

2017 Hunter Valley Coal Network Access Undertaking

Appendix B

December 2016

ARTC



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1 Purpose

The purpose of this Appendix is to define an appropriate methodology to establish the Remaining Mine Life (RML) for use in calculating the annual depreciation allowance for the Hunter Valley Rail Network (HVRN).

2 Executive Summary

ARTC lodged the initial version of the Hunter Valley Access Undertaking (HVAU) with the Australian Competition and Consumer Competition (ACCC) in 2009 based upon the key principles of:

- Embedding a capacity contract structure for Hunter Valley Coal Producers and other Access Holders consistent with the approach across the supply chain as recommended by the Greiner review;
- Providing a framework for the successful approval and delivery of substantial capital investments in the network to deliver the expansion of capacity requirements forecast by the Producers.

The framework proposed, and eventually approved by the ACCC, provided for rolling 10 year capacity contracts and a depreciation of the network asset based on an average Remaining Mine Life (RML) approach, defined to be the end of 2032. This framework exposes ARTC to network stranding risk based upon the gap between the contract term (10 years) and the capital recovery term (RML); which stranding risk is exacerbated by the limited security cover (a maximum of 90 days) which ARTC has over the contracted revenues. Despite these risk exposures, the framework supported capital investment of \$1.52 billion in the network from the initial lodgment and \$1.1 billion under the approved 2011 HVAU as per the table below:

Period	2008/9	2009/10	2010/11	2011 H2	2012	2013	2014	2015	Total
Total Capital (\$m)	\$185.8	\$190.3	\$68.0	\$62.6	\$527.9	\$161.4	\$225.5	\$101.0	\$1,523

The structure for recovery of capital investments in the network is significantly different from non-regulated, competitive, infrastructure environments where the investments are recovered over the term of a contract. The HVAU therefore imposes a capital recovery structure on ARTC which increases its level of stranding risk above that which would result in a competitive environment. In its review of the initial HVAU, and subsequent approval, the ACCC specifically nominated depreciation (and hence Remaining Mine Life (RML)) as the appropriate mechanism to manage stranding risk.

In the time since the lodgment of that initial HVAU in 2009 and commencement of the 2011 HVAU, and the ACCC's assessment of that RML, market changes have been such as to suggest an increase in the level of stranding risk faced by ARTC:

- The projects proposed by the ACCC as mitigants to ARTC's stranding risk in its initial assessment of that 2009 position (T4 Terminal and Shenhua coal mine in the Gunnedah Region) have not proceeded;
- 7 mines have moved into care and maintenance during the period;
- No uncontracted mines indicated as prospective in the 2011 HVAU have proceeded. In respect of the two potential mines in the Gunnedah Basin (Caroona and Shenhua) Caroona

announced they were selling back their licences to the Government due to community opposition to the development. In that announcement the Government also announced they would investigate the repurchase of the Shenhua licences;

- Australia's third largest political party has announced the closure of the Australian coal industry as announced key policy positions;
- The international parent of a significant producer was placed in Chapter 11 bankruptcy protection relevant to the United States securities legislation;
- The ownership of mines of some mines has changed to lower credit rated counterparties;
- Large multinational producers have had their credit ratings downgraded due to commodity market conditions;
- In April 2016, ARTC's credit rating was downgraded by Moody's due to adverse coal market conditions.

The ACCC has identified that, in a regulated environment such as the Hunter Valley Coal Network where maximum revenue is capped, the only demand side risk that impacts revenue is downside risk; which is ultimately borne by the infrastructure owner. With increasing international pressure on developed countries to reduce their CO2 emissions, global thermal coal forecasts reinforce the downside risk of volume reductions.

Since 2011, the global seaborne thermal coal market conditions have shifted. These changes at both a global and Hunter Valley level, have therefore contributed to an increase in the stranding and credit risks faced by ARTC. In this environment of increased risk, the Producers have proposed to exacerbate this risk by proposing that RML should nearly double; extending the uncontracted asset exposure from 6.5 years to 20 years as well as transferring significant risks to ARTC which it is not in a position to manage.

ARTC is not proposing to change the minimum security provisions to manage this increased credit risk, and believes that the principle of consistency in RML is of primary importance so proposes a continuation of the current RML term. The claim by producers on increasing RML prompted a detailed analysis of the risks inherent in their proposal. The key conclusions from this assessment are:

- The uncertainty associated with proven (7.5%) and probable (17.5%) reserves has been independently assessed and these reserves risks must sit with Producers as ARTC is not in a position to manage them;
- Mines do not produce to zero reserves in many instances and, on average, have circa 32MT remaining at closure. In addition, reserves are significantly reduced in the years leading to closure, reflecting the reality of the uncertainty on those reserves, thus demonstrating that reserves at closure is a different measure than the certainty factor;
 - A conservative estimate based on closures since the 2011 HVAU commenced indicates that 10% of reserves included in the 2011 RML either closed or did not commence production; therefore reserves should be discounted by this figure to reflect this end of life effect;
- Production utilised in the long run should reflect the maximum efficient production rate of the mine which, at a minimum, should be the contracted capacity although production rates higher than contracted indicate contracted rates is a minimum efficient level;
- Political risk is revealed in the approvals of projects. Automatic renewal of licences cannot be assumed and relicensing of projects is a risk which ARTC cannot manage and therefore cannot accept. A pragmatic position, as adopted by ARTC, is to assume the licence life is limited by the longest lived licence at the mine;

ARTC acknowledges the ACCC's position in respect of prospective mines based on a reasonable expectation they will move to production and has amended the 2017 HVAU to reflect this position. ARTC believes this expectation, as reflected in the HVAU amendment, is defined by the presence of contracted capacity and an approval to develop the mine, as these commitments demonstrate the developers have sufficient confidence in the mine commencing they have made contractual commitments creating a financial exposure to the commencement of production.

