

Metals & Mining

Buy

2 July 2013

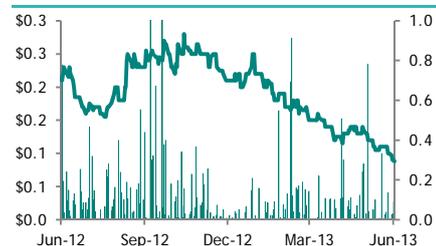
Price (A\$)	0.09
Target Price (A\$)	0.29
Ticker	IEC-AU
Market cap (A\$m)	24
Estimated cash (A\$m)	4.2
Attr resource (Mt)	366
EV/Resource (US\$/t)	0.04
Shares in issue	
Basic (m)	275
Fully diluted (m)	293

52-week	
High (A\$)	0.28
Low (A\$)	0.09
3m-avg daily vol (000)	68
3m-avg daily val (A\$000)	16

Top shareholders (%)	
ASPAC Mining Ltd	14.9
Lujeta Pty Ltd	7.1
Farjoy Pty Ltd	7.0
RBC	5.7
Total	34.7

Management	
Graeme Robertson	E CHR & MD
David Mason	ED
Jonathan Warrand	ED & CFO
William Paterson	NED
Gideon Nasari	NED

Share Price Performance (A\$)



Source: FactSet

RFC Ambrian acts as Agency Broker to this company

Craig Foggo

+44 (0)20 3440 6822

craig.foggo@rfcambrian.com

Intra Energy

Growing Domestic Coal Markets

Intra Energy is an ASX-listed coal producer in Tanzania and Malawi. MOUs have been signed in both these countries for the development of independent coal-fired power stations; IEC has also completed pre-feasibility studies (PFS) for both proposed power projects.

Asset (Company)	Status	Ownership	Region	Res (Mt)	MW
Ngaka Mine (Tancoal)	Production	70%	Tanzania	423**	-
Ngaka IPP* (Tancoal)	PFS Comp	70%	Tanzania	-	200
Songwe-Kabulo (Tanzacoal)	Exploration	70%	Tanzania	100**	-
Pamodzi IPP	PFS Comp	100%	Malawi	-	120
Nkhachira Mine (Malcoal)	Production	90%	Malawi	-	-
Ngana/N Rukuru	Exploration	90%/100%	Malawi	-	-
AAA Drilling Co	Drilling Co	100%	-	-	-

*IPP: Independent Power Producer; **JORC; Source: Intra Energy

The sale of coal to industrial consumers will generate positive free cashflow once production reaches 18,000tpm, a rate targeted by end of 1QCY14. Intra (IEC) currently has a pipeline of contract negotiations that could increase sales +100% from its current rate of 12,000tpm.

Industrial coal procuring clients will benefit from the coal's higher energy content, the flexibility in deliverable volumes and, most importantly, the cost-competitive pricing compared with coal imported from South Africa.

IEC's management and board has, combined, overseen or developed nine power projects globally. Executive Chairman Graeme Robertson's experience and leadership brings considerable credibility to IEC's relationship with regional and central government authorities, as well as potential strategic partners considering investing in the development of the mine-mouth, coal-fired power projects. IEC is likely to dilute down its interest to a minority holding in a deal with a strategic investor(s) that agree to fund and build the power plant.

IEC's strategy is to expand domestic and regional markets and to be the definitive coal and coal power supplier for Eastern Africa. Plans to build two separate mine-gate coal-fired plants remove the need for transport infrastructure. Consequently, IEC's execution, finance, development and operation risk is limited to a simple open-cast mine. Furthermore, IEC's coal off-take will be at a benchmarked fixed price contract with the state-owned power company. These payments will be guaranteed by the government or others (eg, the World Bank).

Recommendation – BUY; Target Price A\$0.29

We are initiating coverage of Intra Energy with a BUY rating. Catalysts for the next 12 months are:

- Sign two separate Power Purchase Agreements (PPA) – 3QCY13
- JORC resource/reserve expansion – 2HCY13
- Positive cashflow from operations – 1QCY14

Contents

Investment Case	3
Valuation	6
Scenario Analysis	8
Company Overview	9
Coal Portfolio	10
<hr/>	
Portfolio Summary	10
Ngaka Mine (70% Tancoal, Tanzania)	11
Nkhachira Mine (90% Malcoal, Malawi)	15
Ngana and North Rukuru Prospect	18
Songwe-Kabulo Project (70%, Tanzacoal)	18
Power	20
<hr/>	
Overview	20
Power in Africa and the World Today	20
Funding Options	21
Tanzania – Electricity Generation Alternatives	21
Ngaka Power Plant (100%, Tanzania)	23
Pamodzi Power Plant (100%, Malawi)	25
Other Assets/Projects	27
Management and Board	28
Appendix I – East Africa	30
Appendix II – Energy – Tanzania	32
Appendix III – Energy – Malawi	33
Appendix IV – African Grid Interconnections	34
<u>Appendix V – East African Mining Sector</u>	<u>35</u>

Intra Energy has established coal production and sales into industrial consumers

Investment Case

Intra Energy (IEC) has established coal production and sales into industrial consumers at prices that have high margins due to its low delivery costs compared with its rivals. While it continues to grow these sales, IEC is also focused on increasing the market for its coal through the sponsorship and championing of two coal-fired power projects that are subject to MOUs. The value in achieving this is considerable, and spearheading the strategy is a man who has done it all before in Indonesia at New Hope Coal – the legacy of which is a +45Mtpa coal mine that is still running today.

We outline our investment case for IEC below:

- **Tancoal has limited regional competition** in Eastern Africa as it is the only major operating coal mine in the region. While prices being received have softened marginally, they are relatively immune from the recent international declines in coal prices. The further inland the market, the higher the costs for imported coal; this leads to higher prices for Tancoal in Tanzania and Malcoal in Malawi.
- **IEC has numerous well advanced projects** that have suitable quality coal and simple development/operational potential. The assets look viable and there is strong potential that these can supply coal to the company's markets.
- **No exposure to infrastructure or transport risks.** Many bulk commodities require significant infrastructure; this brings financing issues and execution risk outside the skill base of most mining juniors. IEC's value is just dependent on its ability to mine coal. This brings simplicity to the project execution and removes margin volatility as transport costs are eliminated.
- **Driving value, de-risking assets.** We have identified some key targets for the next 6-12 months that will drive value. These are:
 - *the expansion* of sales and production of industrial coal;
 - *the delineation* of reserves at the operating Ngaka mine;
 - *maiden resources in Malawi* at its extensively drilled Nkhachira mine and Rukuru prospect; and
 - *the signing of the Power Purchase Agreement* term sheet in 3Q13.

The next 12 months are a critical period for IEC in which projects will be significantly de-risked and value added. Momentum is gathering and we note the haste with which the Tanzanian Government is pursuing the negotiations to approve terms for a mine-gate, coal-fired 200MW power plant – as exemplified by its decision to form the 'Project Ngaka Taskforce' (a team of government departments required for sign off on the projects). Momentum has also gathered in Malawi; here the government has stated that the project is of primary importance, and multiple briefings with the president have taken place.

- **Counterparty takes finance and execution risk.** IEC is acting as the project sponsor for both power projects and is seeking African and international equity investors. Key to executing this power project successfully is the incorporation of a consortium with expertise and a track record in building and operating such projects. While IEC is likely to reduce its ownership in doing this, the value of a potential dividend stream to IEC is significant, nevertheless.

- **Potential power projects are not limited to the two memorandums of understanding (MOUs).** While IEC has signed two MOUs – one is signed with The Tanzanian Electricity Supply Company (TANESCO) to provide 200MW and the other is with the Government of Malawi to provide 120MW – it is also discussing the potential to supply power to large resource companies in the region. To this end we have identified the power requirements for the operation of three majors in the region: 120MW at Barrick, 60MW at Anglo Ashanti and 180MW at Goldfields. These mines can be paying up to US¢40-45/KWhr for HFO- (heavy fuel oil) generated power. In the current climate of plummeting gold prices and weakening commodities, these firms are considering large equity investments to reduce operating costs – power for this is often a significant driver.
- **Any PPA deal is reliant on guarantees.** Key to any consortium funding is a bankable Power Purchase Agreement (PPA) that ensures payments for power produced will be paid in US dollars and are guaranteed by governments or other guarantors (eg, World Bank, AfDB or export credit agencies). These contracts are commonplace in Africa and we believe funds could be made available for the reasons we give below:
 - *Malawi does not have reliable base load power* or sufficient electricity generating and transmission capacity, which restricts industrialisation and development. Moreover, it is estimated that only ~8% of its population has access to power. The new government (in power since April 2012) has approved Malawi's second Growth and Development Strategy. The strategy's principal objective is poverty reduction through sustained growth and infrastructure development. The plan gives high priority to removing bottlenecks in energy and transport infrastructure that have been widely cited as impediments to investment and economic diversification.
 - *Tanzanian hydropower accounts for ~50% of Tanzania's total power generation*, with the remainder produced from thermal power utilising domestic natural gas and liquid fuels (heavy fuel oil, diesel). The heavy weighting of hydropower in its generation profile has meant that frequent and prolonged droughts affect the region severely (the last major drought occurred in 2011). The government is looking to diversify its power generation and we recognise that coal-fired generation is a reliable and affordable base load source that is not subject to climate-driven variability. Significantly, Tanzania possesses strategic coal resources to support its generation requirements and, hence, coal-fired base load power is a viable option.
- **Gas is not a viable alternative in Tanzania.** The upgrade of the current in the land high voltage 220KV system to 400KV will make future gas-fired generation power more readily available in the country, but the upgrade is a long way off given the required funding for the capital costs for such an upgrade. Furthermore, costs of generation are somewhat obscure due to the unknown pricing of the gas. We believe a gas substitute will not threaten the viability of a coal-fired power station that can be developed and built quickly.

