal before the Australian Competition Tribunal, due to commence in early 2008. The remainder of this paper discusses the

key arguments and issues under Section s44G (2), pertaining to the critical criteria (a), (b) and (f), in assessing the efficacy of any potential access regime.

5. Criterion (a) - Promotion of Competition

Criterion (a) requires that access promotes competition in another market other than the one for which access is being sort.

The Council identifies three dependent markets in which access to the Mt Newman railway line could promote competition under Criterion (a):

- The market for (production of) iron ore;
- The market for iron ore tenements; and
- The market for (rail) haulage services.

5.1. Competition in the Production of Iron Ore

In its deliberations, the Council recognises that the market for iron ore production is a global one and hence, the non-development of relatively minor resources in the Pilbara is unlikely to impact upon it in any meaningful way. On this basis, the Council accepts the BHPBIO argument that access would not promote competition in the market for iron ore.

There is strong evidence to support the view of BHPBIO and the Council's concordant finding on this issue. Geoscience Australia (2005) indicates that Australia has demonstrated economic resources of iron ore equal to 14.6 Gt (billion tonnes), of which around 92 per cent or 13.4 Gt are located in the Pilbara, making it the centre of a world-class iron ore resource. Australia's JORC (Joint Ore Reserves Committee) Proven and Provable Reserves are reported as 4.6 Gt, with BHPBIO and RTIO having either discovered or confirmed the vast majority of these. Estimated resources at Mindy Mindy are equal to 70Mt and amount to 1.5 per cent of this total. This supports the view that there are no gains from denying access to FMG on the basis of their impact on the global iron ore market.

Further, there is no evidence to suggest that BHPBIO would gain from denying access to FMG to develop the 67 Mt of iron ore at the Mindy Mindy site when its current level of production is expected to around 100mtpa and projected increases to 300mtpa within the next 20 years.

So the evidence suggests that the Council's acceptance of the reality of a global market for iron ore is reasonable.

5.2. Competition for Iron Ore Tenements and Rail Haulage

However, despite accepting the above evidence and conclusions, the Council found that *separate* markets for iron ore tenements and haulage services exist in the Pilbara.

Therefore, these markets are subject to potential *vertical foreclosure*, whereby BHPBIO could deny access to the Mt Newman railway line in order either to prohibit the development of these reserves or to substantially reduce their value to all potential participants, except either of the two major iron ore producers and rail infrastructure operators in the Pilbara region. Access to the Mt Newman railway line would promote competition in both.

The counter-argument to this suggestion is that these services are inputs into the global iron ore industry and are therefore priced and developed in connection with

global trends in the iron ore industry. Iron ore tenements and the haulage of iron ore only occur as part of a global chain which sells into the global iron ore market. A test for this is the extent to which these activities occur *without* reference to the global iron ore market.

Clearly iron ore tenements are an input into the iron ore production process, while the Council has already acknowledged that haulage services along the Mt Newman Line would primarily be used for iron ore rather than other metals or bulk commodities. Further, there is no demonstrable evidence that producers gain any advantage in leaving the economic reserves of the Pilbara undeveloped. In a global iron ore market where no one producer or set of producers enjoys pricing power, all producers will maximise profits through the extraction of lowest cost reserves. Therefore, even if local reserves are acquired by an incumbent, they will eventually enter the global iron ore market depending upon conditions in that market. The lowest cost producer is the best and extraction should be sequenced so as to take advantage of lowest costs.

However, the Council found that iron ore tenements and rail haulage constitute a distinct market in the Pilbara. In reaching its finding on tenements, the Council is effectively attempting to isolate one aspects of the iron ore production process, (paragraph 17, CRA 2006). However, the value of an iron ore tenement is directly connected to (i) the expected price and (ii) the cost of extraction.

FMG has acknowledged in recent public statements that increases in iron ore demand from China and the resulting higher global price for iron ore have driven their expansion plans. These include accumulating the largest area of tenements in the Pilbara, conservatively estimated to cover an area of 35,500 square kilometres (FMG 2007).

It has been claimed that those firms with the greatest potential to develop iron ore tenements already operate existing infrastructure. This is true. However, it is also true that to a large extent, the advantage enjoyed by incumbent producers who own existing infrastructure is also apparent in their capacity to plan, resource and undertake major projects in that area, an established fact for the past 40 years of operations in the Pilbara. The fact that tenements may ultimately be developed by existing producers is further testament to the global nature of the iron ore business as well as the history of development in the Pilbara.

The ACCC expressed this view in its "Public Competition Assessment: Rio Tinto – Proposed Acquisition of a 50 per cent interest in the Hope Downs Iron Ore Project", where it found that given the small annual tonnages expected to be produced by this project (around 30 mtpa), development by RTIO was not likely to affect competition in the global iron ore market.

Competition for iron ore tenements takes place with due regard for movements in a global market for iron ore. Operators with large deposits and of vertically integrated supply chains are advantaged at every level in such a market and in turn, buyers and end consumers of iron-derived products benefit from such cost reductions.

Similarly, assertions that the haulage market is separate from the global iron ore market, or mineral markets for that matter, suffer from a similar weakness as the argument applied to the case of tenements.

This arguments above raise serious questions as to whether access would increase competition and not disrupt a highly efficient vertically integrated supply chain. Again, this is an empirical issue which is raised more fully in this paper's discussion of Criteria (f).

6. Criterion (b) – Uneconomical to develop another facility

The central issue in third party access is the perceived social benefits of allowing access to a facility outweigh the costs of doing so.