In conclusion, RML has been established as the appropriate variable to manage the stranding risk of investments. A defined period for capital recovery of investments is a key feature of investments in competitive infrastructure environments; and this principle of consistency is the key basis for ARTC's RML methodology. ARTC has demonstrated that the risk allocation in the structure of the HVAU is asymmetric, with ARTC effectively wearing the downside demand risk of the network with no compensation. The Hunter Rail Access Task Force (HRATF) RML proposal exacerbates this risk asymmetry, and seeks to transfer reserves, licence and production risk to ARTC which it cannot manage. ARTC has developed a formula which fairly allocates such risks between it and Producers; resulting in an RML less than previously calculated; consistent with market performance since the 2011 HVAU was approved. However, certainty and consistency are overarching parameters; therefore the ARTC proposal is to: provide for a zero risk change to all parties solution, compared to the Industry proposal which shifts substantial risk to ARTC with neither capacity, nor compensation, to manage those risks. This proposal is defined as:

- Maintain existing RML of 16.5 years (as at June 30, 2016);
- Recalculate the RML during the term of the HVAU if a mine becomes prospective and, should that result in an increase above the 16.5 years (as at June 30, 2016) adjust depreciation on that basis;
- Make no adjustment for mine closures during the period until the mid HVAU review; and
- Make no adjustment to security deposit provisions.

3 Background to Existing RML

3.1 Additions to the RAB

Since the initial development of the HVAU and focus on implementing the recommendations of the Greiner Review recommendations, over \$1.5 billion has been added to the RAB through investment by ARTC in the HVRN, with \$1.1 billion of this investment under the approved 2011 HVAU, as demonstrated in the table below:

Period	2008/9	2009/10	2010/11	2011 H2	2012	2013	2014	2015	Total
Total Capital (\$m)	\$185.8	\$190.3	\$68.0	\$62.6	\$527.9	\$161.4	\$225.5	\$101.0	\$1,523

The position adopted in that initial HVAU was to use the RML of the Hunter Valley mines to determine the depreciation of the network. Following consultation and assessment by the ACCC, a figure was approved by the ACCC which now equates to 16.5 years of RML as at June 30, 2016. The basis of that decision provides key insights into the optimal position for the RML in the renewed HVAU.

3.2 ACCC Decision on HVAU Submitted 2009

The ACCC found average mine life as proxy for remaining rail life was appropriate as:

- It is consistent with regulatory practice where coal is overwhelming the majority of rail traffic;
- Coal is the vast majority of traffic, currently pays virtually all fixed costs of the network and *“ARTC could expect to have significant assets stranded if its depreciation was projected beyond the average expected operating lives of the coal mines ... the ACCC considers a high expectation of asset stranding is not desirable in a regulatory setting ... a shorter average mine life is not necessarily inappropriate as it is likely to result in higher production mines, who benefit the most from the expansion of the network, paying more of the total fixed costs of the network over its life. In addition, a weighted approach will lessen the stranding risk faced by ARTC ...”*

In discussing IPART’s views that Prospective Mines should be included in RML, and also responding to the same suggestion by Xstrata, the ACCC stated:

“However, the ACCC’s view is that the inclusion of highly prospective mines is likely to be inappropriate as the reserve, production rates, timing and probability of such mines coming into production is highly uncertain. Inclusion of these mines would unnecessarily increase the stranding risk of ARTC.”

The conclusion by the ACCC in this area is compelling in that, whilst it highlights the somewhat arbitrary nature of the depreciation period for a regulatory asset, it is unlikely to impact on mining operations given the small marginal pricing impact and, critically, reduces stranding risk for ARTC and that the approach of shortening regulatory asset lives to limit stranding risk is a consistent feature of rail undertakings:

Overall, the ACCC considers that the increase in rail Access Charges caused by an assumption of an approximate 20 year mine life versus a 30 year mine life is unlikely to cause significant deferment of mining operations given the small component of the coal price that rail Access Charges constitute and has the desirable feature of lessening the stranding risk faced by ARTC on its investments. The ACCC also notes the view on shortening regulatory asset lives to limit stranding risk is consistent with the treatment of assets lives for the QR coal.

The price impacts of stranding risk are also discussed explicitly in other parts of the decision. In these sections (covering pp555-558), the ACCC provides the following conclusions:

Overall, the higher coal prices now being observed and likely to be present for much of the regulatory period, and the large complementary sunk investment planned in the short to medium term on the basis of forecast prices, indicates ARTC should face relatively low stranding risk on its investments.

Supporting this description of complementary sunk assets, the ACCC particularly references Shenhua constructing its own terminal as part of its Gunnedah development and the construction of a potential 4th terminal at the Port of Newcastle.

In discussing the management of stranding risk the ACCC concluded that it should generally be accounted for in cash flows but an adjustment to asset beta is inconsistent with the assumptions of the Capital Asset Pricing Model (CAPM) thereby implying the only method to manage via cash flow is via depreciation.

The ACCC does conclude ARTC overestimates the extent of stranding risk on the new investments; however given hindsight, the supporting evidence for this overstatement suggests this confidence was misplaced as none of those complementary investments designed to decrease stranding risk occurred.

3.3 ARTC Credit Rating

In April 2016, the credit rating agency Moody's announced a two notch downgrade of ARTC's credit rating due to "the company's rising exposure to weak coal market conditions". An independent ratings agency therefore concluded that the stranding and credit risks to which ARTC was exposed had increased because of adverse coal market conditions; consistent with the ARTC position that its stranding risk have increased since the 2011 HVAU rather than decreased.

