

## PURPOSE

This paper is a supporting paper to the RML Methodology paper published on the ACCC website on February 23, 2017. The analysis provided below reflects analysis of the data provided by HRATF in its various RML proposals, as well as data supporting the ARTC RML methodology in respect of the end of mine life and license renewal risk allocations.

The purpose of this paper is therefore to present the summary findings of investigations into the mine lives of the Hunter Valley Coal Mines (Mines) served by ARTC's Hunter Valley Rail Network (HVRN), as part of ARTC's 2017 Hunter Valley Coal Network Access Undertaking (2017 HVAU). The investigations focus on estimates of the remaining life of Mines used to determine Remaining Mine Life (RML) for use in calculating the annual depreciation allowance for the HVRN under the 2017 HVAU.

In this paper summary findings are presented for the following investigations.

- Review, confirmation and comparison of proposals made to ARTC by the Hunter Valley Rail Access Task Force (HRATF) in April and August 2016 against publicly available information at the time.
- Identification of Mines used in the determination of RML accepted by the ACCC for the ARTC 2011 Hunter Valley Coal Network Access Undertaking (2011 HVAU) that have closed, ceased production or have been placed on care and maintenance during the term of the 2011 HVAU and determination of the impact on the RML for the 2011 HVAU.
- Review of the status of exploration and mining applications and licences for Mines.

The investigations have been carried out by a consultancy for ARTC. The investigations have been conducted as a desk-top review of relevant publicly information available at the time of the investigation. Where relevant, the investigations have referenced reserves and production data provided confidentially to ARTC by the HRATF as well as some internal ARTC data. Where relevant the types of publicly available data referenced by investigations includes:

- Company Annual Reports, JORC Resources and Reserves Reports and company announcements where publicly available for the period between 2013 and 2016. Small adjustment to reserves estimates have been made to align to reporting period to the relevant comparator dates;
- 2014 NSW Coal Industry Profile published by the NSW Government (2014 CIP); and
- NSW Department of Industry – Energy and Resources website  
<http://www.resourcesandenergy.nsw.gov.au/> Applications & Approvals - Current Titles Status Reports<sup>1</sup>

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<sup>1</sup> <http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/applications-and-approvals/current-titles-reports-applications-and-services/title-status-reports>

**REVIEW, CONFIRMATION AND COMPARISON OF HRATF PROPOSALS****HRATF April 2016 Proposal**

In April 2016, the HRATF provided to ARTC estimates of Production and Proven and Probable Marketable Reserves by Mine indicated as pertaining to 2014 for what it considered to be both existing and prospective Mines. Proven and Probable Marketable Reserves for existing Mines totalled approximately 3.4bT and, for prospective Mines, totalled approximately 1.2bT.

Prospective Mines considered by the HRATF included Mount Pleasant, West Muswellbrook, Bylong, Caroona, Vickery and Watermark. Given the sale of Caroona's license back to the NSW Government on 11 August, 2016, ARTC has excluded Caroona from the analysis.

The HRATF also reported estimated Production at 237mT for existing Mines in 2014 and 41mT for prospective Mines. The Production figures were used to propose an RML for the HVRN of 22 years. Saleable Production should also be reasonably closely aligned to volumes railed (once production transported by other means where applicable has been excluded).

ARTC has undertaken a comparison of the Proven and Probable Marketable Reserves against commonly used industry references including the 2014 CIP, and other publicly available sources including company reporting, where available for 2014. Data identified is, where available, compliant with the Joint Ore Reserves Committee (JORC) guidelines.

**Reserves Comparison with 2014 CIP**

ARTC found that, in most cases, HRATF estimates of Proven and Probable Marketable Reserves at existing Mines in 2014 aligned to those identified in the 2014 CIP, and where not aligned, HRATF estimates were generally lower. The table below shows a comparison of HRATF estimates of Proven and Probable Marketable Reserves at existing Mines with those identified in the 2014 CIP.

