FINAL

Results of Modelling and Related Submissions Responding to NCC Draft Recommendation for Declaration

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Date: 6 January 2006

CRA Project No. D06742-00

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1. INTRODUCTION AND EXECUTIVE SUMMARY

1 On January 6, 2006 BHPBIO submitted to the National Competition Council ("**NCC**") additional modeling that addresses a range of issues arising from the NCC's Draft Recommendation.

2 The results of that modeling make it clear that the NCC erred in its assessment of whether it would be economic to develop a facility, other than that to which access is being sought, which could provide the services covered in the application for declaration. More specifically, the modeling shows that:

- Given the expected growth in BHPBIO's own production, there is not likely to be spare capacity on the Mt Newman Line ("**MNL**" or "the Line") that could accommodate third party use of that Line over the proposed period of declaration;
- Declaration will therefore not avoid duplication of the Line: rather, it will simply allow access seekers not to build capacity themselves, while forcing BHPBIO to build that capacity and build it sooner;
- The costs to FMG of building the rail capacity FMG requires are no greater (and indeed are lesser) than the costs to BHPBIO of so doing;
- As a result, declaration would bring no savings to Australian society from the avoidance of duplication.

3 The modeling submitted by BHPBIO also shows that:

- Allowing third party use of the Line would impose substantial diseconomies of scope on BHPBIO, undermining the efficiency of a large and rapidly growing Australian exporter that operates in a highly competitive world market;
- To reduce the extent of those diseconomies of scope, BHPBIO would need to incur substantial additional capital outlays. From Australia's point of view, and given the considerations above, those outlays are a waste of resources;
- Even having made those outlays, BHPBIO would still be vulnerable to reductions in service performance arising from the greater complexity of managing a multi-user system, obstacles to the introduction of new and more productive technologies and delays associated with the regulatory process.

4 Based on that modeling, we here report an assessment of the losses that would be borne by Australian society if even only one of the efficiency impairments consequent on declaration were to eventuate. More specifically, a Computable General Equilibrium model of the Australian economy has been used to estimate the social cost of a one year delay to BHPBIO's capacity expansion program. The model we have used (the Monash Multi-Regional Forecasting model) is one that is very frequently relied on for policy analysis in Australia.

5 The results generated by the model show that a delay of one year, **even if it were completely made up in the subsequent year**, in a project of the size of BHPBIO's RPG3 capacity expansion program would result in lost output for the Australian economy of about $400 million. The loss to Western Australia would exceed $600 million. These losses are significant, and yet are conservatively estimated, for reasons that include the following:

1. The event being quantified represents only one of the several forms of cost that declaration would impose on BHPBIO and hence on the Australian economy. Other forms of cost (such as reduced reliability of service) would interact with the event being quantified, so that aggregate costs could be very much greater;

2. In practice, rather than a single instance of delay, multiple, overlapping delays to the investment program seem likely. Such multiple, overlapping delays would have costs that are greater than the sum of the costs of individual delays;

3. Additionally, the estimate of the costs of even a single instance of delay is conservative as:

    a) In reality, a delay in any one year is not likely to be fully made up in the next. Indeed, as a result of the delay, the opportunity the investment was intended to secure may be lost, including to competitors overseas, increasing the cost to Australia;

    b) Even if the delay were made up in the subsequent year, "catching up" would impose a cost penalty that has not been factored in to the calculation;

    c) The MMRF assumes a low rate of return in iron ore mining operations. Were a more realistic estimate of the rate of return adopted, the economic losses would be materially greater.

6 Given these costs, and the fact that declaration would not allow any avoidance of net capital outlays, the only benefits of declaration would come from the effects it might have in promoting competition. It is therefore appropriate to examine the extent of these effects as this, together with the results of the updated modelling, will determine whether declaration is in the public interest.

7 The NCC has come to the view that declaration would promote competition in what it claims to be a market for iron ore tenements in the Pilbara and in what it claims to be a market for rail haulage in the Pilbara. Neither of these markets is properly defined.

8 While the economic substance of the first of these claimed markets (which relates to iron ore tenements in the Pilbara) is difficult to grasp, it seems clear that properly defined, the relevant market would either be one for exploration or one for the supply of iron ore. Both of these are far wider in geographical scope than just the Pilbara and are in any event already effectively competitive. As a result, declaration could not promote competition in a relevant market.

9 As regards the claimed market for rail haulage, the NCC has not adequately tested whether the rail haulage services here at issue are in a distinct functional market from the supply of rail track. The updated modelling and other information submitted by BHPBIO shows that there are substantial and on-going economies of scope between operating rail haulage and operating the other components of the Line. Given these economies of scope, vertical integration between these would prevail in a competitive market (as indeed it does). As a result, the NCC cannot properly conclude that these activities meet its test for 'economic separability', which is a precondition for them to lie in separate markets.

10 The NCC, in its Draft Recommendation, seeks to side-step this issue by assuming that any third party use of the Line (and consequent diseconomies of scope) would be **de minimis**. It is not clear on what basis this assumption rests, given that declaration would open the way for all potential access seekers. Additionally, this assumption seems manifestly inconsistent with the NCC's view that the effects of declaration on competition would be material.

11 However, even if the NCC maintained that assumption, it could not properly conclude that the activities were separable, as that conclusion would merely be the result of the assumption that any departure from vertical integration is *de minimis*. In effect, were the NCC to conclude that the activities were separable simply because it had assumed that the extent of shared use was *de minimis*, it would have robbed its own test of any substance and could conclude **in any and every case** that currently integrated functional activities were separable.

12 As a result, the NCC has not discharged its obligation to properly identify the markets in which declaration would promote competition and ensure that those are separate from the markets in which are provided the services for which declaration is being sought.

13 However, even if markets identified by the NCC were properly defined, declaration would not promote competition in those markets:

a) With respect to iron ore tenements, there is already lively and effective competition for the acquisition of viable tenements. Even if declaration facilitated the entry of new potential acquirers, that entry would have not any discernable effect on competition for the acquisition of viable tenements, as at best the entrants would be marginal participants in the acquisition process. Moreover, the supply of the tenements that seem to be included in the market the NCC has defined is likely to be virtually completely inelastic with respect to acquisition price. As a result, even if some change occurred in the terms on which those tenements trade, that change would merely redistribute rents, rather than increase output;

b) As regards rail haulage, transport under the RTA would provide an effective alternative to use of the declared service. In practice, any entrant seeking to use the declared service would suffer major cost penalties associated with its small scale and lack of access to BHPBIO's proprietary rail service technologies. Given the substantial extent of those cost penalties (that we discuss further in this report), the threat of such entry occurring could not have any discernable effect on the terms at which any third party use of rail haulage would occur.

14 In short, while declaration risks imposing substantial costs, it would yield few benefits, if any. As a result, declaration must fail a properly specified cost-benefit test.

15 It follows from the above that:

a) The NCC cannot be satisfied (as it is required to be under criterion (b)) that the development of an alternative facility to provide the service would be uneconomic;

b) The NCC cannot be satisfied (as it is required to be under criterion (a)) that competition would be promoted by declaration, and that if it was promoted, it was promoted in a market other than that for the service subject to the declaration; and

c) The NCC cannot be satisfied (as it is required to be under criterion (f)) that declaration would not be contrary to the public interest.

16 This report sets out the analysis that underpins these conclusions. While we have summarised our findings here in an order which starts from the modelling results and then derives their implications, the report itself follows the sequence of the statutory criteria, for ease of comparison with the material we previously submitted. As a result, we begin by considering the issues associated with the promotion of competition, move to consideration of whether development of an alternative facility would be economic and conclude by examining whether declaration would be in the public interest.

2. CRITERION (A): IRON ORE TENEMENTS MARKET

2.1. PROBLEMS ARISING IN CONNECTION WITH NCC MARKET DEFINITION

17 There are several problems arising in connection with the market proposed by the NCC (a Pilbara-wide market for mineral tenements containing proven iron ore deposits), which suggest that the NCC's treatment of the market is unduly narrow.

18 The first broad error the NCC has made is a conceptual one. Specifically, the NCC has sought to define the market by reference to a particular *temporal* stage in the production of iron ore, i.e. it has proposed that the relevant market is one in which iron ore is supplied (or capable of being supplied) post-exploration but pre-exploitation.

19 It may be useful to clarify the temporal sequence involved. Exploration for iron ore (and other minerals) occurs with a view to the eventual exploitation of discovered reserves and the sale of extracted iron ore (and other minerals) in the world market(s) for iron ore (and other minerals). Decisions in a base period ("period one") to explore will depend on the likely returns from the exploitation of any discovered reserves, net of the costs of exploration. This in turn depends on the expected prices of iron ore (and other minerals) in the future (period three and following). If iron ore (or other minerals) is discovered in period two, the explorer can sell the right to exploit the discovered reserves (the tenement), but the price anyone will be prepared to pay for this right will be constrained by the expected returns from exploitation, namely the expected prices of iron ore. Alternatively the explorer can decide to exploit the reserves itself.[1]

20 Set against this temporal sequence, the NCC appears to be saying that there is a market that sits between the exploration stage (period one) and the exploitation stage (period three).

21 While in principle a particular temporal stage in a production process may constitute a market, application of the SSNIP test (the widely accepted test for market definition) indicates that for present purposes the two relevant markets are an exploration market and an iron ore production market. In other words, there is *no separate antitrust market* in between these two stages in production and the 'market' identified by the NCC is best characterised as a temporal sub-market.

1 An analogy can be drawn here with the market for the resale of tickets that have won the lottery. In other words, in period t=1 50 people explore and in period t =2 20 win; in t=2, these 20 need to do something with the winnings, which is that they draw the winnings themselves or sell the right to do so to others. In period t =3, exploitation of that share of the 20 which is economic (i.e. where the expected prize exceeds the cost of cashing the ticket in) occurs. What the NCC is saying is that period 2 is a market.

22 The second broad error relates to the NCC's *effective* treatment of the market, which in several respects is inconsistent with its own stated market definition, as well as with any proper economic analysis:

- Most importantly, the NCC effectively excludes from the supply-side those tenements owned by BHPBIO, Rio Tinto, Hancock Prospecting Pty Ltd (Hancock) and now also FMG;
- Similarly, the NCC's market only includes proven small tenements – as opposed to all tenements;
- The NCC effectively treats the market as being narrower than a Pilbara-wide market; and
- Finally, the NCC ignores its own observation that different tenements may contain a range of minerals, and that therefore the relevant market may include various mineral deposits.

23 These issues are examined below.

2.1.1. Temporal sub market

24 Turning first to consider the correct temporal dimension of the market, the NCC justifies its view that there is a standalone market for mineral tenements containing proven iron ore deposits on the *sole* basis that there are transactions or potential transactions for iron ore tenements. This fact, however, merely determines the *existence* of *a* market; it is substitution possibilities that determine the correct *boundaries* of the market.

25 That this is the case is reflected in the following authoritative statement[2]:

> *[A] market is the field of actual and potential transactions between buyers and sellers* ***amongst whom there can be strong substitution****, at least in the long run, if given a sufficient price incentive.* [emphasis added]

2 *Re Queensland Co-operative Milling Association Ltd* (1976) 25 FLR 169 at 190. See also *Re Services Sydney* (2005) ACompT7 at [108]-[109].

26 Moreover, the NCC's *own* analysis of the claimed benefits from increased demand side competition in this market relies on an effect on exploration in a *previous* time period and then an effect on iron ore production in a *subsequent* time period, not just an effect on the supply of tenements in the same period.[3] This suggests that substitution for transactions at other temporal stages along the production process is likely to extend market boundaries.

27 This is best illustrated by reference to the SSNIP test. The relevant question is whether a hypothetical cartel of firms that controlled all mineral tenements containing proven iron ore deposits could profitably effect a small but significant and non-transitory increase in price ("SSNIP") above the competitive level.

28 For such a SSNIP to occur, the hypothetical cartel must not be vulnerable to effective substitution[4] on either the demand side or on the supply side. For supply side substitution not to be effective, there must be assets that are specific to the market in question. However, there are no assets that are specific to the market the NCC has sought to define; rather, all the assets (including the relevant human capital) required merely to own and transact in tenements would be held by exploration firms (that could engage in the search for tenements) and mining firms (that could exploit and more generally commercialise the tenements).

29 As a result, the question posed by the SSNIP test would have to be answered in the negative. In effect, *unless this hypothetical cartel also controlled the relevant upstream exploration market*, the potential buyers of those developed tenements included in the cartel would respond to this price increase by deploying their existing facilities to develop their own unexplored sites i.e., by switching to exploring and to exploiting the resulting reserves. This makes clear that the relevant market also includes wider exploration activities.

3 It is significant that paragraph 7.194 of the NCC Draft Recommendation indicates that the NCC considers that the main benefit of declaration will be to increase incentives both for exploration and to exploit tenements with iron ore deposits – which presumably refers to incentives to engage in iron ore production: National Competition Council, *Application by Fortescue Metals Group Limited for declaration of a service provided by the Mount Newman Railway Line: draft recommendation*, November 2005 (hereafter, NCC Draft Recommendation).

4 Substitution is effective if it is sufficient to defeat the attempted price increase.

30 Furthermore, a hypothetical cartel of firms that controlled iron ore tenements *in the Pilbara region* would be constrained by the downstream global market for iron ore production. If owners of tenements in the Pilbara attempted to impose a SSNIP above the competitive price, the price of iron ore would not increase commensurately and sales by iron ore producers located in the Pilbara in the downstream market would fall away if they attempted to pass these increases onto customers, as would the demand for such tenements. This makes clear that *the returns that can be made from the exploitation of Pilbara reserves depend on the price at which the iron ore can be sold on global markets* (not just the current price, but also the pattern of expected prices over the longer term) – and that a hypothetical cartel that controlled iron ore tenements in one region alone would be constrained by the downstream global market for iron ore.

31 In other words, the price for iron ore tenements is determined by induction from the world price correspondingly with the Hotelling valuation principle. The NCC itself seems to accept this implicitly when it states that exploration activity is positively affected by current iron ore prices.[5]

32 The NCC's concern is with demand side competition to acquire tenements in the Pilbara. It is, therefore, also relevant to ask whether a hypothetical monopsonist in this posited market (assuming it existed) could impose a small but significant and non-transitory decrease in price (SSNDP).[6] This would only be possible if the supply of tenements is not perfectly elastic at the competitive price derived from the (expected) world price for iron ore. Such a monopsonist would not affect the world price of iron ore and hence the expected returns from the alternative of exploitation by the potential seller of the tenement. In these circumstances, the potential for this monopsonist to reduce the price paid for tenements would be extremely limited, for several reasons.

5 See Paragraph 7.125 of NCC Draft Recommendation.

6 The preconditions that must be met for monopsony power to be exercised are discussed *inter alia* by R. D. Blair and Harrison, J. L. 1992, "The Measure of Monopsony Power", 37, *Antitrust Bulletin,* 133 and R. G. Noll 2005, "Buyer Power and Economic Policy", *Antitrust Law Journal*, 72, 589-624.

33 First, tenements containing large reserves, where the expected returns from exploitation would justify investment in specific railway infrastructure, would simply be exploited by the existing owner, since the relative return from exploiting the reserves themselves would have increased. Supplies of these tenements to third parties will be highly or even perfectly elastic at the competitive price and an SSNDP will not be possible. Tenements with reserves of any size controlled by existing vertically integrated miners with existing infrastructure that can be used to exploit the reserves will be similarly immune from an SSNDP, since again the relative return from sale versus exploitation will decrease and the supply of these tenements will be perfectly elastic at the competitive price. Any SSNDP must therefore be confined to those tenements with small reserves controlled by junior explorers, but even these tenements may be characterised by highly elastic supply where they contain other mineral deposits and hence where there are other potential uses of those tenements. This "market" is best described as a limited temporal sub-market for the acquisition of tenements with small reserves of only iron ore and no other exploitable mineral deposits from junior explorers.