Intra looks to have a strong business case for a vertically-integrated coal power supply business in a region that needs it

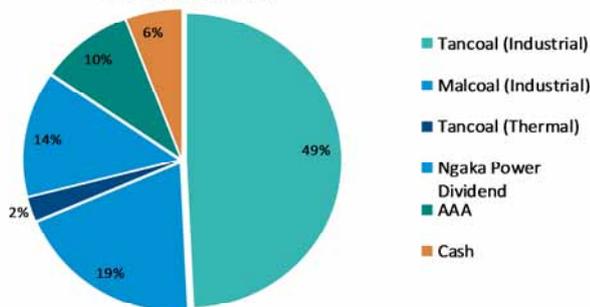
In conclusion, Intra looks to have a strong business case for a vertically-integrated coal power supply business in a region that certainly needs it. Management has a strong track record, a local market for this supply looks very likely and the project looks to have the support of its key stakeholders. Furthermore, the project is not plagued by infrastructure challenges. The company looks significantly undervalued and, as a consequence, we are comfortable rating the company as a **BUY**.


RFC Ambrian

Ticker	IEC-AU
Recommendation	BUY
Target Share price (A\$)	0.29
Current Share price (A\$)	0.09
Implied Return (%)	222%
P/NAV (x)	0.31

Financial Yr. End	30 June
Shares on issue (m)	275.0
Market Cap (A\$)	24.8
Enterprise Value (A\$)	20.9
Cash (A\$)	3.9
Debt(A\$)	1.3

Valuation					Profit & Loss (A\$m)				
Asset	Discount rate	NAV "X" Factor	NAV Target (A\$)	Target Price (A\$)	ASM	FY2013	FY2014	FY2015	FY2016
Tancoal (Industrial)	10%	0.40 X	\$32.9	\$0.12	Revenue	\$7.0	\$19.8	\$42.7	\$52.4
Malcoal (Industrial)	10%	0.30 X	\$12.9	\$0.05	Cost of Sales	\$6.1	\$10.1	\$19.7	\$22.7
Tancoal (Thermal)	10%	0.05 X	\$1.7	\$0.01	Gross Profit	\$0.9	\$9.7	\$23.0	\$29.8
Ngaka Power Dividend	10%	0.05 X	\$9.1	\$0.03	EBITDA	(-\$5.7)	\$2.7	\$15.6	\$22.1
AAA	10%	1.00 X	\$6.4	\$0.02	Net Profit before tax	(-\$6.5)	\$1.5	\$14.4	\$20.7
Cash	0%	1.00 X	\$3.9	\$0.01	Tax Payable	\$0.0	(-\$0.7)	(-\$1.4)	(-\$3.9)
Total NAV			\$79.8	\$0.29	Profit after tax	(-\$6.5)	\$0.8	\$13.0	\$16.8

Valuation Split (%)

Balance Sheet

Assets	FY2013	FY2014	FY2015	FY2016
Cash	\$4.1	\$4.0	\$17.1	\$30.7
PPE & Exp. & Dev.	\$27.1	\$27.6	\$33.8	\$41.2
Total Current Assets	\$7.5	\$7.4	\$20.4	\$34.0
Total Assets	\$34.7	\$36.1	\$64.4	\$75.3
Liabilities	FY2013	FY2014	FY2015	FY2016
Int. Bearing Liabilities - ST	\$0.4	\$0.4	\$0.4	\$0.4
Total Current Liabilities	\$4.6	\$4.6	\$4.6	\$4.6
Total Liabilities	\$8.3	\$8.0	\$14.3	\$20.1

Ratios and Key Financial Data

EPS (AUDc)	-2.4c	0.3c	4.6c	5.9c
FCFPS (A\$)	NM	0.1c	2.4c	3.3c
P/E ratio (x)	-3.74 X	32.20 X	1.97 X	1.5 X
P/FCF (x)	NM	86.19 X	3.81 X	2.7 X
EV/EBITDA (x)	NM	7.11 X	1.24 X	0.9 X
Current ratio (x)	1.6	1.6	4.4	7.4
Shares on Issue (M)	307.2	307.2	307.2	307.2

Reserve and Resources Statement (At 70 % Attributable)

Status	Thermal Coal	Mkt Cap / tonnes	EV / tonnes
Total Reserves	-	\$0.0	\$0.0
M&I only	169,190,000	\$0.1	\$0.1
Total Resource	365,890,000	\$0.1	\$0.1

Production Profile (0zAu) (100% of Project)

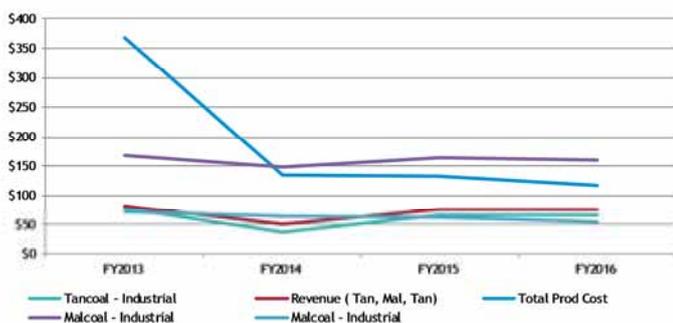
Operation	FY2013	FY2014	FY2015	FY2016
Tancoal - Industrial	62,250	304,000	470,000	572,000
Malcoal - Industrial	2,150	40,180	56,000	79,000
Tancoal - Thermal	0	0	0	0
Total	64,400	344,180	526,000	651,000

Coal Price & Revenue

USD / t	FY2013	FY2014	FY2015	FY2016
Tancoal - Industrial	\$79	\$37	\$66	\$65
Malcoal - Industrial	\$169	\$149	\$163	\$159
Tancoal - Thermal	\$0	\$0	\$0	\$0
Revenue (Tan, Mal, Tan)	\$82	\$50	\$77	\$77

Cash Cost

USD / t	FY2013	FY2014	FY2015	FY2016
Tancoal - Industrial	\$96	\$21	\$34	\$33
Malcoal - Industrial	\$73	\$65	\$62	\$54
Tancoal - Thermal	\$0	\$0	\$0	\$0
Total Prod Cost	\$367	\$135	\$132	\$118

Revenue/Cash Cost Per Tonnes

Cashflow Generation

Cashflow generated	\$0.2	(-\$0.1)	\$13.1	\$13.6
Equity Placement	\$4.5	\$0.0	\$0.0	\$0.0
Debt Funding	\$3.5	\$0.9	\$7.6	\$6.1
Capital Expenditure	\$3.5	\$1.7	\$7.5	\$8.6

Directors & Management

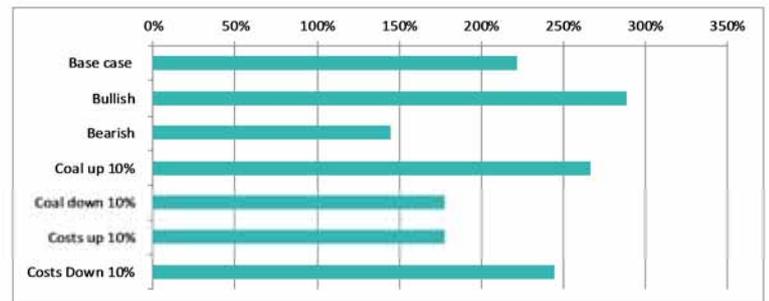
Graeme Roberson	Executive Chairman & MD
David Mason	Executive Director
Jonathan Warrand	Executive Director & CFO
William Paterson	Non Executive Director
Gideon Nasari	Non Executive Director

Major Shareholders

ASPAC Mining Ltd	14.94%
Lujeta Pty Ltd	7.09%
Farjoy Pty Ltd	6.98%
RBC	5.71%
Total	34.72%

Scenario Analysis

Scenario	NAV Target (A\$m)	Target SP (A\$)	Variance from base case (A\$)	Variance from base case (%)
Base case	80	0.29	0.00	0%
Bullish	97	0.35	0.06	21%
Bearish	63	0.22	-0.07	-24%
Coal up 10%	90	0.33	0.04	14%
Coal down 10%	69	0.25	-0.04	-14%
Costs up 10%	73	0.25	-0.04	-14%
Costs Down 10%	87	0.31	0.02	7%



Source: Company data, RFC Ambrian estimates

Valuation

Riskd NAV of A\$79.8m

We value IEC on a sum-of-the-parts basis, valuing assets at fair value using a DCF (at a 10% discount) based on parameters and assumptions from our review of operations. This generates a riskd NAV of A\$79.8m after using varying riskd weightings for each asset within IEC.

