Attachment A

CHRONOLOGY OF NEGOTIATIONS

NUMBER	DATE	DESCRIPTION
1.	18 July 2003	Andrew Forrest (CEO of Fortescue Metals Group Limited (**FMG**)) and Graeme Rowley (Executive Director Operations, FMG) first met with Graeme Hunt (President Iron Ore, Carbon Steel Materials BHP). The purpose of the meeting was to explain what FMG was hoping to achieve and to persuade BHP Billiton Iron Ore to co-operate with FMG in a mutually beneficial arrangement under which FMG would either invest in building its own railway and linking it with the Mt Newman Railway, or FMG would pay BHP Billiton Iron Ore to expand its railway. Access by FMG to the section of the Goldsworthy Railway running west of the intersection with the Mt Newman Railway to Nelson Point was implicitly part of these discussions as access to that section was required to get to FMG's proposed port at Anderson Point.
2.	24 July 2003	The meeting on 18 July 2003 was followed up with a letter from Andrew Forrest to Graeme Hunt. There was no response to this letter.
3.	1 December 2003	Andrew Forrest wrote to Peter Beaven at BHP Billiton Ltd, noting the WA Supreme Court's decision (*Hancock Prospecting Pty Ltd v BHP Billiton Iron Ore Pty Ltd* [2003] WASCA 259) dealing with BHP Billiton's obligation to enter into contracts for the carrying of iron ore products on the rail infrastructure developed by BHP Billiton.
4.	2 December 2003	Graeme Rowley faxed a copy of the same letter to Graeme Hunt requesting an opportunity to discuss the issues outlined.
5.	23 December 2003	Graeme Hunt responded to Andrew Forrest's letter making the following points: (1) BHP Billiton Iron Ore thought that FMG was building its own railway. (2) It would be premature to enter into rail access negotiations. (3) FMG faces significant challenges with the Mindy Mindy project. Graeme Hunt concluded that given the challenges facing FMG it would not currently be commercially sensible to expend resources negotiating an arrangement under the Rail Transport Act 1987 (**RTA**). He pointed out that the RTA requires the nomination of a base tonnage which becomes a 'take or pay' commitment.
6.	16 January 2004	Andrew Forrest responded to Graeme Hunt's reply pointing out the obligation under the RTA to sensibly negotiate and at the very least commence meaningful negotiations. Andrew Forrest reiterated: (a) An explicit obligation to carry iron ore products of a third party – "to be negotiated" (b) The interpretation that one doesn't need to be operating a mine to be a third party (c) The railway line is not a private facility for the exclusive use of the Mt Newman Joint Venture – the right of access to third parties allows for competition between producers of iron ore (d) "to be negotiated' – means prior to the time when the products are to be carried and therefore before the mine is in

NUMBER	DATE	DESCRIPTION
		active production (e) The resources required to negotiate access are a burden imposed by the Mt Newman Joint Venture's privileged position.
7.	2 February 2004	Graeme Hunt replied and repeated his position that BHP Billiton Iron Ore did not wish to discuss the provision of an iron ore rail carriage service until such time as FMG was capable of entering into and sustaining the associated commitments and that BHP Billiton Iron Ore did not believe that FMG was yet in that position. Graeme Hunt said that BHP Billiton Iron Ore wished to understand how FMG was going to meet the challenges it faced and suggested that contact be made with Stewart Hart – VP Commercial, BHP Billiton Iron Ore.
8.	12 February 2004	A meeting between Andrew Forrest (and others from FMG) and Stewart Hart (and a colleague) took place at FMG's offices. The issue of access to BHP Billiton's Mount Newman Railway line, specifically for the transportation of iron ore from Mindy Mindy, was discussed. The meeting was amicable and BHP Billiton Iron Ore promised to respond within a week.
9.	20 February 2004	When no response had been received Andrew Forrest telephoned Stewart Hart. The tenor of the discussion was that the matter had been discussed internally but the decision had been reached not to co-operate. The reason given was that BHP Billiton Iron Ore needed to push as much ore as it could down the railway line with the implication that that would preclude cooperation with FMG.
10.	16 March 2004	A group from FMG taking a Chinese delegation around the Pilbara ran into some senior executives from BHP Billiton Iron Ore in Newman. There were a number of conversations between the parties including one between Andrew Forrest and Graeme Hunt. In all cases the message was basically the same – namely that BHP Billiton Iron Ore was not going to, and didn't see that it had the need to let FMG use its infrastructure.
11.	1 June 2004	Chris Catlow the Chief Financial Officer for FMG met with Peter Beaven. Chris Catlow complained about the fact that Graeme Hunt had not returned any of Andrew Forrest's calls and reiterated FMG's desire to work co-operatively with BHP Billiton Iron Ore to create improved infrastructure that would benefit both parties. Peter Beaven replied that he was tasked with creating profits for BHP Billiton Iron Ore and did not see how co-operation would deliver such objectives.
12.	Throughout 2004	There have been numerous telephone calls from Andrew Forrest to Graeme Hunt. Graeme Hunt has always been unavailable and the messages left never elicited any response.
13.	25 August 2005	Email from Andrew Forrest to Graeme Hunt suggesting that Fortescue and BHP Billiton Iron Ore could explore areas for co-operation and suggested a meeting be arranged.

NUMBER	DATE	DESCRIPTION
14.	2 September 2005	Graeme Hunt responded by email stating that co-operation raised anti-trust issues; that sharing infrastructure would create diseconomies of scope that outweighed any economies of scale and that any meeting would be inappropriate whilst litigation was outstanding.
15.	5 September 2005	Andrew Forrest replied again by email explaining that Fortescue did not intend that the co-operation would violate anti-trust laws but rather infrastructure sharing was something that would make sense.
16.	12 October 2005	Graeme Hunt responded by letter stating that BHP Billiton did not believe that any proposal to link BHP's and Fortescue's railway lines made sense; and further that since Fortescue was building its own railway, carriage under RTA was no longer required. He then restated the BHP Billiton position that discussions only had to be held with parties whose mining plans were sufficiently well advanced and that BHP Billiton would be happy to have those discussions when Mindy Mindy reached that stage. The suggestion of a meeting was again turned down.
17.	23 February 2006	Graeme Hunt was asked by Julian Tapp at the Global Iron Ore and Steel Forecast Conference in Perth to explain BHP Billiton's refusal to negotiate. Mr Hunt responded by asserting that Andrew Forrest hadn't responded to his offer – This prompted Andrew Forrest to show a copy of Mr Hunt's 12 October 2005 letter to the conference to demonstrate BHP Billiton's lack of good faith in the matter.
18.	24 February 2006	Conference presentation from the previous day released to ASX and media.
19.	9 March 2006	Graeme Hunt writes to Andrew Forrest stating happy to discuss access for Mindy Mindy when plans "sufficiently well advanced". Stated (incorrectly) that FMG had previously indicated that Mindy Mindy would not be ready to mine until 2015. Suggests that if development to be earlier certain information is required so that BHP Billiton could give indications about pricing and required capital contributions.
20.	17 March 2006	Andrew Forrest writes to Graeme Hunt requesting that BHP Billiton confirm that it was prepared to enter negotiations in relation to Mindy Mindy under the RTA. Letter sets out Fortescue's response to all the information requested by BHP Billiton.
21.	5 May 2006	Chris Lynch (Executive Director, Group President - Carbon Steel Materials, BHP Billiton) writes to Andrew Forrest in response to the 17 March letter stating that BHP Billiton did not believe that the Mindy Mindy deposit was economically viable.
22.	10 May 2006	Andrew Forrest responds to Chris Lynch's letter explaining how BHP Billiton had misinterpreted the size of the resource at Mindy Mindy, reaffirming the requirement to move 5Mtpa for a period in excess of 12 years and requesting a response to the letter of 17 March.
23.	18 July 2006	Ian Ashby wrote to Andrew Forrest restating BHP Billiton's position that BHP Billiton would not negotiate until Mindy Mindy was sufficiently well advanced. The letter questioned: (a) Fortescue's ability to handle 5Mtpa of product from Mindy

NUMBER	DATE	DESCRIPTION
		Mindy over its port facilities; (b) the likely timing of the development of Mindy Mindy; and (c) whether there were issues of equipment compatibility as Fortescue had claimed; The letter repeated BHP Billiton's doubts about Mindy Mindy being economic and queried the appropriateness of undertaking negotiations.
24.	23 August 2006	Graeme Rowley responded to Ian Ashby's letter of 18 July 2006 answering the questions that were asked including confirming that Fortescue did wish to enter into discussions under the RTA and asking BHP Billiton to confirm that it was prepared to do so – no response was received to this letter.