EXISTING MINES	HRATF v 2014 CIP COMPARISON					
	Mines Aligned	Mines Not Aligned	Marketable Reserve Tonnes Aligned	Marketable Reserve Tonnes Not Aligned		HRATF Tonnes Variance
				HRATF	2014 CIP	
<b>PZ1 Existing Mines</b>	18	7	2034	265	557	-292
<b>PZ2 Existing Mines</b>	4	0	668	0	0	0
<b>PZ3 Existing Mines</b>	5	1	717	4	41	-37
<b>All Existing Mines</b>	<b>27</b>	<b>8</b>	<b>3420</b>	<b>269</b>	<b>598.1</b>	<b>-329</b>

In total, the HRATF estimate of Proven and Probable Marketable Reserves for existing Mines is 329mT (around 8%) less than that identified in the 2014 CIP. It is found that the discrepancy largely arose from some Mines south of Newcastle not being included by the HRATF.

Regarding prospective Mines, the 2014 CIP generally only reports Mineral Resources, rather than Reserves. Mineral Resources are identified at earlier stages of the development of a mining project and with far less confidence. With respect to the prospective Mines considered for inclusion by the HRATF, the HRATF appears to have taken around 30% of Mineral Resources as being an estimate of Marketable Reserves that

may be identified in the future for a prospect in some cases where Reserves data is not identified. The table below describes treatment with respect to prospective Mines.

PROSPECTIVE MINES	TOTAL RESOURCES (TONNES)	TOTAL RESERVES (TONNES)		NOTES
	VARIOUS	HRATF	2014 CIP	
Mount Pleasant (Prospective)	571	326	326	Reserves data aligns with 2014 CIP.
West Muswellbrook (Prospective)	621	186	0	2014 CIP identifies Resources but not Reserves. HRATF estimate based on 30% of Resources.
Bylong (Prospective)	423	127	0	2014 CIP identifies Resources but not Reserves. HRATF estimate based on 30% of Resources.
Caroona (Prospective)	NA	300	0	No 2014 CIP Resources or Reserves estimate. BHP state 260mT ROM in Gateway application.
Vickery (Prospective)	537	180	180	Reserves data aligns with 2014 CIP.
Watermark (Prospective)	932	100	0	2014 CIP identifies Resources but not Reserves. Basis of HRATF estimate unclear.

### Reserves Comparison with other publicly available information

ARTC has undertaken a review of Marketable Reserves information identified in company reporting and other available reporting. ARTC has found that in most cases Marketable Reserves data reported in the 2014 CIP (and so HRATF Reserves data) was aligned to Marketable Reserves data found in 2013 annual reports and other available reporting for many relevant mining companies. This reporting predominantly relates to the 2013 calendar year. The table below shows a reconciliation of Proven and Probable Marketable Reserves data provided by the HRATF against the 2014 CIP and 2013 company reporting.

EXISTING MINES	HRATF v 2014 CIP v COMPANY REPORTS 2013 COMPARISON							
	HRATF aligned to 2014 CIP and 2013 Company Report		2014 CIP and 2013 Company Report aligned only (generally HRATF not provided)		HRATF aligned to 2014 CIP but not to 2013 Company Report (generally 2013 Company Report not available)		No alignment (generally HRATF not provided)	
	Mines	Reserves (Tonnes)	Mines	Reserves (Tonnes)	Mines	Reserves (Tonnes)	Mines	Reserves (Tonnes)
<b>PZ1 Existing Mines</b>	14	1945	5	265	4	89.2	2	0
<b>PZ2 Existing Mines</b>	4	668	0	0	0	0.0	0	0
<b>PZ3 Existing Mines</b>	4	580	1	4	1	137.0	0	0
<b>All Existing Mines</b>	<b>22</b>	<b>3194</b>	<b>6</b>	<b>269</b>	<b>5</b>	<b>226.2</b>	<b>2</b>	<b>0</b>

ARTC has found that around 93% of the HRATF estimates of Proven and Probable Marketable Reserves are aligned to the 2014 CIP which is, in turn, is around 94% aligned to 2013 reporting by companies.

As such, it could be concluded that a substantial majority of 2014 estimates Proven and Probable Marketable Reserves for existing Mines provided by the HRATF are aligned to available industry and company reporting, but that the estimates are aligned more so to the 2013 calendar year rather than the 2014 calendar year.