Producing Coal Mines – Industrial Coal Sales

We value the industrial coal sales of the existing producing coal mines, 'Tancoal (Industrial)' and 'Malcoal (Industrial)'. We value both these assets as they are currently in production. We use a risk weighting for each NAV due to the speculative nature of the forecast sales that largely drive value. We value Malcoal at a lower risk weighting of 0.30x due to it having no JORC resources.

We feel that IEC must continue to prove it can penetrate and gain the market share potential we forecast; when this is achieved we will adjust our riskd NAV to a lower discount, thereby increasing the valuation substantially.

We also value the 'AAA Drilling' company using a DCF_{10%}; this generates a NAV of A\$6.4m at a 1x riskd NAV. The NAV is based on 33% utilisation, a seven-year asset life and revenues based on IEC guidance.

Power Project – Power Dividend and Thermal Coal Sales

Riskd NAVs for both power dividends streams: A\$9.1m for Ngaka and A\$13.0m for Pamodzi

The successful development of both the Pamodzi and Ngaka power projects generate significant revenues from dividend streams, we value each as a NPV_{10%} at a riskd weighting of 0.05x NAV. This results in riskd NAVs for both power dividends streams of A\$9.1m for Ngaka and A\$13.0m for Pamodzi. We also value the increased sales of coal using an NPV_{10%} and a riskd weighting of 0.05x NAV at A\$1.7m.

While these projects are advancing well from a development perspective, they are still subject to MOUs and, hence, to final agreements. There are also permitting, financing and execution risks, leading to a heavy discount. On completion of signing the full PPA agreement for the development of even one PPA we will adjust our riskd NAV to a lower discount, thereby increasing out valuation.

All cash held, outstanding principal and interest debt payments are modelled through the DCF. We assume a 50% debt/equity split for the capex. We summarise our sum-of-the parts valuation in the table below.

Table 1: Valuation Summary

Fair Value Calculation	Discount rate	NAV (US\$m)	Target SP (US\$) (no discount)	NAV (A\$m)	NAV 'X' Factor	NAV Target (A\$m)	Target SP (A\$)
Tancoal (Industrial)	10	76.5	0.28	82.3	0.40	32.9	0.12
Malcoal (Industrial)	10	40.1	0.15	43.1	0.30	12.9	0.05
Tancoal (Thermal)	10	30.8	0.11	33.1	0.05	1.7	0.01
Ngaka Power Dividend*	10	168.7	0.61	181.4	0.05	9.1	0.03
Pamodzi Power Dividend	10	241.0	0.88	259.2	0.05	13.0	0.05
AAA Drilling	10	6.0	0.02	6.4	1.00	6.4	0.02
Cash		3.6	0.01	3.9	1.00	3.9	0.01
Total NAV		566.6	2.06	609.3		79.8	0.29

*We assume a 120MW plant and not 200MW

Source: RFC Ambrian

Below we show the key assumptions used in our DCF valuation to calculate the NPV_{10%}.

Table 2: Key Assumptions - Life of Mine

Description	Tancoal (Industrial)	Malcoal (Industrial)	Tancoal (Thermal)
Mining and Processing Assumptions			
Total Ore Mined (Mt)	20.70	2.94	18.45
Waste Mined (Mt)	78.22	8.83	71.18
Strip Ratio	3.78	3.00	3.86
Sales (Mt)*	27.90	2.94	18.45
Operating Cost Assumptions	US\$/t produced	US\$/t produced	US\$/t produced
Mine Production Expense			
Mining Costs (includes waste)	18.81	21.00	19.29
Logistics Cost	11.17	31.06	-
Cost of Sales Other	1.67	1.50	1.50
Total Mine Production Expense	36.10	53.56	20.79
Other Operating Expenses			
Royalty	1.94	7.03	-
Depreciation	2.44	0.70	9.65
Corporate Expense	4.77	4.48	3.96
Interest Expense	0.02	-	7.34
Total Other Operating Expenses	9.16	12.21	20.95
Tax Expense	6.68	22.47	1.21
Capex Assumptions	US\$m	US\$m	US\$m
Initial Capex	9.24	2.05	59.5 ²
Sustaining Capex	35.0 ¹	-	114 ¹
Financing Assumptions	US\$m	US\$m	US\$m
Funding Senior Debt	5.70	-	177.30
Price Assumptions	US\$/t	US\$/t	US\$/t
Thermal Coal Price	64.9	140.6	Contract cost plus*

¹Assumes new equipment every five years; ²Assumes development of two mines to allow for supply of coal to the Ngaka and Pamodzi power projects.

*Commercially sensitive; Source: Company data, RFC Ambrian

Scenario Analysis

As part of our financial modelling for Intra Energy we explore the effects on the NAV under different scenarios.

Table 3: Scenario Analysis Assumptions

Scenario/Sensitivities	Bullish (%)	Bearish (%)	Coal up 10%	Coal down 10%	Costs up 10%	Costs down 10%
Coal Price	+10	-10	+10	-10	-	-
Capex	-10	+10	-	-	+10	-10
Cash Costs	-10	+10	-	-	+10	-10

Source: RFC Ambrian

The table above outlines the assumptions for each of the six scenarios explored relative to the base case on which we made our valuation. In our bullish scenario we assume a 10% premium to our coal price and decrease cash costs and capex by 10%. In our bearish scenario, capex and cash costs are increased 10% and we decrease coal prices by 10%. In our costs up and down scenario we adjust costs up by 10% and down by 10% respectively.

Table 4: Financial Outcomes of Scenario Analysis

Scenario	NAV Target (A\$m)	Target SP (A\$)	Variance from base case (A\$)	Variance from base case (%)	Variance from SP (A\$)	Variance from current SP (%)
Base case	79.8	0.29	0.00		0.20	222%
Bullish	96.8	0.35	0.06	21%	0.26	289%
Bearish	62.6	0.22	-0.07	-24%	0.13	144%
Coal up 10%	90.2	0.33	0.04	14%	0.24	267%
Coal down 10%	69.4	0.25	-0.04	-14%	0.16	178%
Costs up 10%	73.1	0.25	-0.04	-14%	0.16	178%
Costs down 10%	86.7	0.31	0.02	7%	0.22	244%

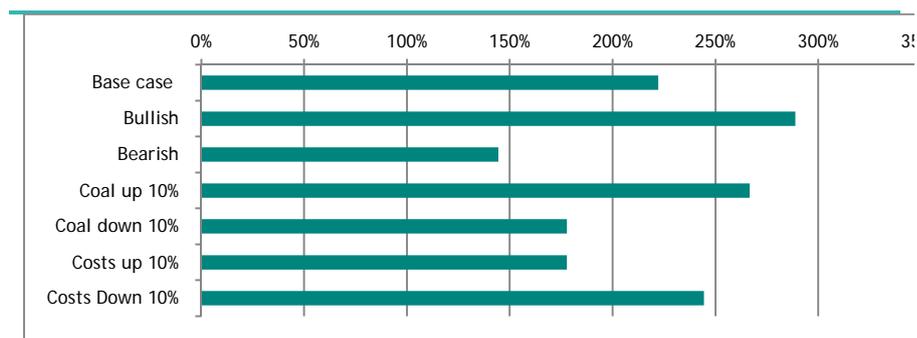
Source: RFC Ambrian

Table 4 outlines the effects on share price valuation (in A\$) as well as the variance in target price (from base case) and the variance from the current share price, both in absolute and relative terms.

Our scenario analysis models positive share values for all the scenarios

Our scenario analysis models positive share values for all the scenarios; furthermore, it demonstrates the minimal downside risk at the current share price. The project shows resilience to lower commodity prices than our forecast; even the higher costs scenario demonstrates higher returns relative to the current share price. The bearish scenario (lower coal prices and higher costs) also shows an increase in returns from the current price.