Attachment B

Carbon Steel Materials
President - Iron Ore

bhpbilliton

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bhpbilliton.com

Wednesday, October 12, 2005

Mr. Andrew Forrest
Chief Executive Officer
Fortescue Metals Group Ltd
Ground Floor, Fortescue House
50 Kings Park Road
West Perth, Western Australia 6005

Dear Andrew,

Thank you for your email of 6 September 2005.

I take the suggestion in your email of "cooperation on that parallel line and port" to refer to shared use of both the BHPB and FMG rail lines in accordance with the "rail loop" suggestion you have previously made to the National Competition Council.

As you will be aware from our submission to the NCC concerning FMG's declaration application, we could not agree to such a proposal because we believe it is unworkable. There would be significant difficulties with control, flexibility of operation, asymmetric wear, incompatible equipment and technology as well as problems with delays in obtaining agreement to any proposals to modify or improve the lines. Overall, we believe that it would introduce substantial inefficiencies and costs without sufficient benefit for either party.

I note that you had also previously approached us in relation to supply by BHPB Iron Ore of a rail carriage service under the RTA, but that those discussions had not proceeded because your project was not sufficiently developed to enable terms and conditions to be formulated. As you are now building your own rail system, I take it that you will not be pursuing the RTA avenue in relation to your main project.

Presumably, you have not raised the RTA in relation to your Mindy Mindy project because you do not have sufficiently advanced plans in relation to the Mindy Mindy project. We are aware of our obligations to negotiate terms for rail carriage services with third parties whose plans for mining are "well advanced" and would be happy to discuss terms when your plans for Mindy Mindy are sufficiently well advanced to make this practicable.

In light of the above, I believe that there would little point to a meeting at this time.

Yours sincerely,

Graeme P Hunt
President Iron Ore

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23 August 2006

Mr. Ian Ashby
BHP Billiton Iron Ore
PO Box 7122 Cloister's Square
Perth WA 6850

Dear Mr. ~~Ashby~~ Ian,

I refer to your letter dated 18 July 2006.

Previous Correspondence

Fortescue has a different interpretation of the context in which the issues that you referred to should be interpreted. Fortescue had attempted to engage in discussions related to gaining access to BHPBIO's infrastructure from as early as July 2003; Mindy Mindy has been part of that agenda since February 2004 and indeed the central case since the lodgement of the NCC application in June 2004. All our efforts to engage in discussions or to organise meetings related to this matter have been rebuffed. BHPBIO has repeatedly deployed what we term the "Catch 22" defence, namely to argue that Fortescue's plans were not sufficiently well developed to allow negotiations to commence, knowing that the expenditure required to reach the stage of being 'sufficiently well developed' would not rationally be spent without certainty of access to infrastructure.

BHPBIO only became prepared to progress discussions when faced with an expectation that the Final Recommendation from the NCC would be to declare the Mount Newman railway for a period of 20 years. However despite writing to Graeme Hunt on 17 March 2006 to provide the information that he indicated was required – it took 4 months to gain a proper response to that letter.

In your letter of 18 July you raised 4 issues that you assert require further clarification before detailed commercial negotiations can commence:

1. Capacity of 5Mtpa.
2. Frequency of railings
3. Commencement of railings date
4. Unloading equipment

1. Capacity of 5Mtpa

You referred to a couple of ASX announcements which you indicated were examples illustrating the fact that the port facilities would only be capable of handling 45Mtpa. I was unable to locate an ASX announcement dated 23 June 2006 and the ASX announcement dated 26 June 2006 merely stated that the initial production target was 45Mtpa. However I gather from the subsequent specific questions that you were somewhat doubtful about the ability of the facilities owned by The Pilbara Infrastructure ("TPI") to handle additional throughput given the intention of FMG Chichester to mine at a rate of 45Mtpa and the fact that TPI facilities were designed to operate also at 45Mtpa. Although it is true that TPI's facilities were optimised for operations at 45Mtpa they will be capable of being stretched above that capacity. More importantly TPI is prepared to expand the capacity of the facilities should demand from third parties, including Pilbara Iron Ore, require such an expansion; the facilities were designed with expansion capability in mind and can be quickly expanded when required.

In answer to your specific questions:

1.1. It is intended that Mindy Mindy production will be shipped via the port facilities owned by The Pilbara Infrastructure rather than through the public berth at Port Hedland.

1.2. It is intended that Mindy Mindy production will be shipped as a stand alone product.

1.3. a. The port facilities will be able to handle the additional production.
b. The facilities will be able to handle a separate product and TPI is prepared to ensure that its facilities can handle 50Mtpa.

1.4. The port facilities are not limited to 45Mtpa but will initially be optimised for a throughput of 45Mtpa; they will be capable of a higher level of throughput.

2. Frequency of railings

Fortescue understands that BHPBIO cannot necessarily guarantee the delivery of one rake every 24 hours. Fortescue notes the possibility that BHPBIO may be able to commit to the delivery of 30 rakes per month and to the use of reasonable endeavours to space those rakes relatively evenly over the month.

Pilbara Iron Ore's requirements would probably exceed 30 rakes per month but would probably be less than 30 trains per month assuming the trains would be made up of more than one rake. If the ore wagons are to be loaded using front end loaders there would be an issue with evenness of weight distribution that would probably limit the amount that could be loaded into each wagon. Assuming for the moment that each rake could take around 12,000 tonnes, then 360 rakes per year would only be capable of moving around 4,320,000 tonnes.

Could you please clarify whether the figure of 30 rakes a month was merely illustrative or represents some underlying operational constraint that would either restrict the number of rakes available to 30 per month or would restrict what could be made available to only one rake per time? Clearly if there is some operational constraint Pilbara Iron Ore will work within what can be made available, but an early indication of any such constraints will assist with appropriate planning associated with the development of the Mindy Mindy deposit.

3. Commencement of railings date

As you correctly observed there has been an agreement between Consolidated Minerals and Fortescue that Fortescue would take control of Pilbara Iron Ore's activities during the next stage of development. The undertaking of the proposed Feasibility Study is conditional upon the level of risk associated with access to the infrastructure required for export of the product. That is ultimately a commercial decision and at the moment there is no practicable method of getting iron ore from Mindy Mindy to any export terminal from where it could be sold.

There is of course the possibility either that the Declaration of the Mt Newman Railway will ultimately be successful or that commercial negotiations with BHPBIO (either under RTA, a modified version of the RTA proposed by the WA Government, or under some other commercial arrangement) will enable the iron ore to be transported from Mindy Mindy to TPI's port facilities at Port Hedland. However the risk of not being able to transport the iron ore economically is currently regarded as too high to be able to justify the expenditure required for the Feasibility Study. This situation is under constant review and Fortescue is hopeful that sufficient certainty can be obtained to justify undertaking the Feasibility Study by early next year.

Rod Baxter at Consolidated Minerals has his own views about when mining at Mindy Mindy might be able to commence and Fortescue would not wish to pass comment on those views other than to say they represent one possible outcome.

In answer to your specific questions:

3.1. The quantum and timing of production from Mindy Mindy is conditional on the outcomes and recommendations of the full Mining Feasibility Study.

3.2. a. The Scope of the Mining Feasibility Study would involve further drilling to establish the extent and variability of the Mindy Mindy deposit; better sampling data to improve our understanding of the likely physical and metallurgical properties of the ore and therefore a better understanding of the processing facilities likely to be required including those required for transportation to export facilities. The study not likely to be concluded until better certainty regarding transportation has been achieved since the cost of transportation is an integral component in any assessment of the economic viability of mining.

b. Once access to a service capable of transporting the iron ore from Mindy Mindy to an export terminal has been established it is inevitable that the Mining Feasibility Study will recommend the development of Mindy Mindy.

3.3 The Mining Feasibility Study will help to determine the optimum level of output and its expected duration, the level of further processing that will optimise the value of the product and the marketing strategy that flows from a better determination of the physical and metallurgical properties of the final product.

4. Unloading equipment

As I am sure you will appreciate, during the development of a project of the size currently undertaken by Fortescue (referring specifically to the Pilbara Iron Ore and Infrastructure Project located within the Chichester Ranges), plans change during the course of development. The size of the ore wagons will be larger than those employed by BHPBIO partly because of the lower bulk density of our ore (which was not apparent at the time of the PERs) and partly because of the higher axle loadings at which TPI's wagons will operate (again something that had not been verified at the time of the PERs). Moreover the train unloader has been designed with a top clamping mechanism and it is our understanding that such a system risks damaging BHPBIO wagons which do not have the required structural strength in their side panels.

