

LAND COURT OF QUEENSLAND

**Second Supplementary Individual Expert Witness
Report**

Financial and Market Analysis

**Tim Buckley, Institute of Energy Economics and Financial
Analysis (IEEFA)**

REGISTRY: Brisbane

NUMBERS: MRA428-14, EPA429-14
MRA430-14, EPA431-14
MRA432-14, EPA433-14

Applicant: **ADANI MINING PTY LTD**
AND

First Respondent: **LAND SERVICES OF COAST AND COUNTRY INC.**
AND

Second Respondent: **CONSERVATION ACTION TRUST**
AND

Statutory Party: **CHIEF EXECUTIVE, DEPARTMENT OF**
ENVIRONMENT AND HERITAGE PROTECTION

Executive Summary

In Dr Jerome Fahrer and Dr Richard Denniss' Joint Expert Report Economic Assessment on 27 February 2015, in relation to issue 119 at comment (ii) on page 10, Dr Fahrer discloses new details on the definitions used to calculate the Attachment B, the summary of a financial model of the Carmichael coal project proposal (Financial Model) and an undisclosed Bankable Feasibility Study (BFS) done by or on behalf of Adani Mining to detail the financial viability of the proposed project.

Specifically, issue 119 details that port and rail costs are amalgamated into the "selling costs" column, contrary to the specific, separate column designated for rail costs which is blank except for the capital cost. This new disclosure means my own model relied on in my Supplementary Individual Expert Witness Report of 27 February 2015 (IEEFA Financial Model) double-counted these costs.

As noted in my Individual Expert Witness Report from 9 January 2015 (Individual Report), the Financial Model supplied by Adani Mining generates an unrealistically optimistic review of the financial viability of the proposal. In my view, Attachment B's Financial Model:

1. overstates the likely long term real thermal coal price;
2. under-estimates the discount Carmichael coal will sell at;
3. overstates the likely yield of the open-cut mine;
4. is predicated on an unrealistically low cash cost of operations for the Carmichael mine;
5. understates the total rail costs; and
6. ignores the significant interest expense that will be incurred over the life of the project.

This Second Supplementary Report has been prepared to address the new rail and ports disclosure made on the 27 February 2015. I have kept my recast financial model (IEEFA Financial Model) assumptions constant except for the following two changes that stem specifically from the new disclosures by Dr Jerome Fahrer:

1. I have broken out the Financial Model's catch all "Selling Costs" to separately detail real:
 - a. Rail costs (A\$10.19/t); b. Port costs (A\$6.00/t); and c. Marketing costs (A\$1.50/t); and
2. I had previously relied on the "Operating Expenditure (real per tonne)" plus the "Selling Costs" provided in the Financial Model on the assumption that combined these two catch all categories were reasonable total mining costs 'free on rail' (i.e. excluding rail, port and royalty costs). Given the oversized nature of this number, I had assumed a number of

mine related costs were including in “Selling Costs”. I have now modelled: a. “Mining costs”; b. Coal Handling and Preparation Plant costs (“CHPP”); and c. Overhead costs.

The alternative IEEFA Model output in Attachment A to this report, has been updated to reflect the above changes to “Selling Costs” and “Operating Expenditure” in Adani Mining’s Financial Model.

Excluding purchase costs and capital construction costs, the mine is estimated to lose money at the gross operating level every year, with the losses totalling US\$7,306 million (A\$9,367 million) in real terms. This equates to a real cash operating loss of US\$235 million (A\$301 million) per year on average.

Including Australian carbon costs as per the Financial Model would increase the forecast gross operating cash loss by another A\$4,823 million. Realistic environmental rehabilitation costs would also expand the forecast loss further.

These calculations have affirmed my view that the Carmichael coal project to be both financially unviable and unbankable.

This project is commercially unviable and Adani Enterprises Ltd will continue to struggle to find credible independent financial groups willing and able to fund this project development. If the project does get developed, I would classify it as extremely likely to be a stranded asset, that being a project that will not deliver an economic return on new capital employed and which is likely to see a less-than-expected useful economic life as a result of global market and policy changes.