Figure 1: Scenario Valuation – Share Price (A\$/share)



Source: RFC Ambrian

Company Overview

Background

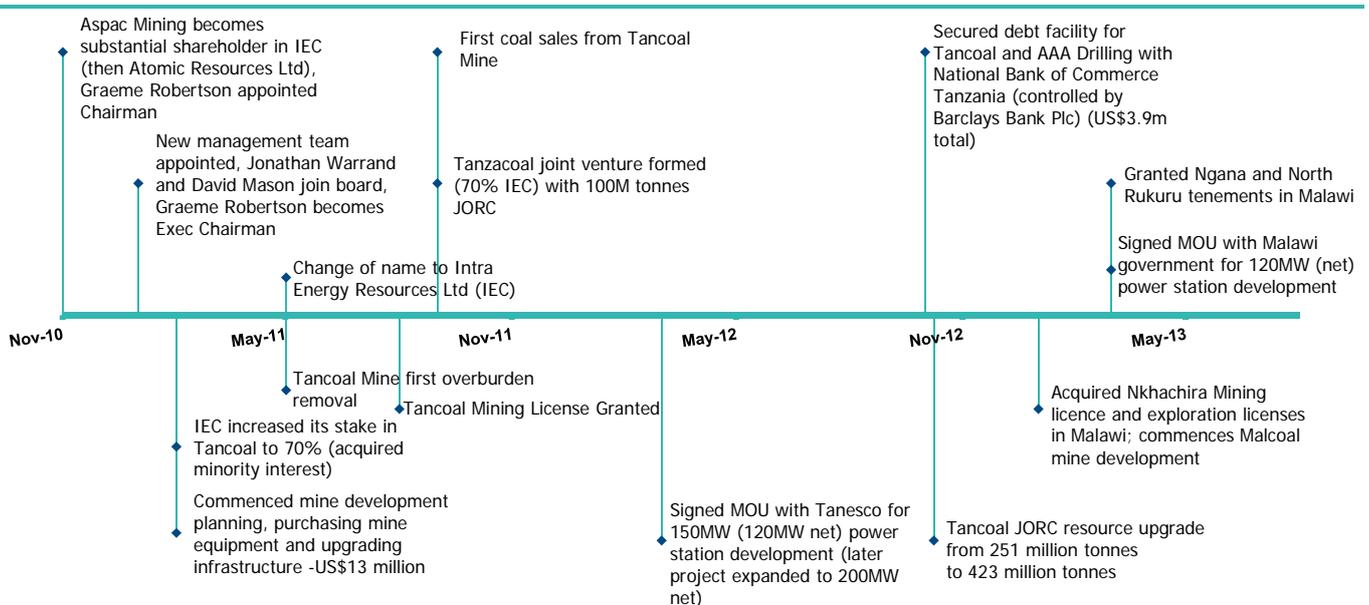
The strategy to develop assets in Tanzania was initiated in November 2010

The renewed strategy to develop assets in Tanzania was initiated in November 2010 following the appointment of Graeme Robertson to the board as Chairman of IEC (or Atomic Resources Ltd as it was known then). Since that time IEC has invested over A\$20m in developing the assets and infrastructure required to establish operations that are now on the brink of generating positive free cashflows.

In the time since Graeme and his new board and management joined, IEC has also acquired and applied for various new coal licences in Malawi and Tanzania. Today these licences have established JORC resources and operating mines that are the now the focus of an initiative to supply coal-fired power plants in-country.

Figure 2 identifies the key milestones since the board changes in late 2010.

Figure 2: Timeline



Source: Intra Energy

Financial Summary

Table 5: Shares and Options

# Issued (m)	Strike (A\$)	Equity (A\$)
1.00	0.25	0.25
0.80	0.25	0.20
5.50	0.65	3.58
1.50	0.65	0.98
0.60	0.39	0.23
2.64	-	-
3.67	-	-
2.32	-	-
18.03	0.29	5.23

Source: Intra Energy

As at 31 March 2013 IEC had A\$2.42m in cash, after which A\$4.53m was raised via a rights issue. Of the A\$3.79m debt facility, A\$3.35m has been drawn and is payable monthly up until the facility's maturity date (October 2015). Financial statements from 31 December 2012 indicate that working capital was positive (the working capital ratio was 2.79x).

Total issued and outstanding ordinary shares are 275,012,090, with a further 18.02m options outstanding. If all were exercised, A\$5.23m in cash would be raised; however, the options are currently out-of-the-money. The options represent 6.15% of the fully-diluted shares issued.

Coal Portfolio

Portfolio Summary

IEC has a portfolio of thermal coal projects

IEC has a portfolio of thermal coal projects, all at varying stages. Industrial sales of thermal coal have been developed and grown for the last two years; this trend is set to continue in 2013 as we expect production to expand due to IEC's continued focus on increasing sales to new industrial clients. From the mine face to delivery to clients, optimisation and cost reduction strategies are underway.

The future growth of IEC is reliant on growing its domestic industrial sales (ie, gaining market share from its main South African competitors) and the start of thermal coal sales to in-country power projects that are in advanced stages of negotiations for approval and design.

In the table below we have summarised the key mining projects owned by IEC.

Table 6: Asset Summary

Project	Holding Company	Ownership	Status	Resource (Mt)	Strip Ratio
Ngaka/Mbalawala*	Tancoal	70%	Prod	423	4.45 [^]
Songwe/Kabulo	Tanzacoal	70%	Exp	100	-
Nkhachira	Malcoal	90%	Prod	-	-
Ngana	Malcoal	90%			
N Rukuru	IETL+	100%	Exp	-	-

*Based on the current small-scale operation, not indicative of larger-scale production of thermal coal for the mine-mouth coal; ⁺IETL: Intra Energy Trading Ltd; [^]Bulk cubic metre (BCM) of waste to coal; Source: Intra Energy, RFC Ambrian

IEC has now formulated a mine development strategy to achieve its future coal production objectives

IEC recently contracted the consultants Optimine to undertake, in conjunction with IEC's own staff, a strategic resource review of IEC's portfolio of coal resources. As a result, IEC has now formulated a mine development strategy to achieve its future coal production objectives. Some of the key targets we have identified in the next 6-12 months are:

- the delineation of reserves at the Ngaka mine;
- the delineation of a maiden resource in Malawi; and
- the expansion of sales and production of industrial coal.

To bring investors up to speed with mining activity in East Africa, we have included in Appendix V a table of mines operating in the region and another table identifying operating coal mines. Given IEC's strategy to expand coal sales through the development of power projects, we have also undertaken a brief overview of the Tanzania and Malawi power sectors in Appendices II-III.

Figure 3: Location


Source: Intra Energy

Figure 4: Logistics – Stockpiles and Ports


Source: Intra Energy

Tancoal has produced over 170,000t of coal in the last 20 months

Ngaka Mine (70% Tancoal, Tanzania)

Tancoal, owned 70% by IEC, operates a coal mine located ~700km south-west of Dar es Salaam. The 30% JV partner in Tancoal is the National Development Company (NDC); this entity is state-owned and is carried to production.

Plans from the outset have concentrated on expanding current coal production and sales to industrial users, while, longer term, IEC has focused on developing coal sales to a mine-mouth, coal-fired power plant. Momentum continues to gain pace on delivering this; IEC completed a PFS on the Ngaka Power Project in March 2013, 12 months after signing an MOU with the Tanzanian Government to develop a 200MW coal-fired plant.

Project Background

Tancoal commenced small-scale mining at Ngaka in September 2011, which at the time had JORC resources of 251Mt. Following the commencement of drilling in 1QCY12, IEC grew the resource substantially (to 423Mt) by October 2012. A detailed LOM mine plan was then completed in March 2013. Approximately A\$20m has been invested in this project since exploration and development activities commenced in mid-2008.

Current Operations Overview

Ngaka is accessible via a graded 60km haul road that connects to the fully sealed highway. The mine has the capacity to operate at 30,000tpm utilising the current fleet. The operation consists of considerable equipment, including excavators, dozers, front-end loaders, an in-pit crusher and a screen, and a fleet of 12 x 15t haul trucks plus 8 x contracted 15t haul trucks. It also operates a fleet of equipment for road maintenance.

Mining operations are currently only active on the Mbalawala licence (Tancoal South). Here the mining process involves the removal of overburden by dozer rip and push, with coal haul trucks loaded by excavator. The mined coal is crushed in-pit and then trucked to the Kitai load-out stockpile close to the main highway. From here it is then loaded onto larger 32t haul trucks for distribution to both domestic and cross-border customers in Tanzania, Kenya and Uganda.

The coal is currently exported to clients from the Kitai stockpile (see Figure 4). Coal is also transported 150km by 650t barges from the Ndumbi port to the Kiwira-Itungi port in the north and 420km to Chipoka in the south. Going forward, barging to Chipoka will be terminated and IEC's other 90% subsidiary in Malawi, Malcoal, will supply clients utilising coal from this port. This is also planned for the Kiwira-Itungi port coal clients, although Ngaka will continue supplying some clients if coal production is not adequate at Malcoal.