3.4 Investment Recovery in a commercial environment

The purpose of economic regulation of infrastructure exhibiting the characteristics of a natural monopoly is to replicate the terms of access in a competitive environment to ensure that competition is not distorted in related markets.

The question of the applicable RML and depreciation to apply to the HVRN is one of the capital recovery of the asset. Given that the vast majority of the asset base reflects the \$1.52 billion of investment made since the initial lodgment of the undertaking, the question is therefore one of capital recovery of recent investments.

The investments in the capacity of the Hunter Valley were undertaken on the basis that the capital would be recovered over the period to end 2032. In addition to the discussion above about depreciation being the appropriate tool for managing stranding risk, comments by the ACCC in its draft 2013 Compliance Assessment decision, highlighted depreciation as a key risk management tool for ARTC in managing its investment risk (at p36):

Further, the ACCC considers that the array of existing mechanisms in the HVAU, such as take-or-pay contracts, accelerated depreciation, the rate of return, the unders and overs accounting framework in addition to loss capitalisation adequately compensate ARTC for the risks associated with its investments on the Hunter Valley Coal Network and in particular in Pricing Zone 3.

Whilst ARTC would dispute the use of the term "accelerated" given that none of the complementary projects quoted by the ACCC to support its view that ARTC downplayed its stranding risk in 2011 occurred, the acknowledged principle that the depreciation mechanism in the 2011 HVAU supported the substantial investments which occurred in the HVRN under the current HVAU is critical.

This principle is key because the mechanism of recovering investment capital over an approximate 20 year time horizon is consistent with competitive, commercial practice. In its comments on gas pipelines in its 2016 Review of East Coast Gas Markets ("Gas Inquiry"), the ACCC highlighted that incremental capital was recovered over the term of the contract underpinning this investment. This

approach is therefore standard commercial practice. Whilst the ACCC raised issues with the returns earned on those investments, and the tariff post capital recovery, the practice of recovering capital over a set period, was not disputed.

Given the HVAU mechanisms in respect of the RAB and application of the WACC; neither of these anti-competitive concerns relate to the HVRN. ARTC accepts both of these mechanisms; however the interaction between RML and capital recovery term is of critical concern to it.

The HVAU limits contract term to 10 years; therefore ARTC is exposed to stranding risk between the contractual term and HVAU depreciation limit as it has no guarantee of recovering its investments. In comments on the initial submission, Industry sought to set the term of the HVAU equivalent to the RML, but dismissed out of hand a verbal suggestion by ARTC to then align the term of the contracts to the HVAU and RML term. With key commercial parameters subject to a 5 year review, the only risk a Producer is exposed to in extending its contract terms is capacity risk. Therefore, at the same time as proposing a significant extension of the RML, Producers were not prepared to accept the reserves risk implied by this position (by way of a longer term contract) yet seek to impose the same on ARTC. This is not a practice consistent with competitive markets, where the investment is underpinned by a take or pay contract which allocates the reserves risk to the Producer; the party best able to manage that risk.

Stranding risk is therefore managed in competitive environments via contract terms and, as acknowledged by the ACCC, by depreciation in regulated environments; and hence by RML in the case of the HVAU. The stranding risk in the HVRN is equal to the gap between the contract term and the RML defined in the HVAU (especially given the rejection by Industry of linking the terms). Given that the option of removing stranding risk via contract is denied ARTC, it is critical that the depreciation does not increase the risk profile underpinning the significant investment made under the HVAU.

The principle of investment certainty is critical to ARTC. As will be demonstrated below, ARTC believes that an objective and reasonable allocation of reserves and licence risk delivers an RML below that accepted by the ACCC in 2011 HVAU; however the principle of investment certainty trumps this risk allocation and hence the ARTC position is to maintain the RML that underpinned the investment within the HVAU.

3.5 Credit Risk

The contracts create a further risk to ARTC being credit risk. This risk is managed by security provisions in the AHA's, however that security only covers a minimum of 90 days of a 10 year contract. The changes in the ownership of the Hunter Valley mines since the initial HVAU, as well as re-ratings of existing producers, has resulted in ARTC facing an increased credit risk. Whilst ARTC is not proposing to amend its security provisions to address this increased risk, the rising nature of credit risk in the Hunter Valley requires noting.

3.6 Gas Inquiry

The Gas Inquiry undertaken by the ACCC analysed in detail the contracting principles that exist within the pipeline sector of the gas market. This analysis found that incremental investments were underpinned by contracts which guaranteed the recovery of capital over the length of a foundation contract; although monopoly pricing power caused concern in two instances – being the return earned on the foundation contract and the pricing post the expiry of that contract (given the capital has been repaid). Neither of these options are relevant to the HVAU as the return is specified in the approved undertaking and the revenue cap is a function of the depreciated asset base, so once the capital has been recovered, the tariff will represent the direct cost of providing access.

Critically, the ACCC highlighted that changes in demand impact on the ability to over and under recover the construction cost.

The prices charged by pipelines that have already recovered the cost of construction are higher than would be the case under full regulation. The Inquiry recognises that a range of factors may result in a pipeline operator being able to 'over recover' the cost of

construction. Many have little to do with the exercise of market power. For example, an unexpected increase in demand later in the life of a pipeline may enable it to 'over recover' its construction costs even if it faces effective competition. Equally the pipeline could 'under recover' if demand was unexpectedly low, though the chances of this are reduced by the use of long-term GTAs.

