

LAND COURT OF QUEENSLAND

**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** **OF**

Executive Summary

Dr Jerome Fahrer's Economic Assessment on 30 January 2015 Attachment B provides a summary of a financial model of the proposed Carmichael Coal Project (Financial Model) and references the Affidavit of Rajesh Kumar Gupta from 21 November 2014. In turn, this references an undisclosed Bankable Feasibility Study (BFS) done by or on behalf of Adani Mining Pty Ltd (Adani Mining) to detail the financial viability of the proposed project.

As noted in my Individual Expert Witness Report from 9 February 2015 (Individual Report), the Financial Model supplied by Adani Mining has a number of omissions and errors such that no respectable financial institution would place any reliance on it. Given the time constraints on evaluating this model at the time, I initially only had time to include a preliminary evaluation of the Adani Mining model in *Section 1.4 "Anomalies in the Financial Model for Carmichael Coal"*. This Supplementary report has been prepared after I have had time to recreate the Financial Model and then include a number of assumptions that to me are more reasonable, conservative and prudent to better evaluate the question of commercial viability.

I note five of the key assumptions I have incorporated:

1. Using the long-term futures price for thermal seaborne coal is a key change. The financial markets provide a pricing of coal out to 2021 that reflects the current consensus on the outlook of demand and supply, and what that means for prices. I then assume flat real US dollar (USD\$) prices over the life of the mine, largely consistent with the Financial Model assumption albeit from a more realistic, lower starting point.
2. The second key adjustment is to include a 30% discount for the significantly lower than benchmark coal price I consider it likely that Carmichael coal would receive – as explained in *Section 1.1.1 "Carmichael Coal is Low Quality..."* of my Individual Report.
3. The Australian dollar (AUD) has continued to depreciate against the USD\$, and I have updated the rate included to reflect this. The current spot rate is volatile around the USD0.78/AUD level. I have held this constant over the life of the mine.
4. I have adjusted the run-of-mine (ROM) coal production to reflect closer to Australian benchmark 80% yield on open cut mining to calculate product coal available for sale.
5. I assume there will be real fuel, labour and maintenance costs of running a 388km railway line and normal port loading charges. These two significant costs appear to have been omitted from the Financial Model.

With these and other adjustments, I have recalculated the cash cost of production in real AUD terms, and the estimated revenue per tonne of product coal in real USD terms, and then translated this back into AUD at the USD0.78 rate.

The resulting cash cost of production average is AUD\$65.88/tonne over the life of the mine, translating into USD\$51.39/tonne. The revenue per tonne average for Carmichael coal is USD\$39.02/tonne, resulting in a gross cash loss of USD\$12.37/tonne average over the mine life, before considering the interest cost on debt or any repayment of capital.

Attachment A details my recasting of the Financial Model correcting for my assumptions on these key inputs (IEEFA Financial Model).

Excluding purchase costs, capital construction costs and carbon costs, the mine is estimated to lose money at the gross operating level every year, with the losses totalling USD\$11,836 million (AUD\$15,174 million) in real terms. This equates to a real cash operating loss of USD\$394 million (AUD\$505 million) per year on average.

Including Australian carbon costs as per Adani Mining's BFS would increase the forecast gross operating cash loss by another AUD\$4,823 million. Additionally, I have not included a more realistic environmental rehabilitation cost relative to the very low estimate in the Financial Model.

These calculations have affirmed my view that the Carmichael Coal Project is both financially unviable and unbankable.

This project is commercially unviable and Adani Enterprises will continue to struggle to find credible independent financial groups willing and able to fund this project. 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

Section 1.4 of my Individual Report provided to the Court on 9 February 2015, provided a preliminary analysis of the financial model disclosed in Attachment B by Dr Fahrer provided on 30 January 2015 (Financial Model). I have now had the opportunity to analyse the Financial Model further, and I believe it would assist the court to provide an alternative model output that adjusts for a number of the issues I have identified in my Individual Report.

The alternative model output is Attachment A to this report with the adjusted columns identified by bolded titles.

The material changes made to each of these columns are detailed here in the order that the columns appear from left to right.