Tonnages are reduced during the wet season due to lower haulage rates on the graded road, while the large stockpile buffers supply to ensure sales are filled over this period.

Costs, Production and Sales

Tancoal has produced over 170,000t of coal in the last 20 months, averaging 8,500tpm at a strip ratio of 4.5 bulk cubic metres (BCM) of waste to 1t of coal. Sales averaged 4,440tpm over the same timeframe, achieving the targeted ~10,000tpm from mid-2012.

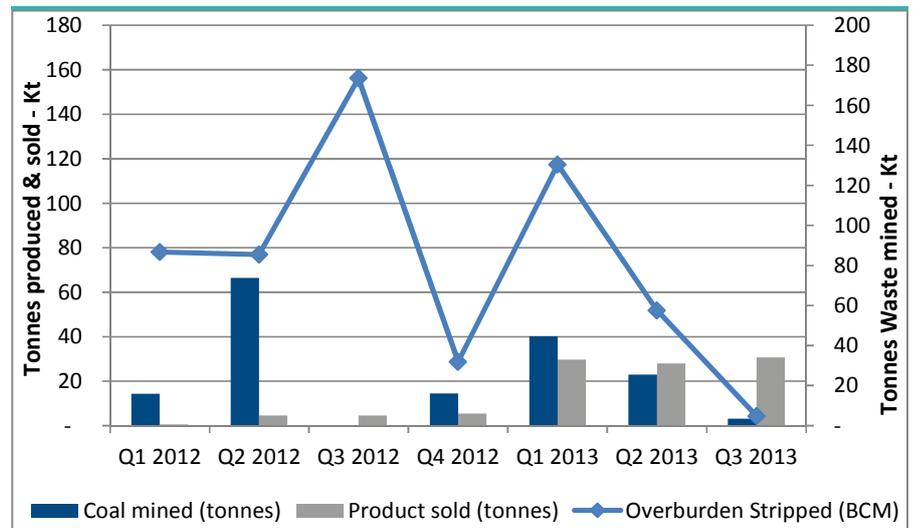
The coal is sold at the mine gate for ~A\$54/t, with production costs targeted to fall to A\$35/t

The coal is sold at the mine gate for ~A\$54/t, with production costs targeted to fall to A\$35/t. It's expected that costs can be reduced down to A\$25/t once production is at full capacity and haul road improvements are finalised. Freight charges are picked up by the client, although IEC may fund this cost for 100% reimbursement (which is a drain on working capital).

We have charted coal production and sales since operations commenced in Figure 5 below. The Ngaka mine has the capacity to produce 30,000tpm (360,000tpa) and IEC is targeting this production rate in 12 months.

We estimate a stockpile of ~25,000t of coal as sales were slower due to a commitment from industrial buyers to longer-term supply contracts with Richards Bay coal exporters; some of these have lapsed, allowing them to purchase coal from IEC. Some prospective clients also had to run down their coal inventories before switching to IEC coal. Moreover, numerous prospective clients wished to trial the fuel before switching to IEC's product, and most of these trials were not completed until March 2012. These issues stifled sales, but since mid-2012 sales have increased. We note that sales have increased over the last two quarters; this, combined with current contract-negotiated volumes, suggests that sales will grow to double (or even triple) their current volumes by the year end. Some of these sales will also be filled by IEC's other coal mine.

Figure 5: Ngaka Mine (JV) Sales (includes non-attributable sales)



Source: Intra Energy

Development Plans

A BFS must be completed on the Ngaka coal mine

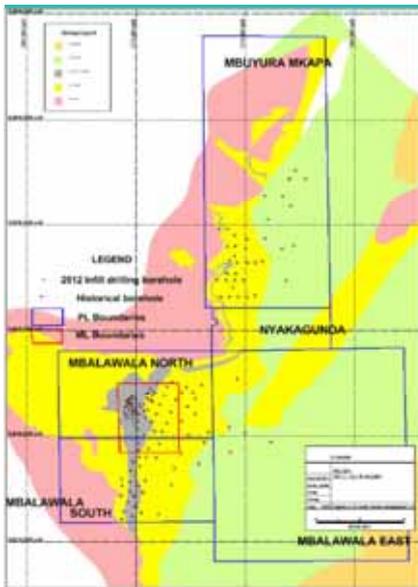
A BFS must be completed on the Ngaka coal mine so that mining costs can be included in the IPP BFS that is targeted for completion by March 2014; the cost to achieve this is minimal.

During FY14 a further A\$1.5m is budgeted for work on the graded road in order to reduce operating costs. The investment should reduce costs due to the shorter haulage distance, and road upgrades will also improve road/bridge axel loads, thereby increasing haulage loads and decreasing costs per unit.

Table 7: Drill History

	Year	# Holes	Total (m)
CDC	1950s	39	10,934
Atomic	2008-10	57	7,607
IEC	2011	51	2,503
IEC	2012	137	11,478
Total		284	32,522

Source: Intra Energy

Figure 6: Plan View – Drill Collars and Licences


Source: Intra Energy

Geology and Resource

Over 32,500m (284 drill holes) have been drilled to date, with over five seams identified in the 423Mt JORC resource. Table 8 summarises the resources below. Some 40% of the resource is contained within the measured and indicated category; this allows IEC to commence the BFS (it has already partially started this with the LOM plan already finalised). The resource is split over two deposits, with Mbuyura in the north and Mbalawala in the south (see Figure 6).

Table 8: IEC JORC Resources

	Mbalawala	Mbuyura Mkapa	Total
Measured	39	16	55
Indicated	63	49	112
Inferred	114	142	256
Total	216	207	423

Source: Intra Energy

At Tancoal South (Mbalawala), where coal is currently mined, the S300 seam is being extracted. The seam has good thicknesses of between 1.2-6m and the dip is shallow. Strip ratios have averaged ~4.4:1 to date, although IEC expects this to decrease as operations expand.

With reference to the broader resource at Tancoal South, the seams dip 5-10° to the east and the strike length is ~7km long by ~2.5km wide, as defined by drilling. The majority of the drilling is down to 250m, so most of the resource sits above this level. The resource model remains open in various areas and other targets exist within proximity to the resource.

As shown in Figure 6, ~2km to the north of the Mbalawala mine is the Mbuyura licence (Tancoal North). This licence contains just under 50% of the 423Mt JORC resources and consists of the same coal formation as that to the south, although seams dip steeper at 10-15°. Drilling has defined the strike of the resource over 11km long by 3.5km wide; extensions of coal are highly likely. The resource has been drilled down to ~250m.

There was no depth of weathering evident, or major aquifers encountered; as such, water does not pose an issue to mining. Below are shown the coal qualities of the various seams in the sequence.

Table 9: Tancoal Seams – Raw Coal Quality*

Seam	Avg Thickness (m)	Ash (%)	Inherent Moisture (%)	Volatile Matter (%)	S (%)	CV (kcal/kg)
Tancoal South (Mbalawala)						
S500	1.06	46.4	2.4	21.6	0.59	3,834
S400	4.59	41.9	2.2	22.1	0.65	4,212
S300	3.28	18.2	2.9	25.8	1.04	6,301
S200	0.69	13.3	3.3	27.9	1.84	6,798
S100	1.30	14.6	2.5	29.7	1.67	6,774
Tancoal North (Mbuyura)						
S500	0.65	~	~	~	~	~
S400	0.96	44	1.9	22.5	0.42	4,233
S300	1.42	43.7	2.0	22	0.54	4,201
S200	1.74	36.1	1.9	21.7	0.74	4,717
S100	5.57	24	2.0	24	1.75	5,844

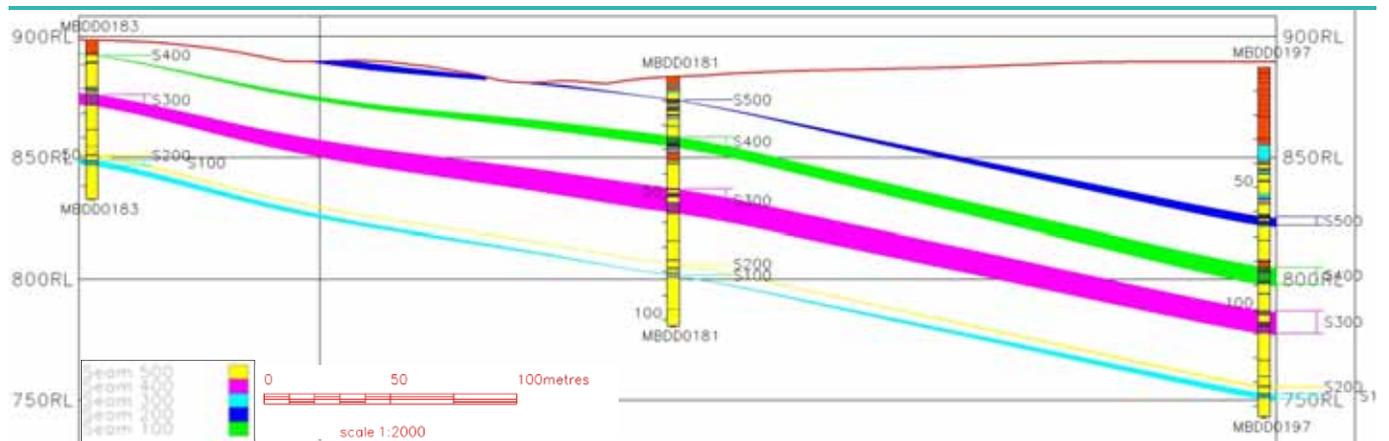
*Coal thickness and raw qualities are weighted on M&I only; Source: Intra Energy

