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Issues Paper – Remaining Mine Life Hunter Valley coal network

Prepared for IPART

Author: Mike Smart

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SYDNEY

Level 14
68 Pitt Street
GPO Box 220
SYDNEY NSW 2000
Ph: (61 2) 9234 0200
Fax: (61 2) 9234 0201

For information on this report please contact:

Name:	Mike Smart
Telephone:	612 9234 0200
Mobile:	61 407 246 646
Email:	msmart@lecg.com

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1 BACKGROUND

The NSW Rail Access Undertaking (the Undertaking) requires IPART to review specific regulatory settings every five years. IPART is currently conducting a review of the remaining mine life of the Hunter Valley coal mines serviced by the rail network operated by ARTC and RailCorp.

The Undertaking provides that the depreciation of the regulatory asset base (RAB) of the rail infrastructure is to be calculated using a straight-line methodology and the estimate of the remaining useful life of the rail assets. The Undertaking further provides that the useful life of the relevant rail infrastructure should be determined with reference to the remaining mine life of the mines using the rail network. The revised remaining mine life is to be applied to the depreciation of the Hunter Valley coal network from 1 July 2009.

The remaining mine life was initially set by IPART at 40 years from 1999, implying a terminal year of 2039. IPART's 2004 review of the remaining mine life left the implied terminal year unchanged (IPART determined that the remaining mine life in 2004 was 35 years). IPART's 2004 decision was based largely on a consensus among stakeholders in favour of preserving the status quo.

ARTC has proposed a shortening of the remaining mine life to 22.8 years from 1 July 2009. This would bring the implied terminal year forward from 2039 to 2032.[1] ARTC's proposal is supported by a technical report it commissioned from Booz & Co.[2] Booz Allen and Hamilton, as the firm was then known, prepared technical reports for IPART in 2000 and 2004 on the remaining mine

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1 ARTC submission to IPART, 1 Dec. 2008.

2 Booz & Co., "Mine Life Assessment Hunter Valley Region," Appendix B to ARTC 1 Dec. 2008 submission.

life estimates. The implied terminal year proposed by ARTC now is virtually the same as the terminal year implied by the 2004 Booz Allen report.[3]

RailCorp, being the other rail infrastructure owner in the Hunter Valley, has declined to make a proposal concerning remaining mine life.[4]

2 STAKEHOLDER SUBMISSIONS RECEIVED TO DATE

Brief submissions have so far been received by IPART from Asciano and the NSW Minerals Council. The Asciano submission[5] indicated that, owing to the prevalence of direct contracting for access between coal owners and ARTC in the present era, Asciano no longer put itself forward as the access seeker's advocate in the debate. Consequently, Asciano did not make any specific comments on ARTC's proposals concerning the mine life issue.

The Minerals Council's submission,[6] which was preliminary in nature, signalled a concern that the shortened mine life proposed by ARTC would lead to increased access prices. It also sought a wide range of substantiating information pertaining to the Booz report.

Some of the requested information has subsequently been provided by ARTC at a highly aggregated level.[7] ARTC indicated that some of the detailed information sought by the Minerals Council was commercially sensitive and questioned the relevance of some other information that was requested.

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3 In 2004 Booz Allen, who were then IPART's consultants, recommended a shortening of the remaining mine life. However, IPART did not accept this recommendation, given the consensus that had emerged in favour of maintaining the status quo.

4 RailCorp submission, 29 Oct. 2008.

5 Asciano submission, 30 Jan. 2009.

6 Minerals Council letter of 16 Jan. 2009.

7 Additional information provided by ARTC, 15 Feb. 2009.

The Minerals Council indicated it would be making further submissions.

3 IMPORTANCE OF MINE LIFE

The Undertaking requires that:

> *'For any Access Seeker, or group of Access Seekers, Access revenue must not exceed the Full Economic Costs of the Sectors which are required on a stand alone basis for the Access Seeker or group of Access Seekers'*.