In applying criterion (b), the Council agrees with the Australian Competition Tribunal that 'uneconomical' should be construed in a 'social cost benefit sense' rather than in terms of private or commercial interests. This follows the argument outlined by the Tribunal in its Duke EGP decision:

> *…[the] test is whether for a likely range of reasonably foreseeable demand for the services provided by means of the pipeline, it would be more efficient, in terms of costs and benefits to the community as a whole, for the pipeline to provide those services rather than more than one*. (*Duke EGP decision, para 137)*`

Thus, the Council found that the appropriate test for criterion (b) to be satisfied is if, over the range of demand, it is more economic for a single facility rather than multiple facilities to provide the service. In this case, the facility in question would be a natural monopoly.

The Council emphasises the importance of undertaking a social cost benefit analysis of the impact of access. In doing so, the council seeks to rely on traditional competition policy principles in undertaking this assessment. This rests on answers to several critical questions:

- The 'Private' Test: Has or can the Mt Newman Line be duplicated?
- What is the likely level of demand (existing and future) for the services offered by the Mt Newman Line in comparison with its capacity?
- The 'Social' Test: What are the costs and benefits of access verses the alternatives to access? (discussed as part of the "Public Benefit" test).

We assess the extent to which the declaration of access is impacted by these issues and the nature of the social cost benefit analysis required to determine if access is economic.

6.1. The Private Test: Duplication

A primary test of natural monopoly in any market is the observation of whether or not the facility in question has, or has the potential to be, duplicated by another party.

This is a 'private test' in the sense that a facility which has already been duplicated should not be considered to be a natural monopoly. The Council has

acknowledged this point and the argument that where a facility has been duplicated or a third party has made a commitment to duplicate, the natural monopoly test becomes irrelevant.

It should also be noted that this view was re-expressed in individual statements by two members of the pre-eminent group of economists in this area (Professors Ordover and Willig) in RTIO's submission to the council on 6 May, 2005 (RTIO, 2005).

The basis of this argument is that a duplicated facility is likely to have considerable 'sunk' costs that are already costed for. These costs are no longer relevant to the considerations of any new addition to this facility. Given this, only the 'unduplicated' part of the facility for which access is being sought should be subject to declaration. Even partial duplication can be used as evidence against the existence of a natural monopoly.

This issue should be central in this case as FMG is proposing to construct a rail line from Port Hedland to the Chichester Ranges (the FMG Line) which will transport up to 60mtpa from its Cloud Break and Christmas Creek deposits to Port Hedland, (FMG presentation to the Asia Pacific Iron Ore Conference, November 2005). The facility will essentially duplicate the Mt Newman Line over a 200 kilometre stretch or around 70 per cent of the 285 kilometre length of the Mt Newman Line. In essence, the party seeking access is planning to at least partially duplicate the facility.

Following advice from FMG, the Council acknowledges the likelihood (paragraph 6.43 of the Draft Recommendation) of this occurring. FMG and the Western Australian State Government have entered into a mining State Agreement - *Iron Ore (FMG Chichester Pty Ltd) Agreement* - which brings into effect the Chichester railway and a port. This agreement was signed in November 2005.

Yet the Council accepted the inconsistency that the Mt Newman Line is a natural monopoly when FMG is committed to duplicating a considerable length of it. Given that substantial duplication of the Mt Newman Line is being undertaken, it remains an open question as to the extent to which the facility can be deemed to be a natural monopoly. As Willig (2005) notes, the relevant part of the Mt Newman Line which should be subject to access is that located between the point of divergence of the FMG Line from the Mt Newman Line to that point at which the Mt Newman Line is accessible from the Mindy Mindy deposit. This is a length of around 85 kilometres only.

This view was rejected by the Council in its Final Recommendation. Its reasoning is that the FMG Line to the Chichester Ranges (referred to as the "FMG Chichester line") was still prospective:

> *In particular, the Council noted the difficulty in gauging the irreversibility of a 'commitment' to construct greenfields infrastructure. The Council considered in would be premature to describe the FMG Chichester line as unequivocally 'committed' or its costs as sunk. Rather, the Council considers there is an opportunity for the line to be constructed* (NCC 2006a, p 218.).

This finding is particularly disconcerting given FMG's repeated commitment and physical undertaking to constructing the ('open access') FMG Line to the Chichester Ranges (see for instance FMG 2005 and more recently, FMG 2007, which estimates a completion date in the second quarter of 2008).

If ultimately successful, FMG may commence an access claim to the Mt Newman Line at the same time it is nearing completion of the construction of its own rail line which substantially duplicates the Mt Newman Line.

6.2. Expected Demand

The potential for duplication extends beyond the FMG Line, if and when projected demand for the services of the Mt Newman Line exceed its current or expected capacity.

The Council must form a view as to the most likely level of demand for the services of the Mt Newman Line over the period during which declaration of access takes place. In its Draft Recommendation, the Council has decided on a period of 20 years.

Relatively higher levels of demand make the potential duplication of the facility relatively more economic, yet at the same time also provide the existing provider with a considerably more complicated series of negotiations on engineering and financing arrangements. In some cases, as is argued below, proposed demands by parties seeking access may see demand exceed actual or potential capacity. Critically, the Council must define the correct counterfactual to access, taking into consideration both present and future demand for the facility. This is the likely demand from all sources in the face of anticipated future demand from export markets, in particular, China, relative to the capacity of the Mt Newman facility.

The Council relies on an assessment by the Western Australian Government (paragraphs 6.67-6.69 of the Draft Recommendation) in assessing the likely demand from BHPBIO. This is considered to be in the order of 152 mtpa by 2010 and combined with 10mtpa from the Mindy Mindy deposit translates into total demand for the line's services of around 162 mtpa and possibly higher given robust demand for iron ore over the coming decade.

This figure is disputed by BHPBIO who estimate that demand could potentially reach 300 mtpa within the next 20 years (paragraph 2.17 of BHPBIO, December 2005) and indeed, more recent indications from BHPBIO suggest planning to reach this output over a shorter timeframe. This implies a level of demand of at least 300 mtpa over the next 20 years and is certainly above any estimate that could be considered to be an incremental increase in the line's capacity.