**HRATF August 2016 Proposal**

In August 2016, the HRATF provided to ARTC updated estimates of Production and Proved and Probable Marketable Reserves by Mine indicated as pertaining to 2016 for what it considered to be both existing and prospective Mines. The updated estimates were based on information provided by Castalia Strategic Advisors (Castalia). Castalia indicated that, in most instances, the most recent reported data was for 2015, and then adjusted for production to estimate 2016 reserves. In two instances, where the data was older, additional adjustment was applied to bring all data to the consistent 2016 basis.

Proved and Probable Marketable Reserves for existing Mines totalled approximately 4.0bT and, for prospective Mines, totalled approximately 1.2bT. Based on the estimates, the RML for the HVCN has been updated to 30 years.

Prospective Mines considered by the HRATF now included Mount Pleasant, Bylong, Caroona, Vickery and Watermark. West Muswellbrook was not included. Given the sale of Caroona's license back to the NSW Government on 11 August, 2016, ARTC has excluded Caroona from the analysis.

The HRATF also reported 'Current Production' (indicated as 2015) at 163mT for existing Mines in 2014 and 30mT for prospective Mines. The Production figures were used to propose an RML for the HVRN of 30 years.

**Comparison with other publicly available information**

ARTC has undertaken a review of Marketable Reserves information identified in available 2015 company reporting and other available reporting, including sources identified by the HRATF (Castalia). ARTC has found that in most cases Marketable Reserves data reported by the HRATF had 31 December 2015 currency. The table below shows a reconciliation of Proven and Probable Marketable Reserves data provided by the HRATF (Castalia) against updated information sourced by ARTC for 2016.

CASTALIA ESTIMATES		CONFIRMATION		VARIATION TO 2016 ARTC ESTIMATES			
Pricing Zone		MARKETABLE RESERVES	PRODUCTION	MARKETABLE RESERVES (-ve = CASTALIA LOWER)		PRODUCTION (-ve = CASTALIA LOWER)	
		%	%	mT	%	mTpa	%
1	Confirmed	93%	96%	-246	-7%	-9.57	-8%
	Unconfirmed	7%	4%				
2	Confirmed	90%	75%	-90	-11%	-9.8	-21%
	Unconfirmed	10%	25%				
3	Confirmed	30%	56%	-156	-13%	-6.4	-16%
	Unconfirmed	70%	44%				
Hunter Valley	Confirmed	80%	85%	-492	-9%	-25.77	-12%
	Unconfirmed	20%	15%				

ARTC has confirmed 80% of Proven and Probable Marketable Reserves and 85% of Production.

- **Pricing Zone 1 variation** – HRATF excludes Mandalong (85mT, 5.2mTpa) and prospective West Muswellbrook (186mT, 6.2mTpa).
- **Pricing Zone 2 variation** – ARTC Marketable Reserves at Wilpinjong is 90mT higher based on company report. HRATF has not included around 7mTpa domestic production at Wilpinjong.

- **Pricing Zone 3 variation** – Higher ARTC Marketable Reserves at Watermark (60mT) and Maules Creek (110mT) based on company forecast and updated Whitehaven reserves. Reserves are marginally lower at other Whitehaven mines due to updated advice. Higher ARTC production at Maules Creek (3mTpa), Vickery (1.5mTpa) and Watermark (2mTpa) based on future company expectations.

### Comparison of August and April HRATF Proposals

The table below shows a comparison of Proved and Probable Marketable Reserves and Production submitted in the April and August 2016 HRATF proposals. The April proposal relates to 2014 (shown above to be largely aligned to 2013) and the August proposal relates to 2016 (likely to have 31 December 2015 currency).