34 Furthermore, it is extremely doubtful whether such a narrowly confined SSNDP would have any impact whatsoever on the exploitation of reserves or on exploration activity, which is the NCC's ultimate concern. In the short term, the supply of these tenements would be fixed and any SSNDP would simply involve a transfer of rents from the exploitation of discovered reserves within this narrow temporal sub-market. In the longer term, exploration decisions will depend on the expected returns from the potential discovery of iron ore deposits and/or other minerals, whose existence and size is unknown. The main factor determining these expected returns will be the expected prices of iron ore and other minerals, not the price which could be obtained from the sale of those tenements with only a small amount of iron ore and on which no other minerals have been discovered. To the extent that the supply of these tenements or of exploration activity would decline in response to such an SSNDP for all such tenements, few as they are likely to be, it should also be understood that the prices at which tenements trade are negotiated prices (which themselves emerge from a process – discussed below – that amounts to a hybrid auction), rather than uniform prices, and accordingly "pricing along the supply curve", with no decrease in activity, is a more likely result. These issues are relevant both to the question of whether declaration is likely to promote competition, discussed below, and to the likely costs and benefits from declaration, which are discussed under criterion (f).

35 Summing up, it is unlikely that the market defined by the NCC exists as a standalone market as attempts to impose a SSNIP would result in sales being displaced by transactions at different temporal stages in the production chain.[7] Attempts to impose an SSNDP would have similar consequences for all but a very limited sub-set of tenements, and would be unlikely to have any effect on exploration activity or the exploitation of reserves.

36 The NCC appears to have confused a temporal sub-market with an antitrust market. The above analysis makes clear that for the purpose of competition analysis there are likely to be two relevant markets: the iron ore production market and a wider minerals exploration market.

37 Extensive material has already been submitted in relation to the iron ore production market, and in any case the NCC considers that this market is effectively competitive.

38 A full analysis of the exploration market is beyond the scope of this paper, however, subsection 2.2 briefly examines why this market is likely to be very broad in its various dimensions.

2.1.2. Effective treatment of market

39 Having considered an important conceptual flaw with the NCC's market definition, this subsection now turns to examine a separate set of concerns relating to the NCC's effective treatment of the market. The broad concern here is that the NCC treats the market in a manner that is inconsistent *even with its own stated market definition* – and which in important respects is at odds with economic theory.

40 In particular, even if a Pilbara-wide market for mineral tenements with proven iron ore deposits existed as an antitrust market, the NCC analyses this market in a manner that distorts the 'promotion of competition' analysis by exaggerating the importance of the junior explorers in the market.

Exclusion of iron ore producer's tenements from the market

41 The first flaw in this respect is that the NCC, in practice, excludes from the supply-side of the market those tenements owned by BHPBIO, Rio Tinto, Hancock and now also FMG.

7 In paragraph 7.60 of its Draft Recommendation, the NCC states that transactions in relation to iron ore tenements may take different forms, including joint venture arrangements pursuant to which the entity which has a licence to mine the tenement shares the proceeds of mining with another entity, usually in return for capital to construct the mining infrastructure. Such a transaction seems to contemplate the original tenement holder entering the downstream iron ore production activity.

42 It is clear that these players would be part of the supply-side of a 'Pilbara-wide market for mineral tenements containing proven iron ore deposits'. Related to this, the NCC itself appears to consider that one of the main reasons that BHPBIO has a motive to act anti-competitively in relation to this 'market' is so that it can develop iron ore tenements that would otherwise be developed by junior explorers. This view indicates that the NCC considers BHPBIO and other iron ore producers in the Pilbara compete against junior explorers in this 'market'.

43 Further, the exclusion of these larger producers from the market is unsatisfactory from an economic standpoint as it is clear that they own and explore iron ore tenements.

44 Cases such as *Davids*[8] make it clear that a firm's vertically integrated operations should be included in the relevant market if the buyers or potential buyers of developed iron ore tenements (or of the output from tenements) would consider developed iron ore tenements from these vertically integrated miners to be close substitutes to iron ore tenements developed independently. Substitution may be direct (at the same vertical or temporal stage of production) or indirect (at a subsequent stage of production). This condition would clearly be satisfied here as the iron ore produced from both competes on the world market, which in turn determines the potential revenue from both these alternatives. BHPBIO and the other iron ore producers can choose whether to develop their own tenements or those discovered by third parties. If the cost of third party tenements increases, the relative return from exploiting them will decline and exploitation of their own tenements becomes relatively more attractive.

45 It is, therefore, clear that junior explorers alone could not effect a SSNIP in relation to the price for 'Pilbara-wide mineral tenements containing proven iron ore deposits' – any attempt by a hypothetical cartel of junior explorers to raise the price of iron ore tenements containing proven iron ore deposits would result in iron ore producers instead developing tenements they own. As a result, those tenements have to be included in the relevant market.

8 *Davids Holdings Pty Ltd v Attorney General* (1994) 49 FCR 211.

Exclusion of larger tenements from the market

46 This leads to a related point about market boundaries, which is that the NCC's 'market' only includes proven *small* tenements, even though the NCC itself states that the market should be limited to those tenements that contain iron ore in quantities sufficient to be capable of efficient extraction.[9] Even if the NCC considers that only small tenements are likely to be affected by declaration, a distinction should not be drawn between small and larger tenements for the purposes of *market definition*. One reason for this is that it is unlikely that there are any significant incremental costs associated with exploring for and the initial development of smaller deposits, and hence an explorer would not draw a distinction as to the type of deposit for which it was searching. It is, in other words, implausible that there would be explorers specifically seeking *small* tenements and that the prices those explorers could expect to obtain would be independent of the prices for larger tenements.

Further narrowing of geographic market boundaries

47 The geographical dimension of the market as defined by the NCC is unclear. It refers to a Pilbara-wide market,[10] yet when considering the impact of declaration the 'market' being considered seems limited to the sites adjacent to the Mt Newman Line.[11]

48 This confusion primarily affects the analysis of whether declaration promotes competition – as is discussed below.

Exclusion of other minerals

49 The NCC defines the market as a 'Pilbara-wide market for mineral tenements containing proven iron ore deposits' and also considers that exploring for various activities are likely to be complementary activities – such that in at least some cases tenements with iron ore deposits will also contain other minerals.[12]

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9 NCC Draft Recommendation paragraph 7.58.

10 See paragraph 7.81 of Draft Recommendation.

11 For example, when assessing BHPBIO's incentives to exercise its supposed market power the NCC considers that BHPBIO may seek to ensure that iron ore tenements in the vicinity of its railway are not mined out so as to keep those tenements for itself. However, the relevant area does not extend over the Pilbara: paragraph 7.177. This would imply that any supposed market power did not extend across the relevant market.

12 This is acknowledged by the NCC in paragraph 7.55 of the Draft Recommendation.

50 This indicates that the relevant product boundaries of the exploration market are likely to be broader than those which apply to the iron ore production market. Essentially the relevant product boundaries are likely to be drawn according to the expertise and human capital required to engage in exploration. Given a SSNIP (or a SSNDP) an entity that searches for iron ore could shift with relative ease to explore for other resources. As entry into these markets is relatively easy (i.e., capital requirements are relatively low), it is reasonable to assume that human capital defines market boundaries on the supply-side. In this sense a parallel can be drawn with an innovation or 'R&D' market, which often has a broader product boundary than the product market with which it is associated. For example, a toothpaste firm may have an R&D division that tries to develop better toothpaste, however, personnel employed in that division could just as easily engage in R&D activities in relation to deodorant, mouthwash, hand cream etc. This indicates that the market should not be defined as an R&D market for toothpaste alone.

51 This is reflected in the following quote from a US Senate Report which considers the proper definition of R&D (and innovation) markets:[13]

> *To be included in the relevant R&D market, firms must have the ability and incentive, either individually or in collaboration with one another, to undertake R&D comparable to that of the joint program in question. In this context, "incentive" is measured by an objective standard. Firms need not currently compete with one another at the production or marketing stage. Market shares in current markets or in projected future markets will not be determinative of a firm's ability and incentive to compete in a relevant R&D market. Rather, what is crucial to evaluating R&D competitiveness are the facilities, technologies, and other assets to which firms have access.*

52 Despite this, the NCC's effective treatment of the market ignores the possibility of the relevant iron ore tenements having an alternative use. To the extent that such alternative uses exist or are likely, this would affect the elasticity of supply and hence the scope for any SSNDP (i.e. for monopsony power to be exercised).

2.2. IT IS UNLIKELY THAT DECLARATION WOULD PROMOTE COMPETITION

53 Having set out the deficiencies in the Council's market definition, we now turn to consider whether declaration would promote competition. As a first step in this, it is important to briefly characterise the market.

54 Current participants in the Pilbara are BHPBIO, Rio Tinto, Hancock, FMG and the junior explorers.

13 Senate Report No. 98-427, 98th Cong., 2d Sess. (1984).

55 Material presented to the NCC by BHPBIO demonstrates that most junior explorers either currently explore for other minerals and resources or have done so in the recent past. This indicates that even junior explorers are able to switch with relative ease from one exploration activity to another and are also able to mine for various resources concurrently. Material presented by BHPBIO also indicates that many explorers in the Pilbara are currently exploring (or have in the recent past explored) either within this area or elsewhere in Australia or beyond for other resources and minerals, indicating that the geographic dimension of the market is also broad.

56 This evidence of substitution indicates that the exploration market is broad in its various dimensions – and this fact alone makes it very unlikely that declaration of the Mt Newman Service would promote competition therein.

57 Moreover, the view that declaration is unlikely to promote competition is likely to apply *even on the NCC's view of the market*.

58 Thus, even if there were a market for iron ore tenements post-exploration but pre-exploitation in the Pilbara, BHPBIO, Rio Tinto, Hancock and now FMG already extensively participate on the *supply side* of this 'market'. The iron ore producers' size alone (and also their activity) makes it very unlikely that any additional activity by junior explorers – even if it were to arise as a result of declaration – would alter the state of competition in this 'market', other than in a trivial sense.

- The vast majority of iron ore tenements in the Pilbara have been or are being explored or developed by these players.

- Further, the effectively competitive nature of the downstream iron ore market (i.e., the fact that BHPBIO and other miners are price takers in this market) implies that major iron ore producers have every incentive to exploit viable iron ore tenements, all the more so given the prospects for iron ore prices and demand. The effectively competitive nature of the iron ore production market means that a failure by these players to exploit viable iron ore tenements would simply result in the loss to them of potential earnings. If BHPBIO chose not to exploit a tenement with proven deposits in the Pilbara when it would otherwise have been efficient to do so, then other producers in the downstream world market – not just those in the Pilbara region – would displace any sales that BHPBIO could have made in the downstream market with ore produced from their own developed tenements.

- Iron ore producers have no incentive to monopsonistically reduce output in their vertically integrated operations, since they pay the real cost of extraction along the supply curve.[14] While they may have an incentive to reduce the price paid to other explorers for tenements, as discussed in the previous section on market definition, their ability to do so is likely to be extremely limited, and the potential impact on exploration or the exploitation of reserves even more so. The impact on resource allocation is likely to be non-existent or at most trivial.

59 Thus, it is the effectively competitive nature of the downstream market – rather than the number of players in a hypothetical iron ore tenements market – which creates incentives for existing players to efficiently exploit any viable reserves they may have or can obtain (that is, to exploit them in a manner and a time consistent with the efficient inter-temporal use of resources).

60 It is difficult, therefore, to see how declaration could promote competition. More specifically, declaration would not lead to a better use of resources (i.e., it would not bring forward any exploitation of reserves that these players would otherwise have sat on) as any investment that a third party would find worthwhile as a result of access, BHPBIO would already find worthwhile. Nor would declaration have any effect on downstream markets, such as leading to a reduction in the price of iron ore, as the NCC itself acknowledges. Where the market is already effectively competitive, adding players (in this case only small players located high up the cost curve) is unlikely to add further competitive pressure to the market.

61 This is not to deny that there may be, and commonly will be, negotiation over the terms on which any small tenements trade hands, and – as an inevitable part of that – dispute over the allocation between the parties of any Ricardian rents. However, it would be a mistake to confuse Ricardian rents (which arise independently of any restriction of output) with monopoly rents. While profit maximization will induce iron ore producers to time exploitation so as to maximise the Ricardian rents they derive (and to bargain for themselves as large a share of those rents as they can), in a competitive world market they plainly have no individual ability to use that timing to alter the level of final prices or the resulting value of tenements and more generally of reserves.

14 This point relates to the way in which buyer power operates in resource markets. Supply curves in these markets are generally upward sloping in relation to the price of the mineral (here, iron ore prices) because the cost of extracting minerals from different locations is uneven (hence the cheapest are exploited at low prices and gradually more difficult deposits are extracted at higher prices). The exercise of buyer (or monopsony) power involves buying less in order to pay less, moving down the supply curve. A vertically integrated miner, however, does not need to do this because it does not pay a market price for reserves, but instead pays the actual cost of extraction all along the supply curve and will exploit reserves to the point where they become unprofitable. This ensures it is able to extract the resource rents itself (rather than having to pay them to independent holders of the deposits as it would have to do in a vertically separated competitive market).

62 Putting the existing iron ore producers' activity on the supply side of the market to one side, the rest of this section now examines the NCC's analysis as to whether competition will be promoted in a hypothetical iron ore tenements market.

63 The NCC's assessment that competition will be promoted from declaration of the Mt Newman service principally hinges on its belief that the price for iron ore tenements with proven small deposits will increase as a consequence of more intense competition on the demand side of this (sub-) market, and that this increased price will increase exploration and/or development of reserves. The NCC considers that declaration will enable new marketers to enter the market, bid for the tenements and then sell the iron ore onto world markets.

64 As a preliminary point it is important to realise that even if such entry on the demand-side were likely (and it is not for reasons that are explored below), it is unclear whether exploration decisions would in fact respond significantly to the price in this sub-market. To understand why this may be the case, it is necessary to first set out the nature of the relevant supply-side decisions, which are decisions as to whether or not to explore a tenement with unknown mineral deposits, which may or may not include iron ore and which may contain large or small deposits

65 The potential returns from exploration will depend on the likely prices of the various minerals that might be found (if the finds are large enough to enable the mine to be independently developed) as well as the price the explorer could obtain from selling the tenement to an existing mining company (if the finds are too small to justify the site being independently developed).

66 When exploration decisions are made, the size of the find is not known, but there will be expectations about the likely price at which iron ore and other minerals can be sold on the relevant world market and the likely price that will be paid for tenements with proven small deposits. This makes clear that the supply function for exploration activity can be drawn against several variables:

- First, the supply function can be drawn against the world price of the various minerals which may be found in the relevant area. As the NCC has acknowledged, exploration activity is likely to be responsive to the mineral prices in world markets and so this curve will be relatively elastic;

- Second, the supply function can be drawn against the price paid for iron ore tenements, or more relevantly the price paid for small deposit tenements.[15]

15 The price paid for large tenements will just reflect the price of iron ore, since these deposits can be independently exploited.

67 Focussing on this latter relationship, it seems plausible that the exploration supply function is relatively unresponsive to the price paid for small deposit tenements, on the basis that its weighting in the overall expected profitability of exploration would be likely to be small. Much more critical would seem to be the price in the world market for iron ore (and other minerals) if (as seems likely) explorers are mainly focused on the "big find".[16] Certainly these different levels of responsiveness are consistent with recent activity in the Pilbara, which appears to have increased markedly in response to the current price of iron ore and other minerals.

68 This implies that declaration (even if it did alter the terms on which small tenements were traded) would be unlikely to affect overall exploration decisions. Expressed in more technical terms, if exploration does not respond to the price in this sub-market, then the supply of tenements with small reserves would be vertical (or close to vertical) in relation to this price. In this context, any increase in demand side competition would simply shift rents from the marketing party to the junior explorer – and would have no effect (or no material effect) on exploration activity or the underlying allocation of resources.[17]

69 It is difficult to see how this would constitute a promotion of competition as opposed to just a redistribution of rents.