This is referred to as the ceiling test. IPART confirms that the rail infrastructure owners comply with the ceiling test each year.

The Undertaking also specifies that *Full Economic Costs* includes depreciation of the RAB which is to be calculated on a straight line basis over the useful life of the regulatory assets.

In reality the ceiling test only applies to the access revenue received from the group of mines referred to as the constrained group.[8] For the constrained group of mines the access prices paid reach but are not allowed to exceed the ceiling test calculation of full economic costs (which includes the straight-line depreciation each year of the RAB).[9] For the mines in the unconstrained group access prices do not approach the ceiling test revenue limit.

The economic life of many types of infrastructure assets is determined by the physical wear and tear caused by usage. For these types of assets the engineering life is, for practical intents, the economic life. However, other types of assets become obsolete before they have deteriorated physically. The Hunter Valley coal railway network is of this type. The programme of major periodic maintenance keeps rails, sleepers and ballast renewed indefinitely.

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8 The constrained group of mines contains those situated along the mainline between the Port of Newcastle and a point near Muswellbrook.

The calculation of full economic costs is on a stand alone basis. The access owners' under and overs account policies ensure access prices do not exceed the ceiling test as any over-recovery of costs is returned to access seekers.

Concrete bridges may last for centuries. Nevertheless, barring the discovery of some other lucrative commodity in that area, the rail network will become virtually obsolete when the coal runs out—which it must eventually. Thus the mine life is, for practical intents, equal to the economic life of the Hunter Valley network.

The terminal year is directly related to the remaining mine life:

Remaining mine life = (terminal year – present year)

The Hunter Valley network is valued on the basis of Depreciated Optimised Replacement Cost (DORC). Ignoring new investment, this falls annually in a straight line from the current value to zero in the terminal year (presently set at 2039). The slope of this line is the depreciation rate. The steepness of the DORC valuation line over time determines the amount of depreciation that can be recovered by ARTC through the ceiling revenue limit in each year. Shortening the estimated remaining mine life will make that line steeper, which will increase the amount of depreciation that may be included in the ceiling revenue in any one year. Increasing the depreciation will increase the annual revenue limit, and this will increase access prices for a given coal tonnage.

While varying the mine life will alter the pattern of capital charges over time, it will not usually affect the asset owner's life-cycle return on investment. The current DORC valuation of the infrastructure can only be recovered once over its lifetime, whether that be done quickly (short remaining life) or slowly (long remaining life). The timing of depreciation should not usually affect the net present value of infrastructure returns within the Constrained Network.[10]

Nevertheless, the infrastructure owner may prefer to receive the depreciation more quickly because that would minimise the risks of asset stranding. If the mine life had been set artificially high, and demand for rail haulage suddenly ceased at, say, the year 2020, then the DORC value at that date may be unrecoverable, and the infrastructure owner would suffer a capital loss. To

[10] The Constrained Network is the set of track sectors that are required by the constrained group of mines.

insure against this risk, the asset owner would rationally seek to "front-load" the depreciation profile over time. Obtaining a relatively short remaining mine life is one way to front-load the depreciation profile.

While asset stranding of this type may be construed as merely a transfer between rail infrastructure owner (whose asset may be stranded) and mine owners (who receive below-cost access as a result), aversion to stranding risk may deter some new infrastructure investments that could have succeeded commercially. Investment deterrence would represent a deadweight loss.

From the standpoint of the access customer, however, an artificially short mine life could have adverse consequences, too. Again, part of this consequence might simply be a transfer between miners (who pay too much) and infrastructure owners (who receive too much). However, there is a welfare issue as well. By increasing access prices in the early years, the shortened mine life estimate might make coal mine developments or output expansions unviable that may otherwise have succeeded. These foregone opportunities would also represent a deadweight loss.

Thus, while small variations of the mine life may cancel out in the longer term, there are real risks to welfare created by substantially incorrect estimates.