While this is the case, if the pipeline was subject to full regulation under the NGL and NGR, the scope to charge prices that 'over recover' the cost of providing the service would be limited because one of the more fundamental principles in the NGR is that an asset should only be depreciated once over its economic life.¹²⁶ In effect, this means that once the value¹²⁷ of the asset has been recovered from users, regulated prices would be based on the forward looking cost of operating and maintaining the pipeline (including the cost of carrying out any future capital works). This principle was adopted in at least two of the GTAs that were provided to the Inquiry, with provisions in these GTAs providing for prices to fall once the cost of construction had been recovered.

This analysis highlights the asymmetric nature of risks to which ARTC is exposed. Given the workings of the combinatorial model and the revenue cap under a structure of full regulation (as noted above), ARTC has no ability to over recover on costs as its total revenue is capped. Higher demand, therefore, would result in return of revenue via the unders and overs process and not over recovery of revenue by ARTC. However, the ability to recoup an under recovery because of a fall in demand is uncertain given this can trigger an vicious circle of cost increases, making more production uneconomic, reducing demand further, increasing costs further and forcing further reductions, further increasing costs, etc. The demand risk of the asset is therefore asymmetric as it eventually only falls on ARTC.

The ACCC's comments in both the 2011 HVAU approval, where depreciation is the appropriate tool to manage stranding risk, and the Gas Inquiry, where demand falls represent a risk of under recovery of an asset reinforce ARTC's proposed position to maintain RML; delivering investment certainty and an appropriate risk allocation mechanism.

4 Demand Risk of the HVRN

Coal market demand risk developments are optimally analyzed by an assessment of the global market trends as well as Hunter Valley specific trends. These developments highlight the downside nature of market risk arising from:

- pressure on demand arising from requirements to lower emissions from generation fleets; and
- pressure on supply from political and community opposition to coal mining developments.

ARTC's assessment of these risks is provided in a confidential attachment to this Guide with the conclusion reflected in the points above that there is downward pressure on both demand and supply. Recognition of these risks should, in no way, be taken as support of ARTC in opposition to coal developments; ARTC is merely highlighting the existence of the risk and that the structure of the HVAU results in ARTC bearing this downside risk with no compensating exposure to any upside benefits.

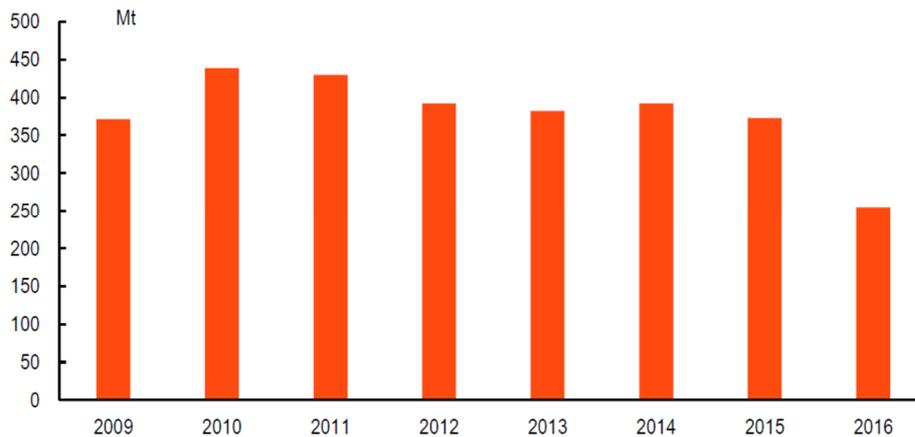
As a relevant guide to what can happen to mature producing coal basins, the recent performance of the Powder River Basin provides a useful case study.

4.1 Powder River Basin

The Powder River Basin provides a relevant case study on the demand risks faced by a mature, consistent quality coal region in the face of declining market. The Powder River Basin has been the largest coal producing region in the United States with the advantage of consistent quality (low ash) coal. This is similar to the comparative advantage enjoyed by the Hunter Valley with its consistently high quality thermal coal (with a further competitive advantage arising from cooperation across all mines in blending quality). Coal Production in the Powder River Basin reached a recent high of

close to 450 MTpa in 2010. The March quarter 2016 production figures declined by 30% to 63 MT as a function of a combination of higher strip ratios and costs associated with longer lived mines plus declining demand for thermal coal due to a shift in generation fuel away from coal.

Powder River Open-Cut Mine Production



Source: AME

This chart highlights that quality is not a barrier to market destruction and the combination of market destruction and higher strip ratios (due to end of life impacts) driving up costs delivers impacts that are significant and immediate. Further increasing the costs of the remaining reserves would place even greater pressure on those volumes, resulting in further decreases in production and leading to a vicious cycle of increased costs and decreasing demand.

5 HRATF Proposal

The Hunter Valley coal producers tabled a position on RML on 23 August, suggesting that despite the prevailing market conditions, the RML of the Hunter Valley has increased from 16.5 years (as at July 1 2016) to 30 years. This position represents an increase of over 36% from the RML of 22 years they proposed to the ACCC on 16 March 2016 in their submission on 2016HVAU lodged with the ACCC by ARTC on 23 December 2015.

The key methodologies contained in this proposal are highlighted below

5.1 Proposal Methodologies

- All marketable reserves are included at 100% certainty;
- All marketable reserves are produced to zero;
- All licences are assumed extended;
- Prospective Reserves are included provided they are deemed, by the Producers, to have a reasonable chance of development;
- These reserves are numerated by 2016 production – which, based on data provided by HRATF is substantially below the 2014 figures they used previously

5.1.1 Reserve Uncertainties

Marketable Reserves are developed based upon the JORC code and provide a consistent basis for calculating resources and reserves for companies to use in releases to investors. This provides for a

consistent base for analysis and investment decisions by potential investors, lenders and analysts. ARTC is not disputing the basis of the JORC code or its application by producers.