6.3. Expected Capacity

The Council has received advice on the ultimate capacity of the Mt Newman Line from various sources. Most notably, it cites a study by Evans & Peck (2004), which was undertaken with publicly available data, as well as the unsubstantiated opinions of the Western Australian State Government and FMG, with regard to the potential capacity of the Mt Newman Line. These sources all indicate that the Mt Newman Line can be 'double tracked' to achieve a capacity of 400mtpa. A recent study by G13 & Associates (2006) for the Council, which again, only uses publicly available data contained in various submissions to the Council, appears to confirm this estimate.

However, in its submission to the Council on 6 January 2006, BHPBIO (2006) cites work undertaken by Evans & Peck (2006), the only capacity modelling undertaken on the Mt Newman Line which uses all relevant operational data on the line. This modelling would tend to indicate that projected demand of 300 to 360mtpa for the facility exceeds maximum capacity of the Mt Newman Line, even after double tracking.

This casts doubt on the suitability of extending third party access to the Mt Newman Line and further implies that the economics of additional and separate rail infrastructure in the Pilbara are becoming more favourable.

6.4. Discussion

There is fundamental disagreement between the Council and respondents to the request for declaration as to what constitutes duplication of infrastructure. It is certainly unusual to see a claim for access when the party seeking access is duplicating at least 70 per cent of the facility to which access is being sought.

Aside from this issue, the Council does not appear to be in have sought 'independent' estimates of future demand and supply for iron ore haulage in the Pilbara, rather it has used a combination of data from submissions and 'independent assessments' to verify competing claims. This is one are where there exists great potential for improvement at the 'discovery' phase of any access investigation. This could include the appointment of a single or panel of estimators/modellers who formally take evidence from concerned parties and provide the Council with an 'official' estimate, rather than the current *ad hoc* approach of assessing multiple opinions about these issues.

7. Criterion (f) – Public Interest

Criterion (f) requires that access (or increased access) to the service would not be contrary to the public interest. On balance, the social costs of declaration must not outweigh the social benefits.

An assessment as to whether criterion (f) is satisfied depends upon the extent to which the social costs and benefits are identified and assessed in (a) to (e). The public interest mandates that access be *less costly* than other alternatives (i.e. duplication or access under other arrangements), where costs include not only those borne by FMG, but all costs, including impacts on BHPBIO's operations.

7.1. Social Costs and Benefits of Access

Given the competing claims in this case, an assessment of the expected social costs and benefits of access weighs the expected net costs of duplication against the net costs of access. This should measure the costs (construction plus other social costs) of duplication against the costs of access to the Mt Newman Service. Comparison should also be made with the case where FMG accesses the infrastructure under the State-based Rail Transport Agreement (RTA).

In particular, the provision of rail services by two or more firms along a single line rather than a single firm raises two key questions in relation to costs:

a. Is it less costly for one or more than one firm to operate on a single rail line?
b. Is it less costly to separate the activities of the underlying rail infrastructure (below rail) from haulage (above rail)?

Quite clearly, in the absence of complete or partial duplication, it is often the case that it is economic for only a single piece of infrastructure to be built by firms in an industry, as per (a). However, it does not follow that this argument extends to access of that infrastructure where use by a third party impairs the efficient use, or raises the cost of the entire service provided, as per (b).

7.2. Capital Costs: Duplication and Access

The identification of an appropriate alternative scenario or 'counterfactual' is critical in any cost benefit analysis, no less in matters of access. It follows from the above discussion of duplication that the decision by the Council to exclude the FMG Line from its analysis of alternatives to the Mt Newman Line is inconsistent. Even if the partial duplication isn't accepted as evidence against the Mt Newman Line being a *complete* natural monopoly, it follows that the FMG line could serve as *partial* duplication of the Mt Newman Line and the counterfactual is a spur from the FMG line.

The estimated costs of duplication reflect these uncertainties. The Council notes that the costs of full duplication, that is, a new line from Mindy Mindy to Port Hedland are 'likely to lie in the range of $400 million to $1,200 million, noting that the higher estimate more likely to reflect current cost estimates (see its Final Recommendation in NCC 2006a). This uncertainty is further reflected in the G13 & Associates (2006) estimate that a new rail line would cost $1,020 million to construct.

The Council has not provided any independent estimates of the cost of construction of a spur line from the FMG Line to the Mindy Mindy deposit. However, work undertaken by Evans & Peck (2005) and presented in the RTIO submissions to the Council of June 2005, estimate that it would cost approximately $122 million to construct a spur line from the FMG Line to Mindy Mind, although this cost would now be inflated in view of overall rising costs in the Pilbara.

Taking the statements of FMG at face value and assuming the FMG Line is constructed, the cost of partially duplicating the Mt Newman Line are substantially lower than those of directly duplicating the service.

There is substantial disagreement between BHPBIO and the Council's consultants as to the true cost and operational capacity of the Mt Newman Line in view of double tracking this facility. G13 & Associates find that double tracking the facility would raise capacity to around 400 mtpa at a cost of $609 million. BHPBIO's own modelling indicates that this is a substantial underestimate, with its own simulations suggesting costs of at least $1,285 million (BHPBIO 2006, document 4 pg 7) for the relevant section of the facility, with capacity at around 200 mtpa when allowing for bottlenecks at port facilities as discussed above. These estimates need to be viewed in context. BHPBIO is already proposing a marked expansion of the service offered by the Mt Newman Line in comparison with FMG's requirement of access to 295km or less of this facility.

The uncertainty surrounding the nature of FMG's proposal to duplicate the Mt Newman Line and the conflicting estimates of the cost to BHPBIO makes a comparison between the capital costs of duplication and access difficult.