Tancoal South S300 and S100 seams are high energy coals with good mineable thicknesses

The seam thicknesses and coal quality of the various seams are shown below. The data confirms that the Tancoal South S300 and S100 seams are high-energy coals with good mineable thicknesses (all other quality measures are within typical thermal coal specifications, although we feel the sulphur is a little high). Washing is unlikely, but we wouldn't rule it out at this early stage as it may optimise the open-pit design given the potential to mine the shallower and thicker lower-quality coals that can then be washed to improve quality specifications. In a scenario with no washing, IEC can selectively mine the coal to remove ash as it is not inherent in the coal. Pit optimisation with no wash plant would utilise said mining practices, as well the blending of low- and high-energy coal so as to manage ash, sulphur and energy levels.

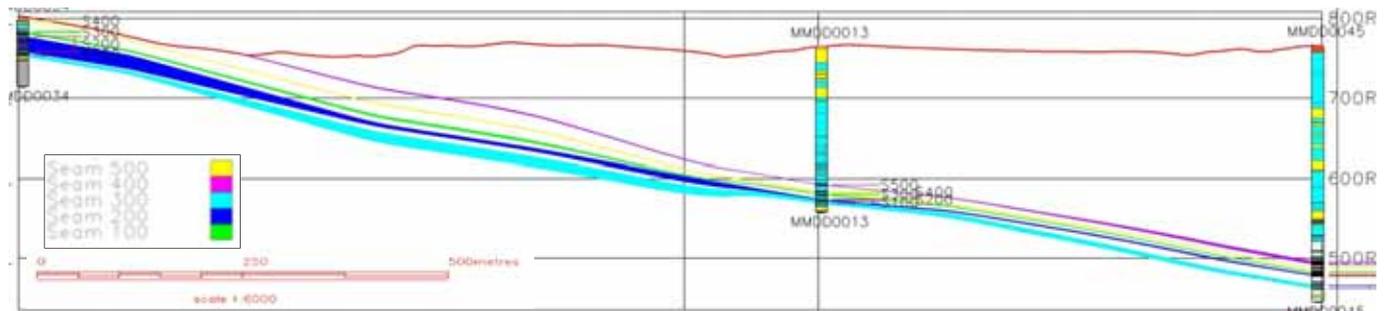
Figures 7 to 8 show the sequence of coal seams in the formation.

Figure 7: Tancoal South (Mbalawala) – Cross Section



Source: Intra Energy

Figure 8: Tancoal North (Mbuyura) – Cross Section



Source: Intra Energy

Figure 9: Location


Source: Intra Energy

Nkhachira Mine (90% Malcoal, Malawi)

Malcoal, owned 90% by IEC, holds three prospecting licences and the Nkhachira mine. These were acquired in January 2013 for A\$800,000 plus a loan of A\$150,000 repayable from distributions. CMI, the 10% JV partner, is free carried and owned by a local Malawi national. Following the mobilisation of the contractor equipment to site in mid-February, pre-stripping commenced soon after. With the onset of the rainy season, production was only able to commence in mid-May.

IEC's current plans at Nkhachira are focused on the expansion of production and industrial coal sales, with future plans to supply coal to either the Pamodzi power project, a privately-owned coal-fired power station in Tanzania, or another future mine-mouth, coal-fired power station.

While no JORC resources exist at this newly-acquired project, IEC has moved quickly to drill out a well-defined mine plan that greatly reduces the mining and geological risk of extracting the coal; in our opinion, this adds significant credibility to the production and cost guidance.

Current Operations Overview

The mine is located ~70km south of the Tanzanian border. A ~30km graded road connects the mine to the main sealed Koronga-Chitipa highway. IEC shares the graded road access with Paladin Energy's (PDN AU) Kayelekera uranium mine. The connecting sealed highway is used to haul coal to various clients, both domestic and cross-border (locations include Zambia and DR Congo).

Malcoal was previously mined by artisanal miners, unaided by mechanisation. Following the acquisition of the licences by IEC, pre-stripping commenced and a 50m x 100m box cut was completed at the time of our site visit (June 2013) – we confirm that stripping had exposed the ~3m thick lower seam. IEC is in advanced contract negotiations for securing a mining equipment lease; the mobilisation of more efficient mining equipment will expand capacity to 15,000tpm and improve production reliability. Equipment sourced will consist of an excavator, a dozer, a front-end loader, a crusher and a screen, and two 30t haul trucks. The mined coal is trucked from the pit via the graded road to a stockpile (which is soon to be relocated to near the pit as it currently sits by a river that floods during the wet season). Haul trucks (35t) are loaded at the stockpile for distribution to clients. As at the Ngaka mine, the stockpile serves to act as a buffer during the wet season.

There are currently ~1 month of coal supply stockpiled, and a further ~1 month of coal production exposed (both being based on 3,000tpm coal production).

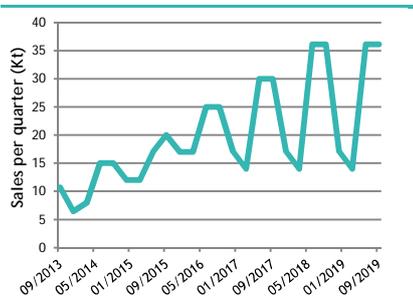
Costs, Production and Sales

Production is planned to ramp up in line with sales contracts. According to IEC, industrial coal demand in Malawi is estimated to be around 120,000-150,000tpa, markets in Zambia are estimated at ~240,000tpa although there are some domestic collieries. The main coal consumers come from the substantial, decades-old tobacco exporting industry, concrete manufacturers, paper mills, textiles and breweries.

Industrial coal demand in Malawi is estimated to be around 120,000-150,000tpa

Costs are currently A\$40/t and should go down to A\$25/t

Figure 10: Nkhachira Mine Sales*
(note sales correlate to seasonal agricultural tobacco harvests)



*Shown as 100% of Malcoal; Source: RFC Ambrian estimates

Maiden resource is planned in 3QCY13

Three size fractions are sold (fines, mids and coarse); while each has varying sale prices, sales currently average ~US\$70-75/t at the mine gate. The price received in Malawi is higher than that paid by Tancoal's clients due to there being virtually no competition. Historical pricing was set by small domestic coal producers and imported coal, which incurs high transport costs as it is imported from Zimbabwe or Mozambique. Production costs are currently A\$40/t and should go down to A\$25/t once the new mining equipment is leased. IEC offers freight financing on the same terms as at Tancoal's Ngaka mine.

We have charted the coal production and sales outlook in Figure 10. This includes sales into Malawi and Zambia. The mine is targeting production at the expanded 15,000tpm capacity rate within 18-24 months and will be scaled to demand.

Development Plans

The FY14 budget allows for further infill, pre-production drilling plus mine infrastructure. A total of ~A\$1.5m is budgeted for this and the building of a bridge. The improvements are required to allow the increased tonnages and all-year access.

No definitive plans exist for the expansion of Nkhachira beyond its requirements for industrial coal sales. However, there are three viable options that may see the Nkhachira mine expand coal production significantly. They are:

- Exportation of coal to privately-owned coal-fired stations.
- Supply an integrated mine-mouth, coal-fired power project.
- Supply of coal to the proposed southern coal-fired Pamodzi plant. If coal prospects in the south of Malawi are sterile or not viable, Nkhachira could supply coal to the Pamodzi plant. In such an instance, a BFS would need to commence following the delineation of a +15Mt reserve/~25Mt resource. As it stands, the Pamodzi plant will source coal from Tanzania; however, this is a short-term proposal (<5 years) that will change once funding can be sourced to develop a Malawi-based coal mine.

Geology and Resource

The resources lie in the far northern part of the North Rukuru Basin, consisting of Karoo Formation sediments, the major coal-bearing formation of Sub-Saharan Africa. Coal outcrops and other sediments have been mapped and the major stratigraphy and coal seam sequence defined.