ARTC does, however, dispute the way that these Reserves have been utilized in the RML calculation and the risk allocations provided therein.

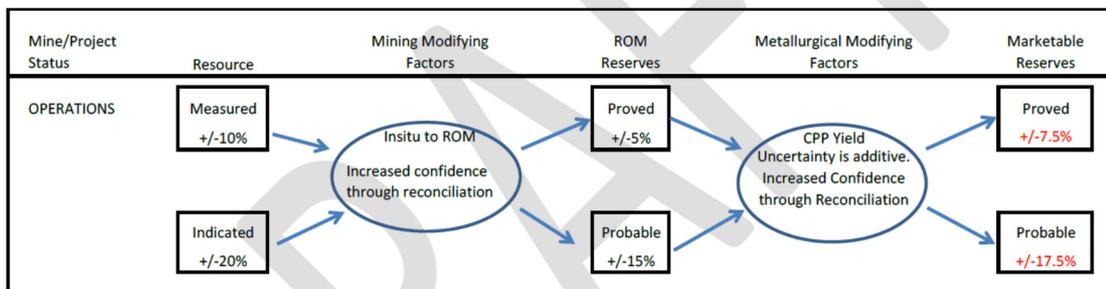
Coal Reserves (also referred to as Ore Reserves) are the economically mineable part of a Measured and/or Indicated Mineral Resource. Coal Reserves in the JORC Code are subdivided into Proved and Probable to reflect the confidence in the underlying resource estimate and the associated mine planning Modifying Factors, Modifying Factors are considerations used to convert Mineral Resources to Ore Reserves. These include mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental and government factors, Marketable Reserves allow for practical yields in a beneficiation plant.

Marketable Reserves are a subset of Coal Reserves and are equal to the sumproduct of Proven (P1) Reserves and Probable (P2) Reserves at the relevant mine yield.

In order to make an assessment of the accuracy of the Marketable Reserves for a project / mine, a number of items should be considered, with varying degrees of confidence reflecting whether a Reserve is calculated as P1 or P2:

- Geological Confidence,
- Modifying Factors applied in the estimation of Coal Reserves,
- Modifying Factors applied in the estimation of Marketable Reserves (if required), and
- Level of study / Project status.

The chart below summarizes the impact of these assessments and highlights the uncertainty ranges associated with the calculation of P1 and P2 reserves:



ARTC therefore proposes that rather than assuming marketable reserves have no risk, that Proved Reserves are based upon a 92.5% Confidence interval and Proven 82.5%. These uncertainty risks reflect Reserves Risk and are not capable of being managed by ARTC; but are the business of Producers to accept and manage these risks.

It is therefore ARTC's position that accepting Reserves at 100% confidence exposes ARTC to significant Reserves risk that it is unable to manage. Therefore Proven and Probable reserves that establish Marketable Reserves be discounted by the relevant Probability factor to that class of reserves.

These calculations are supported by the attached report which is strictly Confidential between ARTC and the ACCC.

5.1.2 Mines Produced to Zero

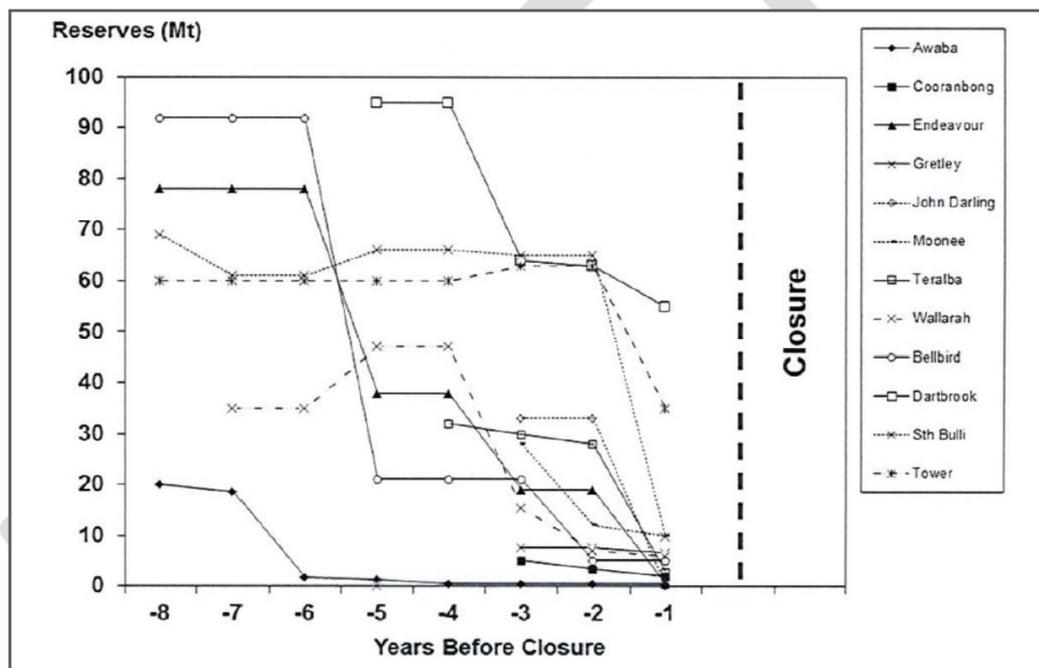
The development of mines typically focus on the reserves closest to surface first and then move to deeper reserves over time, with increasing strip ratios (reflecting the amount of rock removed per ore produced). This was exhibited by the Powder River example above where the increased costs of production resulted in significant declines in commercial viability.