Pricing Zone		2014 HRATF (APRIL 2016)		2016 HRATF (AUGUST 2016)	
		Marketable Reserves	Production	Marketable Reserves	Production
1	Existing	2299.3	161.7	2709.4	104.1
	Prospective	512.0	17.1	474.0	8.0
	<b>Total</b>	<b>2811.3</b>	<b>178.8</b>	<b>3183.4</b>	<b>112.1</b>
2	Existing	668.1	45.1	566.0	32.8
	Prospective	127.0	4.2	127.0	4.2
	<b>Total</b>	<b>795.1</b>	<b>49.3</b>	<b>693.0</b>	<b>37.0</b>
3	Existing	759.1	29.9	739.5	26.2
	Prospective <sup>1</sup>	280.0	9.3	278.0	7.8
	<b>Total</b>	<b>1039.1</b>	<b>39.2</b>	<b>1017.5</b>	<b>34.0</b>
Hunter Valley	Existing	3726.5	236.7	4014.9	163.1
	Prospective <sup>1</sup>	919.0	30.6	879.0	20.0
	<b>Total</b>	<b>4645.5</b>	<b>267.3</b>	<b>4893.9</b>	<b>183.1</b>

<sup>1</sup> Excludes Caroona

ARTC has found that Marketable Reserves estimates have increased by around 5%, and Production estimates have fallen by around 30% over the period.

- **Pricing Zone 1 variation** – Significant increase in Marketable Reserves reported by Rio Tinto at Bengalla (90mT), Hunter Valley Operations (400mT) and prospective mine Mt. Pleasant (150mT). Reduced Production estimates for many of the larger mines including Bulga (7mTpa), Mount Arthur (7mTpa), Mount Thorley (7mTpa)
- **Pricing Zone 2 variation** – Marketable Reserves and Production estimates have declined significantly by 90mT and 12mTpa respectively in the August 2016 proposal. Domestic production may have been excluded.
- **Pricing Zone 3 variation** – Maules Creek production has been estimated at around 6mTpa less in the August 2016 proposal.

## Comparison of the August 2016 HRATF Proposal with estimates used for the 2011 HVAU.

In 2011, the ACCC approved an RML for the HVRN of 22 years to apply in 2010 as part of its acceptance of the 2011 HVAU.

The approved RML was based on estimates of Marketable Reserves proposed by ARTC to the ACCC as at 2008 and life-of-mine Production profiles. The table below shows a comparison of 2016 Marketable Reserves and Production as proposed by the HRATF in its August 2016 proposal with those proposed by ARTC to the ACCC in 2010. Average Life-of-mine Production levels are implied in by the Production profiles in the 2010 ARTC proposal for those mines forecast to still be producing in 2016 at that time. At the time Hunter Valley Coal Supply Chain throughput was forecast to increase from around 95mTpa in 2008 to well over 200mTpa.

Pricing Zone		2016 HRATF (AUGUST 2016)		2011 HVAU (2008)	
		Marketable Reserves (mT)	Current Production (mTpa)	Marketable Reserves (mT)	Implied Life of Mine Average Production (mTpa)
1	Existing	2709.4	104.1		
	Prospective	474.0	8.0		
	<b>Total</b>	<b>3183.4</b>	<b>112.1</b>	<b>2894.1</b>	<b>143.0</b>
2	Existing	566.0	32.8		
	Prospective	127.0	4.2		
	<b>Total</b>	<b>693.0</b>	<b>37.0</b>	<b>920.1</b>	<b>45.1</b>
3	Existing	739.5	26.2		
	Prospective <sup>1</sup>	278.0	7.8		
	<b>Total</b>	<b>1017.5</b>	<b>34.0</b>	<b>478.5</b>	<b>23.3</b>
Hunter Valley	Existing	4014.9	163.1		
	Prospective <sup>1</sup>	879.0	20.0		
	<b>Total</b>	<b>4893.9</b>	<b>183.1</b>	<b>4292.7</b>	<b>211.4</b>

<sup>1</sup> Excludes Caroona

The table shows that 2016 HRATF Marketable Reserves estimates are higher than that proposed to the ACCC in 2010. This mainly occurs in Pricing Zone 1 and Pricing Zone 3. On the other hand, the level of Production is well below forecasted life-of-mine averages in Pricing Zone 1.

- Pricing Zone 1 Variation** – A 10% increase in Marketable Reserves estimates since 2008 due to upgrades for Hunter Valley Operations (300mT in 2014 and 2015), Mt. Arthur (375mT around 2010) and Mt. Pleasant (120mT in 2014) as reported by coal companies. These more than offset mine depletion and closures that have occurred since 2008. Production levels less than forecasted averages due to production downgrades, several mine closures (e.g. Donaldson, Newstan, Integra, Ravensworth UG, Drayton) or delay in planned developments (e.g. Drayton South).
- Pricing Zone 2 Variation** – Reserves reduction is largely due to downgrades and depletion and possible exclusion of domestic production at Wilpinjong. Offset by inclusion of prospective Bylong mine (127mT, 4.2mTpa). Also, lower than average production levels at Ulan and Moolarben.