1. Financial Assumptions

This Second Supplementary Report has been prepared to address the new rail and ports disclosure made on the 27 February 2015. I have kept my recast IEEFA Financial Model assumptions constant except for the following two changes that stem specifically from the new disclosures:

1. I have broken out the Financial Model's catch all "Selling Costs" to separately detail:
 - a) Rail costs (A\$10.19/tonne);
 - b) Port costs (A\$6.00/tonne); and
 - c) Marketing costs (A\$1.50/tonne);
2. I had previously relied on the "Operating Expenditure (real per tonne)" plus the "Selling Costs" provided in the Financial Model on the assumption that combined these two catch all categories were reasonable total mining costs 'free on rail' (i.e. excluding rail, port and royalty costs). I had assumed a number of mine related costs were including in "Selling Costs". I have now modelled:
 - a) "Mining costs";
 - b) Coal Handling and Preparation Plant costs ("CHPP"); and
 - c) Overhead costs.

1.1 Recasting Selling Costs

I have replaced "Selling Costs" to separately detail the real cash cost per tonne of:

- a. Rail costs (A\$10.19/tonne);
- b. Port costs (A\$6.00/tonne); and
- c. Marketing costs (A\$1.50/tonne).

1.1.1 Rail Costs

I have included Rail Costs of A\$10.19/tonne real, consistent with my first version. This makes allowance for only those cash costs of operation, and does not cover the significant capital costs of the railway line.

However, I would reference the new information cited in the "Second Affidavit of Rajesh Kumar Gupta" dated 27 February 2015 that cites at paragraph 4:

"Adani Mining holds the existing assets for the proposed Mine. Other and different entities have been established for the purposes of the associated rail and port projects".

I would note that if the rail line is owned by a different legal entity not owned by Adani Enterprises Ltd, then it would be realistic to lift this A\$10.19/t to a commercial rate more

likely to be the full A\$14.71/t real – as per Aurizon’s 2013/14 annual report. Having external shareholders like POSCO E&C would also likewise require a full cost recovery to be factored into the separate Adani Mining project – adding A\$4.52/tonne to the real costs over the mine life. This adjustment would add 7.6% to the average cost over the life of the project, an increase in costs of approximately A\$4,200 million in real terms. However, to be conservative I have not included this potential additional cost in my calculations.

1.1.2 Port Costs

I have included Port Costs of A\$6.00/tonne real, consistent with my first version.

I would reference the new information cited in the “Second Affidavit of Rajesh Kumar Gupta” dated 27 February 2015 that cites in paragraph 8:

“Control of the T1 assets will remain with APSEZ which will, post proposed restructure, be held directly by the shareholders of AEL.”

Adani Ports & SEZ Ltd (APSEZ) is a listed company and I note that the above statement appears inconsistent with Adani Enterprises’ announcement to the Bombay Stock Exchange on 20 May 2013¹ and its two subsequent annual reports to shareholders deconsolidating T1. A further Bombay Stock Exchange announcement as recently as 19 December 2014 fails to notify shareholders of the distinction in ownership of T1 and the proposed T0.²

1.1.3 Marketing Costs

I have included Marketing Costs of A\$1.50/tonne real, reflective of the need to sell the Carmichael coal into the global seaborne trade. This will involve staff, office and other costs to manage the sale and logistics of the delivery process.

1.1.4 Conclusion – A 7% higher transport and selling cost assumption

The combination is a total cost of transport and selling costs to the “free on board” state of A\$17.69/tonne real, 7% higher than the A\$16.56/tonne real assumed in Attachment B Financial Model.

¹ http://www.bseindia.com/xml-data/corpfiling/AttachHis/Adani_Enterprises_Ltd_200513.pdf

² The Bombay Stock Exchange sought clarification from Adani Enterprises Ltd with respect to the media report in The Economic Times on December 18, 2014 stating "Adani, POSCO tie up to Build Terminal in Aus". Adani Enterprises Ltd was requested to submit its clarification under the provisions of Clause 36 of the Listing Agreement. Adani Enterprises Ltd replied on 19/12/2014 stating "The said news item is pertaining to a Company which is neither a direct or indirect subsidiary of the Company". This announcement is referenced from:
<http://www.bseindia.com/corporates/ann.aspx?curpg=1&annflag=1&dt=20141201&dur=P&dtt=20141231&cat=&scrip=512599&anntype=A>

1.2 Recasting Operating Costs

I had previously relied on the “Operating Expenditure (real per tonne)” plus the “Selling Costs” provided in the Financial Model on the assumption that combined, these two catch all categories were reasonable total mining costs ‘free on rail’ (i.e. excluding rail, port and royalty costs). I had assumed a number of mine related costs were included in “Selling Costs”. I have now modelled: a. “Mining costs”; b. Coal Handling and Preparation Plant costs (“CHPP”); and c. Overhead costs.

I have accessed proprietary mine model data from Wood Mackenzie to calculate their best estimate of the cash costs of mining for a comparable set of similar mines currently in operation. Given I am under commercial in confidence restrictions on this data, I have provided only a summary of the averages.