In a 2014 study by M. Creech, *Reserves, Reserves and not a Tonne to Mine – A Study of Reserves Reported Prior to Mine Closure*, there were two critical findings:

- Over 62 mine closures since 1975, an average of 32 MT of Reserves remained unmined;
- In the years leading up to the mine closure, the stated reserves of the mines were substantially reduced.

The following table details the findings in respect of remaining reserves, whilst the chart below demonstrates the reserves reductions in the years leading up to mine closure:

Category	Total		Underground		Open cut		New South Wales		Queensland	
	n	Mt	n	Mt	n	Mt	n	Mt	n	Mt
Reserve depletion	39	32	25	8	14	37	22	14	17	15
Uneconomic	34	40	25	43	5	58	23	43	11	30
Geology	6	30	6	30	0		5	30	1	30
Other	22	59	17	39	9	100	13	45	9	94
Totals/average	101	33	73	29	28	61	63	32	38	38



These findings are consistent with the Powder River Basin example above, in that they imply that as the reserves decline, the cost of extraction of those reserves increases; initially driving a decrease in the stated reserves and then forcing mine closure with reserves remaining in the ground.

The decline in reserves leading to closure is a function of the uncertainty principle discussed above and highlights that making allowance for reserves in the ground is a separate risk.

ARTC has undertaken a detailed analysis of the behaviour of Hunter Valley mines since the commencement of the 2011 HVAU and, in that short period alone, has identified that the combination of relevant mine closures and mines included but not commenced, accounted for a total of 430 MT of Reserves, or 10% of the total Marketable Reserves included in the 2011 Calculation. This analysis is summarized in the table below:

EXISTING MINES INCLUDED IN 2011 HVAU BUT CLOSING, CEASING PRODUCTION OR PLACED ON CARE AND MAINTENANCE					
	2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	ACTUAL SALEABLE PRODUCTION FROM 2009	2011 HVAU MARKETABLE RESERVES NOT REALISED	TOTAL 2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	PROPORTION OF TOTAL
PRICING ZONE 1	161	49	113	2544	4%
PRICING ZONE 2	0	0	0	1270	0%
PRICING ZONE 3	28	1	27	479	6%
HUNTER VALLEY TOTAL	189	50	140	4293	3%
PROJECTS INCLUDED IN 2011 HVAU RML ESTIMATE BUT NOT COMMENCING 2009-14					
	2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	ACTUAL SALEABLE PRODUCTION FROM 2009	2011 HVAU MARKETABLE RESERVES NOT REALISED	TOTAL 2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	PROPORTION OF TOTAL
PRICING ZONE 1	224	0	224	2544	9%
PRICING ZONE 2	0	0	0	1270	0%
PRICING ZONE 3	67	0	67	479	14%
HUNTER VALLEY TOTAL	290	0	290	4293	7%
ALL EXISTING MINES AND PROJECTS INCLUDED IN 2011 HVAU RML ESTIMATE NOT REALISING ESTIMATED MARKETABLE RESERVE					
	2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	ACTUAL SALEABLE PRODUCTION FROM 2009	2011 HVAU MARKETABLE RESERVES NOT REALISED	TOTAL 2011 HVAU MARKETABLE RESERVES (2008 ESTIMATE)	PROPORTION OF TOTAL
PRICING ZONE 1	385	49	336	2544	13%
PRICING ZONE 2	0	0	0	1270	0%
PRICING ZONE 3	95	1	94	479	20%
HUNTER VALLEY TOTAL	480	50	430	4293	10%

ARTC is therefore proposing that all reserves used in the RML calculation be reduced by 10% to account for this end of life impact. Whilst this is a more conservative figure than applying the long term average of 32 MT remaining per mine, ARTC is happy to utilize the recent, conservative, 10% impact demonstrated by its analysis of mine closures included in the 2011 HVAU.

5.1.3 Licence Risk

Social licences have developed into a critical informal factor in mine developments. The recent policy direction in NSW evidenced by the repurchase of the Carroona licence by the NSW Government, suggests the risk of licence approvals is increasing.

This is not a risk that ARTC can manage, and therefore lies within the remit of the Producers themselves.

ARTC has undertaken an analysis of the licences attached to each mine and, in the interests of conservatism, is prepared to accept an exposure to the longest dated approval that exists in respect of each mine, but not beyond that.

The ARTC proposal is therefore that the mine life calculated for each mine to be used in the weighted averaging process, is capped by the longest dated mine that applies to that mine. In this manner, ARTC is limiting its allocation of the relicensing risk that attaches to each mine; a risk it is unable to manage.

5.1.4 Prospective Mines

In considering the issue of Prospective Mines in its determination of the 2011 HVAU, the ACCC was unequivocal in its view that the inclusion of highly prospective mines in the RML calculation would increase the stranding risk of ARTC:

“However, the ACCC’s view is that the inclusion of highly prospective mines is likely to be inappropriate as the reserve, production rates, timing and probability of such mines coming into production is highly uncertain. Inclusion of these mines would unnecessarily increase the stranding risk of ARTC.”

ARTC agrees with this principle and believes that this should be reflected in the RML methodology for the new HVAU.

The HRATF proposal is for Prospective Mines to be included where a mine satisfies any one of the following three tests:

- It is licenced; or
- It has contracted export capacity; or
- It has a reasonable expectation of production in the coming 5 year period (where this reasonable expectation is based on the Producers’ expectation).

Application of this methodology was such that, as at August 8, Caroona was still being proposed as a mine that met these benchmarks. ARTC highlights this example merely to show that satisfaction of one leg of this test is not sufficiently high a benchmark to allow for inclusion, as this does not change a mine from being highly prospective.