Fortescue's suggestion that BHPBIO could haul Mindy Mindy product using wagons provided by Fortescue or indeed that Fortescue could provide both locomotives and wagons was made in the context of an offer to consider whatever arrangements would facilitate the development of Mindy Mindy with the least disruption and inconvenience to BHPBIO. We did not suggest that BHPBIO was required to consider such an arrangement under the terms of the RTA, we were merely indicating that we were prepared to be flexible and consider commercial arrangements that were outside the RTA if such an arrangement was mutually acceptable.

You have noted that BHPBIO's obligations under the RTA extend no further than providing a haulage service using its own rolling stock You also noted that BHPBIO's position is that it will not allow third party locomotives and ore wagons to operate on its system. We were not aware that the policy extended to not allowing third party wagons to operate on the system even if hauled by BHPBIO locomotives and operated by BHPBIO personnel. Fortescue does not share BHPBIO's opinion that difficulties associated with operations and maintenance would be likely to make this alternative uneconomic and impracticable – indeed we see no reason why rolling stock compatible with TPI's train unloader could not be provided to BHPBIO for it to haul in order to service the Mindy Mindy operation.

Your suggestion that Fortescue should consider the practicability of modifying its proposed unloading facilities so that they could accommodate BHPBIO's ore cars is noted. Construction has not commenced; although the design of the unloader has been finalised and contracts have been let - the design does not rule out the possibility of adaptation to accommodate BHPBIO wagons as it could be retro fitted with a bottom clamping system and could be packed out when required to deal with the smaller size of the BHPBIO wagons.

Please let me know your suggestions, as if it is possible we will be pleased to accommodate them.

BHPBIO's response to Fortescue's letter of 10 May

Our position has always been that full resource definition of Mindy Mindy will not take place until access to infrastructure has been established. Nothing has changed. The drilling work recently undertaken by Consolidated Minerals reflected a contractual requirement between Pilbara Iron Ore and Derek Ammon that required resource definition to be undertaken as part of the terms under which one of the mining tenements making up the Mindy Mindy deposit was acquired.

As I have already explained, expenditure on further feasibility studies is a commercial decision based on uncertainty associated with access to infrastructure. Only when there is reasonable certainty of commercial haulage rates or some other method of exporting the ore will there be further expenditure on defining the deposit. We have the necessary confidence concerning the economic viability of the deposit – we merely lack sufficient certainty over both the probability of getting access to haulage and the likely associated charges. I don't wish to comment directly on media releases put out by Consolidated Minerals, but I would note that circumstances change, the certainty associated with access to infrastructure fluctuates and as it does so, so does the preparedness to undertake further feasibility work.

You have expressed concern about Fortescue's "less than fulsome disclosure of relevant key facts". With respect, Fortescue has disclosed all the relevant key facts known to it and whilst you may regard the disclosure as less than generous, since your motives to date appear to have been based on your desire to show why you are not obliged to enter discussions you can hardly complain about the fulsomeness of Fortescue's disclosure. I repeat – we have disclosed all the relevant key facts that we were aware of at the time any comments were made. If you would like to be more specific about what you believe to be contradictory comments made by Fortescue, I would be happy to explain why such comments were made and more importantly why those comments were consistent with the relevant key facts as known by Fortescue.

You have asserted that you believe that there is a risk that the economics of Mindy Mindy could lead to it being abandoned or deferred indefinitely after considerable time and money had been invested in negotiating a haulage arrangement between Fortescue and BHPBIO. Again, with respect, given the huge amount of time and money devoted by BHPBIO to defending against Fortescue's 'Declaration Application' – an application brought about by BHPBIO's refusal to enter into commercial discussions with respect to such a haulage arrangement – we find it surprising that you would now proffer this potential risk as the reason why you effectively elected to devote (with certainty) a far larger amount of resources to fight Fortescue through the courts.

Your query as to whether it is appropriate to delay detailed discussions until such time as a detailed feasibility study and further drilling has been completed appears to be nothing more than a repeat of the 'Catch 22" defence that BHPBIO has deployed ever since it took the decision not to enter into commercial discussions. At the risk of sounding like a scratched record allow me to repeat our position which we have held unwaveringly since the very beginning – we do not believe it to be a commercially sensible decision to spend more resources on proving up the Mindy Mindy deposit to JORC standards whilst the risk that access to infrastructure will not be forthcoming remains so high. That may change as a result of our efforts to gain access through Part IIIA of the Trade Practices Act, but without a reasonable degree of certainty, from whatever source, it remains the case that further activity will not take place.

I believe that I have given detailed responses to the questions you posed in your letter of 18 July, and I confirm that we do wish to proceed with discussions. Could I ask you to confirm that you are prepared to enter into discussions about terms of access under the RTA? This question was asked of Graeme Hunt by Andrew Forrest in the letter dated 17 March 2006, and yet we have still not received a response. If you are not, would you please set out quite clearly, why you are not and what you believe to be necessary before you would be willing to do so.

Lastly, as there is no further doubt of the viability or certainty of Fortescue's project to the thinking man, we would ask that BHPB Iron Ore change from its thinly veiled opposition to Fortescue with a true intent to achieve multi-level cooperation. I am aware that this is the preferred stance of our CEO.

Yours sincerely,
Fortescue Metals Group Ltd

Graeme Rowley
Executive Director - Operations

Attachment C

The Evaluation of Criterion (b) in Long-Haul Rail Services

A Report on behalf of DLA Phillips Fox

Joshua Gans

The analysis here represents the views of CoRE Research Pty Ltd (ACN 096 869 760) and should not be construed as those of DLA Phillips Fox or its clients.

19th December, 2007

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1 Background

I have been asked to evaluate whether it is likely to be more economic to build a separate rail track and corridor as opposed to expand the operation of existing facilities in long heavy-haul rail networks in the Pilbara. This evaluation is in the context of access seekers wanting to utilise existing rail networks for above rail haulage operations. Specifically, the issue is whether it is "uneconomic for anyone to develop another facility to provide the service." The purpose of this exercise is to provide the relevant economic approach to this issue in order to properly formulate the evidence needed to make the required evaluation.

This brief report proceeds as follows. First, I consider the application of the *pure* natural monopoly test and conclude that it is likely to be unsuitable for this environment. Second, I consider a net social benefit test as favoured by the Australian Competition Tribunal. I show how this can be evaluated in the case of long-haul rail networks and also propose an evidentiary test to determine whether a rail network would be economic to duplicate or not.

2 The Natural Monopoly Test

To begin, I examine the natural monopoly test and evaluate its usefulness in the assessment of criterion (b). The traditional definition of a *natural monopoly* is this:

> An industry is said to be a natural monopoly if for any given output, the social costs of production are lower when that output is produced by one rather than two or more firms.[1]

Notice that this is defined relative to an "industry" and with respect to the number of firms as opposed to facilities or plants. Of relevance here, the industry refers to the service of using a given section of rail track in the Pilbara for the requirements of both its owner and also other prospective users (such as FMG).

This service could be produced by one firm or more than one firm. It is considered a natural monopoly if the social cost of providing the service would be lower if just say, its owner, provided the required service compared with its owner and others doing so.

Technically, examining whether a service constituted a natural monopoly would involve considering whether, for *any* given level of industry output, Q with $C_i(q)$ being the (social) costs of production for firm i for an output of q:

$$C_{OWN}(Q) \leq C_{OWN}(\alpha Q) + C_{OTH}((1-\alpha)Q)$$

for any arbitrary fraction, α. Notice that this test requires one to examine *all* potential levels of industry demand; or at least those that are reasonably expected to arise. So while it may be that, for low levels of output, the above inequality is satisfied, higher levels may make having more than one producer cost effective. In this case, the industry would not be considered to be a natural monopoly.

2.1 Capacity constraints

When a facility is being utilised at a level below its potential capacity and seeker demand would be unlikely to raise it to that capacity, even

[1] See, for example, Joshua Gans, Frances Hanks and Philip Williams, "The Treatment of Natural Monopoly under the Australian *Trade Practices Act*: Three Recent Decisions," *Australian Business Law Review*, Vol.29, No.6, December, 2001, pp.492-507.

aside from natural monopoly considerations, it is plausible that accommodating seeker demand would be preferable to duplicating the capacity in the facility. However, note that the very existence of capacity constraints means that there exist levels of demand such that duplication will be cost minimising. Recall that a natural monopoly is evaluated at all potential outputs for an industry. However, if a plant or facility were to reach capacity, then, by definition, the marginal costs associated with exceeding that capacity are infinite. Thus, to produce *anything* beyond that capacity requires another plant or facility.

Consequently, industries with capacity constraints pose a particular issue for the application of the natural monopoly test to evaluate whether a facility is uneconomic to duplicate. I will argue here, therefore, that the pure application of that test is not appropriate.