However, on the above evidence, it is likely that under the proposed counterfactual scenario of partial duplication, an extension of FMG's Line could be considered to be economic in comparison with the costs of allowing access to the Mt Newman Line, even if this is feasible given probable existing demand and emerging capacity constraints.

7.3. Competition in Haulage (Above-Rail) Services

The level of access sought by FMG is substantially more intrusive than the three simpler alternatives outlined by BHPBIO. Instead of merely developing Mindy Mindy in conjunction with BHPBIO or selling its ore at the minegate, or even accessing the Mt Newman Line to ship ore via BHP's carriages, FMG is seeking to run its own rail stock along the Mt Newman Line.

It is an open question as to whether one or two firms (in the first instance) would be more efficient in operating above-rail services along the Mt Newman Line. It is generally thought, that 'economies of density' exist in rail operations, where it becomes progressively less expensive in average–cost terms to run more trains along a given line. However these benefits can be dissipated where an entrant (through access or other means) raises costs across the entire system of rail infrastructure.

Where economies of density exist, it is potentially, but not always, the case that a single firm will be more cost effective than a group of firms supplying the same services. Economies–of–density do not in themselves imply that a firm or facility is a natural monopoly. Instead, the relevant test for a natural monopoly is whether it is less costly to produce a given range of demand in one or more firms. Where it is less costly for a single firm to operate in a market than two or more firms, the cost function of an industry is said to exhibit the condition of ***subadditivity.*** In the case of access to the Mt Newman Line, subadditivity would be denoted as:

$$\textit{Haulage Costs}\,(\text{BHP+FMG}) < [\textit{Haulage Costs}\,(\text{BHP}) + \textit{Haulage Costs}\,(\text{FMG})]$$

In the instance above, the cost of BHPBIO hauling its own iron ore as well as that of FMG along the Mt Newman Line is less than the cost of both BHPBIO and FMG each undertaking their own hauling.

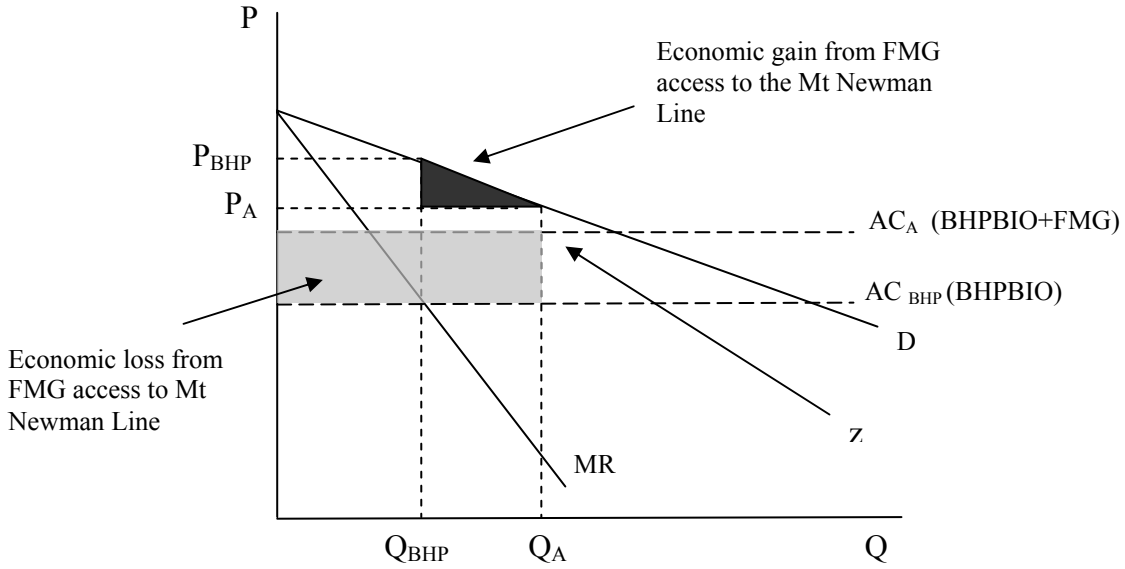
Williamson (1968) analysed the separation of a vertically integrated industry, where economies of density exist, such that the costs of the initial provider are lower than those of an industry with several firms, even if competition results in lower prices for the final product. Bitzan (2003) has applied this analysis specifically to US Class 1 freight rail networks, testing for the presence of cost sub-additivity. He finds substantial evidence for cost sub-additivity and concludes as follows for the US rail system studied:

> "(1) that there are economies associated with vertically integrated railway maintenance and transport, suggesting that separating the two would result in increased resource costs, and (2) railroads are natural monopolies in providing transport services over their own network, suggesting that multiple-firm competition over such a network would result in increased resource costs. These findings suggest that policies introducing 'open access' or on bottleneck segments would not be beneficial from a cost perspective." (pp. 223-24).

It should be noted that in this case, 'costs' refer to accounting costs associated with the construction and operation of competing facilities as well as *opportunity costs* arising from access. These include costs relating to congestion, coordination and planned expansion. In particular, the latter costs as outlined above, are potentially substantial, such that they represent the real cost of access.

The economics of access are shown in graphical terms in Figure 2 below.

Figure 2: The Economics of Access



The demand curve (D) represents the market for haulage of iron ore along the Mt Newman Line where the vast majority of this demand comes from BHPBIO. The marginal revenue (MR) curve indicates that in the case of either BHPBIO as sole operator or FMG gaining access to the Mt Newman Line, the market for haulage is unlikely to be competitive in the sense of having many suppliers. This allows existing

suppliers to charge prices above average cost to potential entrants.[2] BHPBIO in the first instance has average costs equal to AC_{BHPBIO} (assumed for simplicity to be constant over the relevant range and thus equal to marginal cost) but sets prices at P_{BHP} and produces Q_{BHP}, including ore from other operations which is transported by BHPBIO under existing arrangements. The entry of FMG into the haulage market, enabled through a managed access regime, results in its and other operators' additional demand also being transferred via Mt Newman at price P_A and Q_Q. This results in a lower price than that available under BHPBIO's sole operation, with FMG taking advantage of historic or 'sunk' costs incurred by BHPBIO and any economies of density which may exist. [3]

Competition through access results in a decrease in price (P_{BHP} - P_A) applied to the increase in output (Q_A - Q_{BHP}). This black shaded area (known as the 'Harberger triangle' in economic theory) represents the economic gain from competition through access. It should be noted that this need not be the case if the cost structure of FMG is sufficiently high so as to make it unwilling to undercut BHPBIO's price for other parties seeking to transport ore along the rail line.