Although no JORC resources exist at this newly-acquired project, a maiden resource is planned for 3QCY13 as IEC has moved quickly to drill 64 holes (2,860m). Based on our rough estimates from the drilling, it's feasible that about 250,000t has been delineated on what is effectively pre-mine development drilling. The drilling was completed on close spacings as centres varied between 50-100m. In light of this programme, despite there being no JORC resources, we think the drilling definition is high and significantly de-risks the technical and economic risks of the operation. Based on our mining assumptions, this represents about 24-30 months production. Furthermore, in addition to the pre-mine development drilling, IEC has undertaken a larger drill campaign to delineate resources (drill centres were 100-200m in this instance). Again, our rough estimates suggest several million tonnes of coal may exist; we await the maiden resource to confirm this.

It is estimated that the region contains over 20km of strike

The coal prospects in the region are significant and only a small portion of the region has been drilled. It is estimated that the region contains over 20km of strike based on reviews of data collected by Malawi geological surveys. Interpretations suggest there is considerable potential for there to be numerous coal deposits within IEC's licences as data from the geology and stratigraphy indicate that the coal has been offset along strike by structural features such as faults.

Drilling to date has identified three main seams in the Nkhachira deposit: the Upper Seam (with thickness of 0.8m), the Middle Seam (0.8-2.1m) and the Lower Seam (3.0m). From interpretations, it's understood that the seam dips 10-12° where shorter-term mining is planned (<2 years); this will likely steepen to 10-20° for the enlarged resource.

Tests completed during due diligence showed raw coal quality ranging between 5,500-7,150kcal/kg and 12-28% ash. The high energy and low ash values in the range quoted suggest the coal is very good quality, although this is more likely to be closer to the lower end of the range quoted. Drill results have confirmed the presence of some high gamma readings in sandstones, but not in the coal seams; as such, uranium is unlikely to be an issue for coal quality.

Limited information on coal quality

It is early days in the development of this asset, and with limited information on coal quality collected we can't formulate a strong opinion on the viability of the project. IEC's management team, on the other hand, has had access to drill core and logs, allowing it to form a good understanding of the coal quality along-strike. Given the planning that has been undertaken by IEC, commencing operations is probably less risky than some outsiders (and indeed ourselves!) believe. With the completion of a maiden JORC resource imminent, coal quality risk will soon be eliminated.

Figure 11: Location



Source: Intra Energy

Ngana and North Rukuru Prospect

Two coal licences in northern Malawi were granted in January 2013 – North Rukuru and Ngana. According to IEC: *“based on due diligence and historical exploration data, both licences are highly prospective and are expected to host large, shallow coal resources... Both concessions contain numerous coal outcrops throughout and have the potential to add significant coal resources to the IEC inventory.”* We did not review these properties during our site visit and we await further details from the exploration programme that has been undertaken.

A geological mapping and sampling programme has been completed since the acquisition. As of March 2013, a 5,000m drilling programme was in progress and results will be reported in late 2013. The programme aims to extend the mapped coal outcrops and determine the continuity and quality of the coal seams. IEC also aims to produce JORC-compliant resources and reserves in 2013 at these prospects; after these results, it will likely supply the proposed Pamodzi power plant. Of funds budgeted for the programme, minimal expenditure remains.

Ngana Licence (90%, Malcoal)

IEC’s 90%-owned subsidiary Malcoal was granted 100% ownership of the Ngana licence, covering 231km². It is located south of the Tanzanian border.

North Rukuru (100%, Intra Energy Trading Ltd)

IEC’s other Malawi subsidiary, IETL, was granted the licence, which covers 318km². It is located immediately south of Malcoal’s Nkhachira mine.

Songwe-Kabulo Project (70%, Tanzacoal)

Tanzacoal, a 70%-owned subsidiary of IEC, owns licences in Tanzania that contain over 100Mt of coal. A coal-fired power station is proposed in the Mbeya region of western Tanzania and the Tanzacoal resources are considered likely to be the principal fuel supplier.

The Songwe-Kabulo licences were acquired in April 2011. These are owned 30% with a local Tanzanian party. The JV partner is owned by a consortium of private Tanzanian investors. IEC paid US\$7m cash for its 70% interest – no further payments are outstanding. IEC also acquired a 70% interest in three prospecting licences around the Songwe-Kabulo mining licence for a consideration of US\$1m cash and US\$2m of IEC shares.

Geology and Resource

Significant historical exploration and mining evaluation was conducted by British Mining Consultants Ltd (BMCL) at these licences during the 1980s for the Tanzanian State Mining Corporation.

Drilling completed on the project totals 5,800m (77 holes); seven of these holes were twinned by IEC to validate the existing data and establish the 100Mt JORC resource. Drilling was less than 230m and the resource is defined over a strike of 8.5km by 2.5km wide. The seams dip ~15° to the east at an angle not too dissimilar to the slope of the range; this makes the overburden less of an issue and reduces strip ratios (see Figure 13).

Figure 12: Location



Source: Intra Energy

Table 10: JORC Resource

Category	Coal (Mt)
Indicated	75
Inferred	25
Total	100

Source: Intra Energy

Overall raw product of approximately 5,500kcal/kg and 26% ash

The resource coal quality averages 4,900kcal/kg and 32% ash; however, preliminary results from a recent bulk sample indicate that an area within the Kabulo deposit may be of a higher-quality coal. The bulk sample results indicate an overall raw product of approximately 5,500kcal/kg and 26% ash. This is significantly higher-quality coal than the JORC resource, which has positive implications for any development scenario. If a significant reserve of this lower ash content coal is delineated, a wash plant would not be required as the coal could be blended with lower ash material from Tancoal.

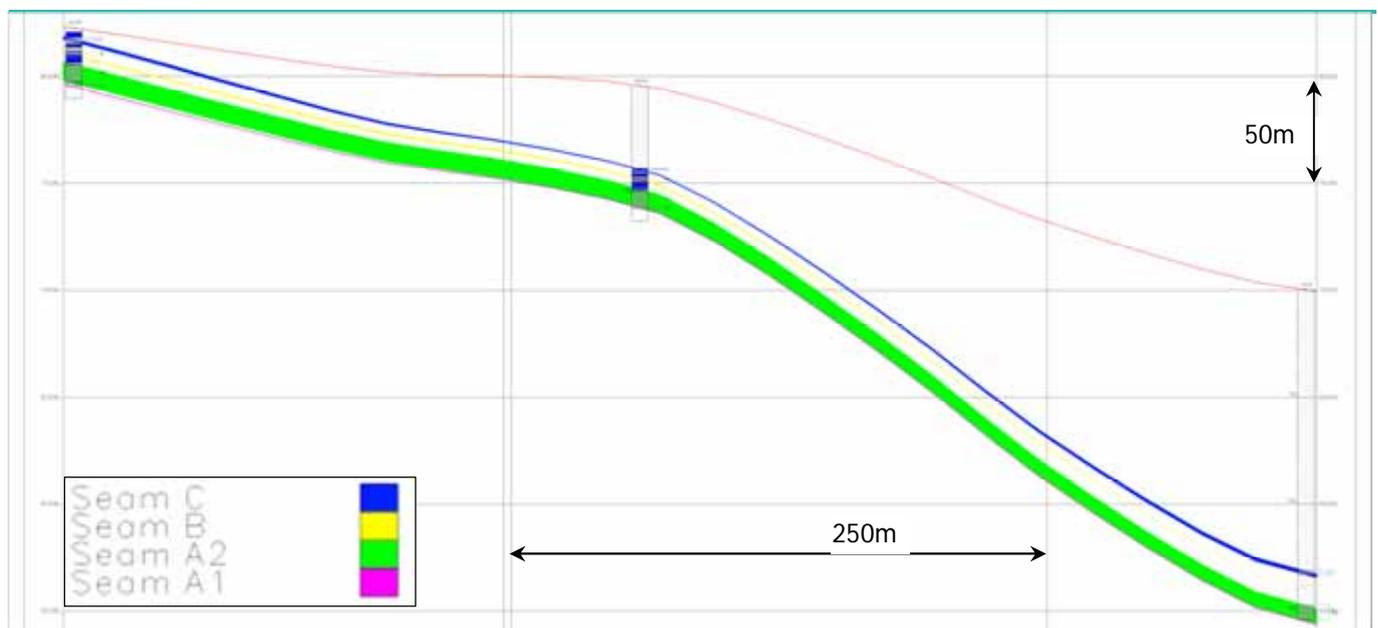
In late December 2012 a bulk sample for mine pre-development and marketing purposes was collected; a 5,650t bulk sample was excavated for detailed analytical and combustion testing. Samples comprising the full coal seam sequence were taken and stockpiled separately. In-pit channel and stockpile samples were taken and analysed in a Tanzanian laboratory. The results are shown below.