What would happen, however, if we took a more limited view of the natural monopoly test and restricted it to plausible ranges of demand. At a first pass, this might suggest that, if plausible demand in an industry were to reach capacity then, it would not constitute a (partial) natural monopoly because the costs associated with meeting that demand would be lower if two plants or facilities existed. One issue that I will consider in more detail in Section 3 is that this places an undue weight on costs without consideration of demand drivers. However, another issue is that this type of analysis confuses a facility with a firm. However, as I argue here, this is not necessarily the case. Even when plausible demand exceeds capacity that does not imply that it is cost minimising to duplicate a facility.

To see this, consider a single track rail line. Suppose that it is assessed that this single track rail line has reached capacity. Hence, to meet higher levels of demand a second rail line needs to be constructed. Does that mean that the industry is not a (partial) natural monopoly?

It is unlikely that this is the case. This is because the issue for natural monopoly is not whether one, two or ten rail lines are necessary to meet demand. Instead, the issue is whether there are economies to be realised from common ownership and operation of them.

There are good reasons to believe that those economies would exist. On the one extreme, suppose that one track travels through a canyon and it is not possible to build the second track anywhere near it. Instead, the second line – still connecting the same two locations as the first – is built on another, very separate path. In this situation, having a coordinated system operating the two would be beneficial. Why? Because one line could be used for incoming traffic while the other could be used for outgoing traffic. That would reduce the costs of scheduling two-way operations.

On the other extreme, the rail racks could be side by side. In this case, links between them could optimise the flow of traffic and allow more efficient management of trains with differing speeds and also who might travel on only certain lengths of the track.

On an intermediate level, each line could have connections between them that would allow each to be used as a passing loop for the others to manage traffic of heterogeneous speeds. Once again, this demonstrates the returns to networking as opposed to fully separate facilities.[2]

That said, in principle, each of these lines could be owned by different entities. The firms could then contract between each other to ensure that economies of coordination are realised. However, this will likely impose transaction costs that would not otherwise be incurred if the system was commonly owned and operated.

The point to note here is that capacity constraints, while making it a little harder to evaluate whether an industry is a (partial) natural monopoly, do not rule it out.

2.2 Foreseeable demand

There is also a difference between natural monopoly and the notion that it would cost more to satisfy foreseeable demand by developing another facility. As noted earlier, a natural monopoly is evaluated at all levels of demand. Thus, the fact that the access provider had 80 percent of that potential and seekers 20 percent, would make no difference in the evaluation of a natural monopoly. However, whether it would cost more to satisfy the 20 percent seeker demand in addition to the provider's demand is relevant for criterion (b).

To see this, consider the following hypothetical example. Suppose that it costs $300 to develop a rail line and the marginal costs of operating the rail line rise from $0 for the first 50 units to $10 per unit for the next 50 and that capacity is reached at 100 units. Suppose also that provider demand is 70 units and seeker demand is 20 units. Finally, we suppose one rail line already exists so that its development costs are sunk.

Now under the natural monopoly test we would ask: is it cheaper to have two lines to satisfy the 90 units of total demand or just have one

[2] See, for example, the discussion in J.M. Preston, "A Simple Model of Rail Infrastructure Capacity and Costs," *ITS Working Paper*, No.370, Institute for Transport Studies, University of Leeds, 1992. See also, NERA, "Review of Overseas Railway Efficiency," Report for the Office of the Rail Regulator, July 2000, that documents returns to rail network size and density.

line. With one line, the total costs are \$10 x (90 – 50) = \$400. With two lines, the total costs are \$300 + \$0 = \$300. Thus, it is cheaper to have two lines; so it is a natural monopoly at this level of demand. Why? Because once you allocate demand optimally across both lines, the savings in marginal cost outweigh the additional development costs.

However, it cannot be presumed that, if the additional rail line was owned by another party, the incumbent provider would want or be able to allocate demand to it. In this case, with an additional line, total costs are \$300 + \$10 (70 – 50) = \$500. That is, total costs are higher with an additional line than would be the case if we just had one line.

Thus, the application of the natural monopoly test presumes that after another facility is developed, demand will be allocated optimally across all facilities. It is an evidentiary matter whether this is likely to be the case or not. However, it cannot be presumed that this will be the case when those facilities are owned and operated by different firms.

2.3 Summary

What this analysis suggests is that the *strict application* of the natural monopoly test is not likely to be relevant in the application of criterion (b). Instead, something more in the spirit of that test but that takes into account likely ranges of demand and their use patterns across facilities will be relevant. I consider such a broader approach in the next section.

3 The Net Social Benefit Test

According to the Australian Competition Tribunal, the test for criterion (b) is a social test:

> [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 one pipeline to provide those services rather than more than one. (Duke EGP decision, para 137)
>
> …the uneconomical to develop test should be construed in terms of the associated costs **and benefits** of development for society as a whole. (Sydney Airport) [**emphasis** added]

Notice that the test considers not only the social costs associated with developing another facility but social benefits as well. In contrast, the natural monopoly test and approach either ignores social benefits or presumes that these benefits are the same regardless of whether another facility is developed or not.

Here I argue that not considering the benefit side of the social decision equation can lead to misleading results in certain cases. In particular, the benefits realised can differ between the factual (no development of another facility/providing access) and the counterfactual (developing another facility). This is especially the case where there are capacity constraints in the short, medium and/or long term.

3.1 The Social Decision Tree

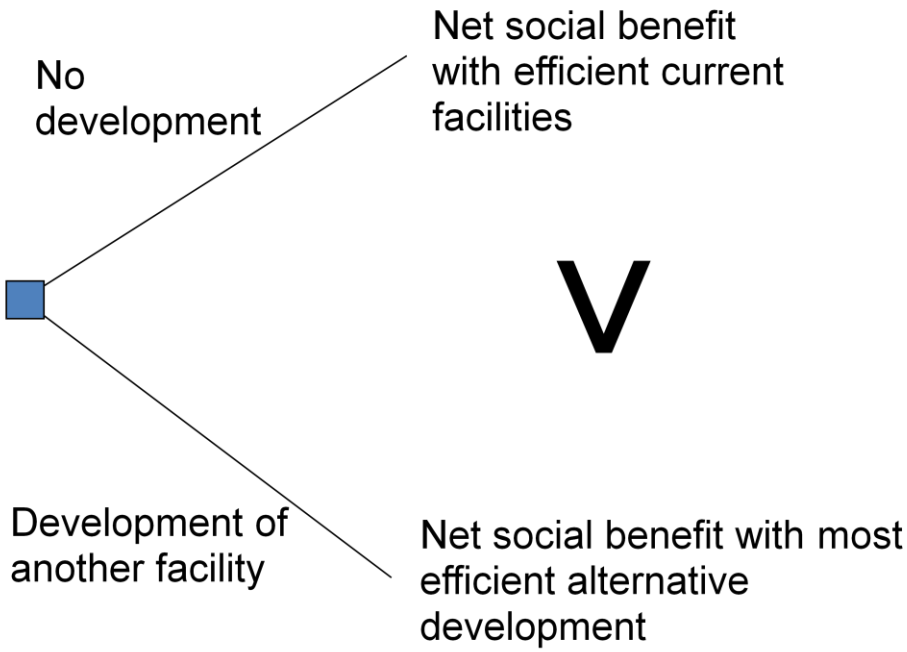
In economics, an evaluation of whether it is 'economical' to take an action is conducted by comparing the net benefits that flow from the consequence of taking that action with those that arise from doing the next best alternative. If the net benefits from the action exceed all other alternatives, then that action is said to be economical.

When it comes to the consideration of whether it is economical not to develop another facility, or equivalently, uneconomical to develop another facility to provide the service, a decision tree can be constructed to assist in evaluating the net benefits associated with each action.

Figure 1 shows such a decision tree. The tree begins with a decision node (the square) with two branches extending from it. The top branch corresponds to the choice of not developing another facility

while the bottom branch corresponds to the choice of developing another facility. At the end of each branch, we have said in words what the consequence of each action is.

Figure 1: Social Decision Tree



Analysis of this decision tree requires us to do a few things. First of all, we need to carefully unpack the consequences in terms of net social benefits flowing from each action. Second, we need to evaluate what the best alternative is to providing access. That is, we need to consider the appropriate counterfactual. In what follows I consider each brand in turn.

3.2 The Factual

There are several consequences that will flow from no alternative facility being developed and seekers being able to access a rail line.

1. *Usage*: Non-owner usage will occur on the rail line.
    a. In the absence of any congestion on that line this will be a pure increment to the rail line's utilisation.
    b. However, if, at any time, there are capacity or scheduling issues, then seeker usage will be managed as part of the overall mix. Thus, some of the usage

from seekers will displace the provider's usage that it would have had had there been no access. In this case, usage is said to be *constrained*. The extent of that displacement will depend upon the value of the ore being transported as well as the relative efficiency of the mining operations of seekers.

c. For use later on, it will be assumed that the provider's usage under access will be Q^a and those of others will be q^a.