1.1 Product Coal adjusted for open cut mine yield of 80%

I have adjusted the product coal volumes to reflect my views expressed in Section 1.4, numbered paragraph 9, of my Individual Report, ie. closer to the Australian benchmark 80% yield on open cut mining to calculate product coal available for sale. I have taken an assumed 26% underground to 74% open cut gross production ratio as per the Supplementary Environmental Impact Statement (SEIS).¹ On the open cut run-of-mine (ROM) coal, I have assumed a yield of 80%, assuming 20% of ROM coal is lost as substandard in the washing and preparation of product coal.² Given an assumed yield of 100% on the underground coal, this provides a yield over the entire Carmichael project of 85%. In the absence of the full BFS explanation, the summary of the Financial Model shows a 92% yield, a figure I consider to be too optimistic.

¹ Page 16 Appendix B Carmichael Coal Mine and Rail Project SEIS; Report for Updated Mine Project Description October 2013.

² Australian coal mine average yields vary considerably, with most falling in the 70-80% range. Wood Mackenzie in its report "Australian Coal Supply Summary" of June 2014 calculates the average yield in Australian coal as having declined from 80% in 1993 to 77% in 2013 in their mine-by-mine study.

1.2 Carmichael Coal Price USD\$ – adjusted for structural market decline and discounted for coal quality

1.2.1 long term futures price for thermal seaborne coal

Using the long term futures price for thermal seaborne coal is a key change to reflect my comments in Section 1.4, numbered paragraph 1, of my Individual Report. The financial markets provide a pricing of coal out to 2021³ that reflects a current consensus on the outlook of demand and supply, and what that means for prices. The benchmark futures price currently for delivery in 2021, assumes a gradual recovery of prices to USD\$64.55/tonne. We then assume flat real USD\$ prices over the life of the mine (maintaining the Financial Model assumption of 2.5% pa inflation for both Australian and US markets), largely consistent with the Financial Model assumption albeit from a more realistic, lower starting point. This gives an assumption of a nominal coal price for Newcastle Benchmark 6,000kcal coal of USD\$88.76/tonne.

As detailed in my Individual Report, I consider that the global coal markets have fundamentally and permanently changed since the Adani Group acquired the Carmichael coal deposit. Structural decline of the seaborne thermal coal sector is increasingly evident, with China's coal imports in January 2015 falling a staggering 40% month on month relative to December 2014,⁴ while India's coal imports in January 2015 fell 21% month-on-month.⁵

This nominal coal price also better reflects my view that coal is in structural decline as expressed in Section 1.4, numbered paragraph 1, of my Individual Report. I further note that the January 2015 China Economic Review by Wood Mackenzie shows that they are factoring structural decline as their increasingly likely central forecast.

The benchmark futures price does not factor in any further decline in prices as a result of the expansion of global supply from the Carmichael mine should it proceed, as detailed in Section 3.1 of my Individual Report and expanded on at Section 2 below.

³ <http://quotes.eSignal.com/esignalprod/quote.action?symbol=NCFQ-ICE>

⁴ <http://www.reuters.com/article/2015/02/08/us-china-economy-trade-idUSKBN0LC01D20150208>;
http://www.nea.gov.cn/2015-02/12/c_133989991.htm?utm_source=Azure+Cleantech+Update&utm_campaign=84ad5f38bb-Azure+China+Cleantech+Update7+3+2014&utm_medium=email&utm_term=0_6bc3c93c4c-84ad5f38bb-171255481

⁵ <http://in.reuters.com/article/2015/02/09/india-coal-imports-idINKBN0LD0BY20150209?feedType=nl&feedName=inmoney>

1.2.2 Carmichael Coal assumed to sell at a 30% discount

A key adjustment is to include an average 30% discount for the significantly lower than benchmark coal price I consider it likely that Carmichael coal would receive – as explained in Section 1.1.1 “Carmichael Coal is Low Quality’ of my Individual Report. The summary Financial Model does not break out this assumption, and I understand Adani Mining intends to sell the higher quality thermal coal to premium markets and lower quality coal could be marketed into India. In the absence of this detail, I have used a blended average.