Even assuming such as gain from competition, it is often the case that access will increase average costs across the entire market through, first, the higher costs of the new entrant, that is, for example, costs attributable to negotiating access and, secondly, the higher costs associated with duplicating rail operations in the new environment. (these are the costs associated with subadditivity.) Such costs include not only the higher costs of competition through the uneconomic duplication of above-rail resources but also economic losses from delays in expansion of the network, as discussed above. The economic impact of higher costs represents the *opportunity loss* of the use of those resources elsewhere in the Australian economy.

This loss is demonstrated by the grey area in Figure 2.

There are a number of other studies in the United States which have analysed rail network and service cost data from before and after deregulation to establish the existence or otherwise of economies of density and subadditivity in rail costs. These include Ivaldi and McCullough (1999) and Wilson (1997). These studies also find considerable evidence for the existence of economies of density in US rail networks.

Ivaldi and McCullough's (1999) analysis suggests that density economies are derived not only from fixed costs being applied to every increasing volume but are also derived from 'weakly increasing variable costs'. This finding tends to corroborate the claims of BHPBIO and RTIO that planning flexibility and operation scale are important as key cost drivers in rail. If this finding is applicable to the Pilbara, it implies that effective separation of above- and below-rail infrastructure may not in itself generate as significant benefits to the community as access to haulage service from the existing rail service provider might. Given the ongoing work into the

[2] Although in this case, it should be noted that this is simple a matter of the transfers of *Ricardian rents* whereby parties negotiating over rail access are really sharing the benefits of any profits in excess of cost Pilbara producers may enjoy in the global iron ore market.

[3] What this means is that the elasticity of the demand curve will increase and the marginal revenue function will reflect this change in elasticity by swivelling to the right. It will cut the new (higher) average cost function thus giving the new price, P_A.

probable operational outcomes of access, a similar analysis could be undertaken for the Mt Newman Line.

Bitman adds the obvious caveat to his study that his results need not necessarily apply in other jurisdictions or for other rail networks and the same may be said for other studies in other jurisdictions. However, this does not deny the possibility that they might be replicated in the current case.

The key point is that the nature of the net benefits from access (or otherwise) is an *empirical question*. Increased costs under competition, including capital costs for access (net of duplication costs under the alternative scenario) and costs to the economy due to diseconomies of scale may raise the cost of access to such an extent that it outweighs the benefits of a competitive environment.

In other words, the costs of the monopolist's 'markup' need to weighed against the more efficient use of resources a society enjoys as a result of the economies of density inherent in a monopoly supplier of rail services. The nature of this trade off depends upon the difference in average costs between the monopoly supplier and firm(s) in a more competitive setting; the difference in average prices (if any) between the monopoly supplier and firm(s) in a more competitive setting; and the elasticity of demand for rail services in the Pilbara.

The Council has made no attempt to undertake this empirical modelling, with the focus instead being on the respective capital costs of duplication verses access. There is a need for the Council to quantify all potential costs and benefits associated with access. It presents a number of opinions and examples of instances which imply sub-additivity of the cost function for rail services along the Mt Newman Line. Yet there is no empirical evidence from the operations of Mt Newman to suggest that either is the case. A similar criticism applies to the counterfactual scenario under which FMG establishes its own rail system.

Without empirical evidence, it is difficult for the Council to reach the conclusion that access would promote either competition or economic efficiency or both in haulage services or that it would be economic for the community to duplicate the haulage service along the Mt Newman Line. A determination on the nature of rail service costs along the Mt Newman Line can only be arrived at after examining historic cost data and should be undertaken in conjunction with an independent and confidential study of potential cost diseconomies, as discussed below.

7.4. Diseconomies of Scope in Above-Rail Competition

Shared use of a facility are often characterised by 'diseconomies of scope' where the joint production of two (often competing) products or services is more costly. It may be the case that there are economies of density from BHPBIO and FMG sharing the Mt Newman Line, but if these cost advantages are counter-balanced by increased costs attributable to interface activities between both firms, the cost structure of the Mt Newman Line after declaration would result in an economic loss to society. This is due the existence of transactions costs in not only the synchronisation of demands and activities along the existing infrastructure but also in negotiations with regard to expansion. Several submissions to the Council have outlined problems that can arise in this case.

CRA (2006) has an extensive discussion of emerging evidence on diseconomies of scope, not only in the context of the interface between rail owners and service operators but also in terms of vertically integration in the resources industry. They cite several studies which suggest that shared access to rail infrastructure results in per unit cost increases, particularly in the case of bulk commodities. For instance, Gomez-Ibanez (2003) finds that the disaggregation and complete vertical separation of Great Britain's railroads resulted in substantial coordination problems, including access prices which created an incentive for train operators to congest tracks and a failure to reach agreement on adequate responses to reduce congestion and enhance the network.These problems appear to be relevant in the case of the Mt Newman Line, where an expansion in capacity is forecast to take place, even in the event of a decision against access.