As per paragraph 27 (page 7) of Adani Mining’s Head of Mining Operations “Third Affidavit of Llewellyn Lezar”, Mr Lezar cites the yield in 2012/13 and 2013/14 for six largely comparable operating thermal coal mines in Queensland as supporting his estimates saying yields range from 55% to 100% and as per his Attachment LL-3, average 76% in 2012/13 and 77% in 2013/14 across all Queensland coal mines.

I have used a similar approach to benchmark my assumptions for yields plus mining, CHPP and overhead costs. I have taken a sample of nine larger scale, open cut Queensland coal mines that are predominantly thermal coal of export grade. I removed Mr Lezar’s underground thermal coal mine at Ensham and used data from the Ensham open-cut mine. I have added three of the largest Queensland open-cut, export oriented thermal coal mines.³ Given that Queensland coal mining is predominantly coking coal focussed, I have then calculated a comparable estimate of the average of five of the largest NSW open cut, export oriented thermal coal mines.⁴

I do not expect long term mining costs to be significantly different across NSW relative to Queensland once access to infrastructure, scale, yield and stripping ratios are considered.

1.2.1 Discount to Comparable Industry Averages of 30%

Adani Mining’s Financial Model (i.e. Attachment B to the Individual Report of Dr Fahrer) assumes total mining costs ‘free on rail’ average A\$24.76/tonne real over 2020-2047. This is half the average of the sample of 9 Queensland and 5 NSW open-cut mines reviewed.

Mr Lezar⁵ cites five reasons for this lower than industry average assumptions. The use of standard gauge rail will lower the average rail costs, but will have no bearing on the mining costs. Mr Lezar cites an unquantified but higher portion of bypass coal, and that this will lower the CHPP costs (as per 1.2.3 below), but again this will not impact the mining costs.

³ Yancoal’s Cameby Downs, Sojitz’s Minerva, Anglo American’s Callide, Idemitsu’s Ensham opencut, Tarong Energy’s Mendu, Glencore’s Clermont, Rolleston, Newlands and Collinsville mines.

⁴ BHP’s Mt Arthur, Oakbridge Group’s Bulga, Rio Tinto/Wesfarmer’s Bengalla, Rio Tinto’s Warkworth and Glencore’s Mt Owen Complex.

⁵ Paragraph 27 (page 7) of Adani Mining’s Head of Mining Operations “Third Affidavit of Llewellyn Lezar”, 27 February 2015.

The strip ratio of 5.85 bank cubic metres (“BCM”) per tonne that Adani Mining disclosed in its Supplementary Environmental Impact Statement (“SEIS”) is 5% below the Australian industry average (by reference to the comparable Queensland and NSW mine samples). Wood Mackenzie cites an Australian coal mine average approaching 7BCM/tonne, suggesting a 16% scale advantage on the strip ratio.

I would observe that five of the larger NSW thermal open cut export oriented coal mines average 10Mtpa of product coal, on average double the size of the existing Queensland sample set used. Yet I would note that the total cash cost of production ‘free on rail’ is similar between the two subsets. NSW on average across the two years has a 3% cost advantage that is primarily explained by the lower stripping ratio evident (5.0BCM/t in the NSW sample versus the 7.3BCM/tonne for Queensland), rather than material scale or equipment size advantages.

I have conservatively assumed the Carmichael coal mine will generate scale and strip ratio advantages of a combined 30% savings relative to the 14 comparable thermal mines reviewed.

1.2.2 Mining Costs

I have included Mining Costs of A\$28.85/tonne real. This makes allowance for overburden and coal removal, fuel and electricity costs, labour and explosives.

I have calculated this by reference to the average of the Queensland and NSW sample set. To this, I have reduced the mining cost for the Carmichael mine to assume a 30% cost advantage due to mine scale and size of the equipment, plus the ongoing cost down initiatives evident across the mining sector. I consider this to be very conservative, and the risk in my mind is clearly that the realised mine costs will be higher, closer to that evident by comparable, large scale, open-cut Australian thermal export coal mine average.

The SEIS refers to the Carmichael mine having a forecast strip ratio of 5.85BCM per tonne of coal.⁶ As mentioned above, the Carmichael mine is in the middle of the sample used i.e. an average 7.3BCM/tonne for Queensland vs 5.0BCM/tonne in the NSW sample.