1.3 Carmichael Coal Price AUD\$ - adjusted for Australian dollar depreciation

The Australian dollar (AUD) has continued to depreciate against the US dollar (USD), and I have updated the modelled rate to reflect this. The current spot rate is volatile around the USD0.78/AUD level. Whether it is commodity, interest rates or currency prices, the current spot rate is considered by many financial market analysts to be the best indicator of future value, and applying this assumption as was done in the Financial Model, I have held this constant over the life of the mine.

1.4 Rail operating costs

I assume there will be real fuel, labour and maintenance costs of running a 388km railway line. As explained in Section 1.4, numbered paragraph 6, of my Individual Report, this significant cost appears to have been omitted from the Financial Model. Given the Financial Model details the capital construction cost of the railway line it implies it will be owned and operated within the Adani Mining group, I have not modelled a full external rail charge commensurate with a full arms-length transaction. However, this assumption results in a significantly lower than fair charge for rail costs. Should POSCO E&C or other third party equity providers co-own the railway, a full and fair market price is likely to be required. Given the absence of any legally binding contracts with external owners, I have assumed this is not applicable.

Further, a rail line without locomotives and rail wagons would not transport much coal, nor would it work well without rail staff, fuel and maintenance.

To calculate a fair cash cost per tonne of coal transported, I have referenced Aurizon Holdings' 2013/14 annual results. Aurizon charged its coal customers an average 3.8c/km/tonne for coal in 2013/14, and its gross cash profit margin was 31%. This means Aurizon had a 69% cash operating cost. I have taken the assumed 388km rail distance and multiplied this by 69% of 3.8c – giving a rail cash cost of operation of approximately 2.6265c/km/tonne and applied this to the product coal available for sale.

1.5 Port costs

As explained in Section 1.4, paragraph 7, of my Individual Report, I assume there will be normal port loading charges for the coal. This significant cost appears to have been omitted from the Financial Model. I would note that it is my understanding that Adani Enterprises will be the ultimate owner of the Carmichael Coal proposal, and the private Adani family will own the Abbot Point Coal Port Terminal Zero. Given the costs of building and operating a multibillion dollar port, and the independent legal and ownership structures, an arm's length transaction is assumed to occur. Australian average port charges are in the order of AUD\$5-6/tonne, although the last Australian coal port to be built is Wiggins Island Coal Export Terminal (WICET) in Queensland, and I estimate WICET will charge AUD\$13-17/tonne for port charges.⁶ Therefore, I have included a conservative estimate of AUD\$6/tonne for Port Costs in Attachment A.

1.6 Coal Royalty

Given the recalculated revenues per tonne of the Adani Mining proposal, I have assumed a Queensland Coal Royalty remains at the current applicable 7.0% on coal prices below AUD\$100/tonne, and I have assumed this holds constant in real terms.

1.7 Corporate Tax

The Financial Model, using my adjusted values above, results in a project proposal that is forecast to lose a total of USD\$11,836 million (AUD\$15,174 million), in real terms, over the

⁶ http://www.ieefa.org/wp-content/uploads/2014/09/IEEFA-Briefing-Note_WICET_May-2014.pdf

30 year implied life of the mine, or an average of USD\$394 million (AUD\$505 million) per year (real) – per Section 3 below. As a result of this gross operating loss, the assumed tax payable from the project in Australia will be zero.

1.7.1 Deduction of Interest Expense

As stated in Section 1.4, numbered paragraph 5, of my Individual Report, the Financial Model does not appear to provide a deduction for interest expenses. Given this is a mine model examining cash revenues versus cash profits, it does not include capital funding costs. Given the probability of a significant portion of debt funding, these will be a very material cash drain in their own right, which I would estimate at more than AUD\$400 million annually. Long term debt servicing ability is a key consideration for banks in working out bankability.

Likewise, I consider the AUD\$116.69 million rehabilitation provision to be significantly understating the likely rehabilitation costs,⁷ but in the absence of any hard industry data, I have accepted this figure as is.