- **Pricing Zone 3 Variation** – Significant increase in Marketable Reserves and Production due to inclusion of Maules Creek (349mT, 7mTpa), and now prospective mines Vickery (178mT, 4.5mTpa) and Watermark (159mT, 3mTpa). Partly offset by mine depletion.

**IMPACT OF MINES THAT HAVE CLOSED, CEASED PRODUCTION OR HAVE BEEN PLACED ON CARE AND MAINTENANCE ON THE RML FOR THE 2011 HVAU.****Identification of Mines that have closed, ceased production or have been placed on care and maintenance during the term of the 2011 HVAU**

The table below shows those mines that were included in the approved RML estimate for the 2011 HVAU as proposed to the ACCC in 2010 that have closed, ceased production or have been placed on care & maintenance since the commencement of the 2011 HVAU.

MINE	PRICING ZONE	ACTION	YEAR	HVAU FORECAST TERMINAL YEAR
ABEL UG	1	Care & Maintenance	2016	2029
AWABA UG	1	Ceased Production	2012	2029
DONALDSON OC	1	Ceased Production	2013	2011
INTEGRA OC & UG	1	Care & Maintenance	2014	2009 (OC) 2017 (UG)
NEWSTAN UG	1	Care & Maintenance	2008/2014	2024
RAVENSWORTH UG	1	Care & Maintenance	2014	2020
STRATFORD OC	1	Care & Maintenance	2014	2022
SUNNYSIDE OC	3	Closed	2012	2023
TASMAN UG	1	Ceased Production	2013	2029
UNITED UG	1	Care & Maintenance	2010	2010

The table below shows prospective mines included in the RML estimate for the approved 2011 HVAU on the basis that they were planned to commence production during 2009-2014 but, for various reasons, are yet to have commenced production.



MINE	PRICING ZONE	ACTION	YEAR	HVAU FORECAST COMMENCEMENT YEAR
DARTBROOK (PLANNED OC/UG)	3	Project yet to commence production		2010
DRAYTON SOUTH PROJECT (FORMERLY SADDLERS CREEK)	1	Project yet to commence production		2010
MOUNT PLEASANT (PLANNED OC)	2	Project yet to commence production		2014
MOUNT THORLEY (PLANNED UG)	1	Project yet to commence production		2009-14
NEWSTAN EXTENSION (FORMERLY NEWSTAN LOCHIEL/AWABA EAST)	1	Project yet to commence production		2009-14

### Impact on the RML for the 2011 HVAU

The table below shows the impact on the extent of Marketable Reserves assumed in 2008 and proposed to be included in the approved 2011 HVAU of:

- existing mines that have closed, ceased production or have been placed on care & maintenance since the commencement of the 2011 HVAU; and
- prospective mines (projects) included in the 2011 HVAU RML estimate based on planned commencement of production during 2009-2014, but are yet to commence. Note the exclusions below.

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

This reveals that Marketable Reserves included in the approved 2011 HVAU would have been 10% less if these unrealized volumes were not included. It should be noted that the table above excludes the impact of:

- Bickham OC was forecasted to commence production in 2012 and 36mT was included in the approved Marketable Reserves in the 2011 HVAU. It is understood that this proposal was rejected by the NSW Government in 2010. The company reported in 2012 it is considering feasibility as an underground mine. Inclusion of this proposal in the table would increase the overall Hunter Valley impact from 10% to 11%. This also highlights the relationship between licensing risk and its impact on ARTC's stranding risk;
- the Mount Pleasant project not commencing during 2009-14 which should have technically been included. This has been excluded due to the likelihood of commencement in near future reported by its owner. Inclusion would have resulted in an increase in unrealised Marketable Reserves that were included in the approved 2011 RML estimate of 349.9Mt and increase of the overall Hunter Valley impact from 11% to around 19%.