70 Even if this argument is not accepted and the NCC considered that exploration decisions did respond to the expected price in this sub-market, it is unlikely that declaration would increase competition on the demand side for the following reasons:

- There are a number of substantial obstacles which are likely to prevent additional buyers entering the market to acquire iron ore deposits even if the Mt Newman service is declared; and
- Declaration in any event would be unlikely to alter the competition between existing iron ore producers to acquire iron ore tenements, which is and will remain effective.

16 Where mineral deposits are substantial enough to justify specific investment in rail (and other) infrastructure to service those deposits, access will not increase competition to acquire tenements because the supplier can in effect be the buyer, efficiently exploiting the deposit themselves.

17 Even if the relevant supply curve is not completely vertical, in the neighbourhood of an equilibrium, junior explorers' profit function will be flat and a small increase in the share of rents accruing to owners of small tenements will have no effect (or no material effect) on the supply of tenements overall.

Constraints on entry

71 Whether an iron ore tenement is capable of being exploited does not depend solely or even principally on access to rail track services. There are other substantial obstacles to third party buyers being able to market iron ore and/or other minerals, which are likely to preclude entry into the market irrespective of whether the Mt Newman service is declared.

72 These constraints are:

- Being able to set up mining operations, and run these to efficient scale;
- Having access to ores of sufficient quality to permit blending of the ore into a commercially relevant product;[18] and
- Having access to port facilities through which to ship the iron ore.

73 These constraints have already been extensively discussed by BHPBIO and CRA in their previous submissions to the NCC and so are only briefly reiterated here.

74 Turning to the first of these constraints, it is uncontroversial that there are significant scale economies involved in the production of iron ore and as such it seems likely that the only parties who would be likely to develop tenements with iron ore deposits would be established iron ore producers, contrary to the suggestion underlying the NCC's draft recommendation that declaration would enable wide-scale entry by a broad range of possible buyers.

18 Essentially the same constraint would also restrict existing (larger scale) iron ore producers from acquiring ores produced on a small scale by third parties. Iron ore producers may have to change the product specifications of their own commercial products to enable usage of these ores – and it would not be feasible for them to do unless the third party ores were produced at significant quantities.

75 Turning to the second constraint, CRA's previous submission provided ample evidence of steel makers' requirements to obtain specific grades of iron ore, the properties of which must remain stable over long periods of time. These constraints relate back to the blast furnace, which will operate more productively, and with lower energy costs if its feed is stable over time.[19] As it is more efficient for blending to occur prior to shipment, purchasers of small deposits would require access to sufficient quantities of other ores which could be satisfactorily blended together, and all of these must be located sufficiently closely to both the port and the complementary ores with which they can be blended. Quite simply, a new entrant on the demand side would be unlikely to emerge unless it could obtain sufficient quantities of such ore to secure at least some long term contracts from steel makers – and the quantities of ore obtainable from a small deposit (or several small deposits) would be unlikely to form the basis of such a long-term relationship.

76 Finally, BHPBIO's submissions of 6 January 2006 cast doubt on whether port constraints could be lifted so as to enable entry.

77 These three factors all raise substantial doubts as to whether demand side participation would increase as a result of declaration.

78 Moreover, to the extent to which those constraints could be lifted, a further matter that needs to be considered is whether access to the Mt Newman line is necessary for demand-side entry into the posited market. In this regard, BHPBIO has already provided submissions as to why the NCC's dismissal of the RTA as a *commercial substitute* to a Part IIIA access regime is erroneous.[20]

79 While the NCC considers that access under the RTA would result in lengthy processes and costs, there is no reason to believe that access under Part IIIA would be advantageous in this respect.

80 In its Review of the National Access regime, the Productivity Commission noted that:[21]

> *The protracted nature of Part IIIA decision making to date has clearly detracted from its capacity to deliver efficient outcomes.*

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19 These matters are examined in detail in Appendix A of CRA report (appendices) June 2005. Available at: http://www.ncc.gov.au/publication.asp?publicationID=189&activityID=32

20 It is worth noting that this is a different issue from whether the RTA is an alternative facility for the purposes of criterion (b). Rather, it is a matter of market definition and hinges on whether the prices set under the RTA would constrain pricing of a hypothetical track access service. This is discussed further at paragraph 148 and following.

21 Productivity Commission 2001, *Review of the National Access Regime*, p.397.

81 Submissions to that review were also critical in their assessment of the declaration process. The NSW Government described the delay, and the outcome, as "totally unsatisfactory".[22] The Queensland Mineral Council estimated that a Part IIIA application took a minimum of three years, and more likely, five years to process.[23] A number of submissions, including that of the Minister for Communications, Information and the Arts and the Australian Wheat Board, claimed that regulatory delays were hindering capacity expansion and were adversely impacting on the consumer.[24]

82 A good example of the lengthy delays and direct costs associated with a Part IIIA matter arose in connection with an application to have particular rail services in NSW declared under Part IIIA.[25] Following an application for declaration by a container transport company in February 1997, the NSW Government sought to have its existing access regime certified by the NCC. Certification did not occur until November 1999, nearly three years after the initial application. The certification was valid for only thirteen months, a period of shorter duration than the time it took to obtain access.

83 Similarly, appeals to the Australian Competition Tribunal (ACT) over Part IIIA matters have often taken years to resolve.

- For example, the Sydney International Airport case began in November 1996, when cargo handlers sought declaration of several services at Sydney Airport. The NCC recommended declaration in May 1997, and the Minister did so in June 1997, a decision which was then appealed to the ACT. The appeal was heard by the ACT in December 1998, and a decision was handed down on 1 March 2000. It took over three years from the making of the application to reaching of a final decision over declaration and even then the parties were still only at the stage of negotiating terms and conditions of access.

- In September 2000, the ACT handed down its decision on Australian Gas Light Gas Networks (AGLGN)'s revised Access Arrangement, which came into effect on 1 October 2000 – nearly two years after AGLGN submitted the Arrangement to the ACT and 14 months after the expected date for commencement of the access regime.[26]

22 Productivity Commission 2001, *Review of the National Access Regime*, p.399.

23 Productivity Commission 2001, *Review of the National Access Regime*, p.399.

24 Productivity Commission 2001, *Review of the National Access Regime*, p.397,399.

25 Productivity Commission 2001, *Review of the National Access Regime*, p.398.

26 Productivity Commission 2001, *Review of the National Access Regime*, p.62.

- By way of further example, the Productivity Commission has highlighted the direct costs and time that was expended in Federal Court proceedings in relation to one small aspect of a wider dispute in connection with an application for declaration of the Rio Tinto railway track service under Part IIIA.[27]

84 In setting out this information, CRA is not asserting that Part IIIA is necessarily flawed. Rather, the point is that it takes considerable time to secure access regardless of whether that access is being sought under Part IIIA or under alternatives to it. For that reason, the NCC cannot properly conclude that the RTA is flawed relative to declaration because of the time, potential uncertainty and cost involved in securing access under the RTA as each of those is manifestly no less under the relevant provisions of Part IIIA. Equally, and as discussed at section 3.2 below, the provisions of the RTA should ensure an outcome in terms of access charges no less efficient than that achievable under declaration.

85 The position under Part IIIA is to be contrasted with the position under the RTA, where that "regime" already clearly applies to the Mt Newman Line (such that there is an analogue to "declaration" already in place), and it remains only for a third party with a commercially sensibly, well advanced prospect for iron ore mining to seek a rail haulage service from the Mt Newman Participants. If agreement cannot be reached as to the terms on which that service is to be provided, an independent expert may be appointed by either party, to determine the position pursuant to the requirements of the RTA, and his/her decision is to be final - see clause 3 of the RTA.

86 Summing up, this material suggests that declaration of the Mt Newman line is neither a sufficient nor a necessary condition for entry into the market.

Competition to acquire iron ore tenements

87 This subsection now turns to explain why the mere fact that there are significant obstacles to the entry (that the Council seems to hypothesize) of new buyers of tenements, does not mean that existing competition to acquire tenements is not already vigorous.

88 Contrary to the NCC's suggestion, competition on the demand side is not necessarily limited to BHPBIO and Rio Tinto, but may now also include FMG and possibly other entities. Competition to acquire viable iron ore tenements between these players is vigorous because at least some of them have substantial assets (including existing ore bodies) whose value can be enhanced by the acquisition of complementary ore bodies, particularly those that are located reasonably close to their own assets.

27 Productivity Commission 2001, *Review of the National Access Regime*, p.63.

89 Just as with competition on the supply-side, strong competition to acquire viable tenements ultimately is explained by the competitive nature of the world iron ore market. In this sense, equivalent reasoning to that set out in paragraphs 57 to 60 applies to BHPBIO's incentives on the demand-side. Simply put, iron ore producers have every incentive to seek to develop tenements that are economic at expected prices in world iron ore markets (and no ability to affect those prices by individually withholding that development).

90 All evidence in the current market in fact points to major players exerting themselves to expand output by every possible efficient means, including buying viable deposits from junior explorers.

91 As noted above, there will of course be negotiation – and at times dispute – about the terms on which small iron ore deposits are purchased. To the extent to which supply of small tenements is fixed, at least in the short term (and for reasons noted, inelastic in the long term with respect to the purchase price), these negotiations involve the allocation of Ricardian rents, rather than affecting the overall level of output. The characteristics of the market in which these negotiations occur make it likely that:

- There will be strong rivalry between the major potential purchasers; and
- Adding marginal purchasers will have little or no effect on the extent of that rivalry.

92 The sale of tenements is best characterised by what can be described as a hybrid auction;[28] in this case, a two-stage auction procedure where the first stage is akin to an ascending price auction and the second stage consists of a sealed-bid stage. Buyers' valuations have both a private and a common component. The common value element arises from the dependence of the tenement's value on the expected world price for iron ore, which will be common to all potential purchasers. The private component arises as purchasers will differ to some degree in their ability to exploit the asset.

28 Klemperer (2002) discusses hybrid auctions and Dutra and Menezes (2002) examine a particular hybrid auction. See P. Klemperer 2002, "What Really Matters in Auction Design", *Journal of Economic Perspectives* 16(1), 169-189; and J. C. Dutra and F. M. Menezes 2002, "Hybrid Auctions", *Economics Letters* 77(3) 301-307. Dutra and Menezes (2005) describe the outcome of electricity auctions in Brazil where the auction format consisted of an ascending-price stage followed by a sealed-bid best offer stage. The auction resulted in extremely competitive prices. See J. C. Dutra and F. Menezes 2005, "Lessons from the Electricity Auctions in Brazil", *Electricity Journal* 18(10), 11-21.

93 The ascending price element arises from the back and forth process as the seller of the tenement at issue solicits bids from potential acquirers; the sealed bid element corresponds to the final stage, in which "best and final" offers are put. While the extent to which the closing terms are public will depend on the nature of the parties (and the disclosure obligations they are subject to), each transaction is essentially *sui generis*. This makes the final bidding a one-shot game where bidders have updated, to the extent possible, their information regarding their competitors' behaviour in the first stage.

94 The study of auction processes has been perhaps one of the most successful and fruitful areas of economic analysis in the last two decades. The principles behind auction theory have been used extensively to design new auctions and markets around the globe in areas as different as electricity, gas, telecommunications and the environment.[29] Two important principles can be derived from this important body of literature.

95 The first is that the sealed-bid best-offer-wins nature of the closing process creates strong pressures for rivalry between viable purchasers. In the context here at issue, this will obviously be especially the case when the tenements have the potential to accrue material Ricardian rents.

96 Second, the outcome of an auction is typically determined jointly by the bidder with the highest valuation or estimative (the winner of an efficient auction) and the bidder with the second-highest valuation or estimative (who sets the price). Thus, 'weaker' or marginal buyers are unlikely to influence the outcomes of an auction process.

97 Importantly, the combination of ascending price and sealed-bid stages makes the likelihood that marginal buyers will affect the outcome of the auction (the allocation or the price) insignificant. Ascending price auctions are inherently unattractive to marginally placed players, as their prospects of making it to the final stage are poor. As a result, even slight bidding costs will be sufficient to deter these players from participating, especially in a common value context, as explained by Menezes, Pitchford and Wait (2003, p. 364)[30]:

29 See, for example, P. Milgrom 2004, *Putting Auction Theory to Work*, Cambridge University Press. For an introduction to auction theory, see F. M. Menezes and P. K. Monteiro 2005, *An Introduction to Auction Theory*, Oxford University Press.

30 F. M. Menezes, R. Ptichford and A. Wait 2003, "Tendering and Bidding for Access: A Regulator's Guide to Auctions", *Australian Journal of Management*, 28(3), 345-370.

In ascending auctions, the presumption that the bidder with the highest valuation will win can discourage the participation of relatively weaker competitors. This phenomenon can be aggravated by the costs of formulating bids. In both the independent-private-value and common-value models, potential bidders (who could even win) often wind up being no shows. In the common-value model this problem is exacerbated due to fear of the winner's curse. When an object has similar value to all bidders, each participant must be careful in bidding, realizing that her chance of winning increases along with her rising estimate of the object's true worth. Going up against a competitor who is assumed to have some advantage tends to heighten this realization, leading to a more cautious stance (since beating a strong opponent would suggest the possibility of having overbid). Aware of this, the bidder with the advantage can reduce her bid, meaning that her signal discourages others. In summary, the 'weak' agents become overly cautious, when participating at all...

98 Even if weaker buyers do participate and make it to the final sealed-bid stage, the likelihood that their bids will affect the bidding behaviour of the strong bidders is small. As long as there are two strong bidders, one would expect the bidding behaviour of the weaker buyers to have little influence, if any, on the bidding strategies of the best placed market participants.

99 Therefore, if the NCC's belief is that declaration would open the door to new potential purchasers of tenements, the reality is that adding such marginal players to this kind of process cannot have more than a negligible effect on the ultimate outcome.

100 It follows that the NCC makes two errors in its assessment:

- It under-estimates the extent of rivalry that will occur between well placed potential buyers to obtain tenements that are expected to be viable, even if there are only two such well placed potential players;
- It greatly over-estimates the degree to which adding marginal players (or facilitating the entry of marginal players) into this process could alter the market outcome, even were such entry to occur (or be facilitated).

101 Summing up, the NCC cannot simply assume that adding a marginal participant will lead to a promotion of competition, even slight: rather, it needs to ground that assessment in an analysis of the relevant competitive process. For the reasons set out in this section, any such finding would be incorrect in respect of the transactions here at issue.

Any increase in competition would be restricted to those tenements with small deposits adjacent to the railway

102 Even if the NCC rejects all the above arguments and in particular considers that declaration would remove a substantial barrier to entry on the demand-side of its posited market, it seems clear declaration would be unlikely to promote competition other than in a very small part of even its own market. Specifically, it would only affect small tenements that were close to the Mt Newman line. The reasons for this correspond to the analysis in subsection 2.1.2 – which makes clear that even on the NCC's own view of the market, declaration would only affect a very small part of the market.

103 First, to be economically viable small deposits must be located close to transport. Therefore, to the extent that the NCC sub-market *is* relevant to exploration decisions, demand side competition would surely not be Pilbara wide but would be limited to the owners or third party users with access to railway lines either adjacent to the tenements or close enough to be worth building a spur line or trucking the ore to exploit the tenement.

104 Therefore, if declaration of the Mt Newman Service removed a barrier to entry, this would only be of benefit to deposits close to the Mt Newman Line. Given the NCC has defined the market as Pilbara-wide, this impact in terms of the geographic market is likely to be trivial.[31]

105 Of course, deposits that are large enough to justify their own railway would not be affected by declaration, so only small tenements would be affected by declaration. This raises *additional doubts* as to whether the effect on competition from declaration passed a materiality threshold.

31 As is pointed out in the discussion under criterion (f), this is tenuous as a benefit, and is unlikely to justify the potential costs associated with declaration.

3. CRITERION (A): RAIL HAULAGE MARKET

106 The NCC's draft finding that declaration would promote competition in the rail haulage market is incorrect in two respects. The rail haulage market as defined by the NCC is not a distinct market from that in which the Mt Newman Service is provided. Declaration would not promote competition, though, even if the rail haulage market were well-defined and separate from the rail infrastructure services market. This section first considers the market definition issues, and then the question of promotion of competition.