4 BOOZ-ARTC METHODOLOGY

In simple terms, the expected life of a given mine can be estimated by dividing its current coal reserves[11] by the expected average rate of extraction. The expected life of a given group of mines may be estimated by taking either a simple arithmetic average of the lives of the constituent mines, or a production-weighted average. The latter approach is preferable because it gives due

[11] The term "reserves" is used in a quite specific way here. It refers to the quantum of coal that has been identified as being economic to extract at current coal prices. It should not be confused with the term "resources", which refers to the quantum of coal that has been either "measured", "indicated", or "inferred". Resources are quantified without reference to the ability to extract economically. Reserves are a subset of resources.

weight to the larger mines. The present Booz report and its 2004 predecessor both employed a production-weighted average mine life to arrive at their preferred estimates.

Information on coal reserves for existing mines is in the public domain. The quantum of reserves at every mine will be influenced to some degree by the prevailing price of coal, as an increase in price makes more of the coal economic to extract (and vice versa). However, this effect, while acknowledged in the Booz report, was not taken into consideration further in arriving at the estimates.

The current rate of extraction of coal is observable for every mine, but it is difficult to translate that figure into a robust forecast average over the life of the mine. The actual rate of extraction for a given mine depends on the future prospects for international sales, specific chemical properties of its coal, geological and industrial conditions at the mine, the financial health of the mining company, and infrastructure bottlenecks at the port and on the rail system. The mining company is probably best placed to assess these factors, but its assessment may be competitively sensitive. Therefore, these assessments are not generally available either to regulators or rail infrastructure providers.

Booz has applied its industry expertise to arrive at estimates of extraction rates for specific mines. It has distinguished two cases: production unconstrained by transport infrastructure, and production constrained by anticipated infrastructure bottlenecks. The presence of infrastructure bottlenecks has a relatively minor influence on Booz' estimates of average mine life—the constraints increase average mine life by 0.3 years.

A greater uncertainty is created by the fact that coal deposits exist within the rail network's catchment area that have not yet been developed as mines. Some of these deposits represent hundreds of millions of tonnes of coal—a quantity that could conceivably extend the economic life of the rail network by many years. Booz considered two mine life scenarios that included an estimate for these as-yet undeveloped mines, but opted ultimately to rely on the mine life estimates that exclude them. Booz reasoned that the quantum of reserves in these locations, as well as the timing of mine commencement were highly uncertain.

5 ISSUES ON WHICH IPART WOULD LIKE COMMENT

A number of issues were raised by the ARTC proposal and submissions received to date. Further issues arose in the previous IPART investigations of mine life that may be worth revisiting in this round of consultation. IPART invites stakeholder comment on all of these issues.

5.1 Current terminal year

The status quo on mine life is a terminal year of 2039. This year was originally determined as a fair compromise between the 30 year life sought by the then asset owner and the 50 year life sought by the mining industry in 1999. In the subsequent 2004 review, a broad consensus view emerged among all players that the original terminal year should be maintained.

Given this history and the complications that would invariably follow any significant change to depreciation schedules, not to mention the great uncertainties surrounding both the short and long-term outlook for coal mining in the Hunter Valley, IPART would like to hear stakeholders views on the costs and benefits of amending the current terminal year of 2039.

IPART seeks comment on the desirability or otherwise of departing from the current terminal year of 2039. In particular,

- *Why would a change to the mine life be useful?*
- *What would be the advantages of any such change? What would be the disadvantages?*
- *Who would gain and lose from any such change?*
- *Are there other consequences of a change to mine life that IPART should consider in making a decision?*

5.2 Appropriateness of Booz-ARTC methodology

The methodology adopted by Booz and ARTC in its current proposal is similar in many ways to the methodology adopted in 2004. The main departure between the present Booz method and the 2004 method is in its examination of the effect of coal chain infrastructure constraints on mine life.[12]

Some of the lynchpins of the Booz-ARTC methodology are:

- The decision not to consider the possible impact of coal prices on reserves;
- The decision to employ a production-weighted average of mine lives;
- The decision to exclude from consideration mines that are not yet operating.