ARTC is comfortable to accept a methodology that allows for prospective mines to be included in the calculation, provided they have a reasonable expectation of development and where that reasonable expectation is based upon objective facts being:

- It is licenced; and
- It has contracted for export capacity

By satisfying both legs of this test, the mine has demonstrated that the owners are sufficiently confident of its production to contract for its future capacity and to fund the licence approval process to completion. This funding commitment by Producers is the only objective test for determining a reasonable expectation of production as, if it is not prepared to commit funds in securing capacity for the project, it cannot be confident of the development proceeding.

The reference to contracted rates is also critical as this allows the mine life calculation to be based on an objective test reflecting the commitments of the Mine Producer; rather than an arbitrary 30 year allowance for each mine.

ARTC is therefore comfortable to accept the inclusion of Prospective Mines with a reasonable expectation of production into the calculation methodology; where that expectation is confirmed by capacity and licence commitments made by the relevant Producer.

Further, ARTC is prepared to make the adjustment to the RML calculation for any mine that meets the criteria during the term of the HVAU in the pricing notification period immediately following the test satisfaction; and not await the mid HVAU review of RML.

5.1.5 Production

HRATF has proposed that the denominator for the RML calculation be the latest production figures, which is 2016 Production as per their August 2016 position for a RML of 30 years.

ARTC believes there are critical logical inconsistencies in this proposal, which transfers significant risk to ARTC.

In its April 2016 submission to the ACCC and the accompanying proposal of 22 years RML, HRATF used production figures from 2014. These figures are substantially higher, in aggregate, than the 2016 figures used to support a 30 year RML.

Although proposing a lower production number, HRATF have also proposed a Reserves base that, in aggregate, has substantially increased. The outcome of proposing a higher numerator and a lower denominator is the increase in RML from 22 to 30 years.

The proposal that whilst economic production levels have declined the available economic reserves have increased is logically inconsistent.

Assuming that producers are rational economic agents, they will produce to the point that price is greater than the marginal cost of operations. Given they are rational, the contracts Producers have entered into with ARTC for contracted capacity must reflect their view of the efficient production level of the mines based upon their view of future market conditions. As identified in the analysis of the JORC code, Reserves are calculated within a certainty band based on future economic production. The contracted rates of production and the reserves calculation are therefore linked in that they both reflect future economic production.

If the level of production is lower than contract, then a logical reason for this is that the production is uneconomic. If the production is uneconomic, and this is forecast to continue into perpetuity, then this must also be reflected in a reduction in reserves as clearly that difference (between efficient and actual production) is never forecast to be produced and so those reserves must be uneconomic. The fact that HRATF have proposed increased reserves, demonstrates they do not believe those reserves are uneconomic. These positions are therefore logically inconsistent and the use of an arbitrary (low) annual production rate is inappropriate and rejected by ARTC.

Given that the current level of contracts on the ARTC network is below the system capacity, and that producers are producing at below their efficient rate; a producer may choose to under contract and rely on the risk of Ad Hoc services or capacity trading to meet its needs. The contracted position is therefore its minimum efficient production level and, if production is higher than contracted capacity this higher figure is a clearer representation of its efficient level. ARTC is unable to assess the contracting strategy for each mine, but does not believe it should be exposed to risks arising from that contracting strategy.

Therefore, consistent with the use of reserves as the numerator in the RML calculation, ARTC believes that the denominator reflect the efficient production level of that mine which is reflected in the greater of its historic production or future contract levels.

5.2 ARTC RML Calculation

The ARTC proposal is to continue to calculate the weighted average mine life for the Hunter Valley based on an assessment of the mine life for each mine, which is then weighted by its contribution to the total Reserves across the Hunter Valley.

The application of this methodology is shown in the confidential spreadsheet attached and delivers an outcome of approximately 15.5 years (as at 1 July 2016).

Every mine that satisfies the test of licence and contract is included and, as stated above, if a mine meets this objective threshold during the term of the HVAU, the RML will be recalculated for inclusion in the immediate next pricing period.

5.2.1 Investment Certainty

The other key element of ARTC's RML position is consistency with the investment decisions that underpinned the expansion of the network under the previous HVAU. ARTC acknowledges that there were mine based investments at the time too, such that the conditions that supported these investments by both sides should continue ensuring certainty of investment conditions to both sides.

Therefore, although ARTC's calculation for RML is lower than the current 16.5 years (which reflects the deteriorating market conditions since the 2011 approval); ARTC is proposing that the existing RML be maintained.

The calculation that ARTC is proposing is therefore the greater of the product of the weighted average RML equation (as above) or the existing RML of 16.5 years (as at 1 July 2016).

5.3 Asymmetry of Risk

The discussion above highlights that, in a regulated environment, demand risk is asymmetric and sits with the infrastructure owner. This is because over recovery of revenue is regulated away, so demand fluctuations can only result in an under recovery of revenue by the investment owner. This is entirely consistent with the highlighted discussion on stranding risk by the ACCC in its approval of the 2011 HVAU:

Overall, the ACCC considers that the increase in rail Access Charges caused by an assumption of an approximate 20 year mine life versus a 30 year mine life is unlikely to cause significant deferment of mining operations given the small component of the coal price that rail Access Charges constitute and has the desirable feature of lessening the stranding risk faced by ARTC on its investments. The ACCC also notes the view on shortening regulatory asset lives to limit stranding risk is consistent with the treatment of assets lives for the QR coal

This statement implies that, in the view of the ACCC, a 50% increase in RML provides little substantive benefit to Producers in the context of the overall coal chain profitability. The risk of setting an RML that is too short is therefore minimal in the context of existing mine profitability; especially as those producers would experience a substantial reduction in tariffs once the assets are fully depreciated as there is no longer capital to earn a return of or on; an issue highlighted by the ACCC as a benefit not a risk.