3.1. DEFINITION OF RAIL HAULAGE MARKET

107 The NCC's definition of the rail haulage market is problematic from two perspectives. First, the NCC effectively treats the Mt Newman Line as a standalone market in which BHPBIO holds a monopoly on rail transport, notwithstanding the NCC's adoption of a Pilbara-wide geographic market definition.

108 Second, the NCC's view that rail track and haulage services are in distinct markets hinges on the incorrect finding that the diseconomies of scope are slight. Further, the NCC has been inconsistent in assuming, for the purpose of making a finding in respect of separability (and hence for market definition), that the third party use of the service will be slight, while assuming the opposite for the purpose of assessing impacts on competition – i.e., that the scale of use will be significant.

109 The second issue has further implications (beyond the existence of separate markets) for the NCC's assessment of whether declaration would promote competition because the NCC fails to consider the substitutability of rail track services under Part IIIA and haulage services under the RTA. This is discussed further below under the heading of whether declaration will promote competition in the posited rail haulage market.

110 Before turning to a more detailed discussion of the issues relating to vertical efficiencies and the existence of markets, it is important to note that, were there (contrary to CRA's views) a rail haulage market that was functionally distinct from the market for the Mt Newman Line, it would then be important to understand whether the geographic scope of that market extended beyond the Mt Newman rail infrastructure to include, for example, the Rio Tinto rail infrastructure. If so, Rio Tinto would be an existing supplier of rail haulage services in that market and BHPBIO would not be a monopolist.

111 The NCC defines the rail haulage market as Pilbara-wide, explicitly noting in paragraph 7.103 that the Rio Tinto railway system would also form part of this geographic scope. This conclusion is consistent with commonsense if, contrary to CRA's views, the rail haulage market is a well-defined market for antitrust purposes.

112 As a result, the NCC errs, even by reference to its own market definition, in analysing matters as if BHPBIO were a monopolist in the market the NCC has defined.

113 That said, this section now turns to the issue of whether a functionally separate market for haulage in fact exists.

114 This question arises because, for criterion (a) to be satisfied, the market in which competition would be promoted by declaration must be distinct from the market for the service that is the subject of declaration. The NCC's Draft Recommendation notes at paragraph 7.4 two conditions that must be met for two markets to be considered functionally separate. These conditions are economic separability and asset specificity. It is the economic separability test on which this subsection focuses.

115 The test for economic separability, although variously formulated in the differing instances in which the issue has arisen, centres on the extent of the efficiencies associated with vertical integration. What is clear is that where those efficiencies are very great, 'disaggregating' the activity into distinct markets would make little sense. This is consistent with the Tribunal's most recent discussion of the issues in *Re Services Sydney.*[32]

116 This can be seen by consideration of the SSNIP test. Where the transactions costs savings from integration are substantial, the ability of a hypothetical cartel of vertically integrated firms to profitably and durably raise price above the competitive level would not be constrained by the existence of non-integrated competitors. As a result, it is the vertically integrated firms that define the scope of the relevant functional market.[33] It follows that where 'disintegration' imposes substantial efficiency penalties (so that non-integrated firms are not a constraint on their integrated rivals), then the effective field of rivalry, and the boundaries of the relevant market, encompass the integrated operation.

32 *Re Services Sydney* (2005) ACompT7 at [108]-[120].

33 This is analogous to the test for the existence of a cluster market, which asks whether the ability to raise price of a hypothetical cartel of suppliers of a bundle of products would be effectively constrained by the presence of unbundled suppliers. If it would not, then the bundle defines a cluster market.

117 It is CRA's view that the efficiency losses associated with vertical separation of the Mt Newman Line (even if the separation is only partial, involving open access to the track) would be so large that the separability test is failed. While CRA has discussed this issue in previous material, this section considers below two further lines of empirical evidence that are relevant to this issue. These are:

- a review of recent econometric literature concerning the cost structure of US Class I railroads and in particular tests for subadditivity, which confirm the existence of substantial cost penalties associated even with open access (and significant economies of scale and scope for integrated operation); and
- a discussion in the specific context of the Mt Newman rail system of the nature of separation-related cost penalties.

118 This evidentiary base strengthens CRA's initial conclusion that rail haulage and rail infrastructure in the Pilbara iron ore sector are not separable, meaning that any promotion of competition in the "rail haulage market" that might accompany declaration would not meet the criterion (a) test for declaration.

3.1.1. Empirical evidence on cost characteristics of freight railways

119 The issue of the cost structure of rail operations has received considerable attention in the recent economic literature. A specific question considered in a number of studies is that of the extent and nature of the economies of scope between the various functional layers rail transportation involves. Interest in that question has been stimulated by moves in a number of jurisdictions to seek to structurally separate those functional layers.

120 This section summarises those findings in that literature that may be relevant in assessing the effect of vertical separation of freight track and haulage services on the overall costs of providing these services. The majority of studies carried out to date are econometric (statistical) studies that aim to estimate the relationship between inputs (costs), such as capital and labour costs, and outputs, for instance freight-miles or rail infrastructure. But there are also case studies of specific instances where vertical separation in some form has been undertaken that assess the importance of coordination and similar effects in qualitative terms.

Econometric Studies

121 While a great deal of empirical research has been carried out on the cost structure of railways, going back to the mid-1970s, the focus here is only on the more recent, relatively more sophisticated papers. These studies provide a means of assessing the efficiency losses that would arise as a result of (some) separation of rail track and haulage services on the Mount Newman railway line. The more recent studies of which we are aware analyse the same data set for US rail freight services (albeit over different timeframes), where industry data is aggregated across a variety of freight services. We note that this range of freight services in US Class I railroads differs in some ways from the specialised iron ore haulage services provided by BHPBIO. We also note that statistically estimating railroad cost functions can raise a host of practical problems; for instance, rail 'output' can only be approximated in aggregates that may not adequately capture the complexity of the services.[34] Nevertheless, the consistent result of these empirical analyses is that there are significant cost interdependencies in rail freight networks that make vertical separation of train and track problematic.

Bitzan[35]

122 Bitzan separately considers (among others) the costs of providing 'unit train' services – trains dedicated to the movement of a single commodity between a particular origin-destination pair – and investigates two questions:[36]

- Whether decreases in efficiency might result from separating maintenance of the rail infrastructure from providing transport service: By testing the cost function for 'separability' Bitzan finds that inputs are to some extent substitutes, and that cost savings can result from jointly 'producing' the rail infrastructure and the transport services that use it.

- What the cost impact would be of multiple firms operating over a single, existing rail network: Bitzan calculates an output elasticity of unit train services to ton-miles of around 0.15 (i.e. a one percent increase in ton-miles will lead to a 0.15 percent increase in costs), and concludes that multiple firm competition over such a network would result in increased resource costs.

34 Braeutigam, R. R. 1999, ''Learning About Transport Costs'', in Gomez-Ibanez, J., W. B. Tye, and C. Winston (eds), *Essays in Transportation Economics and Policy*, Brookings Institution, Washington, DC.

35 Bitzan, John D. 2003, "Railroad Costs and Competition, The Implications of Introducing Competition to Railroad Networks", *Journal of Transport Economics and Policy*, 37(2), 201-225; Bitzan, John D. 1999, ''The Structure of Railroad Costs and the Benefits/Costs of Mergers", *Research in Transportation Economics*, 5, 1-52.

36 This is likely to be the category that best corresponds to BHPBIO's iron ore rail haulage service.

Ivaldi and Mccullough (IM)[37]

123 IM develop a more complex model that also incorporates maintenance activity to assess the nature of costs, and more specifically to examine whether there are cost complementarities between providing the rail infrastructure and rail haulage services.[38]

124 With respect to whether there are economies of scale, in common with many other US rail cost studies, IM find that, at output levels which have characterized the industry over the past 20 years, US Class I freight railroads exhibit significant returns to 'density'; that is, average costs decrease with increases in traffic density over a fixed railway system.

125 The evidence on the relationship between infrastructure and haulage costs is ambiguous, however. More specifically, IM find that an increase in infrastructure activity can decrease the costs of providing some freight services (general freight), but increase the costs of providing others (bulk and intermodal), perhaps because increasing traffic reduces the 'window' available for track maintenance.

126 However, IM also find that undertaking some freight services jointly can reduce overall costs, perhaps because all services benefit from a shared input, such as an improved scheduling effort.

Case / Industry Studies

127 The following briefly summarises other studies that have assessed the benefits or otherwise of vertical separation of rail track and haulage services. A key theme of this literature is that the adverse consequences of vertical separation of freight railways were seriously underestimated by the early advocates of such a policy, and some of these consequences have taken many years to come home to roost.

37 Ivaldi, Marc, and Gerard Mccullough 2005, "Welfare Tradeoffs In U.S. Rail Mergers", IDEI Working paper 344. Ivaldi, Marc, and Gerard Mccullough 2001, "Density and Integration Effects on Class I U.S. Freight Railroads", *Journal of Regulatory Economics*, 19(2), 161. Ivaldi, Marc, and Gerard Mccullough, *Subadditivity Tests for Network Separation Using a Generalized McFadden Cost Function*, December 2001.

38 IM also account for different types of rail services – bulk, high value/intermodal, and general freight – but it is not clear, which of these are most likely to be akin to BHPBIO's iron ore service.

Gómez-Ibáñez (GI)[39]

128 In his 2005 paper GI concludes that introducing competition thorough vertical unbundling has proven more problematic than anticipated, since the quality of railroad services depends heavily on the close coordination of infrastructure and train operations. Problems of tailoring and optimisation are less critical if there is excess capacity in the infrastructure (for instance, in Sweden), so that different services can share the facilities with minimal extra cost and conflict. But when the infrastructure reaches capacity and new investment is needed, the level of required access charges increase, and the specific and conflicting needs of operators become more apparent and serious.

129 In his 2003 study, GI considered the disaggregation of Great Britain's railroads in detail, to illustrate the importance and difficulties in maintaining coordination in a vertically unbundled industry.[40] The British rail industry was completely disaggregated; an experiment that is widely perceived to have failed following a number of major rail crashes and the bankruptcy of the monopoly infrastructure company (Railtrack). GI finds that the deterioration of the railway's performance at the end of the 1990s was due largely to the coordination problems created by vertical unbundling:

- The schedule of access charges encouraged train operators to congest the tracks with additional trains, reducing reliability and making track maintenance harder;
- Expanding capacity contributed to safety problems by encouraging higher levels of traffic and discouraging Railtrack from releasing track for maintenance, and probably contributed to the accidents that ultimately bankrupted Railtrack; and
- Reaching agreement about network enhancements to reduce congestion proved to be extraordinarily difficult and generally impossible.

39 Gómez-Ibáñez, José A., "Railroad Reform: An Overview of the Options", Paper presented at the Conference on Railway Reform, Rafael del Pino Foundation, Madrid, September 18-19, 2004; Revised Draft April 11, 2005. "Regulating Coordination: British Railroads", from Gómez-Ibáñez, José A., *Regulating Infrastructure, Monopoly, Contracts and Discretion*, Harvard University Press, 2003.

40 Of course, the British rail network differs in material aspects from BHPBIO's – it is a far more complex network and includes both passenger and freight services.

Pittman[41]

130 Pittman briefly reviews the European experience with vertical separation of rail services, and offers a number of economic/technical arguments to suggest that various characteristics of the railway sector make vertical separation difficult:

- A high share of network costs in total delivered service costs, making it very difficult to set charges that simultaneously encourage the efficient use of the rail network and recover its costs;
- Economies of scale (density) at the 'competitive' train operations level; that is, the costs of a train operating on a given track network decline with ton-km of output; and
- Most importantly, strong economies of vertical integration that are focused on the interface point of wheel and rail.

131 In relation to the last point, Pittman examines the railways trade press and the technical engineering literature to conclude that the discussion of possible technological improvements in the railways sector is focused on the highly interdependent ways that differences in rolling stock design and wheel design affect track wear, track maintenance requirements, and optimal track design; as well as the converse. He concludes that the short-and long-term efficiency of the provision of rail services depends on the successful coordination of this point of intersection between steel wheels and steel rails.

Conclusion on results of the empirical studies

132 The studies reviewed above come to conclusions that differ in emphasis and in the degree to which they are relevant to the circumstances at hand. Nonetheless, it is striking that even in the areas where it was originally thought that vertical separation would be relatively straightforward, subsequent analysis has uncovered substantial difficulties from that separation. Equally, it is striking how much evidence analysis of cost structures and of industry experience finds of significant vertical economies of scope.

133 As a result, the NCC cannot simply assume that there are few costs involved in vertical separation, or few efficiencies involved in vertical integration. Such a conclusion would be inconsistent with the studies that have been carried out and that are reviewed above.

41 Pittman, Russell 2005, "Structural Separation to Create Competition? The Case of Freight Railways", *Review of Network Economics*, 4(3), 181-196.

3.1.2. Lack of functional separation above and below rail for the Mt Newman system

134 Having discussed the evidence from economic studies, this section turns to the Pilbara iron ore railways.

135 As is noted above, two functional layers are separable from an economic point of view only if the transaction costs in the separate provision of the good or service at the two layers are not so large as to prevent separate provision from being feasible. "In effect, to be in different markets, vertical integration must not be inevitable." (NCC Draft Recommendation, paragraph 7.4 (a)). Put slightly differently, the NCC separability test asks whether the savings in transactions costs arising from vertical integration create efficiencies that would make vertical integration inevitable in a competitive market.

136 The transaction costs that are relevant in the present circumstances are the loss of scope economies that depend on unified ownership and control of the entire supply chain (and which would be compromised by shared infrastructure access). The assessment of criterion (f) (public benefit), in Section 5 below, comments in detail on the costs of a loss in scope economies that depend on unified ownership and control of the entire supply chain. The ability to integrate above and below-rail investments in capacity permits a single decision-maker to make efficient tradeoffs between providing extra haulage capacity by increasing the number of train sets or by, say, increasing the proportion of rail infrastructure that is double-tracked — permitting more efficient use of a given fleet of trains. Because of the financial importance of such tradeoffs, vertical separation of rail operations is likely to be materially less efficient than integration. This point is the essence of the contentions in CRA's June 2005 submission about the lack of a valid functional separation between above and below rail 'markets' for a single-track iron ore railway system carrying 100 mtpa or more over distances of 300 – 450 km.[42]

42 Note this important qualification. We do not contend that vertical separation of railways is always inefficient. However, given the particular characteristics of the Mt Newman Line and other Pilbara iron ore rail operations, especially its high utilisation of rollingstock and track assets, and its tightly managed latent capacity (in contrast to that in the formerly government-owned bulk mineral rail systems in Eastern Australia), vertical separation (even partial separation through mandatory third party rail access) removes the ability to coordinate activities across the supply chain which is essential to the achievement of such high levels of efficiency.

137 The affidavits of Peter Monkhouse (23 December 2005), Rod Hoare (22 December 2005), Bob Ridley (22 December 2005), and Phillip Price (23 December 2005) all attest to the character and importance of the efficiency losses that would result from impediments to fully integrated management of BHPBIO's supply chain. The evidence set out in those affidavits implies that vertical integration is inevitable in the operation here at issue and more generally, in any large-scale iron ore operation that is subject to competitive discipline in that market.[43]

138 Obviously, declaration would not lead to structural separation as such – rather, it would lead to shared use of the Mt Newman Line. As a result, it might be contended that it would not lead to the complete loss of the efficiencies of vertical integration, as it would be open to BHPBIO to continue to operate on a vertically integrated basis.

139 That consideration, though it may be relevant to an assessment of the costs and benefits of declaration, is not relevant to the task of functional market definition – as is apparent from the NCC's own formulation of the relevant test. Rather, functional market definition needs to be assessed by considering the efficiencies of vertical integration and assessing whether they are such as to result in vertical integration being likely to prevail in a competitive market.