2. *Costs*: Seekers will cause additional costs on the rail line.

   a. In the absence of any congestion on that line, the costs associated with access will include:

      i. Scheduling: the costs of managing a more complex schedule

      ii. Maintenance: any costs arising from additional usage causing wear and tear on the rail lines

      iii. Accidents: any costs associated with accidents or the holding of adequate insurance.

      iv. Investment costs: once off investment costs to ensure interconnection with non-owner's transportation needs.

   b. If there is congestion on that line, the costs associated with access will include these costs plus:

      i. The loss in revenue from the displacement of the owner's shipments.

   c. Should the access demands cause augmentation of the rail line or bring forward such augmentation this will give rise to the following additional costs:

      i. The costs associated with the augmentation or the capital costs of bringing that augmentation forward.

      ii. Less the profit benefits to the owner that arise from the augmentation including additional shipments made possible and a reduction in scheduling complexity.

   d. We denote the on-going costs associated with access by $c(q^a)$, and for the provider, the on-going costs are $C(Q^a)$. The augmentation costs are A. Note that the profit gains to the provider from augmentation are relative to what it would transport in the absence of

that augmentation. However, measuring these is best taken as part of the counterfactual.

Finally, suppose that the (inverse) demand for seekers was denoted by $p(q)$.[3] Then (absent mining costs and beyond rail transportation costs), the net social benefit from access is:

$$p(q^a)q^a - c(q^a) + P(Q^a)Q^a - C(Q^a) - A$$

3.3 The Counterfactual

The counterfactual involves evaluating the net benefits that are generated if another facility is developed. It is assumed here that that facility would not be owned and operated by the potential access provider.

Using notation, I will assume that if an alternative line is built, the quantities of the potential access provider and the seekers become Q^d and q^d respectively. The quantity, Q^d, assumes that the potential provider will augment its existing track. However, it may be the case that, in the absence of seeker demand, it only partially augments it at a cost, a, to meet a lower usage of $\underline{Q}^d$.[4] The potential provider may find it more profitable to take this option. I will also assume that the capital costs of building another rail line are D (including the costs associated with securing necessary easements and over-coming any environmental issues) while the on-going costs of the alternative line would be $c^{ALT}(q^d)$.

Given this, the net social benefit realised in the counterfactual is:

$$p(q^d)q^d - c^{ALT}(q^d) - D$$
$$+\max\left\{P(Q^d)Q^d - C(Q^d) - A, P(\underline{Q}^d)\underline{Q}^d - C(\underline{Q}^d) - a\right\}$$

[3] Note that conceptually $P(Q)Q$ and $p(q)q$ could be viewed as the profits net of rail haulage costs for the potential provider and access seekers respectively. Thus, differences between them may include the quality of ore mined and the efficiency of their mining and logistics. Putting in all those terms is avoided here to keep the notation simple.

[4] I have ignored in the factual the choice over the scale of augmentation and simply assumed it to be the maximal level. To consider it is a little more complex than in the counterfactual as it depends upon the access price and other factors that will impact on seeker as well the potential provider's use of the facility. These could be factored in but for the moment I have set them aside.

3.4 Back to the Decision

With this analysis of the factual and the counterfactual, we are now in a position to consider the social decision in more detail. Recall that, from Figure 1, a choice of developing another facility will be considered uneconomical if the net social benefits from no development exceed those from development. Using the equations derived above, this will occur if the following inequality holds:

$$p(q^a)q^a - c(q^a) + P(Q^a)Q^a - C(Q^a) - A$$
$$\geq p(q^d)q^d - c^{ALT}(q^d) - D$$
$$+\max\left\{P(Q^d)Q^d - C(Q^d) - A, P(\underline{Q}^d)\underline{Q}^d - C(\underline{Q}^d) - a\right\}$$

A direct calculation of these variables would allow us to quantify whether it was uneconomic to develop another facility or not.

However, it may be the case, that some variables are difficult to quantify or alternatively, that the facts of the case mean that certain simplifying assumptions are justified. In what follows, I consider some simplifying assumptions and demonstrate what these mean for the social test.

3.4.1 What if access causes additional augmentation?

As a first simplifying case, I examine what happens if it is the access demand itself that causes the additional augmentation. That is, suppose that in the counterfactual, the potential provider would choose a lower capacity than in the factual. In this case, the social decision inequality becomes:

$$p(q^a)q^a - c(q^a) + P(Q^a)Q^a - C(Q^a) - A$$
$$\geq p(q^d)q^d - c^{ALT}(q^d) - D + P(\underline{Q}^d)\underline{Q}^d - C(\underline{Q}^d) - a$$

Now to simplify just a little further, let's assume – quite reasonably – that the augmentation would actually cover non-owner's potential usage requirements. If, in addition, the alternative rail line is not significantly more efficient than the existing rail line then, $q^a = q^d$. In this case, the inequality becomes:

$$p(q^d)q^d - c(q^d) + P(Q^a)Q^a - C(Q^a) - A$$
$$\geq p(q^d)q^d - c^{ALT}(q^d) - D + P(\underline{Q}^d)\underline{Q}^d - C(\underline{Q}^d) - a$$

Or

$$D \geq P(\underline{Q}^d)\underline{Q}^d - C(\underline{Q}^d) - a - (P(Q^a)Q^a - C(Q^a) - A)$$

Notice that the right hand side of this inequality is the loss in profits the provider incurs by augmenting the rail to satisfy seeker demand.[5] Critically, it is not simply the additional augmentation costs that would arise in the natural monopoly test.

However, suppose that the augmentation was purely to satisfy seeker demand and the provider would use the line to the same extent before and after the additional expansion. Then $Q^a = \underline{Q}^d$, and the inequality becomes:

$$D \geq A - a$$

This is precisely equivalent to the NCC's application of criterion (b) in past decisions on rail access.

3.4.2 Will augmentation occur regardless?

Given the relatively low usage requirements of access seekers for rail services in the Pilbara, it may be reasonable to assume that the provider will augment or expand the existing line based on its own usage needs and independently of those of others. Further, it may be supposed that it will expand the line eventually to its maximum capacity.

In this case, the social decision inequality simplifies to:

$$p(q^a)q^a - c(q^a) + P(Q^a)Q^a - C(Q^a) - A$$
$$\geq p(q^d)q^d - c^{ALT}(q^d) - D + P(Q^d)Q^d - C(Q^d) - A$$

Notice that, as the costs of augmentation are incurred in either case, they are not relevant to the social decision. Hence, we have:

$$p(q^a)q^a - c(q^a) + P(Q^a)Q^a - C(Q^a)$$
$$\geq p(q^d)q^d - c^{ALT}(q^d) - D + P(Q^d)Q^d - C(Q^d)$$

What this equation says is that the main benefit of developing an alternative facility is that it increases rail haulage capacity allowing (i) more provider traffic to flow along it and (ii) allowing more seeker traffic to flow from along it. If the value of this extra traffic (in terms of net revenues earned) is less than the costs of developing another facility, it is not economical to develop that facility.

Note that it might be argued that, even with a large degree of augmentation, that the provider would be capacity constrained to such an extent that seeker traffic could not be supported on the

[5] This becomes especially relevant when augmentations and expansions are lumpy. Instead, if such investments can be tailored just to meet seeker demand, then the lost profits are not relevant.

existing line at its full opportunity cost. In this case, $q^a = 0$ and $Q^a = Q^d$. The above inequality would then simplify to:

$$P(Q^d)Q^d - C(Q^d) \geq p(q^d)q^d - c^{ALT}(q^d) - D + P(Q^d)Q^d - C(Q^d)$$

or

$$0 \geq p(q^d)q^d - c^{ALT}(q^d) - D$$

What this says is that it will only be uneconomic to develop another facility if the actual private profits to the facility owner are negative. That is, the social version of uneconomic and the private version coincide.[6]

3.4.3 When is a rail line likely to be capacity constrained?

The above analysis takes into account the potential for capacity constraints on the existing line that mean that, should access be sought, then it is possible that both seekers' and the provider's usage may be lower than in the counterfactual.

Suppose that this is not the case (there are no capacity constraints and also the provider is likely to augment its facility in any event), then $Q^a = Q^d$. In this situation, the social decision inequality simplifies to:

$$p(q^a)q^a - c(q^a) + P(Q^d)Q^d - C(Q^d) \geq p(q^d)q^d - c^{ALT}(q^d) - D + P(Q^d)Q^d - C(Q^d)$$

Or

$$p(q^a)q^a - c(q^a) \geq p(q^d)q^d - c^{ALT}(q^d) - D$$

Notice that it may still be the case that $q^a \neq q^d$ as the efficiency of the alternative line may be different from the existing line.