I have maintained my assumption of a whole mine 85% yield from run-of-mine coal to product coal, based on 80% for open-cut and 100% for underground mining. This 80% assumption for open-cut compares unfavourably to the 87% average for the nine comparable Queensland open-cut, predominantly thermal export coal mines. My 80% assumption compares favourably to the 73-74% average for the five large scale, open-cut, predominantly thermal export coal mines in NSW. I would cite that Wood Mackenzie calculates the Australian average presently is 77%, down from 80% in 1993.⁷

⁶ Page 16 Appendix B Carmichael Coal Mine and Rail Project SEIS; Report for Updated Mine Project Description October 2013. A BCM of overburden equates to upwards of 2 tonnes of overburden (I use 2.3tonnes per BCM as a rule of thumb, but this will depend on the type of rock), so this 5.85BCM/t is really 12-15 tonnes per tonne of run-of-mine coal.

⁷ Australian coal mine average yields vary considerably, with most falling in the 70-80% range. Wood Mackenzie, “Australian Coal Supply Summary”, June 2014.

These costs are predominantly AUD denominated, so the lower AUD/USD assumption has materially improved the USD translated cash cost of production since the BFS was prepared, but also explains in part why I assume a lower USD coal price for 2015 and beyond (the global seaborne cost curve for thermal coal has shifted downwards more than 10% in the last six months alone, and prices and cash costs are highly correlated).

Underground mining costs are equal to or higher than opencut mining costs per tonne, so I have conservatively assumed they are equal.

1.2.3 CHPP Costs

I have included CHPP Costs of A\$2.84/tonne real. This covers the cost of washing, separating and processing the coal to remove miscellaneous debris and make the coal ready for transportation. This again is a 30% discount to my calculation of the average of the Queensland and NSW thermal coal mine set, reflecting the higher proportion of open-cut bypass coal referred to by Mr Lezar.

1.2.4 Overhead Costs

I have included Overhead Costs of A\$1.61/tonne real, reflective of the need to operate an Australian head office, manage over a thousand staff and a fleet of mining equipment, liaise with suppliers and the government, plus other miscellaneous costs. This again is a 30% discount to my calculation of the average of the Queensland and NSW thermal coal mine set, reflecting the assumed benefit of economies of scale and to be conservative.

1.2.5 Ramp-up stage prior 2020

The Financial Model assumes the mine takes till 2020 to get to a relative steady state with full production. Costs in 2017-2019 are materially higher given the lack of economies of scale and early learning costs. I have scaled up my assumed mining costs consistent with that assumed in the Financial Model. I exclude this from the averages quoted as 'over the life of the mine'.

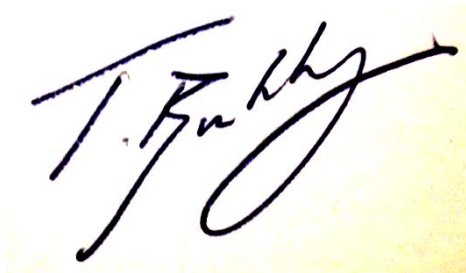
1.2.6 Conclusion –A 30% scale advantage is optimistic

The combination is a total cost of mining of A\$33.30/tonne real, 34% higher than the A\$24.76/tonne real assumed in the Financial Model. I have assumed that the Carmichael mine proposal can deliver a substantial 30% discount to 2014 average costs for major comparable thermal, open-cut, export oriented coal mines in Australia. I find that the 48% discount assumed in the Financial Model is not supported by the numbers. Even so, the risk in my mind is clearly that the relative cost advantage will turn out to be less than I forecast. The Carmichael mine is remote and the team is unproven and as a result the project does not have significant, proven, sustainable competitive cost advantages to suggest its costs will be half that of other large scale Australian thermal mines.

Closing Statement

I confirm the following:

- (a) the factual matters stated in the report are, as far as I know, true;
- (b) I have made all enquiries considered appropriate;
- (c) the opinions stated in the report are genuinely held by myself;
- (d) the report contains reference to all matters I consider significant;
- (e) I understand the duty of an expert to the court and have complied with that duty;
- (f) I have read and understood the Land Court Rules 2000 on expert evidence; and
- (g) I have not received or accepted instructions to adopt or reject a particular opinion in relation to an issue in dispute in the proceeding.

A handwritten signature in black ink on a light-colored background. The signature is written in a cursive style and appears to read 'T. Buckley'.