140 That said, it is CRA's view, based also on the affidavits cited above, as well as the other material submitted by BHPBIO, that the cost penalties associated with shared use are in any case so material that shared use would not be observed in a competitive market. This is because, at least in heavily utilised rail networks, shared use creates diseconomies of scope that offset any gain in economies of density that might come from more intensive use of the rail infrastructure. As set out in the projections provided by BHPBIO to the NCC and discussed in Section 5 of this Report, the capacity of the Mt Newman system is expected to be insufficient to meet its own foreseeable transportation requirements over the next 20 years.[44]

141 The NCC seeks to minimise the extent of these diseconomies by assuming that third party use would be on a very small scale. It is not clear on what basis this assumption rests, given that declaration would open the way for all potential access seekers. Additionally, this assumption seems manifestly inconsistent with the NCC's view that the effects of declaration on competition would be material.

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43 The Kumba – Spoornet case study provided in CRA's June 2005 submission illustrates the seriousness of the performance problems that are associated with vertically separate provision of rail haulage.

44 BHPBIO Submission, "Impacts of Third Party Access on the Mt Newman System, Costs of Corrective Measures and Double Tracking".

142 However, even if the NCC maintained that assumption, it could not properly conclude that the activities were separable, as that conclusion would merely be the result of the assumption that any departure from vertical integration is *de minimis*. In effect, were the NCC to conclude that the activities were separable simply because it had assumed that the extent of shared use was *de minimis*, it would have robbed its own test of any substance and could conclude **in any and every case** that currently integrated functional activities were separable.

143 In practice, as is clear from the material submitted by BHPBIO, the diseconomies associated with shared use by FMG of the Mt Newman Line would be significant, even if that use occurred on a relatively small scale.

144 Additionally and related, there is unlikely to be any rail infrastructure configuration that would be optimal for both BHPBIO and FMG, as the product and business strategies of the two players are likely to be different. As a result, separate provision of rail infrastructure and train operations in the sense considered here would inevitably result in less-than-efficient compromise.

145 Finally, it is worth noting that the optimum system configuration (least overall cost to transport a given tonnage) would be more closely approximated under RTA-style access than under declared access. This is because under RTA access, the areas where the greatest complementarities exist (essentially, the joint management of track and haulage and the optimisation of the complex trade-offs that need to be made within and between the layers) would remain under fully integrated control.[45] This would allow cost minimisation in those areas and minimise the distortions to production and consumption decisions downstream.

146 As a result, to the extent to which any third party use would be found in a competitive market, it would be on the basis of provision of a haulage service, rather than of track access.

147 In short, the NCC has erred in its functional market definition for the following reasons:

- It has not taken account of the efficiencies of vertical integration;
- To the extent to which it has taken account of those efficiencies, it has sought to reduce their significance by (improperly) assuming that any departures from vertical integration would be on a very small scale. Such an approach robs the NCC's own test of any bite;

45 The location of the efficient third-party interface has been extensively studied by economists. An important conclusion of that work is that that interface should be placed in such a way as to allow activities that are characterised by complex interdependencies to be managed on an integrated basis. An excellent discussion of this point can be found in John Roberts 2004, *The Modern Firm*: Clarendon Press, Oxford.

- Moreover, even at that small scale, separation of track and haulage would still be inefficient, making a finding of separability on that basis incorrect; and

- Contrary to the NCC's assessment, were any third party use to be found in a competitive market (and we doubt it would), it would be at rail haulage level, rather than at the level of track.

3.2. PROMOTION OF COMPETITION IN RAIL HAULAGE MARKET

148 Even if the NCC market definition were accepted, there already is a constraint on BHPBIO's ability to exclude competitors. The RTA, which requires BHPBIO to provide a haulage service at a cost-based price, is that constraint.

149 It is such a constraint because haulage and track access are close substitutes from an economic perspective. Viewing matters at the level of the test for market definition, it is clear that in a competitive market, consumers would shift between transport provided by means of haulage through track access, and haulage provided by means of the RTA, were the relative prices of these to shift out of alignment. No less relevantly, in practice, any potential users of BHPBIO's facilities are likely to view haulage under the RTA as in no way inferior (and for reasons set out below, in many ways superior) to haulage provided by means of track access. As a result, the terms of transport under the RTA are highly relevant to a consideration of whether competition would be promoted.

150 It is valid to assume that rail access prices under the RTA would be no greater than rail access prices derived from any arbitration under Part IIIA declaration because, in broad terms, both refer to cost-based principles in deriving the price.

151 More specifically, clause 30 of the RTA sets out third party operating charges, which are to be based on the costs of the common railway system and prorated between users in proportion to the tonnage shares. Clause 31 sets out third party contributions to maintenance capital charges, which are again based on the costs to the Mount Newman Participants for these activities allocated in proportion to tonnage shares between users. Clause 32 notes that the charges in clauses 30 and 31 must take account "*of any variations in total tonneages carried between different sections of the common railway system*." Clause 33 sets out the capital charges that apply to third parties, noting that these capital charges shall have "*proper regard to generally accepted commercial practice and shall include provision for adjustment from time to time to exclude the value of any facilities and equipment which have been replaced or superseded other than in the course of routine repairs and maintenance*." Clause 20 sets out a method for dealing with capacity extensions that are required as a result of third party access: "*In the event that the Mount Newman Participants (…) require further capacity in the common railway system which is not available because of use by a third party the third party shall pay an amount equal to the cost of the provision of new capacity to replace in whole or in part as the case may require the capacity being used by the third party less a sum equal to the total payments made by the third party pursuant to Clause 12 and Clause 13 with respect to the common railway system.*" Clause 12 simply sets out that the third party must pay the cost of additional facilities required to transport its ore, and Clause 13 states that the third party must make reasonable contributions to the cost of enhancements to the facilities reasonably required to improve the efficiency, cost effectiveness and general operation of the common railway system.

152 In short, the RTA provides for cost-based access to haulage services. It does so on a basis that sets access charges in a manner that is substantively equivalent to Part IIIA, both as regards the recovery of operational and maintenance costs, as well as of capital charges. For example, while Part IIIA itself provides little guidance on capital charges, it is clear that the relevant provisions go to a concept of 'reasonableness' that is no different from that under the RTA. Indeed, once the Government's proposed amendments to Part IIIA are enacted, any access charges set under that Part will need to be at least consistent with full cost recovery, including recovery of reasonable capital charges.[46]

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46 A Bill containing amendments to Part IIIA was introduced into the House of Representatives on 2 June 2005, although has yet to be passed. In relation to Pricing Principles, the Bill proposes to amend the TPA so that the ACCC will be required to consider more specific pricing principles when arbitrating access disputes and considering access undertakings. In particular, the proposed amendment states:

The Australian Competition and Consumer Commission (ACCC) must have regard to the following principles:

(a) that regulated access prices should:

(i) be set so as to generate expected revenue for a regulated service or services that is at least sufficient to meet the efficient costs of providing access to the regulated service or services; and

153 There is no reason to believe that costs (and hence access charges) would be higher under the RTA than they would be under track access. BHPBIO is, and, given the competitive nature of world markets, would have every incentive to remain, an efficient operator of haulage services. Capital expenditure on rail infrastructure would not be any higher under RTA haulage than under declared access, for the reason that, under RTA, BHPBIO would have a greater ability to optimise the factors (including train size and path utilisation) that drive rail infrastructure capital spending.[47] The cost of capital would also be no higher under the RTA than it would be under Part IIIA.[48] Moreover, the RTA would involve far fewer diseconomies of scope and might possibly secure greater economies of scale in haulage. As a result, costs (and hence prices) are likely to be lower, rather than higher, under the RTA as compared to track access.

154 Additionally, for reasons that have been discussed elsewhere in this Report, there is no reason to believe that access under the RTA would be inadequate in terms of timeliness. As regards other attributes of service delivery, RTA haulage, which would make use of BHPBIO's proprietary rail transport technologies, is likely to be to a higher service standard than could be provided by an entrant.

155 It is against this benchmark than any promotion of competition needs to be gauged. More specifically, competition would only be promoted in the rail haulage market by declaration, if the degree of competitive constraint on any rail haulage service that BHPBIO would offer to itself or others (through the RTA) would increase beyond that which currently applies.

156 However, such an increase would be unlikely to occur. Rail haulage on the line is subject to increasing returns because of the presence of scale and scope economies. BHPBIO is an efficient operator of rail haulage on that line, and has every incentive to be so, given the competitive nature of the downstream market. Indeed, BHPBIO has a track record of managing operational and investment tradeoffs at different production levels to minimise costs overall. Conversely, an entrant would not be an efficient operator, *inter alia* because of lack of scale and of the relevant intellectual property (and the fixed costs involved in duplicating that intellectual property).

157 Before turning to the nature of cost penalties faced by third party rail haulers, some preliminary points need to be noted.

(ii) include a return on investment commensurate with the regulatory and commercial risks involved.

47 Moreover, under the RTA BHPBIO would avoid some purely wasteful capital outlays that declaration would cause it to incur. Those capital outlays would form part of the cost base in any Part IIIA pricing determination.

48 Indeed, as declaration would increase the risk of asset stranding, the capital charge under Part IIIA should be higher than that under the RTA.

158 First, it is unlikely that declaration would enable entry beyond that which the RTA already permits, because the supply of a haulage service is only possible if the purchaser of that service can acquire other services that are complementary to it, including port services and possibly blending facilities – such that the threat of entry is only credible if a new entrant is able to provide (or the acquirer can otherwise obtain) the full set of these complementary services that would be necessary to a user of those haulage services. There is no evidence that a new entrant[49] would be able to put together (or that the acquirer could otherwise obtain) the full set of complementary assets necessary to do so. As a result, it has not been established that the threat of entry would be credible.

159 Second, even if entry were *possible*, for entry to be *effective,* the entrant's unit costs must be such that it imposes a degree of competitive constraint on BHPBIO relative to the likely prices that would apply under the RTA. Effective entry is unlikely to occur for two reasons:

- First, if the relevant scale on which entry were contemplated was that associated with transporting iron ore from the Mindy Mindy mine, then an entrant into the rail haulage activity would suffer too great a cost penalty to be able to constrain BHPBIO; and

- Second, the only way a third-party specialist rail haulage provider could attain the necessary custom to attain minimum efficient scale without creating sufficient diseconomies of scope (which would undermine the NCC's finding in relation to market definition) would be for the access seeker to transport (or somehow affect the competition to transport) BHPBIO's *own* iron ore from mine to port. However, this possibility seems implausible.

160 For reasons set out below, an entrant rail operator would face a significantly higher cost curve than the price curve that BHPBIO must offer haulage customers under the RTA. More specifically, given the substantial scale economies that would correspond to all likely scales of output, it follows that:

- Rail haulage on the Mt Newman Line, like freight haulage on US Class I railroads, is subject to increasing returns (see the literature cited above which establishes the subadditivity of the cost functions); and

- Given the pricing constraints on rail haulage imposed by the RTA, an entrant to the Mt Newman Line would be uncompetitive on cost at any conceivable level of output.

49 Especially one that required access on a scale that would not cause substantial scope diseconomies.

161 BHPBIO's own imperative to remain competitive in the world iron ore market will act to ensure that its own actual railway costs, on which the RTA price is predicated, are efficient. Set against this benchmark, any entry that might occur following declaration (and we do not believe such entry could occur) would not promote competition.

3.2.1. Nature of cost penalties faced by third party rail hauler

162 There is a presumption in the NCC's discussion of the promotion of competition in rail haulage that declaration will either lead to entry of a new rail hauler, or persuade BHPBIO (through the threat of entry) to offer haulage at attractive prices and terms that would not otherwise be available to other miners. There is a further presumption that entry of a new rail hauler would *ipso facto* mean that competition was promoted in the rail haulage market.

163 Both of these presumptions are incorrect. The first is incorrect because the RTA already obliges BHPBIO to provide haulage to other miners at cost-based prices and on non-discriminatory terms. The RTA is the correct counterfactual for evaluating haulage prices and terms. It is difficult to see how declared access could lead to more attractive haulage prices and terms for an iron ore miner unless the arbitrator were to err and offer sub-cost access to the rail access seeker.

164 The second presumption is incorrect both as a matter of theory and as a matter of fact. Theoretically, it is possible for declaration to promote the entry of an inefficient firm. However, the presence of a highly inefficient competitor would not promote competition in rail haulage: the extent to which an inefficient firm would constrain the incumbent's price or quality offerings would be limited by the degree of the entrant's inefficiency or lack of cost competitiveness.

165 In theory, declaration would allow other more efficient firms to supplant the initial entrant if that firm was inefficient. However, if there is some intrinsic factor that would impede the cost competitiveness of **any entrant**, for example profound scale or scope diseconomies attaching to the volume of third-party freight, then declaration may not promote competition even if it leads to new entry.

166 As a matter of fact, the rail haulage market defined by the NCC includes two large-scale rail operators: BHPBIO and Rio Tinto.[50] The promotion of competition must be judged in terms of the ability of an entrant to promote competition that already exists between BHPBIO and Rio Tinto. It is therefore important to determine whether such diseconomies would affect an independent rail operator on the Mt Newman Line, and how material these might be. The remainder of this subsection considers the factors relevant to the Mt Newman Line which bear on this question. The conclusion is that any new rail haulage entrant providing rail haulage services under declaration would incur very substantial incremental fixed and ongoing costs that would inevitably put it at a material cost disadvantage in relation to an established, large scale operator. In contrast, the RTA requires BHPBIO to share scale and scope economies with a potential access seeker.

167 There are at least three aspects with cost implications in which BHPBIO's train operations under an RTA haulage arrangement will be different from those of an independent rail operator relying on declared access. CRA has previously stated its strong view that scope diseconomies associated with declared access are likely to be extremely significant, and CRA maintains that view. The remainder of this section, however, focuses on whether the entrant rail operator could itself operate at an efficient scale, quite independently of the impacts such entry might have on BHPBIO's existing vertically integrated economies.[51]

Fixed and sunk facility costs

168 The Pilbara region is remote from the industrial centres of Australia, and the Mt Newman railway system is isolated from the interstate railway network. An above-rail train operator in the Pilbara region must be self-sufficient in terms of facilities for maintenance, overhaul, refuelling, stabling and otherwise managing its locomotives, ore wagons, and spares. The minimum set of facilities are likely to include locomotives and wagons, locomotive overhaul and ore car workshops, breakdown service facilities, fuelling and sanding plant, as well as administration and operations offices.

50 The NCC has defined a rail haulage market for which the geographic scope is Pilbara-wide. Within this geographic scope, both BHPBIO and Rio Tinto are rail operators – and FMG may also be a rail operator in the future. See section 3.1 above for further details.

51 If the external costs third party access imposed on BHPBIO were properly reflected in access charges, this would further increase the cost penalty experienced by potential entrants.

169 Establishment of these facilities will involve substantial sunk costs and an ongoing personnel commitment, which are relatively independent of the scale of operations — leading to scale diseconomies relative to the much larger BHPBIO operation. Under declaration, an independent would effectively have to start anew and incur these costs. Under the RTA, BHPBIO would be obliged to share these scale economies with the haulage customer.

Excessive rolling-stock capital costs

170 The independent will not be able to match BHPBIO's high axle loads, because these are the result of proprietary research and development. BHPBIO is currently operating trains at 37.5 tonne axle loads on the Mt Newman line. The ability to do so reliably is the result of continuous research and development proprietary to BHPBIO since at least 1970, when the maximum axle load was 28.5 tonnes.[52] Given the proprietary nature of this research programme, an independent train operator is not likely to be able to acquire rolling stock that would be able to match this performance. Instead, the independent would be more likely to achieve axle loadings that are in widespread use elsewhere in Australia.[53] For this reason, even if an entrant could acquire heavy axle-load ore cars, its inability to manage the interface between its wheels and the BHPBIO rails would result in unacceptably high levels of impact on rail infrastructure cost and performance.