On 6 January 2006, BHPBIO provided the Council with the results of operational modelling of FMG access under various scenarios (BHPBIO 2006, Documents 3 & 4). This work indicates the likely cost of access (to be discussed below) but also notes that a series of other issues could be potentially costly, including the risk of capital cost overruns, delays in construction and contractual and credit risks (BHPBIO 2006, Document 4, p.5). These issues represent potentially damaging costs from access and indicate the level of increase in transactions costs associated with access regimes in general.

Infrastructure bottlenecks in the coal industry are often cited as an example of a supply chain system with the type of the problems associated with access arrangements to natural monopolies. The Reserve Bank of Australia (RBA, 2005), in an assessment of the Australian resources sector noted key differences between the relative capacities of the coal and iron ore industries as a result of the 'fragmented ownership of the supply-chain assets; a large number of mines share mostly state-government-owned rail and port infrastructure.' In the case of privately held infrastructure such as Dalrymple Bay, a major longer-term expansion of capacity was at the time (April 2005) being delayed due to a disagreement with the Queensland Competition Authority (QCA) over allowable user charges. The RBA notes that iron ore suffers from far fewer problems due to the concentrated and integrated ownership of assets in the Pilbara which has enabled operators to expand port capacity by 19 per cent in 2 years with similar planned expansions in rail and mine capacity also taking place over the medium term, the current access question notwithstanding.

Other evidence suggests that the disaggregation of the coal supply chain has potentially a large economic impact on the Australian economy at a time when an historically rapid rate of expansion is required. A Senior Official's Group report to the Australian Government and the Export and Infrastructure Taskforce (2005), noted that coal supply chain constraints in the Hunter Valley could potentially result in lost coal export revenue of $7.9 billion in net present value over the decade to 2015.

To a large extent, these problems are associated with an under-optimised supply chain and represent the type of diseconomies of scope associated with coal chians in excess of 80 to 90 mtpa. The formation of the Hunter Valley Coal Chain Logistics Team (HVCCLT) was in response to emerging diseconomies in 2003. This was viewed as being critical in reducing transaction costs associated with the dispersed

ownership of infrastructure in the industry. One of the reported successes of this team was to increase capacity of the coal supply chain by 20 per cent without substantial expenditure on capital.

Again, this suggests that even limited attempts to align users within a supply chain can yield substantial benefits, although it should be noted that these are subject to the type of negotiation and decision lags which have historically impacted on the output and exports of the Australian coal industry.

Given the historic integration of supply chains in the Pilbara and the perceived benefits of such an arrangement in what is a competitive global market for iron ore, an examination of the likely costs of disaggregation of the supply chain needs to be undertaken. CRA (2006) outlines some of these risks, where it models the economic impact of a one-year delay in a $1 billion investment in iron ore operations in the Pilbara. This is a relatively conservative example considering BHPBIO's $2 billion 20mtpa expansion under its RPG3 project and plans for a further 170 mtpa expansion over the next 20 years – the projected time frame over which access is sought by FMG.

Using the Monash Multi-Regional Forecasting model, CRA finds that even a one year delay in investment results in a loss to the Australian economy of $400 million and $600 million to the Western Australian economy. It is important to note that this models a delay rather than a discontinuation in investment. Also, it is likely that declaration would result in delays to several key projects over the 20 year period, resulting in considerable economic losses. The modelling does not explicitly account for other potential problems, including the reduced market share in key areas as buyers cultivate other sources of supply.

The evidence from Australia's coal industry suggests that there are substantial coordination challenges in a vertically separated supply chain in commodity markets. Evidence from BHPBIO's modelling for the Mt Newman Line, suggests that diseconomies in the operation of the line under access could affect the entire supply chain and the national economy.

7.5. *Summary of the Social Costs and Benefits of Access*

The above discussion indicates that shifts towards greater competition through separation, be it direct separation or an access regime have a variety of costs and benefits to the economy. It is useful to think about these in terms of the benefits arising from more competitors through the shift from single ownership and operation of the Mt Newman Line to an access regime, as against the costs that occur from the duplication of resources and transactions costs that follow competition. The FMG application asks the Council to consider the nature of this trade-off.

Conclusion

This paper discusses the current problems regulators face in terms of assessing the efficacy of third party access. It critiques the current processes of the Council with reference to a recent case involving BHPBIO's Mt Newman Line.

This case highlights virtually all central *decision points* the Council faces in access cases. The present analysis indicates suitable approaches to solving these issues.

In the Mt Newman Line case, on the basis of evidence provided to the Council, there appears to be relatively small benefit and potentially high costs of enabling access under Part IIIA of the TPA.

First, there is substantial evidence that duplication of the Mt Newman Line is economic. Indeed, from FMG's own undertakings on this matter, partial duplication of the Mt Newman Line will take place regardless of the decision on declaration. Second, there exist three viable alternatives to access under Part IIIA – joint development of the Mindy Mindy deposit, sale of ore at the mine gate, and access under the RTA, all three of which can be shown to be relatively more economic than access through declaration. Finally, there is no evidence to indicate that access under Part IIIA would promote competition in any other market.

In addition, there are potentially large costs from declaration and access under Part IIIA. These include the cost of accommodating FMG access and costs associated with the reduction in efficiency of the Mt Newman Line as a result of access. Probably more important are potential delays in expansion of Mt Newman Line as a result of access.

The Federal Treasurer's disinclination to exercise his option to 'take-up' the Council's recommendation to 'declare' the Mt Newman Line indicates that the view from Canberra supports the notion of a further 'testing of the waters' when it comes to access in this instance.

This critique of the Council can be generalised to the processes it undertakes to determine the social costs and benefits of access. These extend to its determination of the relevant 'market' included in any assessment of access, the identification of the existence of a natural monopoly and the relative net benefits of access.