If their efficiency is the same (or at least no better than the provider) then the social decision inequality is further simplified to:

$$p(q^d)q^d - c(q^d) \geq p(q^d)q^d - c(q^d) - D$$

or

[6] There is a sense in which this case – if applicable – suggests that the social value of access may be zero. For this to be true, then the ore quality and mining efficiency of seekers and also prospects yet to be discovered would be known to be so low relative to the provider's that these activities are not worth undertaking. However, in that case, it would be criterion (a) that would not be satisfied. It is not possible to find that criterion (a) is satisfied and simultaneously that this case could arise. Hence, in my opinion, it is not worth consideration as part of a criterion (b) analysis.

$$D \geq 0$$

Hence, it is always uneconomic to develop another facility.

3.5 An evidentiary test

In reality, a social test is difficult to apply because demand will fluctuate, providing more opportunities to for seekers to access the infrastructure without creating a capacity issue and because overall demand growth will be an estimate.

For this reason, to understand whether the economies of coordination imply that augmenting an existing rail network is more cost effective and likely to result in net social benefits than a new rail network (not interconnected with the existing network) to accommodate seeker demand, it is useful to posit an evidentiary test.

> *Consider the following hypothetical scenario whereby the demand of all seekers is transferred to the infrastructure provider. Then, a facility will be considered uneconomic to duplicate if the provider would rather augment their own existing network than build a new rail network to accommodate that demand.*

This test is based on the logic of the efficient component pricing rule that neutralises the make versus buy decision between access providers and access seekers.

Thus, to take a simple scenario, let's re-consider the example considered in Section 2.2. In that case, seeker demand was 20 units while provider demand was 70 units. To apply the test, we suppose that the seeker's 20 units will fetch $50 per unit in revenue (perhaps because it is of lower quality or harder to extract) while the provider's will fetch $60 per unit. We allocate the seeker's demand to the provider and ask what the provider will do.

Option 1 is to put the demand on the existing network. In this case, by having a single line, total costs are $400 while total revenue is $50 x 20 + $60 x 70 = $5,200. The net benefit is therefore, $4,800.

Option 2 is to build an additional network. Doing that and re-optimising, yields the same revenue but the costs fall by $100 as spreading capacity over two networks results in cost savings that outweigh the investment costs of duplicating that network. Thus, in this scenario, duplication would be economic.

But there is a third option: to augment the additional network so as to reduce the high demand costs of operation. Suppose that the augmentation costs were $x. Then, so long as $x was less than the operational costs caused by higher demand ($400) and were lower than the costs of building a new network ($300), then this would be a

superior option to both putting demand on the existing network and building an additional network.

Thus, if there were synergies associated with common operation of the expanded network rather than a duplicated network, then the provider would choose to do that. In that situation, the test would argue that it is uneconomic to duplicate rather than augment the network.

The advantage of the test proposed here is that it can be asked and based on evidence from the provider as to how it would manage expansions in its own demand. If in its strategic documents there is no evidence that it would build a duplicate network to manage this demand, then the above test would force a regulator to conclude that the facility was, in fact, uneconomic to duplicate.

Attachment D

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Monday, 12th November 2007

NEW PARDOO RESOURCE AND EXPLORATION UPDATE

Atlas Iron Limited [ASX Code: AGO] is pleased to report an increase in resources and additional exploration success at the company's Pardoo Iron Ore Project, located 75 kilometres east of Port Hedland in the Pilbara region of Western Australia.

HIGHLIGHTS

PARDOO DSO RESOURCE INCREASED BY 36% FROM 10.5 TO 14.3MT

NEW DSO DRILLING RESULTS HIGHLIGHT RESOURCE POTENTIAL AT RACHAEL

NEW DSO DRILLING RESULTS HIGHLIGHT RESOURCE POTENTIAL ON OLIVIA TREND

TOTAL DSO RESOURCES - ALL PROJECTS NOW AT 23MT

"The growth in the company's resources fully justifies the active exploration campaign approved by the Atlas board in July of this year" commented Atlas Managing Director David Flanagan. "The team are again to be congratulated for a fantastic result in a relatively short time." he added.

During the first 6 months of the year Atlas has largely focussed drilling efforts at Pardoo on infill and extension drilling within and adjacent to existing deposits. This has resulted in a significant increase to the Floyd, Alice and Connie resources. The Floyd resource has increased from 2.7Mt to 6.1Mt, the Alice resource has increased from 1.1Mt to 1.4Mt whilst the Connie resource has increased from 0.38Mt to 0.45Mt. These resource increases have resulted in a 36% increase to the Pardoo resource from 10.5Mt to 14.3Mt. This work has also enabled the Connie and Alice resources to be classified as Indicated, which has increased the Pardoo Indicated resource from 5.5Mt to 7.4Mt, representing an increase of 33%. Resource tables are attached.

In the second half of the year the company has moved to test a number of new targets outside of existing resource areas. First pass testing of the Rachael prospect and the Olivia trend has highlighted additional tonnage potential. Significant results include;

Rachael
42 metres at 59.7 % Fe from 6 metres in PDRC0900

Olivia Trend
16 metres at 58.0 % Fe and 0.01% P from 6 metres in PDRC1063
12 metres at 58.7 % Fe and 0.01% P from 20 metres in PDRC1064
8 metres at 58.3 % Fe and 0.02% P from 16 metres in PDRC1075
10 metres at 58.8 % Fe and 0.02% P from 28 metres in PDRC1089

While the results listed above and in the table attached are encouraging and further drilling is warranted, it cannot be guaranteed that Rachael and the Olivia trend will ultimately deliver resources and reserves.

Pardoo DSO Resource Table - November 2007									
Deposit	Resource Classification	Kt	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	S (%)	CaFe (%)
Alice-Amy Trend									
Alice	Indicated	1,388	58.9	7.0	1.1	0.16	6.5	0.01	63.0
Bobby Trend									
Bobby^	Indicated	2,816	57.2	7.9	1.2	0.13	8.2	0.01	62.3
	Inferred	78	56.5	9.4	0.6	0.10	8.5	0.01	61.7
Claire^	Inferred	115	56.4	7.0	1.1	0.13	10.5	0.01	63.0
Fay^	Inferred	48	57.0	8.6	0.7	0.13	8.2	0.01	62.1
Floyd	Inferred	6,175	56.6	6.2	2.3	0.11	9.8	0.01	62.7
Glenda^	Indicated	605	58.5	5.3	0.8	0.17	9.3	0.01	64.5
Hubert^	Inferred	208	57.4	7.4	1.3	0.11	6.8	0.07	61.6
Channel Iron (CID)									
Connie*	Indicated	451	55.17	6.4	3.21	0.02	10.8	0.01	61.8
Olivia Trend									
Olivia^	Inferred	232	56.6	8.2	1.6	0.06	7.8	0.09	61.4
South Limb Trend									
South Limb^	Indicated	2,160	57.0	6.4	2.3	0.17	8.9	0.03	62.6
	Inferred	-	-	-	-	-	-	-	-
Total Indicated Resources		**7,420**	**57.4**	**7.0**	**1.6**	**0.14**	**8.3**	**0.02**	**62.7**
Total Inferred Resources		**6,856**	**56.6**	**6.4**	**2.2**	**0.11**	**9.6**	**0.01**	**62.7**
Total Resources - Pardoo		**14,276**	**57.0**	**6.7**	**1.9**	**0.13**	**9.0**	**0.02**	**62.7**

Note:

Resources defined at a 55% Fe cut-off grade.

* Connie resource, Channel Iron Deposit, calculated at a 50% cut-off grade

^ These Resources have not changed since reported to ASX in Jan '07

Atlas DSO Resource Table - November 2007								
Resource Classification	Kt	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	S (%)	CaFe (%)
Indicated	7,420	57.4	7.0	1.6	0.14	8.3	0.02	62.7
Inferred	15,426	57.2	6.3	1.8	0.07	9.5	0.01	63.2
Total	**22,846**	**57.3**	**6.5**	**1.7**	**0.09**	**9.1**	**0.01**	**63.0**

Note:

CaFe% is calcined Fe calculated by Atlas using the following formula (Fe%/(100-LOI%))*100
Some resources defined at a 50% Fe cut-off grade.
Includes recently reported Resources from Abydos Project

Background

Atlas Iron Limited is working to complete environmental approvals and commence shipping of direct shipping grade (DSO) iron ore from its Pardoo Project by October 2008. The company is targeting export of 1 million tonnes of DSO iron ore during the first 12 months of operations with production growing to 3 million tonnes per annum by 2010. Together with the development of the Abydos project, the company is targeting annual production of 6mtpa of DSO by 2012.