Regarding that last point, more is known now than in 2004 about the prospects for new mine developments, yet this information does not influence the proposed estimate for remaining mine life.

IPART seeks comment on the appropriateness of the Booz methodology and its adoption in the ARTC proposal. In particular:

- *whether Booz and ARTC are right not to consider possible impacts of coal price changes on reserves*
- *whether the current global financial situation should be reflected into the forecasts and how this might be done?*

[12] For more detailed discussion of the Booz methodology, see section 4 above.

5.3 Effect of infrastructure capacity constraints

In s2.5 of its report, Booz considers the effect of future coal chain capacity constraints on the life of mines. Figure 3, on page 8 of the Booz report illustrates the coal chain capacity forecasts in Mtpa for each year from 2009 to 2024. Capacity increases from about 110 Mtpa in 2009 to around 160 Mtpa in 2012. This is followed by an abrupt increase in 2013 to about 230 Mtpa. Subsequent to that event the forecast is for slow further expansion in capacity over the following 12 years. Booz analysis assumes that the NSW Government and the coal industry will ensure that the Hunter Valley coal chain capacity will expand such that it will be capable of meeting demand.

Relative to these capacity forecasts, the unconstrained production scenario results in very little change in the estimated mine life when compared to the constrained production scenarios. For example in section 4 of its report, Booz estimates that with no capacity constraints on the Hunter Valley coal network the average mine life would be 22.5 years (excluding prospective mines). But if capacity constrains are not removed and therefore expected mine production transported on rail to the Newcastle Prot is reduced the average mine life only increases to 22.8 years (excluding prospective mines).

Given the stated importance placed by all stakeholders on increasing the coal chain capacity and eliminating bottlenecks, it seems unexpected that the inclusion of forecast infrastructure bottlenecks has such a small effect on the average mine life, which is only 0.3 years longer when bottlenecks are in place.

IPART seeks comment on the appropriateness of the Booz approach to modelling coal chain bottlenecks in its estimate of mine life. In particular, IPART would like comments on:

- *How realistic are the Booz forecasts of coal chain capacity from 2009 to 2024?*
- *What difference might it make to the mine life estimates if a more conservative forecast of coal chain capacity expansions were to be adopted instead?*

5.4 Inclusion of mines not yet in operation

Booz and ARTC have adopted the approach of ignoring any mine that is not yet in operation when calculating the remaining mine life for the Hunter Valley overall. While any particular mine project may appear uncertain before it goes ahead, this approach appears unduly conservative when taking a long-term view of future coal production extending over more than 20 years.

Discussing methodology, the Booz report notes, p. 10, that

> "*'Prospective Mines' will be included in the evaluation on a provisional basis as there are concerns about:*
>
> - *The "Prospective mines" have a start date of 2015 and beyond which is outside the current study timeline of 2009-14.*
> - *Production levels are not based on operator information but on ARTC/HVCCLT estimates.*
> - *The estimation of Resource volumes and how they can be meaningfully converted to Mineral Reserves will affect the validity of "Prospective mines" to be included in the analysis.*"

Historically, there has been a pattern of significant coal production in the Hunter Valley coming from relatively new mines. For example, the Mt Arthur North mine, which commenced operation as recently as 2004, is intended to produce 20 Mtpa (ROM) when it reaches full production. Ten years ago, the Booz-ARTC approach might have considered this mine too uncertain to include.

IPART seeks comment on what alternative approaches should be considered to quantify future coal production from mines that are not yet in production but which are likely to make a material difference to the mine life estimate.

5.5 Treatment of lines recently joining the Constrained Group

This section deals with the potential for different depreciation treatment of different parts of the Hunter coal network, focusing on a group of mines and the associated line sectors that form what is known as the "constrained group".[13] Simply put, this group is the set of mines that pay access charges at the regulatory ceiling.[14] They are price-constrained by the ceiling test, which is binding for them. Historically, this group of mines was also known as the "Category I" mines.