What emerges from this case is a pressing need for the Council to formalise its approach to researching issues in access cases. In particular, the modelling of potential benefits from access needs to be undertaken within the formal frameworks provided by economic analysis and utilised by other regulators and indeed, respondents to the Council's own inquiries into access. Such measures would include an emphasis on the independent collection and analysis of data, allowing opportunity for participation from parties seeking access and infrastructure owners, as well as well-defined parameters for assessing likely benefits.

References

Australian Competition and Consumer Commission (2005) *Public Competition Assessment: Rio Tinto – Proposed Acquisition of a 50% interest in the Hope Downs Iron Ore Project* (Canberra: ACCC).

Australia Geoscience (2005) *Australia's Identified Mineral Resources 2005* (Canberra: Commonwealth of Australia).

Baumol, W. (1977) "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry", *American Economic Review*, 67, pp. 809-822.

Baumol, W. (2005), "Submission to National Competition Council", in RTIO – Rio Tinto Limited (2005a) 6 May (with annexures RTIO A to G), *Submission to National Competition Council.*

BHPBIO – BHP Billiton Iron Ore Pty Ltd (2005) *Submission to National Competition Council,* (30 December).

BHPBIO – BHP Billiton Iron Ore Pty Ltd (2006) *Submission to National Competition Council,* (6 January).

Bitzan, J. (2003) "Railroad Costs and Competition: The Implications of Introducing Competition to Railroad Networks", *Journal of Transport Economics and Policy,* 37, pp. 201-225.

CRA – CRA International (2006), *i*n BHPBIO (2006), *Submission to National Competition Council.*

Evans & Peak (2005) in RTIO (Rio Tinto Limited) (2005a) (with annexures RTIO A to G), *Submission to National Competition Council,* (6 May).

Evans & Peak (2006) in BHPBIO – BHP Billiton Iron Ore Pty Ltd (2006) *Submission to National Competition Council,* (6 January).

Everett, S (2005) "Jurisdictional constraints on effective competition: The case of rail access regimes", *Australian Journal of Public Administration*, 64, pp. 91-99.

FMG – Fortescue Metals Group Ltd (2004a), *Application under part IIIA of the Trade Practices Act 1974 for declaration of the service provided by BHP Billiton Iron Ore Pty Ltd,* (11 June).

FMG – Fortescue Metals Group Ltd (2004b), *Supplementary Submissions in respect of the application for declaration of the service provided by BHP Billiton Iron Ore Pty Ltd,* (8 June).

FMG – Fortescue Metals Group Ltd (2005), "Opening Further the World's Leading Iron Ore Region", FMG presentation to the Asia Pacific Iron Ore Conference, (22 November).

FMG – Fortescue Metals Group Ltd (2005), *Introduction: Latest Information,* accessed at: http://www.fmgl.com.au/project/, last accessed on 4 June, 2007.

Independent Committee of Inquiry into Competition Policy in Australia (1993) *National Competition Policy: Report by the Independent Committee of Inquiry into Competition Policy in Australia* (Canberra:AGPS)

Ivaldi and McCullough (1999), "Density and Integration Effects on Class I U Freight Railroads", paper from *Seminaire Marches et Organisations* at IDEI, (July).

NCC – National Competition Council (2002) *The National Access Regime: A Guide to Part IIIA of the Trade Practices Act, Part A: Overview* (Canberra:NCC).

NCC – National Competition Council (2005), *Access application by Fortescue Metals Group Limited for Declaration of Services Provided by BHP Billiton Iron Ore Pty Ltd,* (Draft Recommendation), (11 March).

NCC – National Competition Council (2006a), *Access Application by Fortescue Metals Group Limited for Declaration of Services Provided by BHP Billiton Iron Ore Pty Ltd,* (Final Recommendation), (23 March).

NCC 2006b, *Template for applications for declaration under part IIIA of the Trade Practices Act 1974*, December 2006, available at:
http://www.ncc.gov.au/pdf/DeApTemp-001.pdf

Ordover 2005, "Submission to National Competition Council", in RTIO – Rio Tinto Limited (2005a) 6 May (with annexures RTIO A to G), *Submission to National Competition Council.*

RTIO – Rio Tinto Limited (2005a) (with annexures RTIO A to G), *Submission to National Competition Council* (6 May).

RTIO – Rio Tinto Limited (2005b), , *Submission to National Competition Council,* (5 December).

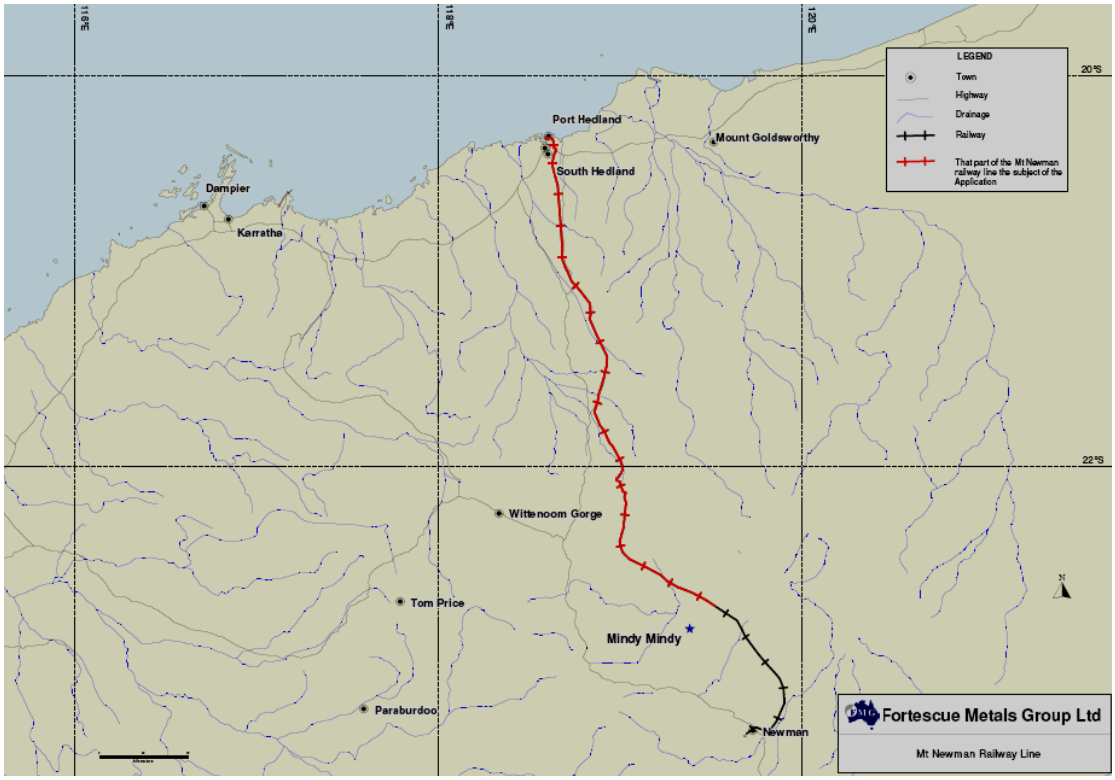
RBA – Reserve Bank of Australia (2005), *Statement on Monetary Policy*, (February).