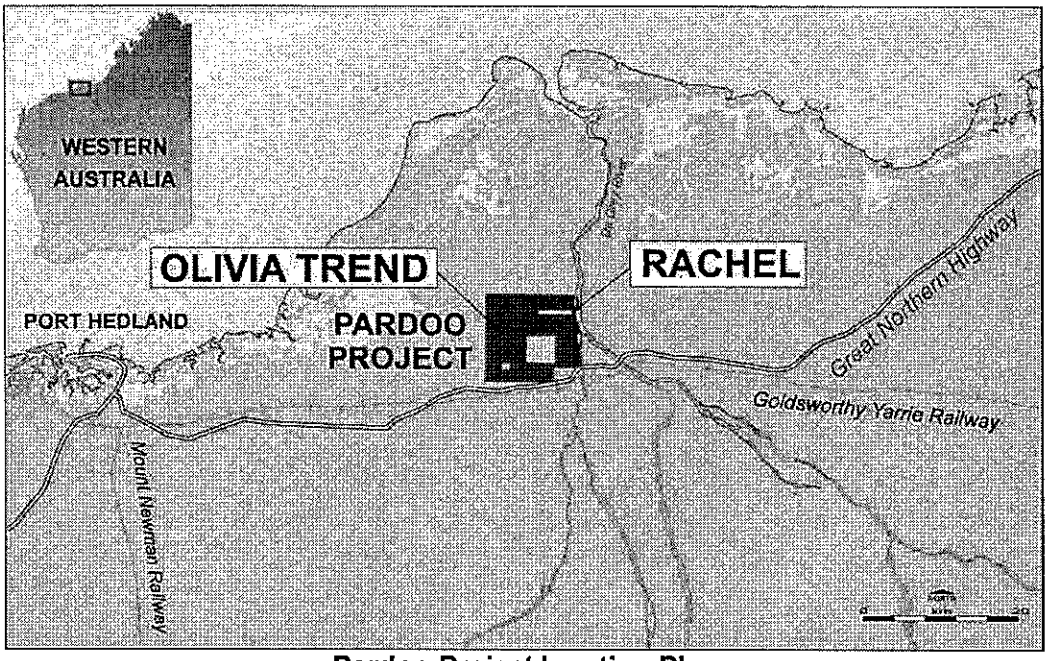
COMPETENT PERSON STATEMENTS

Exploration Results – Pardoo
The information in this report that relates to exploration results is based on information compiled by Mr. Hamish Pescini, who is a member of the Australian Institute of Mining and Metallurgy, and is an employee of Atlas Iron Limited. Hamish Pescini has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results. Hamish Pescini consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

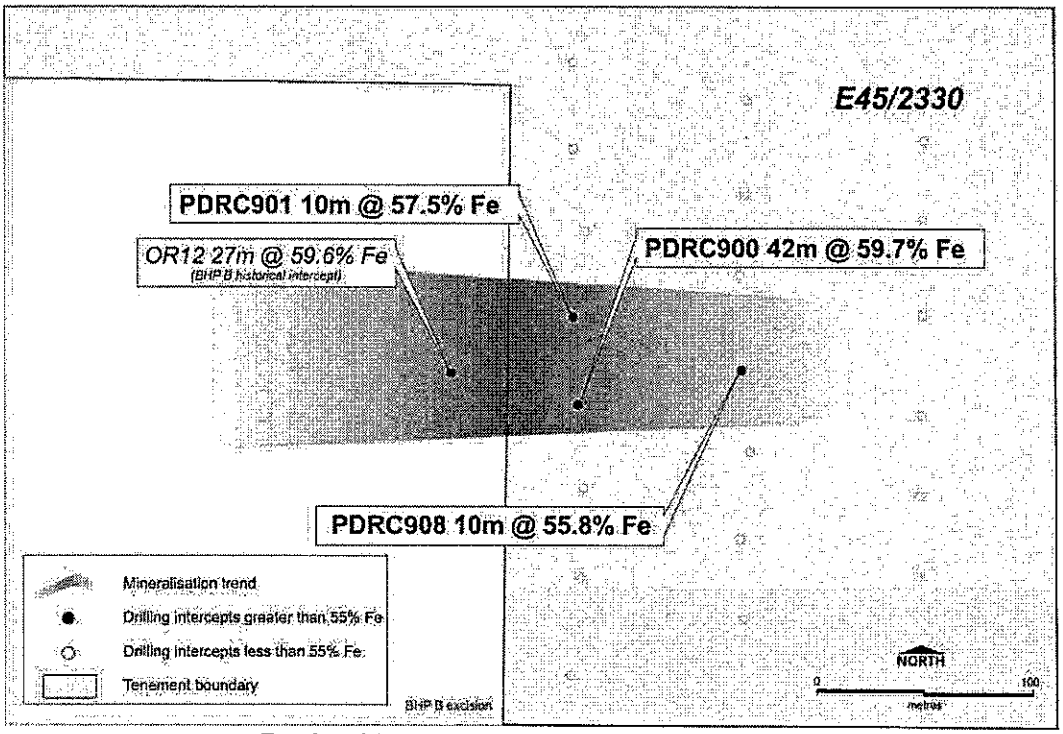
Geological Data, Interpretation and Resource Estimation – Floyd Resource
The information in this report that relates to exploration & resource results is based on information compiled by Mr Hamish Pescini & Mr Lynn Widenbar who are members of the Australasian Institute of Mining and Metallurgy. Hamish Pescini is a full time employee of Atlas Iron Limited and Lynn Widenbar is contracted to CSA Australia Pty Ltd. Hamish Pescini & Lynn Widenbar have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they have undertaken to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Hamish Pescini and Lynn Widenbar consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

Geological Data, Interpretation and Resource Estimation – Alice and Connie Resources
The information in this report that relates to exploration & resource results is based on information compiled by Mr Hamish Pescini and Mr Richard Gaze who is a member of the Australasian Institute of Mining and Metallurgy. Hamish Pescini is a full time employee of Atlas Iron Limited and Richard Gaze is a full time employee of Golder Associates. Hamish Pescini and Richard Gaze have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Hamish Pescini and Richard Gaze consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

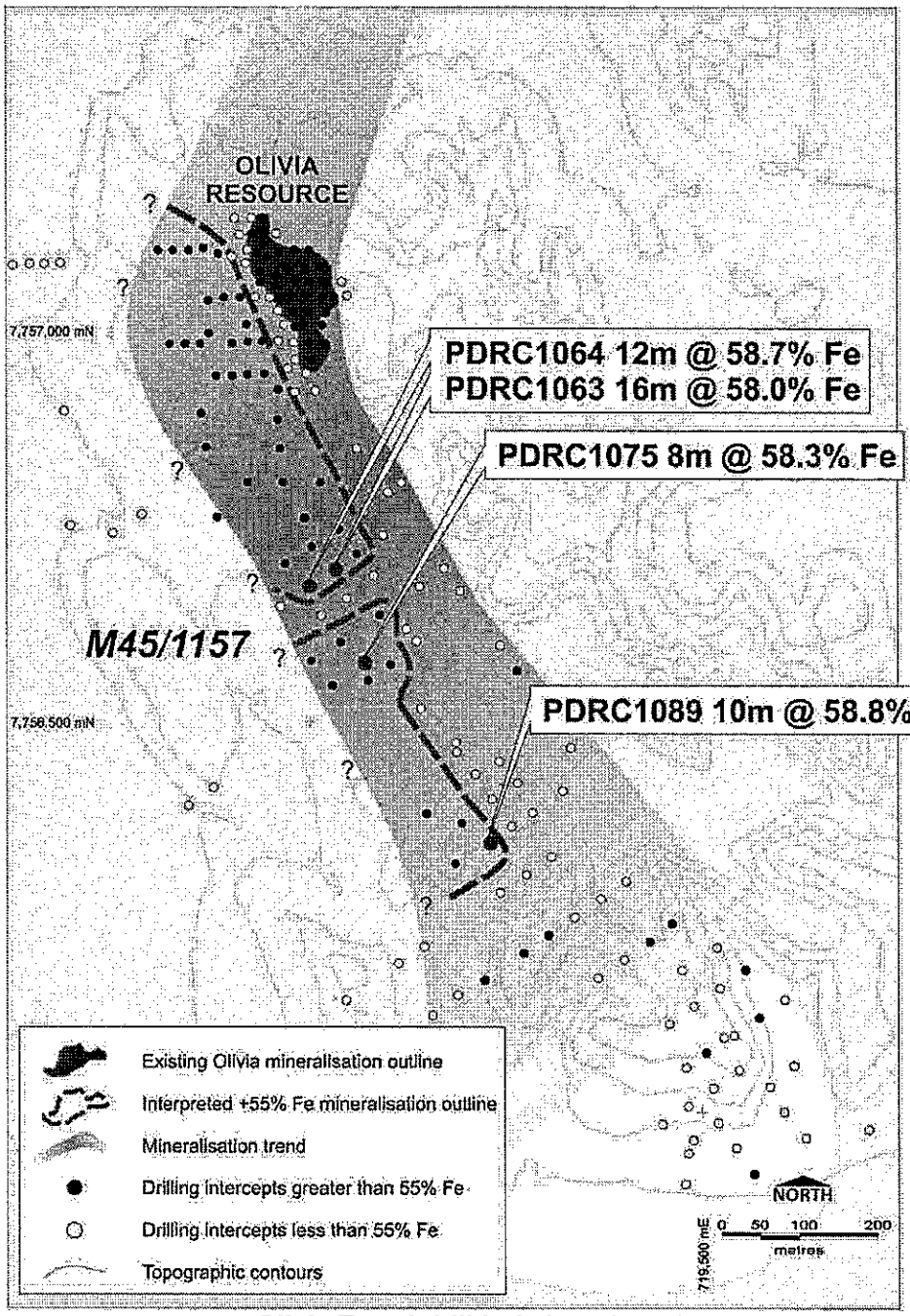
Geological Data, Interpretation and Resource Estimation – Abydos Resource
The information in this report that relates to exploration & resource results is based on information compiled by Mr Mark Gunther who is a member of the Australian Institute of Geoscientists and Mr Hamish Pescini & David Williams who are members of the Australasian Institute of Mining and Metallurgy. Mark Gunther and Hamish Pescini are full time employees of Atlas Iron Limited and David Williams is a full time employee of CSA Australia. Mark Gunther, Hamish Pescini & David Williams have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they have undertaken to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mark Gunther, Hamish Pescini and David Williams consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.