As the ARTC position is to maintain the existing RML, there is also no risk to investment decisions made by Producers under the prevailing HVAU; as any such decisions would have reflected the current reality, which is being maintained. Further, such decisions reflect the alternative reality of a competitive environment where expansion investments are recovered over a set term; but where the post foundation contract tariff would only reflect efficient operating costs as all capital is recovered.

Maintenance of the current RML, ARTC's position, therefore presents no risk to Industry, reflects competitive contract realities and maintains the level of stranding risk accepted by ARTC when it approved the substantial capital investments under the existing HVAU.

In the counterfactual, however, an effective doubling of RML would represent, as accepted by the ACCC, a substantial increase in the stranding risk of ARTC and exposes it to reserves risks substantially beyond contracted limits; risks Producers were not prepared to accept themselves. In addition, ARTC would be accepting licensing risk, particularly the loss of a mine's social licence, plus exploration and development risk of prospective mines. ARTC is an infrastructure owner and is not positioned to manage reserves risk, licence risk nor development risk as well as the global market risks it faces in the declining coal environment that is only likely to accelerate as the ratification of the Paris agreement accelerates.

ARTC is not compensated for any of these risks and, because of the gap between contract and RML, is not in a position to pass them on. This risk is not just for ARTC, but also for longer lived Producers who are effectively cross subsidizing shorter life Producers by paying for their required capacity into the future. As mines close and the volume of production declines, the pool of mines over which capital is recovered declines; increasing their costs to the point at which it is no longer economic for them to pay the full asset cost transferring the stranding risks to ARTC. ARTC is then stuck with the choice of accepting the stranding risk and writing off its assets, or placing more mines under economic stress leading to further closures. In a world of declining coal demand, this vicious cycle of risk and pricing ensures that ARTC will be exposed to substantial write downs of capital; reflecting risks it did not accept at the time of committing to these projects.

This analysis therefore shows that, where the ACCC accepts ARTC's RML position of continuation of the existing position, no party is exposed to a change in risk; this is effectively a zero risk decision. That is, maintenance of the existing RML neither increases risk to Producers nor decreases risk to ARTC; it maintains the existing levels.

Acceptance of the HRATF proposal, however, exposes ARTC to a substantial increase in stranding risk through the transfer of Reserves, Licence, Market and Development risk to ARTC; risks it is neither capable of managing nor compensated for accepting.

The risk of the RML is therefore substantially asymmetric with a zero risk position on the one hand versus a substantial increase in risk for which the party is neither able nor compensated to manage on the other.

6 Conclusion

In this paper ARTC has addressed the following key issues:

- The competitive norm for the recovery of capital underpinning capacity expansions for infrastructure is over a set contracted period;
- ARTC is proposing the continuation of the current RML, consistent with this competitive norm;
- The HRATF proposal attempts to transfer significant risks from Producers to ARTC substantially increasing its level of stranding risk. ARTC is neither capable of managing nor compensated for accepting these risks which include:
 - Reserves Risk;
 - Production Risk;
 - Development and Exploration Risk;
 - Market risk
- ARTC has demonstrated that the ACCC, in its approval of the 2011 HAVU, accepted both:
 - the transfer of stranding risk to ARTC by way of a longer RML is asymmetric as the alternative presents no risk to Industry; and
 - stranding risk is managed through depreciation (RML) not WACC
- The coal demand for industrialized nations is under significant stress arising from the Paris agreement and a focus on reduction of emissions. This greater environmental focus is not only reducing market demand, but also placing significant risks on supplies as political and community activism increases;
 - Offsetting increases in demand for developing countries do not alleviate this market risk as they will be focused on price and lower quality coals, as well as local demand.
- ARTC has defined, via a Confidential Independent Report, Reserves risk as reflecting uncertainty bands that underpin Reserves calculations under the JORC code and has defined these as:
 - 92.5% for Proven Reserves
 - 82.5% for Probable Reserves
- ARTC has demonstrated the significant end of life reserves risk that eventuates through significant revisions in stated reserves leading up to closure (reflected in the confidence intervals above) but also in substantial remaining reserves left in the ground at closure equal to 32 MT on average in NSW since 1975;
 - ARTC has also assessed that, in a much shorter period, 10% of included reserves in the 2011 HVAU either shut or did not proceed;
 - This principle is also highlighted by the Powder River Basin case study in the US, where the combination of market destruction and end of life economics has delivered extensive declines in production;
- ARTC has discussed the risk of social licences and that assuming licences will be extended in perpetuity is no longer reasonable in the current environment. It has established the longest lived licence for all mines and used this as a conservative cap for calculating a mine's life;

- ARTC has identified the logical inconsistency in the HRATF proposal of using low production in tandem with increased reserves and proposed that the use of the maximum of contracted or actual production reflects the true economically efficient production levels consistent with the use of Reserves;
- ARTC has proposed a mechanism to include Prospective mines based on a reasonable and objective assessment of its potential to become a Producing mine; where that assessment is based on Producers committing to capacity;
- ARTC proposes a calculation for RML that delivers an outcome lower than that assessed under the previous HVAU; which is consistent with global stresses the coal market is under and a deterioration in market conditions;
- The critical, and overriding, principle is one of investment certainty; therefore ARTC is proposing to maintain the existing RML to deliver that certainty; despite the RML calculation being less than existing.