171 The Hunter Valley coal railway in NSW provides a relevant reference point for heavy-haul standard gauge railway performance operating under a model of vertical separation. While it is true that coal and iron ore are bulk minerals with very different densities and other properties, meaning among other things that coal wagons are much larger in a volumetric sense than are iron ore cars, the factor determining the maximum size of coal wagons is the axle load limitation. Hunter Valley coal wagons dump their load through "clamshell" doors at the bottom (in contrast to the rotary dump iron ore cars). This fact means that coal wagons are not restricted in their envelope to a shape that will fit through a rotary dumper. The maximum axle loads in use in the Hunter Valley are 30 tonnes, which represents a relatively recent improvement over the 25 tonne axle loads that prevailed before the Hunter mainlines were strengthened.[54]

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52 Source: BHP Billiton Iron Ore Railroad Presentation to Analysts June 2005, Mike Darby, then Vice President, Rail.

53 The issue revolves around the detailed management of the wheel and rail profiles that permits these heavy axle loads to be operated without causing undue wear on the rail and damage to the track structure.

54 See, for example, "Delivering Reliable Australian Coal Exports to the World: Coal Transport Infrastructure", Australian Government Senior Officials Group on Coal Transport Infrastructure, 2004, p. 66.

172 The difference between the axle loads currently achieved by BHPBIO and best practice axle loads in widespread use elsewhere in Australia is sufficiently great that the independent would need to incur a higher capital cost than BHPBIO to acquire a train set capable of carrying the same payload.[55] Simply put, to carry the same payload, a rake of the independent's wagons would require a significantly greater number of ore cars and potentially locomotives. The cost penalties would have to be incurred by an independent seeking access under the TPA. Under the RTA, BHPBIO would be obliged to share the capital cost savings with the haulage customer.

Poor utilisation of trains, crew and spares

173 Given the indivisibility of train sets, difficulties in flexible crew rostering, and the inefficiency of holding spares for a small fleet of trains, the independent is likely to achieve inferior utilisation of trains, crew and spares relative to BHPBIO to deliver the haulage customer an equivalent level of availability and reliability.

174 This effect arises because of the need to organise ore wagons into fixed-size 'rakes', comprising two high horsepower locomotives pulling the number of loaded wagons. Running rakes with less than the maximum trailing load leads to underutilisation of locomotive power, the single most costly capital item in a train fleet. Running single-locomotive half-rakes creates a reliability risk: if the single locomotive fails then the train is stranded, blocking the line until another locomotive can be dispatched to haul it into a siding. An independent entrant transporting incremental quantities of iron ore is highly unlikely to achieve a comparable level of efficient capacity utilisation.

175 These arguments are likely to extend to other aspects of train operations – train crews and associated facilities. As is the case for rolling stock, the train crew of the independent train operator is likely to be relatively lowly utilised, too. Similarly, there is a minimum number of spare locomotives, spare ore wagons, spare bogies and so forth that must be kept on hand for an operation of any size. The smaller the operation, the more costly, in relative terms, it is to keep the minimum inventory of spares.

176 Additionally to these points is the fact that if an FMG train (or that of a similar entrant) breaks down on the mainline and if FMG is itself responsible for retrieving the failed train within a timeframe that will avoid severe disruption to other trains on the system, FMG would need to have emergency rescue assets constantly on hand. The cost of maintaining these rescue assets would undoubtedly be large in relation to FMG's overall fleet costs.

55 Or would have to licence the intellectual property from BHPBIO, which would also involve some degree of cost penalty.

177 Again, the central point is that under the RTA, an independent operator would not incur the costs of these diseconomies. Under the RTA, BHPBIO would be obliged to share any benefits from a large pool of trains, crew and spares with the haulage customer.

Whether cost disadvantages are likely to be overcome

178 There may be situations in which an entrant is uncompetitive at a small start-up level of output but may be able to become cost competitive by increasing in scale post-entry.

179 This is not a relevant consideration in the instant case, for at least two reasons.

180 First, the NCC has assumed that the third party use would be on a small scale.

181 Second, even if that assumption were put aside[56], BHPBIO enjoys absolute cost advantages associated with its superior technology and the extent of its presence in the Pilbara. For example, given BHPBIO's proprietary technology, it is likely that:

- Each ore car rake (including locomotives) operated by an entrant would have a maximum capacity of 4.6 mtpa (assuming, perhaps optimistically, that a rake can make one round trip per 24 hours, and operates every day of the year);
- In contrast, one BHPBIO ore car rake would have a maximum capacity of 4.8 mtpa (similarly assuming 24 hour cycle time and 365 day per year operation). The superior payload (which will result in materially lower capital cost) for the BHPBIO rake is driven by the higher axle loads (noted above);
- Were the entrant to have a standalone operation (as seems likely), it would need to have sufficient rake capacity to cater for the level of demand. It is reasonable to assume that the rake is indivisible (meaning that it would be uneconomic to divide it, for reasons noted above). Therefore, at some tonnage levels, the entrant's fleet will have substantial spare capacity;
- In contrast, BHPBIO's fleet is sufficiently large that particular rakes need not be dedicated to the RTA haulage of third party ore. The consequence of this flexibility is that "partial rakes" can be effectively allocated to RTA haulage by, say, providing the third party with 4 rakes one day and 3 the next. The fleet pooling benefits are obtained by BHPBIO in the form of increased rollingstock utilisation.

182 Given this absolute cost advantage, the entrant will have a markedly inferior cost position at every conceivable level of output short of carrying BHPBIO's own ore.

56 Noting that the NCC could not do this without compromising other, crucial, elements in its findings.

183 There is no reason to assume these absolute cost advantages will diminish over time.

184 Operating, as it does, in a highly competitive world market, BHPBIO is and will remain strongly incented to remain productively efficient in those cost elements that do not rely on scale. Given this, and the experience to date, it must be assumed that it will remain at world best practice in terms of its transport systems.

185 It is also clear that an important part of BHPBIO's strategy in terms of optimising its transport systems is to rely on close integration of the various components of its iron ore operations. There is therefore no realistic prospect of it transferring its own transport demand to an entrant (who could thereby achieve greater scale).

186 Relatedly, there is no loss-leading entry strategy that could eventually lead to a sustainable cost position unless the entrant could capture BHPBIO's own iron ore haulage business — and mimic BHPBIO's axle load performance. As neither of these requirements seems at all likely to be met, the entrant would not be capable of promoting competition in the rail haulage market, if such a market is properly defined and separate from the rail infrastructure market.

3.2.2. Conclusions on promotion of competition

187 Whether competition would be promoted depends on whether entry would be facilitated by declaration and if so, whether the entry which was thereby facilitated would act as an effective constraint on incumbent operators in the posited market.

188 Given the other constraints that are involved (such as port access), the NCC cannot properly assume that declaration would make entry possible. However, even if declaration did make entry possible, that does not mean entry would be likely or, if likely, effective.

189 As a general matter, it is well accepted that where an activity is a natural monopoly, there is no meaningful sense in which the mere fact of allowing entry enhances competition, especially when the activity involves substantial sunk costs.

190 The rail haulage service on the Mt Newman Line is likely to have a strongly subadditive cost structure (that is, to meet the economic tests for natural monopoly characteristics) because of economies of scale at all plausible levels of operation. Indeed, while it is true that marginal costs rise because of congestion effects as use of a rail link approaches capacity, even those congestion effects are better managed within a single entity than they could be when multiple users share the link. As a result, the subadditivity persists even in the range of output where marginal costs are rising.

191 An actual or potential entrant that sought to contest the Mt Newman Line on a small scale would suffer a highly material cost penalty. In the instant case, that cost penalty would be accentuated by an absolute cost disadvantage associated with BHPBIO's control of proprietary technology.

192 The fact that the entrant would need to pay track access charges significantly strengthens this conclusion.

193 To begin with, many of the relevant costs of track are fixed, and hence would efficiently be recovered through lump sum charges. These will of themselves create scale economies, in that the per unit track access charges will decrease with use.

194 Additionally, the diseconomies of scope the entrant imposed on BHPBIO would increase with the extent of its use. For the entrant's decisions to be efficient, the costs associated with those diseconomies would need to be borne by it in the form of supplementary access charges. As its use rose, therefore, it would face rising access payments, which would limit its ability to be competitive even with increased volumes.

195 Under those circumstances, entry is simply not credible. In effect, an entrant would need to incur substantial sunk costs to contest the market – those costs including the bringing together of the significant capital assets required to contest the market. However, subsequent to entry into the hypothetically separate haulage market, the entrant would face a rival that would have every ability and incentive to undercut it. As a result, entry would never occur.

196 This is all the more the case as any potential entrant would face competition from third party haulage under the RTA. In other words, while the entrant would have incurred the sunk costs needed to make use of track access, shippers could use the RTA as an alternative means of transporting third party product to market.

197 This has two implications. First, if the NCC is claiming that declaration would allow shippers to move ore to port over a merchant haulage service, any such haulage service would face the risk of being undercut by shippers relying on the RTA. Given that provision of such a haulage service would involve substantial sunk and fixed costs, it is unclear why it would ever be offered.

198 Second, the test for whether competition is being promoted must be whether effective prices would be lower (on a quality adjusted basis) than they would otherwise be. However, for the reasons set out above, supply by means of track access could not compete with supply by means of the RTA, that is, could not force lower prices or better quality than the RTA would provide. As these are close substitutes, there is no sense in which allowing track access would promote competition in the relevant market (which would encompass haulage services provided by means of track access and haulage by means of the RTA).

4. CRITERION (B): ECONOMIC TO DEVELOP

199 The NCC has erred in its assessment of the social costs and benefits of declaration.

200 The NCC's assessment of the public costs and benefits arising from declared access, as compared to a counterfactual in which FMG constructed its own rail line for Mindy Mindy, was substantially predicated on the belief that a double-tracked Mt Newman Line would emerge by 2010 with or without declaration, and that the capacity of such a double-tracked system would be 400 mtpa.

201 In the light of new information from Evans and Peck, who were the source for the previously quoted 400 mtpa capacity figure, this critical premise of the NCC's analysis has been shown to be incorrect. In particular, the new Evans and Peck report has clarified that the 400 mtpa capacity estimate was predicated on the unrealistic assumption of the absence of "end effects" at port and mine. Taking account of end effects, Evans and Peck estimate that the capacity of a double-tracked Mt Newman Line would be within the range 234 to 247 mtpa, if harbour constraints on shipping were ignored. Taking account also of harbour constraints at Port Hedland, the capacity range is further reduced: 200 to 230 mtpa. The NCC's conclusion concerning criterion (b) cannot be reconciled with this new capacity utilisation information for the following reasons.

202 First, duplication of a facility that may have appeared uneconomic when the facility had excess capacity is not necessarily uneconomic if the facility is capacity constrained. The affidavits of Bob Ridley (22 December 2005) and Phillip Price (23 December 2005) indicate that the Mt Newman rail infrastructure is currently capacity constrained, and is likely to remain so throughout all the currently contemplated capacity expansions.

203 Second, there is nothing inevitable about BHPBIO deciding to double track the Mt Newman Line. The affidavit of Phillip Price in particular discusses a range of significant capacity-enhancing measures contemplated for the Mt Newman system overall. None of these plans involves double-tracking of the Mt Newman Line, yet the timeframe of these plans extends to or beyond the 2010 date by which the NCC asserted that double-tracking would have occurred with or without declaration. If anything, the scheme of the capacity enhancements appears to involve greater reliance on port and mine investments as opposed to large increments of rail infrastructure investment.

204 Given the incorrectness of the two vital premises (existence of spare capacity post-double-tracking and inevitability of duplication) of the NCC's quantitative discussion of criterion (b), the NCC's conclusion is not supported by that analysis. This section now turns briefly to consider how that conclusion would be drawn if proper account were taken of the capacity information contained in the Evans and Peck report, and the operational information in the Price and Ridley affidavits.

205 Starting from the fact that there is currently no spare capacity on the Mt Newman Line, it would be necessary either to build new independent rail infrastructure or to make substantial investments in partial or complete double-tracking of the Mt Newman Line in order to accommodate third party tonnages. In the event that FMG's entire projected mining output of 45 mtpa were to be accommodated on the Mt Newman line, it is probable that nearly complete double-tracking would be required from the point that the Chichester tonnage enters the system.[57]

206 Thus, the construction cost comparison needed to evaluate criterion (b) is not the comparison between a new FMG rail line and squeezing FMG onto the existing Mt Newman infrastructure with minor adjustments. Rather it is between FMG building a new line and BHPBIO at the very least double tracking much of its existing line. BHPBIO has submitted material in its submissions of 6 January 2006 that the costs to FMG of building a new line would be lower than the costs to BHPBIO.

207 Against this must be weighed the scope diseconomies associated with shared use. It is difficult to quantify these diseconomies when the eventual operating parameters of the FMG supply chain are unknown, but the clear conclusions of the Monkhouse, Hoare, Price, and Ridley affidavits are that these diseconomies are of great importance to BHPBIO's ability to continue being an efficient supplier to the world iron ore market.

208 In summary, the NCC's analysis on this point should not be accepted because of its erroneous factual premises. The capital cost differential between declared access and independent rail construction is likely to be modest at the very best, but the scope diseconomies from shared use are not. As a result, the NCC cannot reasonably be satisfied that it would be uneconomical for anyone to develop another rail line to provide the service.

57 See paragraph 7.9 of the TSG report entitled, "Impacts of third party access on the Mt Newman System – Operational modelling", January 2006. That report notes that 136 km of double-tracking would be required to counteract the adverse impacts of FMG haulage of 45 mtpa on the Mt Newman Line, assuming FMG trains were as efficient as BHPBIO trains. If FMG trains were 20% less efficient, then 152km of double-tracking would be required.

5. CRITERION (F): PUBLIC INTEREST

209 The NCC's assessment that the public interest criterion is satisfied simply relies on its earlier findings in relation to criteria (a) - (e). The NCC considers that criterion (f) is satisfied on the basis of its belief that:

- Declaration would improve the opportunities and environment for competition in the Pilbara rail haulage and tenements markets, associated improvements in economic efficiencies, and economic and developmental benefits;
- Declaration would avoid unnecessary, wasteful duplication of infrastructure, and, on balance, diseconomies of scope would not outweigh the capital and operating cost savings that would flow from declaration; and
- While declaration has the potential to impose costs that could be significant, mechanisms are available to manage the risk of such costs.

210 The NCC's assessment of criterion (f) is not based on any serious attempt to weigh or quantify the nature of the hypothesised effects. However, in coming to a view of whether access (or increased access) is warranted, the NCC cannot properly limit itself to a consideration of the qualitative arguments advanced elsewhere. A finding in relation to the public benefit of declaration requires an assessment of the likely materiality and relative magnitudes of the beneficial effects identified by the NCC. That is, in assessing the public benefit, any benefits of declaration must substantially outweigh its associated costs, taking into account the inevitably considerable uncertainties and costs associated with declaration.[58]

211 This section addresses these points in turn below. More specifically, it is submitted in this section that:

- The modelling now presented by BHPBIO (and summarised in its Overview of Modelling Submissions dated 6 January 2006) confirms that declaration would impose substantial costs (including diseconomies of scope) that have material implications for both static and productive efficiency, while allowing no or little avoidance of duplication;
- Any claimed benefits from competition are, at best, slight, and would not outweigh the efficiency losses demonstrated by the recent modelling; and
- The economic risks associated with declaration are potentially substantial.

58 That this is the case is implicit in the ACT's reasoning in the *Eastern Gas Pipeline* case, discussed below in paragraph 237.

5.1. RECENT MODELLING CONFIRMS THAT DECLARATION IMPOSES SUBSTANTIAL COSTS

212 BHPBIO has now submitted updated modelling that confirms the substantial costs that declaration would impose.[59]

213 As the modelling shows, declaration would undermine the ability of BHPBIO to efficiently conduct its operations, including by increasing the costs of running the transport service, complicating the task of adjusting its operation to changing circumstances, and impeding the effective, timely and efficient planning and implementation of investment and capacity expansion. The extent of that efficiency loss to BHPBIO would be far from trivial, and would affect the entirety of its production, as well as longer term investment outcomes. The NCC would therefore be securing at most a very marginal gain in competition at the cost of a substantial, immediate, infra-marginal fall in efficiency and longer term dynamic inefficiencies.[60]

214 Moreover, given the relative magnitude of BHPBIO's contribution to the Western Australian economy, such an effect could be expected to imply corresponding adverse knock-on effects on the Western Australian economy. To the direct impacts of this efficiency loss must therefore be added any wider implications for the Australian economy of reduced competitiveness in a substantial export industry.