Williamson, O.E. (1968) "Economies as an Antitrust Defense: The Welfare Tradeoffs", *American Economic Review,* 58, pp.18-36.

Willig, R. (2005), in RTIO – Rio Tinto Limited (2005b), , *Submission to National Competition Council,* (5 December).

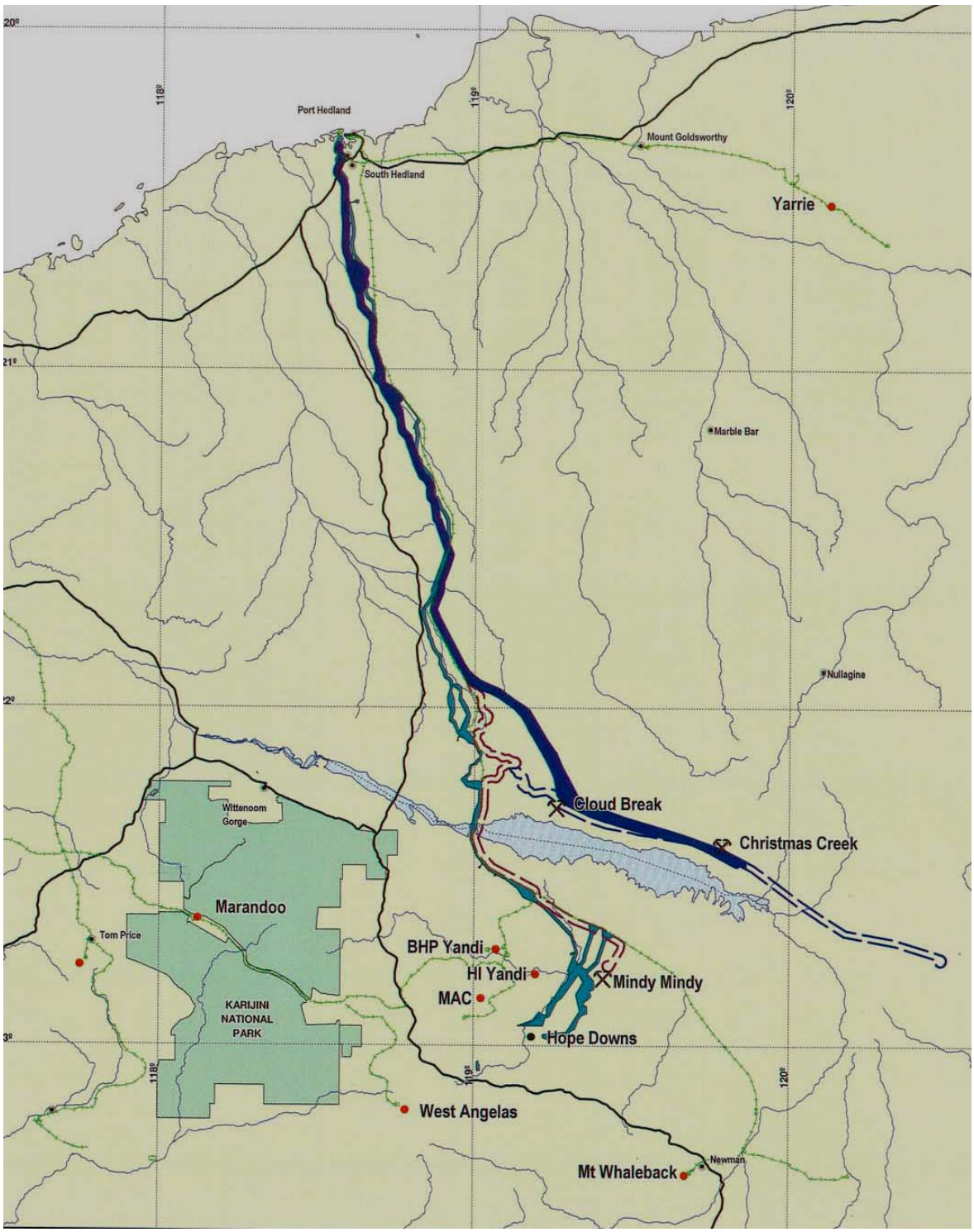
Wilson, W.W. (1997), "Cost Savings and Productivity in the Railroad Industry", *Journal of Regulatory Economics*, (11), pp. 21-40.

FIGURE 1
THE MT NEWMAN LINE AND ACCESS PROPOSAL BY FMG



Source: NCC (2006).

FIGURE 2
THE FMG LINE AND PILBARA IRON ORE DEPOSITS



Source: NCC (2006).