The remainder of the Hunter Valley is unconstrained as to price, meaning that the regulatory ceiling is effectively far above the limit of the unconstrained mines' ability to pay. One consequence of this fact is that the rail infrastructure owner does not recover the full economic costs on track sectors that form part of the unconstrained group.

The 2004 Booz Allen Hamilton report recommended different remaining mine lives for the portion of the network managed by ARTC and the portion managed by RailCorp. At the time, IPART did not accept that part of the recommendation, maintaining instead a single mine life for the entire Hunter Valley.

In this iteration of the mine life estimates, a different version of this separate life question arises. It is possible that for the 2008 year the Ulan mine will become part of the constrained network, owing to increased tonnages from mines in that area. While it has been anticipated for some time, this is the first time that there has been a change to the boundaries of the constrained network.

A change of this sort raises some questions of the regulatory approach, on which IPART would appreciate some comments from stakeholders. For the rail infrastructure from Bengalla to Ulan, which has not previously formed part of the

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[13] It is important to note that the term "constrained" does not refer in this context to infrastructure capacity constraints.

Access revenue must not exceed the Full Economic Costs of the sectors which are required on a stand alone basis.

constrained group, ARTC and the previous infrastructure owner would not have recovered the full economic costs through access charges to date. Now that this line appears likely to become part of the constrained group (because tonnages have improved markedly relative to the costs of the line) the regulatory ceiling will start to restrict access prices for these sectors. This raises the issue of whether the ceiling test should be based on current DORC values or whether allowance should be made for past under recovery (for example via a unders and overs account).

Putting this question in another way, should bygones be bygones, or should the track owner be permitted to apply some of the forward-looking access revenues towards past under-recoveries? IPART is aware that such an approach may not be allowed under the present Undertaking as it may imply access revenue exceeding the Full Economic Costs. Depending on stakeholder's response to this issue, IPART could further investigate whether such an approach is possible under the Undertaking.

The depreciation policy becomes relevant in this context. To the extent that past access prices on the Ulan line did under-recover full economic costs, the expected return of capital did not fully materialise. That being the case, the mechanical application of a time-based depreciation schedule to the regulatory asset base would be inappropriate—the invested capital was not fully returned to the asset owner.

One way to address this problem would be to delay depreciation of the RAB for the non-constrained sectors until the access revenue was sufficient to recover the depreciation charge. That approach would ensure financial capital maintenance for the asset owner. In practical terms, what that means is that the DORC valuation for sectors newly added to the constrained group would be calculated by applying essentially near zero depreciation to the optimised replacement cost until the year in which the sectors joined the constrained group. From that point onward, the DORC valuation would decline so as to reach a value of zero in the same terminal year as applies to the rest of the constrained group.

IPART would like to receive comments from stakeholders on the following related questions:

- *Is it of interest to stakeholders to explore this approach further?*
- *Would the complexities of implementing the approach outweigh any benefits that might be achieved?*
- *Would this approach be consistent with the perceived objectives of the Undertaking?*

5.6 Implementation of any change to mine life

It has been proposed by ARTC that the current implied terminal year for the Hunter Valley rail network be changed from its current setting of 2039 to an earlier year (approximately 2032). Since the inception of the NSW Rail Access Regime and Undertaking, there has been no change to this implied terminal year.

Should such a change be made as a result of the current review, there are some questions of equity that should be considered. Would a shortening of the remaining life lead to over-recovery of ARTC's investment in the network? Would a lengthening of the remaining life lead to under-recovery of ARTC's investment? If conditions need to be applied to preclude either under- or over-recovery, what conditions should be imposed?

IPART would like to receive stakeholder views on any possible disadvantage that might be suffered either by ARTC or its customers in the event of a change (either shortening or lengthening) to the terminal year implied by the current remaining mine life.