215 In contrast, the NCC implicitly and without proper testing assumes that cost increases from declaration to BHPBIO would be very limited, that any cost savings from avoided investment costs accruing to an entrant would more than outweigh corresponding efficiency losses, and that wider economic knock-on effects can be ignored.

5.1.1. Declaration imposes substantial costs on BHPBIO

216 We have previously stated our view that scope diseconomies associated with declared access are likely to be extremely significant, and we maintain that view. Forcing third party access on BHPBIO would threaten its ability to maintain its proven levels of responsiveness and efficiency, harming both the legitimate interests of BHPBIO and the interests of the Australian community in ensuring the competitiveness of key export-related activities. These costs are by their nature difficult to quantify as they depend on uncertain future events and outcomes. Nonetheless, the modelling that has now been submitted highlights the extent of the costs that could be imposed.

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59 BHPBIO Submission, "Overview of Modelling Submissions" and associated Documents.

60 The dynamic inefficiencies include delays to otherwise desirable investment, obstacles to the timely implementation of new technologies and changes in marginal cost that distort the efficient timing of extraction.

217 At the simplest level, third party access to the rail track service will require BHPBIO to undertake additional expenditure. The resulting costs encompass capital costs, such as additional spur lines, signalling and communication equipment, but also ongoing additional operating costs for the infrastructure and administrative overheads.

218 Additional costs would arise from the loss of scope economies that depend on unified ownership and control of the entire supply chain (and which would be compromised, amongst other things, by the presence of FMG rollingstock operating on the Mt Newman line). BHPBIO has commissioned modelling to assess the likely impact of third party access on the operational performance of the rail system, and to determine the corrective measures that would be necessary to mitigate a reduced operational performance as a result of third party access.[61] *Assuming post RGP3 levels of iron ore transportation requirements (129mtpa) plus FMG usage of 45mtpa,* BHPBIO estimates the consequential capital costs requirements to compensate for increased track delays following declaration to be in the range of $575 - $640 million.

219 These capital cost estimates are very substantial, yet they are still conservative in nature. That is, they represent the minimum capital works required to maintain BHPBIO's current performance at current throughput levels on the (highly optimistic) assumption that, inter alia, FMG's operational performance in relation to its dumping rate matches and outperforms that of BHPBIO's, and that FMG's infrastructure is designed to an efficient scale, for instance in relation to FMG's marshalling yard.[62] Even this capital expenditure might not fully offset the diseconomies of scope; there would be additional costs arising from BHPBIO's reduced ability to fully integrate above and below-rail investments and to operate flexibly on a day-to-day basis.

220 In fact, as noted above, there is unlikely to be any rail infrastructure configuration that would be optimal for both BHPBIO and FMG, as the product and business strategies of the two players are likely to be different. As a result, separate provision of rail infrastructure and train operations (with BHPBIO only providing the former, and both providing the latter) in the sense considered here would inevitably result in a less-than-efficient compromise.

61 BHPBIO Submission, "Costs of Corrective Measures to Alleviate Impacts of Third Party Access."

62 BHPBIO Submission, "Impacts of Third Party Access on the Mt Newman System, Operational Modelling."

221 The costs estimates described above also only represent an initial estimate of the direct costs of access, because they relate to BHPBIO's *post RGP3* production levels. Based on world iron ore demand and its own system capacity projections, BHPBIO's foreseeable transportation requirements are likely to be in the order of 300 mtpa inside the next 20 years.[63] Even full double-tracking of the Mt Newman system, which would have an additional estimated cost of $1,747million, would not allow those throughput levels to be achieved.

222 As a result, there is not the effective capacity available that would be required to allow third party access. Accordingly, a requirement to provide access would significantly advance in time the need for BHPBIO to undertake a major upgrade of (or replacement for) the Mt Newman Line.

223 The costs described above relate directly to the continued efficient operation of the Mt Newman line in an open access regime. They do not include additional cost penalties that are likely to arise as a result of declaration in practice, including the direct costs of disputation, and increased day to day interaction costs, specifically those arising as a result of unexpected events such as breakdowns. Those cost penalties are discussed and modelled in the material that BHPBIO has submitted.

5.1.2. Modelling highlights the costs to the Australian economy of disrupting BHPBIO's operations

224 The costs identified above relate to the more immediate direct and indirect opportunity costs arising from declaration. In the event that BHPBIO is not able to address congestion and the disruption of production schedules by way of additional, *timely* infrastructure investment, the consequences of declaration could extend far wider. Given the importance of BHPBIO's operation, not only to Western Australia, but to Australia as a whole, and strong world-wide demand for iron ore, disruption to iron ore production would result in substantial opportunity costs to BHPBIO and to the regional and entire economy. These longer term, dynamic efficiency losses are likely to far outweigh the immediate cost impacts of declaration.

63 BHPBIO Submission, "Impacts of Third Party Access on the Mt Newman System, Costs of Corrective Measures and Double Tracking".

225 There are different issues to be considered here. To the extent that declaration would effectively require BHPBIO to expand in the timeframe demanded by FMG, this would reduce its current flexibility to plan and undertake efficient expansion decisions. But reduced coordination on the Mt Newman Line may also eliminate or compromise other investment options. A relevant example in this context is BHPBIO's reduced ability to invest in driverless trains technology post declaration. This technology may deliver significant operational costs savings and performance improvements across the integrated mine/rail/port production system. Declaration could impose a delay of many years on the introduction of driverless trains, because combining driverless BHPBIO iron ore trains with FMG trains with drivers could not achieve the same efficiencies without creating unacceptable safety risks.[64]

226 More generally, economic (opportunity) costs arise from limitations on BHPBIO's ability to plan and implement a least-cost investment strategy, including because:

- Declaration may preclude alternative, more efficient investments from being made; or
- Declaration is a source of delay to BHPBIO's existing, efficient investment program.

227 The risk and associated cost of investment delays has been highlighted by BHPBIO with reference to the recently announced RPG3 expansion.[65] These delay costs are by their nature uncertain, and depend on the investment path that is eventually chosen. Nonetheless, even indicative estimates developed by BHPBIO suggest that these costs are substantial indeed. More importantly, these costs do not simply represent a direct loss to BHPBIO, but to government and the wider community, also as a result of the loss in royalties and general taxation earnings.

228 The Monash Multi-Regional Forecasting (MMRF) model was used to examine the economy wide impact on the Australian economy of a delay in investment in the Australia iron ore industry. The MMRF is a general equilibrium model that incorporates the various linkages between sectors and regions of the Australian economy, to enable an assessment of the broader 'knock-on' effects of a policy action on the economy.

64 BHPBIO Submission, "BHPB re FMG – Valuation of Costs of Declaration", October 2005.

65 BHPBIO Submission, "Costs of Delays to Investment".

229 The MMRF model has been applied in a broad range of policy contexts, most recently in the course of the Productivity Commission's review of the impact of National Competition Policy and related reforms undertaken to date on the Australian economy and the community more broadly.[66]

230 The impact on the economy of a one-year delay of a $1 billion investment in the (aggregate) Australian iron ore sector was tested.[67] To put this premise into its proper context, it is noted that 20 mtpa of additional capacity corresponding to the RPG3 project required an investment of approximately $2 billion, and it is highly likely over the next 20 years BHPBIO will expand production in the Pilbara by a further 170 mtpa. The modelling results suggest that a delay of one year, **even if it were completely made up in the subsequent year**, in a project of the size of RPG3, would result in lost output for the Australian economy of about $400 million.

231 These losses are significant, for reasons that include the following:

- The event being quantified represents only one of the several forms of cost that declaration would impose on BHPBIO and hence on the Australian economy. Other forms of cost (such as reduced reliability of service) would interact with the event being quantified, so that aggregate costs could be very much greater;

- In practice, rather than a single instance of delay, multiple, overlapping delays to the investment program seem likely, and the cost of such overlapping delays would be significantly greater than simply the sum of the costs of individual delays;

- Additionally, the estimate of the costs of even a single instance of delay is conservative as:

    a) In reality, a delay in any one year is not likely to be fully made up in the next. Indeed, the opportunity that the investment was intended to address may be entirely lost to competitors overseas, making the income loss to Australia all the greater;

    b) Even if it were possible, "catching up" would impose a cost penalty that has not been factored in to the calculation;

66 Productivity Commission, *Modelling Impacts of Infrastructure Industry Change over the 1990s*, Supplement to Review of National Competition Policy Reforms, No. 33, 28 February 2005. Other recent applications include: Victorian Treasury and the MMA Consulting Group, *Greenhouse Gas Emission Policies for Victoria*, December 2005; Allen Consulting Group, *Economic impacts of Proposed Spending on Victoria's Suburban Rail Network*, October 2005; ITS Global with Yin Hua Mai, *Trade Liberalisation Scenarios for wool under an Australia-China FTA*", July 2005.

67 See **Appendix A** for presentation and discussion of these results.

c) The MMRF database implies a low rate of return in iron ore mining operations. Were a more realistic estimate of the rate of return adopted, the economic losses would be materially greater.

232 In the time available, it has not been possible to fully compute the potential costs to the Australian economy of declaration; and as with any such Computable General Equilibrium analysis, there are obviously assumptions that need to be made for the modelling to be tractable. Nonetheless, the important point is that even a single type of adverse impact from declaration (in this case, a short and finite delay in expansion) could impose substantial deadweight losses on the Australian economy.

233 It is not clear that the NCC has properly appreciated the range of these costs, their potential magnitude, and their importance in assessing the declaration criteria.

234 In the absence of a proper assessment of these costs and how they compare with any hypothesised benefits, the NCC risks an access declaration that is decidedly not in the public interest.

235 Furthermore, mandated third party access where access prices did not incorporate opportunity costs, would amount to the de facto expropriation of BHPBIO's capital assets. BHPBIO – and similar large-scale minerals producers – would have decreased incentives to invest in further infrastructure, or would at least be more likely to delay future investments.[68]

5.1.3. Access regulation represents a further source of risks and costs

236 In assessing whether declaration would have the likely effect of reducing the efficiency and competitiveness of the Australian economy, the NCC must take account of the fact that the consequences of declaration are not certain. Rather, declaration involves risks that include those arising from the difficulties involved in predicting the extent of the diseconomies of scope that third party use of the service would impose on BHPBIO. The costs associated with those risks materialising are also themselves uncertain, as they depend on the evolution of world markets for iron ore and the resulting opportunity cost of disruptions to supply.

68 Nothing in the modelling presented in this section assumes that mandated access charges would be set at less than cost. Obviously were charges indeed so set, there would be additional costs that have not been quantified.

237 The possibility of the regulatory process imposing significant costs cannot be dismissed out of hand, given the widespread recognition of the fact that regulation is an inherently imperfect process – a recognition echoed by the Australian Competition Tribunal. Thus in the Eastern Gas Pipeline (EGP) case, the Tribunal's comment that "regulation is a second best option to competition" reflected its view that it would not be appropriate to substitute a regulated reference price for the price that EGP would charge pipeline customers.[69] The NCC cannot, in other words, properly focus on what it regards as imperfections in markets, while ignoring (and failing to bring fully into account) the costs and limitations of regulation, as if regulation could be assumed to be free of error and of cost.

238 This is all the more important as declaration would intrude regulation on to activities that even the NCC accepts operate in a highly competitive world market. In other words, this is not a case of a choice between regulation and otherwise uncontrolled monopoly; rather, it is a choice between the discipline of fully and effectively competitive markets on the one hand, and intrusive regulation on the other.

5.2. THE BENEFITS FROM DECLARATION ARE, AT BEST, SLIGHT

239 Set against these costs and likely costs, the NCC has identified benefits in the form of:

- Avoidance of duplication; and
- Promotion of competition.

240 The updated modelling that has now been submitted shows that there will be no avoidance of duplication.

241 It is consequently now possible to assess the benefits of declaration, as these will consist entirely of any gains arising from the promotion of competition. It is clear, including from the considerations set out above, that these gains are immaterial relative to the costs the modelling has highlighted.

69 *Duke Eastern Gas Pipeline Pty Ltd* [2001] ACompT 2, Para 101.

242 More specifically, the NCC claims that declaration of the Mt Newman Service would promote competition in the Pilbara tenements and rail haulage 'markets', respectively. CRA has provided extensive analysis as to why neither of these markets is likely to be a properly defined antitrust market, and further why, even if they were properly defined markets, it is unlikely that declaration would promote competition in either market. However, *even if the NCC's analysis in relation to these markets were correct,* any potential benefits resulting from declaration are likely to be slight (both because of the nature of the markets involved and because of the effect of any claimed increase in competition in the posited markets).

243 Specifically, even if the existence of a Pilbara tenements market and rail haulage market were accepted, both of these markets are insubstantial markets in the sense that:

- A Pilbara-wide iron ore tenements market, which includes neither iron ore production activities nor exploration, is unlikely to be an important market; and

- Similar views would apply in relation to what the NCC has effectively characterised as a point-to-point transportation market in a remote part of Western Australia.

244 In short, the very narrow boundaries that the NCC has ascribed to each of these markets means that – if these markets did exist as antitrust markets – they could not be considered to be markets that would be of significant importance to the Australian economy.

245 Additionally, the nature of the claimed promotion of competition in both of these markets is slight. Turning to the first of the posited markets, the effect on competition would be limited to small tenements not owned by a vertically-integrated miner that were located close to the Mt Newman Line. In relation to the second market, the prospects of transactions seem, at best, slight – and even if that haulage occurred, its impact on costs (and hence on Australian national income), relative to the likely outcome under the RTA, would be insubstantial, at least at the volumes the NCC has assumed.[70] Significantly, in the unlikely event that some form of additional competition were to develop in that part of the Pilbara region, any impact on international iron ore markets or exploration markets would be trivial.

246 As a result, even a low probability of associated efficiency costs would be likely to outweigh these claimed competitive benefits.

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70 Were the volumes transported greater than those the NCC has assumed, then this would give rise to diseconomies of scope, that would need to be treated as a cost of declaration and set against any potential benefits.

5.3. CONCLUSIONS ON PUBLIC INTEREST

247 The NCC is given a discretion to consider whether declaration would, regardless of the other factors, be contrary to the public interest. It must exercise its consideration of this criterion no less carefully or diligently than its consideration of the other criteria set out in the Act.

248 The updated modelling that has now been provided, both in this report and in other documents filed by BHPBIO, provides important new inputs to that assessment. That modelling highlights the range of costs and inefficiencies declaration would impose on BHPBIO.

249 BHPBIO has also submitted material that shows that the NCC errs in assuming that declaration would avoid social costs associated with duplication. That material concludes that under declaration, the net capital costs associated with the relevant transport services would rise, rather than fall. As a result, there are no social savings against which the costs and inefficiencies associated with declaration can properly be offset.

250 The mere fact that BHPBIO might be compensated through access charges for some or all of these costs in no way alters their assessment from a public interest perspective. Costs unnecessarily incurred remain costs, regardless of by whom they are borne, and detract from the income available to Australian society.

251 However, even if there were social savings from declaration, they would:

- Depend on the NCC's assumption that third party use occurred on only a very small scale, and hence could not give rise to material benefits; and
- Even at that small scale, be inherently uncertain, as poor reliability on the part of an access seeker (or any other factor creating scope diseconomies) would likely offset them.[71]

252 Moreover, even if the NCC continued to believe that declaration would promote competition in the markets it has identified, the extent of the social gains associated with that promotion would inevitably be slight.

71 Poor reliability (or any other factor creating scope diseconomies) would offset these savings as the *marginal* gain associated with the operations of the access seeker would be swamped by the *infra-marginal* loss associated with increasing costs to all of the much greater output of BHPBIO.

253 As a result, even a very slight risk of declaration imposing social costs of the type discussed above and identified in the material BHPBIO has submitted would necessarily lead to expected social losses. Put in other words, if there is even a slight probability that those costs will be incurred declaration would be contrary to the public interest, even if the NCC was correct in its belief that declaration would result in some avoidance of duplication. In contrast, if the NCC comes to the view that there is some reasonable (even if not very high) probability that those costs would indeed be incurred, then it cannot properly conclude that declaration is in the public interest.