Pardoo Project location Plan



Rachael Prospect drill hole location plan



Olivia Trend drill hole location plan

ATTACHMENT 1 - RC EXPLORATION DRILLING RESULTS – PARDOO PROJECT

Hole_ID	Easting MGA94	Northing MGA94	Dip (°)	Az (MGA)	Depth (m)	Depth From	Depth To	Width (m)	Fe %	SiO2 %	Al2O3 %	P %	LOI %
Rachael													
PDRC900	728722	7759161	-70	360	56	6	48	42	59.65	3.77	1.53	0.21	8.41
					Including	**12**	**36**	**24**	**61.27**	2.39	0.92	0.23	8.26
					Including	**44**	**46**	**2**	**60.12**	3.79	1.32	0.16	8.07
PDRC901	728720	7759202	-70	360	40	10	20	10	57.48	8.44	3.29	0.11	5.08
					Including	**16**	**18**	**2**	**60.56**	4.65	2.65	0.11	5.5
PDRC908	728798	7759177	-70	360	54	18	20	2	55.2	6.56	3.48	0.13	10.69
						26	36	10	55.84	5.57	2.84	0.16	10.73
Olivia													
PDRC1051	718840	7756981	-90	0	36	14	20	6	57.37	6.48	1.67	0.02	7.73
PDRC1052	718821	7756979	-90	0	36	2	4	2	55.51	7.22	2.39	0.14	8.97
Olivia Trend													
PDRC1053	718957	7756887	-70	235	40	0	12	12	56.3	7.52	2.44	0.04	8.43
PDRC1054	718973	7756847	-70	235	40	12	28	16	54.43	13.19	0.87	0.04	6.86
PDRC1055	718861	7756850	-70	235	57	22	24	2	56.14	10.88	1.49	0.02	6.09
						36	48	12	56.03	11.67	1.68	0.01	5.37
PDRC1056	718918	7756799	-70	235	45	20	22	2	56.93	10.67	1.02	0.02	5.92
						28	38	10	57.21	8.3	1.56	0.01	6.11
					including	**36**	**38**	**2**	**60.19**	5.27	1	0.01	5.04
PDRC1057	718990	7756756	-70	235	40	16	18	2	55.57	11.82	1.56	0.01	4.91
PDRC1058	719013	7756796	-70	235	40	6	8	2	56.31	10.44	1.28	0.01	5.33
						24	26	2	57.58	6.33	0.83	0.02	6.65
PDRC1062	719059	7756714	-70	235	40	12	14	2	55.05	9.68	3.16	0.01	6.34
PDRC1063	719029	7756691	-70	235	40	6	22	16	58.04	7.83	1.39	0.01	5.42
					Including	**10**	**12**	**2**	**61.53**	5.54	1.12	0.02	4.04
PDRC1064	718992	7756666	-70	235	40	20	32	12	58.66	7.61	1.76	0.01	4.5
					Including	**22**	**26**	**4**	**60.88**	4.92	1.49	0.01	4.53
PDRC1066	718860	7756891	-90	0	40	28	30	2	56.79	10.45	1	0.01	4.9
PDRC1071	719085	7756635	-70	240	42	8	10	2	56.56	8.58	2.08	0.02	6.23
						14	16	2	55.46	12.37	1.02	0.01	5.25
PDRC1072	719036	7756601	-70	240	42	28	34	6	57.02	8.61	1.16	0.01	5.63
PDRC1073	719000	7756577	-70	235	46	16	26	10	56.99	9.54	1.05	0.01	5.33
						30	32	2	56.44	8.72	1.15	0.01	5.54
PDRC1074	719026	7756546	-70	235	40	22	28	6	56.73	10.1	1.27	0.01	5.48
PDRC1075	719063	7756570	-70	235	40	16	24	8	58.33	7.87	1.77	0.02	5.38
					Including	**18**	**20**	**2**	**60.72**	5.37	1.86	0.01	4.35
PDRC1079	719268	7756566	-90	0	38	4	10	6	56.17	10.69	1.3	0.02	5.87
PDRC1089	719218	7756337	-70	235	45	22	24	2	55.85	10.84	2.28	0.02	5.36
						28	38	10	58.77	6.92	1.66	0.02	4.75
PDRC1090	719193	7756369	-70	235	40	24	26	2	55.68	11.02	2.01	0.02	6.38
PDRC1091	719146	7756381	-70	235	42	18	28	10	56.81	9.21	1.63	0.03	6.72
						32	34	2	55.75	9.62	1.18	0.02	6.7
PDRC1092	719182	7756313	-70	235	40	20	30	10	56.99	8.68	1.84	0.02	6.42
PDRC1093	719040	7756141	-70	235	40	24	28	4	58.02	10.01	0.33	0.03	5.86
PDRC1107	719429	7756218	-70	235	39	10	12	2	55.4	10.6	2.1	0.17	7.06
PDRC1108	719463	7756241	-70	235	40	12	14	2	58.99	6.02	0.76	0.04	6.89
PDRC1124	719575	7756120	-70	235	40	10	14	4	55.35	13.01	0.83	0.03	5.61

Hole_ID	Easting MGA94	Northing MGA94	Dip (°)	Az (MGA)	Depth (m)	Depth From	Depth To	Width (m)	Fe %	SiO2 %	Al2O3 %	P %	LOI %
PDRC1126	719555	7756183	-70	235	40	4	6	2	55.82	12.39	0.6	0.02	5.84
PDRC1127	719563	7755919	-70	235	51	40	42	2	55.22	12.47	1.69	0.07	5.49
PDRC1129	719106	7755986	-70	235	43	26	28	2	57.56	9.04	0.5	0.01	6.43
PDRC1133	719201	7756056	-70	235	58	38	40	2	55.93	12.98	0.25	0.02	4.84
PDRC1134	719116	7755899	-70	235	37	8	10	2	55.1	8.32	2.4	0.17	8.91
Alice													
PDDH020**	721616	7758715	-70	360	32	3	31	28	61.44	3	1.34	0.22	6.83

Note: 2m composite samples, predominantly riffle or cone split with subordinate scoop sampling, 55.0% Fe lower cut, no upper cut, maximum internal waste of 2 m, analysis by X-Ray Fluorescence Spectrometry Method with Loss on Ignition (LOI) determined using Thermo-Gravimetric Analysers.

***Denotes diamond drill hole, 1m composite samples, PQ core cut in half, 55.0% Fe lower cut, no upper cut, maximum internal waste of 2 m, analysis by X-Ray Fluorescence Spectrometry Method with Loss on Ignition (LOI) determined using Thermo-Gravimetric Analysers.*