## REVIEW OF THE STATUS OF EXPLORATION AND MINING APPLICATIONS AND PERMITS FOR MINES.

The NSW Government (Department of Industry – Resources and Energy) prescribes the following types of authorities to permit the development of mining opportunities in NSW under the Mining Act 1992.

### **“Exploration licences**

*An exploration licence gives the holder the exclusive right to explore for the specified mineral group(s) within the exploration licence area, during the term of the licence. The purpose of exploration is to locate areas where mineral resources may be present, to establish the quality and quantity of those resources and to investigate the viability of extracting the resource. The granting of an exploration licence does not give any right to mine, nor does it guarantee a mining lease will be granted with the exploration licence area.*

### **Assessment leases**

*An assessment lease is designed to cater for situations between exploration and mining. The lease allows the holder to maintain an authority over a potential project area, without having to commit to further exploration. The holder can, however, continue exploration to further assess the viability of commercial mining.*

*The assessment lease may be appropriate where:*

- *a mineral resource has been proven and the feasibility of mining established but the project is not currently viable, although it has potential to be developed in the foreseeable future, or*
- *there are areas of mineral potential which are natural extensions to existing operations or projects, but it is currently impractical to apply for a mining lease.*

### **Mining leases**

*A mining lease gives the holder the exclusive right to mine for specified minerals within the mining lease area during the term of the lease. In addition to allowing mining, a mining lease permits prospecting operations and prescribed mining purposes to be conducted in association with mining operations. A mining lease for mining purposes only may also be applied for.*

*A mining lease area may also include any associated infrastructure and must be consistent with the development consent area.*

*Development consent under the Environmental Planning and Assessment Act 1979 must be in place before a mining lease can be granted.”<sup>2</sup>*

An existing or prospective Mine may be covered by a range of authorities of the above types, which may cover different parts of the land owned or leased by a mining company. The type and extent of authorities may also vary over time to reflect the ongoing use of any land. Each authority permits an activity for a prescribed period, after which an authority may be renewed upon application, or another authority may be put in place upon application.

As an illustration, Australian Pacific Coal, a company currently considering mining opportunities around the current Dartbrook mine in care and maintenance, describes its tenure in the area on its website as follows:

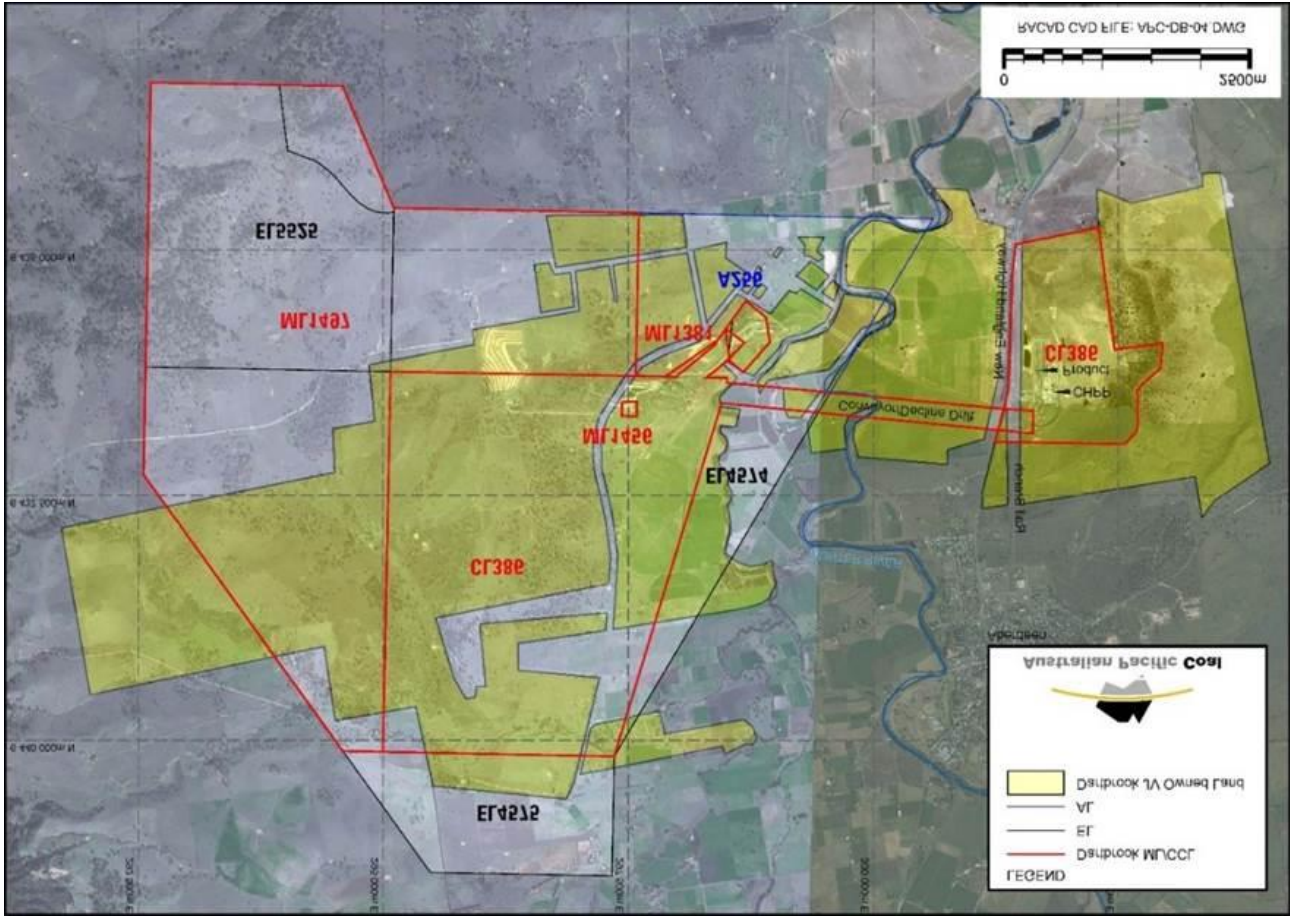
*“Mining leases and coal lease cover a total of 3,268 hectares.*

*Overlapping exploration leases cover 3,800 hectares. Large freehold land package of over 3,400 hectares covering the majority of the potential open cut mining area.”<sup>3</sup>*

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<sup>2</sup> [http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/applications-and-approvals/mining-and-exploration-in-nsw/coal-and-mineral-titles#\\_types-of-authorities](http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/applications-and-approvals/mining-and-exploration-in-nsw/coal-and-mineral-titles#_types-of-authorities)

<sup>3</sup> <http://www.aqcltd.com/irm/content/dartbrook-mine.aspx?RID=423>



**Review of Mine Exploration, Assessment and Mining Authorities**

ARTC has conducted a review of the current coal titles and applications (as at 15 December 2016) published in the website of the NSW Department of Industry – Resources and Energy. The table below shows for each Mine, the number of current authorities and applications, the number of licenses/leases (exploration, assessment and mining) in place and the latest expiry date for these.