254 The NCC has no basis for assuming that the risk is very low that the costs identified by BHPBIO will indeed be incurred. In contrast, there is ample material to the effect that the savings from declaration will be small and uncertain, while its costs will be significant and likely. Indeed, the NCC itself was only able to reach its conclusion that the adverse impacts of declaration would be slight by making the arbitrary assumption that there would only be very limited third party use of the BHPBIO system. These facts should in and of themselves lead the NCC to conclude that declaration would not be in the public interest.

255 Underscoring this point is the fact that the modelling presented above has shown how substantial the costs to Australia of even a single and finite delay in capacity expansion by BHPBIO could be. Given that several cost-increasing events, of different types and overlapping incidence, are likely, it is difficult to see how the NCC could find criterion (f) to be met.

256 There is, however, an additional and important consideration that goes to the policy that underpins Part IIIA.

257 The fact of the matter is that the world iron ore market is highly competitive, and the NCC itself recognises that fact. BHPBIO has no market power in that market, and there is no claim (and could not sensibly be any claim) by the NCC that it does.

258 As a result, far from this decision involving removing a bottleneck to competition in a monopoly market – as was the intention of National Competition Policy – it involves an attempt to redistribute the rents associated with resources in the Pilbara. Even if this were not in itself an entirely improper use of the section – and it would it seem to be one – it seeks, in achieving its end of rent redistribution, to disturb arrangements that have been highly successful in generating wealth for Australia in general and Western Australia in particular. This is to be done so as to accommodate an entrant that would be at best marginal in the Australian iron ore industry.

259 The likelihood must be that the entrant, far from relying on the declared service, would merely use the declaration as a bargaining chip relative to BHPBIO. By threatening to impose costs on BHPBIO's highly integrated operations, it would seek to extract concessions that would yield it commercial value. This is rent-seeking, rather than the promotion of competition in markets otherwise distorted by the exercise of monopoly power.

260 Given that this is what is involved, the NCC should be especially concerned about the degree to which it can be satisfied that the public interest criterion is met. It should weigh carefully the risk of damage being inflicted on one of Australia's most successful export industries for the sake of gains that have little or nothing to do with the policy objectives of Part IIIA.

261 It is submitted that once due weight is given to the potential harm to a large, rapidly growing and highly competitive industry, declaration would plainly not be in the public interest.

APPENDIX A: GENERAL EQUILIBRIUM ANALYSIS OF THE COST OF A DELAY IN BHPBIO'S PRODUCTION PLANS

A.1 INTRODUCTION

262 BHPBIO believes that, if the Mt Newman Service is declared, a new entrant will have opportunities to game the system and the conflicting commercial pressures of the parties will also result in disputes between the parties.

263 Resolving these disputes will require input from a regulator. However, even with the input of a regulator, disputes will not be readily solvable because of the complex nature of a vertically integrated system which will make it difficult to establish the factual background of disputes. Consequently, time will be required to resolve disputes.

264 As a result, BHPBIO will be forced to delay implementation of investment plans that will involve putting in place facilities to greatly expand BHPBIO's production. BHPBIO has already stated that the foreseeable demand for the movement of BHPBIO's iron ore in the Pilbara is potentially up to 300 million tonnes per annum (mtpa) within the next 20 years.

265 After RGP3 is commissioned in late 2007, capacity is estimated at 129 mtpa, meaning that substantial additional capacity will need to be added by 2026 (to handle growing demand). This Appendix details the methodology and results of an analysis that quantified the effects on the Australian economy of a delay in investment plans that are designed to achieve BHPBIO's expected expansion in output.

A.2 SIMULATION OF A $1 BILLION REDUCTION IN INVESTMENT IN THE IRON ORE INDUSTRY

266 We have quantified the effects of a delay in investment by BHPBIO by undertaking simulations using a Computable General Equilibrium model (CGE) model of the Australian economy.

267 We derive a set of CGE multipliers which show the impact on the Australian economy of a given delay in BHPBIO's investment plans. A hypothetical reduction of $1 billion in investment in Australia's iron ore industry is simulated.

268 The results from the simulation are then converted into multipliers and these multipliers can then be used to evaluate delays to alternate projects involving different levels of investment.[72]

269 We have used the MMRF CGE model developed by the Centre for Policy Studies at Monash University.[73] MMRF is particularly well suited to this task as it is a dynamic model that includes iron ore as one of the 52 sectors specified in the model. The version of MMRF used in this study splits Australia into eight regions, one of which is Western Australia.

270 Each of the eight regions in MMRF has a set of equations which describe economic activity in the region. The 8 regions trade with one another in the model and they each also trade with the rest of the world. When a simulation is undertaken results are provided for each region and then the model aggregates the results across the eight regions to obtain results for Australia.

271 In the time available to undertake this work it has only been possible to use a standard version of MMRF for the analysis. The standard version of MMRF does not separately identify the main iron ore producers in Australia nor does it split the iron ore industry down into a mine sector, rail transport of iron ore and port handling of iron ore.

272 The iron ore industry in MMRF also appears to earn a rate of return on capital employed that is below existing rates being achieved in the iron ore industry.[74]

273 Because we have used the standard version of MMRF we have not been able to simulate a reduction in investment in particular components of the iron ore industry. Rather we have investigated what the effects on the Australian economy would be if $1 billion of investment in the industry were delayed for one year.

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72 The model as used is linear, so the impact of varying the investment levels affected is simply derived from the multipliers as estimated.

73 COPS 2006, Economic impact of FMG/BHP Pilbara rail access, Report by the Centre of Policy Studies for CRA International.

74 This is likely to reflect differences in the quality of the resource endowments exploited by the various segments within the Australian mining sector. As iron ore has exceptionally high quality resource endowments in international terms, it would accrue relatively large Ricardian rents, which would be reflected in achieved rates of return. It is important to note that these high rates of return do not connote market power; rather, they are Ricardian in character.

274 While this is clearly aggregative, it is not unreasonable. BHPBIO's production system is highly integrated and BHPBIO has every incentive and ability to manage the system in an integrated way. Reflecting this, each component of the system would be expanded to the extent to which absent such expansion, that component would be a 'bottleneck' to output for the system as a whole (or require the making of more expensive outlays elsewhere). As a result, delaying investment in one part of the system is likely to be equivalent to choking a balanced expansion path for the system as a whole.

275 Equally, the impact of the other means by which declaration is likely to increase BHPBIO's marginal costs can be viewed as broadly equivalent to a delay in output expansion. This is because in extractive industries, increasing current marginal cost is associated with a delay in the optimal timing of exploitation. As a result, the delay impacts simulated here can provide an indication of the wider economic costs associated with the other adverse effects declaration is likely to have on BHPBIO's production costs and capacity.

276 An important part of a CGE analysis is the specification of the economic environment the simulated changes are assumed to take place in.

277 Because MMRF is a dynamic model the effects of the factor simulated are usually reported as deviations from the model's base case. In this application of MMRF, the availability of economy-wide labour in any given year of the policy simulation is held fixed at its base case level for that year. Real consumption spending by both state and federal governments in any given year of the policy simulation is also held fixed at its base case level for that year. So too are the borrowing requirements of all levels of government. The latter is achieved via endogenous determination of state and federal household direct taxes.

278 Investment in the Western Australian iron-ore industry is exogenous and the balance of trade adjusts to achieve this requirement. Real consumption moves with household income.

279 In this economic environment we have simulated a $1 billion reduction in investment in Australia's iron ore industry in 2013, followed by a $1 billion expansion in investment in Australia's iron ore industry in 2014. While the initial delay could be sooner, this is chosen so as to represent a typical delay.

A.3 RESULTS

280 The macroeconomic results are summarised in Table 1. The numbers reported are deviations from the numbers observed in the simulation of the base case.

Table 1: National macroeconomic impact

Australia	Real private consumption ($m.)	Real investment ($m.)	Real government consumption ($m.)	Real exports ($m.)	Real imports ($m.)	Real GDP ($m.)
2013	-262	-1,086	0	838	-431	-78
2014	137	992	0	-903	380	-154
2015	-5	31	0	-14	2	11
2016	3	21	0	1	6	19
2017	6	15	0	5	5	21
2018	8	12	0	7	5	22
2019	9	10	0	8	5	22
2020	10	8	0	8	4	22
2021	10	7	0	8	4	21
2022	10	6	0	8	4	21
2023	10	5	0	8	4	20
2024	10	5	0	8	3	20
2025	10	4	0	8	3	19
2026	9	4	0	8	3	18
2027	9	3	0	8	2	18
2028	9	3	0	7	2	17

281 In 2013, national investment is lower than it is in base case. The fall in investment causes the balance of trade to move towards surplus.[75] The movement towards surplus in the balance of trade is achieved via both an expansion in exports and a contraction in imports. The expansion in export volumes causes the terms of trade to decline. This contributes to the fall in real private consumption in this year. Part of the fall in real consumption spending is also attributable to the decline in real GDP. Real GDP also declines because of falls in the volumes of activities that are subject to relatively high rates of indirect taxation (namely investment and imports).

282 In 2014, there are two broad effects working. First, real GDP is well below base case because capital supply to the WA iron-ore sector is reduced in 2014. MMRF assumes a one year lag between investment and capital supply. Hence, with real investment in WA iron-ore below base case in 2013, capital supply in the WA iron-ore industry is about $1 billion below base case in 2014. This reduces the size of the 2014 national capital stock, relative to base case. This contributes to the negative real GDP deviation in this year.

283 Against this effect, investment is approximately $1 billion higher than base case in 2014. This represents the WA iron-ore investment activity that was deferred from 2013. The expansion in investment causes the balance of trade to move towards deficit. The associated contraction in export volumes causes the terms of trade to rise. The rise in the terms of trade contributes to the positive real consumption result in this year.

284 Beyond 2016 there is a lingering positive effect on the economy. In the time available, it has not been possible to fully ascertain what is driving this effect. However, it is believed that the effect is due to the persistence of a rate of return in the sector that is above its base case level. In turn, the persistence of the rate of return above base case levels is due to parameter settings in the model.

285 We believe that the lingering positive effects observed in the simulation are an artefact of the modelling. We therefore summarise the results with and without these lingering effects, although we believe the results excluding the lingering effects are the more appropriate numbers to use.

286 The results of the simulation, including the lingering positive effects on the economy are summarised in Table 2, where the results are presented as changes in net present value (using a 7 percent real discount rate) of each variable compared to the base case. For example, the results show a loss of real GDP for Australia of $61 million in net present value terms. For Western Australia, the impact is much greater, with a loss of Gross State Product of about $200 million in net present value terms.

75 This reflects the interdependence between the domestic savings/investment balance on the one hand and the balance of trade on the other.

287 Table 2 and Table 3 provide results for both Australia as a whole and for Western Australia. Western Australia is strongly affected by the delay in investment because the iron ore sector is such a large component of the Western Australian economy. However when Western Australia contracts output in the simulations, the resources which are freed up relocate to other parts of Australia. Consequently, production expands, reducing the effects of the lost output in Western Australia. Thus, the impact on Australia of the delay in investment by BHPBIO is less than the impact of the reduced investment on Western Australia.

Table 2: Overview of the results: discounted net present value terms, including the lingering effects ($ million 2005 dollars)

Australia		Western Australia	
Real private consumption ($m.)	-$71.39	Real private consumption ($m.)	-$74.75
Real investment ($m.)	-$60.00	Real investment ($m.)	-$91.36
Real government consumption ($m.)	-$0.00	Real government consumption ($m.)	-$0.00
Real exports ($m.)	$29.22	Real foreign exports ($m.)	-$144.04
Real imports ($m.)	-$41.31	Real interstate exports ($m.)	-$5.44
Real GDP ($m.)	-$60.86	Real foreign imports ($m.)	-$47.07
		Real interstate imports ($m.)	-$70.85
		Real GSP ($m.)	-$197.67

288 If the lingering positive effects on the economy are excluded from the calculations, the impact on the net present value of Australian real GDP goes from -$61 million to -$199 million and that on the net present value of Australian real household consumption goes from -$71 million to -$128 million (Table 3).

Table 3: Overview of the results: discounted net present value terms excluding the lingering effects ($ million 2005 dollars)

Australia		Western Australia	
Real private consumption ($m.)	-$128.48	Real private consumption ($m.)	-$92.58
Real investment ($m.)	-$123.12	Real investment ($m.)	-$126.88
Real government consumption ($m.)	$0.00	Real government consumption ($m.)	$0.00
Real exports ($m.)	-$16.69	Real foreign exports ($m.)	-$261.51
Real imports ($m.)	-$69.52	Real interstate exports ($m.)	$18.47
Real GDP ($m.)	-$198.78	Real foreign imports ($m.)	-$67.06
		Real interstate imports ($m.)	-$88.13
		Real GSP ($m.)	-$307.31

A.4 IMPLICATIONS OF THE RESULTS

289 As indicated in paragraph 4, it is highly likely over the next 20 years that BHPBIO will very substantially expand production in the Pilbara. Were the expansion to be of a further 170 mtpa, this would be equivalent to 8.5 times the capacity put in place via the project known as RPG3.

290 RPG3 was designed to achieve an expansion in output of 20 mtpa and involved an investment of approximately $2 billion. Suppose that, in 2013, BHPBIO were to put in place a similar project as part of its plans to further expand production in the Pilbara. We assume conservatively that such a project would cost a similar real amount as did RPG3.

291 The results given in Table 3 can be used to estimate the consequences for Australia were this project to be delayed for a year. This is because the solution to the model was linear. Hence, the impact on a variable of interest is equal to the impact observed in Table 3 multiplied by the assumed change in BHPBIO's investment in 2013 relative to the modelled $1 billion change.

292 An example may help clarify these calculations. In Table 3, the simulated reduction of a $1 billion investment by BHPBIO in 2013 was calculated to reduce real GDP by $199 million. This implies a CGE multiplier for real GDP of 0.199 ($199/1000). A delay of one year of a RPG3 type project would thus result in lost real GDP for the Australian economy of $398 million (0.199*2000). Similar calculations can be undertaken for the other macroeconomic variables given in Table 3 and the results are given in Table 4.

Table 4: Calculated macroeconomic effects of a delay of $ 2 billion in BHPBIO Investment in 2013 (NPV, $ million 2005 dollars)

Variable	CGE Multiplier ($m/$m delay in BHPBIO investment)	Investment delay in 2013 ($m)	Estimated impact of delay on Australia ($m)
Real private consumption ($m.)	-0.128	2000	-257
Real investment ($m.)	-0.123	2000	-246
Real government consumption ($m.)	-0.0000	2000	0
Real exports ($m.)	0.017	2000	-33
Real imports ($m.)	-0.070	2000	-139
Real GDP ($m.)	-0.199	2000	-398

293 These results suggest that a delay of one year in a project of the size of RPG3 would result in lost real GDP for the Australian economy of about $398 million. Obviously, the implications for Western Australia are substantially greater – these are estimated to be just over $600 million.

294 In many applications of MMRF, the change in real household consumption can be used as an indication of the change in welfare associated with the factor simulated. However, real consumption may not be an appropriate welfare indicator because:

- MMRF presently does not recognise that part of the deviation in returns to capital belongs to foreign providers of capital. The real consumption results cannot be used as a welfare indicator without making allowance for the change in foreign claims on GDP; and

- The MMRF database significant underestimates the rate of return to capital in the Iron Ore industry. Consequently, when iron ore output falls in the simulation in 2014, the model underestimates the drop in capital income accruing to Australians and, hence, the simulation results underestimate the decline in real consumption.

295 These effects are likely to be significant in the simulation undertaken. This is because there are significant changes in the balance of trade in the simulation.

296 In the time available it has not been possible to amend MMRF so that it can more accurately calculate the welfare implications of a delay in investment in the iron ore industry. That said, the results set out above provide a useful guide to the magnitudes of the effects declaration could have on Australia's economy.