However, I have not included interest expenses in Attachment A as it would make no difference to Corporate Tax which is already AUD\$0.

⁷ <http://www.thesaturdaypaper.com.au/news/politics/2014/05/24/minings-multi-billion-dollar-black-hole/1400853600#.U4BvMtKKDZ4>

2. Financial Impact of Carmichael Coal on Seaborne Prices

I would note that the Financial Model assumes peak coal of less than 40Mtpa rather than the 60Mtpa stated in the SEIS and relied upon in Section 3.1 of my Individual Report. Should the Carmichael Coal and Rail Project be successfully commissioned at this reduced size, it will bring an additional 31Mtpa, averaged over the life of the project, or 3-4% to global seaborne thermal coal markets. Adding to excess supply at a time of weak demand can only serve to further depress the thermal coal price. This could see the forward coal price drop by up to 5% as suppliers cut their pricing to secure customers in an oversupplied market. This would be further compounded if additional Galilee thermal coal mines are enabled by the completion of Carmichael, resulting in the equilibrium coal price dropping materially. I have addressed this issue in Section 3 'Additionally' of my Individual Report.

Adani Mining has noted their intention to undertake stage II to lift total peak output to 60Mtpa. Absent this stage II expansion, I would note that the project viability is materially weakened, given the loss of critical economies of scale. I detailed this issue in Section 1.2.5 'Adani Mining's BFS reports a 50-60% reduction in scale' of my Individual Report.

3. Financial Conclusions

My recalculation of the Carmichael Coal proposal results in a modelled cash cost of production average of AUD\$65.88/tonne over the life of the mine, translating into USD\$51.39/tonne. Using the futures price of thermal coal, the current spot AUD/USD exchange rate and an assumed 30% discount for Carmichael coal on quality grounds, the revenue per tonne average for Adani Mining is USD\$39.02/tonne. This results in a modelled gross cash loss of US\$12.37/tonne average over the mine life, before considering the interest cost on debt or any repayment of capital.

Excluding purchase costs, capital construction costs and carbon costs, the mine is estimated to lose money at the gross operating level every year, with the losses totalling US\$11,836 million (AUD\$15,174 million) in real terms. This equates to a real cash operating loss of US\$394 million (AUD\$505 million) per year on average.

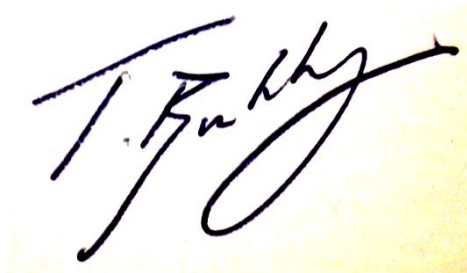
Including carbon costs as per Adani Mining's Financial Model would increase the forecast gross operating cash loss by another AUD\$4,823 million.

This project is commercially unviable and Adani Enterprises 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.