	AUTHORITY (MINING ACT 1992)	APPLICATIONS	LICENCES					NOTE
	AUTH	ELA, MLA	EXPLORATION LEASES EL	LATEST EXPIRY	ASSESSMENT LEASES AL	MINING LEASES CCL, CL, CML, ML, MPL	LATEST EXPIRY	
<b>PRICING ZONE 1</b>								
Abel		1	2	2017		3	2035	Care & Maintenance
Ashton		3	2			4	2035	
Austar		1	1	2016		16	2036	
Awaba UG						1	2028	Ceased Production
Bengalla						6	2037	
Bloomfield		1				1	2029	
Bulga Complex	2	1	3	2019		5	2036	
Chain Valley		1				16	2031	Not served by HVRN
Donaldson			1	2017		1	2020	Ceased Production
Drayton	1					3	2029	
Duralie						2	2032	
Glendell						5	2033	
Hunter Valley Operations	1	4	6	2019		26	2036	
Integra	2		2			12	2033	Care & Maintenance
Liddell						4	2028	
Mandalong	1	2	5	2019		9	2037	
Manning	1		1	2017		3	2026	Ceased Production
Mount Arthur	2	1	1	2017		11	2037	
Mount Owen	3	2	1	2019	1	7	2036	
Mount Thorley		1	1			1	2023	
Muswellbrook	1					3	2026	
Myuna UG			2	2017		3	2036	
Newstan	1		2	2017		13	2035	Care & Maintenance
Ravensworth East						4	2028	
Ravensworth Narama & North	1	4				14	2036	
Ravensworth UG		1	1	2017		17	2036	Care & Maintenance
Rixs Creek		1				2	2031	
Stratford	2	1	1	2017		7	2036	Care & Maintenance
Tasman			2	2017		1	2025	Ceased Production
Wambo			1	2019		7	2032	
Warkworth		1				4	2028	
West Wallsend						6	2029	To close
Westside OC						10	2035	Ceased Production
Dellworth (Prospective)			2	2018				
Drayton South (Prospective)	1		1					
Ferndale (Prospective)			1					
Mitchells Flat (Prospective)		1				1		
Monash (Prospective)			2	2016				
Mount Pleasant (Prospective)	1	1				3	2036	
Rocky Hill (Prospective)		1	3					
Sandy Creek (Prospective)						1	2023	
Savoy Hill (Prospective)			1	2018				
Spur Hill (Prospective)		2	1	2019				
Wallarah 2 (Prospective)	1	4	3	2020				
West Muswellbrook (Prospective)					1			
<b>PRICING ZONE 2</b>								
Mangoola			1	2019	1	1	2029	
Moolarben			3	2020		5	2036	
Ulan		5	2	2017		11	2035	
Wilpingong		1	2	2019		1	2027	
Cobbora (Prospective)		1						
Bylong (Prospective)	2	3						
<b>PRICING ZONE 3</b>								
Boggabri	1					1	2032	
Dartbrook UG	1		3	2016		4	2033	Care & Maintenance
Maules Creek	1		1	2018		2	2036	
Narrabri			1	2019		1	2029	
Rocglen (Belmont)						1	2029	
Sunnyside			2	2017		4	2033	Closed
Tarrawonga		1	1			4	2034	
Werris Creek						3	2033	
Bickham (Prospective)			2	2017				
Caroona (Prospective)								Licences returned.
Dartbrook (Prospective)								
Vickery (Prospective)	1		4	2018		5	2036	
Watermark (Prospective)			1					

Renewal Sought  
Some authorities could not be allocated to mines, or have been allocated with some uncertainty.

The data indicates that the longest current mining lease for Mines ranges between 2020 (4 years) and 2037 (21 years) with most Mines having a longest current mining lease between 2026 and 2029 (10-14 years) and between 2035 and 2037 (19-21 years).

On the other hand, current exploration licences for Mines only extend out a few years to 2020 (4 years).

## ATTACHMENT 1

**Types of Authorities****Exploration licences**

An exploration licence gives the holder the exclusive right to explore for the specified mineral group(s) within the exploration licence area, during the term of the licence. The purpose of exploration is to locate areas where mineral resources may be present, to establish the quality and quantity of those resources and to investigate the viability of extracting the resource. The granting of an exploration licence does not give any right to mine, nor does it guarantee a mining lease will be granted with the exploration licence area.

**Assessment leases**

An assessment lease is designed to cater for situations between exploration and mining. The lease allows the holder to maintain an authority over a potential project area, without having to commit to further exploration. The holder can, however, continue exploration to further assess the viability of commercial mining.

The assessment lease may be appropriate where:

- a mineral resource has been proven and the feasibility of mining established but the project is not currently viable, although it has potential to be developed in the foreseeable future, or
- there are areas of mineral potential which are natural extensions to existing operations or projects, but it is currently impractical to apply for a mining lease.

**Mining leases**

A mining lease gives the holder the exclusive right to mine for specified minerals within the mining lease area during the term of the lease. In addition to allowing mining, a mining lease permits prospecting operations and prescribed mining purposes to be conducted in association with mining operations. A mining lease for mining purposes only may also be applied for.

A mining lease area may also include any associated infrastructure and must be consistent with the development consent area.

Development consent under the Environmental Planning and Assessment Act 1979 must be in place before a mining lease can be granted.