Timothy A Buckley

9 March 2015

Attachment A. Updated IEEFA Financial Model

Attachment A - Carmichael Coal Mine

IEEFA Model

Year	Coal Mined Mt	Product Coal Mt	Carmichael Coal Price US\$ nominal	Carmichael Price A\$ Real	Mine Capex A\$m Real	Sustaining Capex A\$/t real	Operating Expense Total A\$/t real	Operating Expense Mine A\$/t real	Operating Expense CHPP A\$/t real	Operating Expense Overhead A\$/t real	Selling Costs Total Real A\$/t	Rail Costs Real A\$m	Selling Costs Rail Op Real A\$/t	Selling Costs Port Real A\$/t	Selling Costs Marketing Real A\$/t	Carbon Price Real A\$/t	Carbon Cost Real A\$/t	Land Value Decline A\$m	Rehab. Costs A\$m Real	Coal Royalty A\$m Real	Corp. Tax A\$m Real
2014	0.00	0.00			772.50																
2015	0.00	0.00	42.28	54.21	171.91																
2016	0.00	0.00	41.30	51.66	601.60	0.00					833.30							3.59			
2017	0.19	0.16	41.58	50.74	1418.17	0.00	215.19	186.41	18.37	10.41	17.75	833.30	10.19	6.00	1.56	8.68	8.68	116.69	0.57	0.00	
2018	8.72	7.43	42.77	50.92	611.13	0.00	106.65	92.39	9.10	5.16	17.75	833.30	10.19	6.00	1.56	8.93	2.69		26.47	0.00	
2019	29.54	25.16	44.03	51.14	104.83	0.00	44.46	38.51	3.79	2.15	17.68		10.19	6.00	1.49	9.28	9.73		90.06	0.00	
2020	42.91	36.55	44.77	50.73	156.92	0.00	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	9.63	14.77		129.77	0.00	
2021	43.08	36.69	45.19	49.95	62.03	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	13.24	20.44		128.30	0.00	
2022	43.52	37.07	46.31	49.95	34.39	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	26.61	41.73		129.61	0.00	
2023	44.35	37.77	47.47	49.95	27.43	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	39.99	63.84		132.08	0.00	
2024	44.17	37.62	48.66	49.95	150.50	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	53.36	82.65		131.54	0.00	
2025	43.92	37.41	49.88	49.95	51.67	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	66.74	103.51		130.80	0.00	
2026	44.88	38.22	51.12	49.95	27.04	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	80.13	128.79		133.66	0.00	
2027	43.22	36.81	52.40	49.95	86.78	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	93.50	143.90		128.71	0.00	
2028	43.25	36.84	53.71	49.95	103.62	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	106.88	165.27		128.80	0.00	
2029	42.93	36.56	55.05	49.95	170.76	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	120.25	182.67		127.85	0.00	
2030	42.08	35.84	56.43	49.95	121.35	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	133.62	198.83		125.32	0.00	
2031	41.38	35.24	57.84	49.95	55.67	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	144.73	213.14		123.23	0.00	
2032	40.94	34.87	59.29	49.95	226.56	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	149.07	215.56		121.92	0.00	
2033	39.54	33.68	60.77	49.95	196.04	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	153.55	213.69		117.75	0.00	
2034	40.62	34.60	62.29	49.95	41.77	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	158.15	226.37		120.97	0.00	
2035	40.89	34.83	63.85	49.95	57.10	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	162.90	236.18		121.77	0.00	
2036	39.98	34.05	65.44	49.95	74.57	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	167.78	237.34		119.06	0.00	
2037	40.30	34.32	67.08	49.95	41.16	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	172.82	246.93		120.02	0.00	
2038	39.93	34.01	68.75	49.95	23.06	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	178.00	249.34		118.91	0.00	
2039	39.47	33.62	70.47	49.95	66.29	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	183.34	253.73		117.54	0.00	
2040	37.64	32.06	72.24	49.95	30.11	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	188.84	249.18		112.09	0.00	
2041	30.96	26.37	74.04	49.95	83.45	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	194.51	208.40		92.20	0.00	
2042	28.00	23.85	75.89	49.95	36.89	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	200.34	192.07		83.39	0.00	
2043	28.00	23.85	77.79	49.95	56.18	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	206.35	195.70		83.39	0.00	
2044	28.00	23.85	79.73	49.95	9.14	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	212.54	202.27		83.39	0.00	
2045	28.00	23.85	81.73	49.95	32.31	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	218.92	209.67		83.39	0.00	
2046	28.00	23.85	83.77	49.95	0.00	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	225.49	195.71		83.39	0.00	
2047	14.00	11.92	85.86	49.95	2.00	1.18	33.30	28.85	2.84	1.61	17.69		10.19	6.00	1.50	232.25	110.40		41.69	0.00	