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

27 February 2015

ATTACHMENT A - IEEFA Model

Year	Coal Mined Mt	Product Coal Mt	Carmichael Coal Price US\$ nominal	Carmichael Coal Price A\$ Real	Mine Capex A\$m Real	Sustaining Capex A\$/t real	Operating Expense A\$/t real	Selling Costs A\$/t real	Rail Costs Real A\$m	Rail Op Costs Real A\$/t	Port Costs Real A\$/t	Carbon Price Real A\$t	Carbon Cost Real A\$m	Land Value Decline A\$m	Rehab. Costs A\$m Real	Coal Royalty A\$m Real	Corporate 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	0.00	0.00	833.30	10.19	6.00			3.59			
2017	0.19	0.16	41.58	50.74	1418.17	0.00	151.79	18.50	833.30	10.19	6.00	8.68	8.68		116.69	0.57	0.00
2018	8.72	7.43	42.77	50.92	611.13	0.00	75.23	18.55	833.30	10.19	6.00	8.93	2.69			26.47	0.00
2019	29.54	25.16	44.03	51.14	104.83	0.00	31.36	17.70		10.19	6.00	9.28	9.73			90.06	0.00
2020	42.91	36.55	44.77	50.73	156.92	0.00	23.49	17.79		10.19	6.00	9.63	14.77			129.77	0.00
2021	43.08	36.69	45.19	49.95	62.03	1.18	24.78	18.10		10.19	6.00	13.24	20.44			128.30	0.00
2022	43.52	37.07	46.31	49.95	34.39	1.18	23.94	18.56		10.19	6.00	26.61	41.73			129.61	0.00
2023	44.35	37.77	47.47	49.95	27.43	1.18	23.30	16.59		10.19	6.00	39.99	63.84			132.08	0.00
2024	44.17	37.62	48.66	49.95	150.50	1.18	24.78	16.96		10.19	6.00	53.36	82.65			131.54	0.00
2025	43.92	37.41	49.88	49.95	51.67	1.18	26.63	17.21		10.19	6.00	66.74	103.51			130.80	0.00
2026	44.88	38.22	51.12	49.95	27.04	1.18	24.84	17.59		10.19	6.00	80.13	128.79			133.66	0.00
2027	43.22	36.81	52.40	49.95	86.78	1.18	25.98	18.31		10.19	6.00	93.50	143.90			128.71	0.00
2028	43.25	36.84	53.71	49.95	103.62	1.18	24.38	16.40		10.19	6.00	106.88	165.27			128.80	0.00
2029	42.93	36.56	55.05	49.95	170.76	1.18	24.11	15.75		10.19	6.00	120.25	182.67			127.85	0.00
2030	42.08	35.84	56.43	49.95	121.35	1.18	25.20	16.09		10.19	6.00	133.62	198.83			125.32	0.00
2031	41.38	35.24	57.84	49.95	55.67	1.18	26.80	16.63		10.19	6.00	144.73	213.14			123.23	0.00
2032	40.94	34.87	59.29	49.95	226.56	1.18	24.58	17.16		10.19	6.00	149.07	215.56			121.92	0.00
2033	39.54	33.68	60.77	49.95	196.04	1.18	23.85	14.89		10.19	6.00	153.55	213.69			117.75	0.00
2034	40.62	34.60	62.29	49.95	41.77	1.18	23.73	15.23		10.19	6.00	158.15	226.37			120.97	0.00
2035	40.89	34.83	63.85	49.95	57.10	1.18	23.94	15.76		10.19	6.00	162.90	236.18			121.77	0.00
2036	39.98	34.05	65.44	49.95	74.57	1.18	24.57	16.15		10.19	6.00	167.78	237.34			119.06	0.00
2037	40.30	34.32	67.08	49.95	41.16	1.18	23.97	16.57		10.19	6.00	172.82	246.93			120.02	0.00
2038	39.93	34.01	68.75	49.95	23.06	1.18	23.95	14.35		10.19	6.00	178.00	249.34			118.91	0.00
2039	39.47	33.62	70.47	49.95	66.29	1.18	23.45	14.71		10.19	6.00	183.34	253.73			117.54	0.00
2040	37.64	32.06	72.24	49.95	30.11	1.18	23.87	15.25		10.19	6.00	188.84	249.18			112.09	0.00
2041	30.96	26.37	74.04	49.95	83.45	1.18	26.18	15.66		10.19	6.00	194.51	208.40			92.20	0.00
2042	28.00	23.85	75.89	49.95	36.89	1.18	25.16	16.07		10.19	6.00	200.34	192.07			83.39	0.00
2043	28.00	23.85	77.79	49.95	56.18	1.18	25.24	16.21		10.19	6.00	206.35	195.70			83.39	0.00
2044	28.00	23.85	79.73	49.95	9.14	1.18	25.32	16.83		10.19	6.00	212.54	202.27			83.39	0.00
2045	28.00	23.85	81.73	49.95	32.31	1.18	24.96	17.26		10.19	6.00	218.92	209.67			83.39	0.00
2046	28.00	23.85	83.77	49.95	0.00	1.18	27.78	17.45		10.19	6.00	225.49	195.71			83.39	0.00
2047	14.00	11.92	85.86	49.95	2.00	1.18	24.58	18.19		10.19	6.00	232.25	110.40			41.69	0.00