Table 11: Coal Quality – Seam Averages

Seam	Sample Type	Ash (%)	Inherent Moisture (%)	Calorific Value (kcal/kg)	Thickness (m)
C - Upper	Drill Core	24	2.6	5,562	1.58
	Channel Avg	26.5	6.9	5,503	
B	Drill Core	29	2.2	5,258	1.54
	Channel Avg	22.5	8.5	5,996	
A - Lower	Drill Core	28	1.6	5,422	7.33
	Channel Avg	25	8.6	5,528	

Source: Intra Energy

Figure 13: Kabulo Cross-section



Source: Intra Energy

Power

Overview

Graeme Robertson, the IEC chairman, brings with him a wealth of experience in developing coal mines and coal-powered plants, having been a highly successful frontier developer of such projects in Indonesia. We believe that East Africa can expect to see something similar.

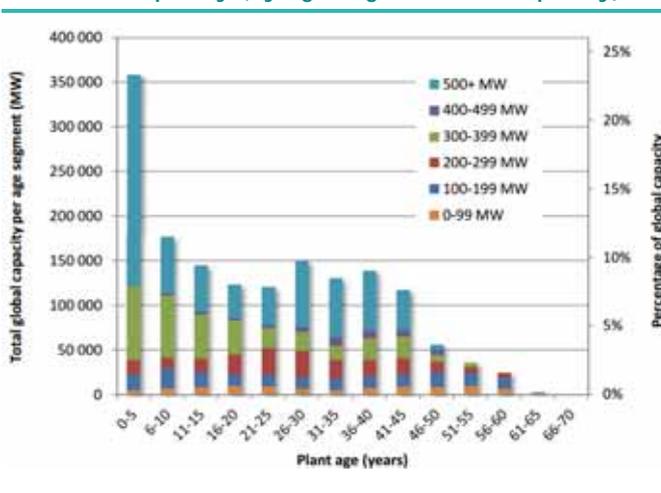
IEC has now completed pre-feasibility studies on two separate coal-fired power projects to be developed in Tanzania and Malawi. These studies come on the back of two signed MOUs. One is signed with The Tanzanian Electricity Supply Company (TANESCO) to provide 200MW and the other is with the Government of Malawi to provide 120MW. Private ownership of power producers is not new in Tanzania, it opened up the market in 1992, while Malawi passed its laws to enable private sector participation in 2011.

Power in Africa and the World Today

A recent report by the World Bank identified nine new energy projects that were begun in East Africa in 2011. Of the 752MW added, 427MW came from five diesel plants in Tanzania and Kenya, two gas-fired plants contributed 190MW and the remaining 135MW was from two separate renewable energy projects. These figures highlight the short-sighted approach to deliver 'quick-build' diesel-powered generators that are expensive to operate and highly volatile to global oil and gas prices. While there are comparatively few coal-fired plants in Africa as a whole, there are numerous coal-fired plants in South Africa and two new plants are under construction there (the 4.8GW Medupi and 4.8GW Kusile power stations). As we outline in Appendices II & III, some power projects have been identified for development in Tanzania, but there are far fewer in Malawi. In these Appendices we also briefly review the energy sectors in both Malawi and Tanzania.

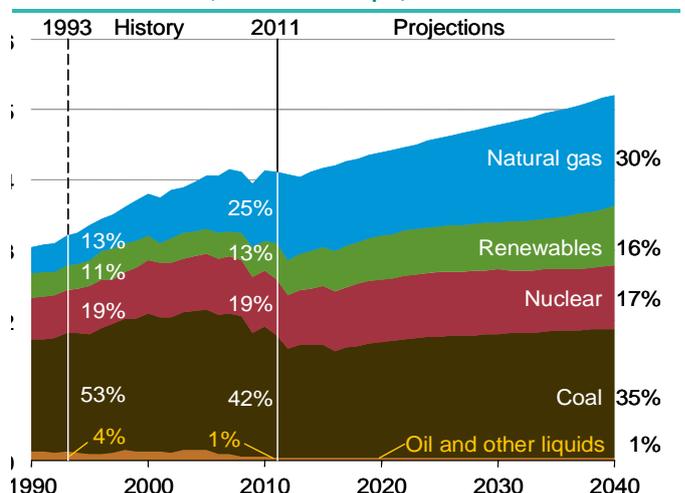
Today, despite global commitments to decreasing carbon emissions, coal is still the most prevalent fuel, largely because it is very competitive against other options as a cheap base load power source. Figure 15 shows the significance of coal to global generation capacity, while Figure 14 shows the steep increase in generating capacity from coal-fired power over the last five years; this demonstrates that it's still the fuel of choice globally.

Figure 14: Total Global Coal-fired Power Plant Capacity (by age & generation capacity)



Source: International Energy Agency

Figure 15: Electricity Generation by Fuel, 1990-2040 (trillion KWh pa)



Source: US Energy Information Administration

IEC is acting as the project sponsor for both power projects

Key to any consortium funding is a bankable Power Purchase Agreement

A voltage upgrade is a long way off given the required funding

Funding Options

IEC is acting as the project sponsor for both power projects and is seeking African and international equity investors. IEC is likely to reduce its ownership in both projects as it seeks to bring strategic partners on board to co-develop the projects; nevertheless, the value to IEC of the power projects is compelling (see *Valuation*).

To this end, we understand that IEC is in negotiations with various financing consortiums, which, in addition to a financier(s), include a corporate specialised in operating & management (O&M) and another in engineering, procurement and construction (EPC).

Key to any consortium funding is a bankable Power Purchase Agreement (PPA) that ensures payments for power produced will be paid in US dollars and are guaranteed by the governments or other guarantors (eg, the World Bank, AfDB or export credit agencies). Some observers note that the World Bank has not financed a coal project since it provided a US\$3.75bn loan to Eskom to assist in the financing of the Medupi coal-fired plant back in 2010. The move drew criticism despite the Bank's long history of financing coal generation, and recently the Bank has been drawn into further debates over the proposed financing of a coal-fired plant in Kosovo. Dialogue emanating from the World Bank on this latest debate suggests that only the very poorest countries will be eligible to receive guarantees or loans for building new coal-fired power stations. The World Bank or AfDb may, however, provide securities or guarantees for the two projects.

Tanzania – Electricity Generation Alternatives

Hydropower accounts for ~50% of Tanzania's total power generation, with the remainder produced from thermal power utilising domestic natural gas and liquid fuels (heavy fuel oil, diesel). The heavy weighting of hydropower in its power generation profile has meant that frequent and prolonged droughts affect the region severely (the last major drought occurred in 2011). They have caused significant (and ongoing) power shortages. The government is looking to diversify its power generation and we recognise that coal-fired generation is a reliable and affordable base load source that is not subject to climate-driven variability. Significantly, Tanzania possesses strategic coal resources to support its generation requirements and, hence, coal-fired base load power is a viable option.

The upgrade of the current in the land high voltage 220KV system to 400KV will make future gas-fired generation power more readily available in the country and at a lower cost to customers, but the upgrade is a long way off given the required funding for the capital costs of such an upgrade. The percentage of electricity generated from gas-fuelled plants will continue to increase, particularly once the natural gas pipeline servicing Tanzania's booming offshore gas fields are connected into the ~532km long Mtwara to Dar es Salaam gas pipeline; however, gas will not be available in the short term (for reasons we mention), and its costs of generation are somewhat obscure due to the unknown pricing of the gas. It is for these reasons that we believe a gas substitute will not threaten the viability of a coal-fired power station that can be developed and built quickly.

Figure 16: Tanzania – Existing and Future Interconnected Grid



Source: Power System Master Plan Tanzania Electric Supply Co

Ngaka Power Plant (100%, Tanzania)

The PFS completed on the development of the 200MW coal-fired power station estimates costs at between US\$400-440m, and power production is expected by early 2018.

Despite delays in reaching a key milestone agreement in recent months, the government has made numerous overtures that signal its support for the project. To this end, the government has:

- **granted a mining licence** within six months of the application to IEC's subsidiary Tancoal. This is extremely fast;
- **vended licences** into the Tancoal assets in exchange for a 30% free carry in the subsidiary; and
- **committed members from critical government departments** to the 'Project Ngaka Task Force', which has been set up to find ways to expedite the process. Departments included are shown in the table to the left.

There is good reason for us to believe that key milestones will advance, but – as with all deals in Africa – there is potential for delays. In light of the government's vested interest and the fact that negotiations are now narrowly focused on a handful of key terms, we expect PPA key terms to be signed in the near future.

Ngaka Project Summary

The key aspects of the project are shown below:

- **An MOU to develop a 200MW coal-fired, mine-mouth power station** was signed with TANESCO (Tanzania's state-owned power company) in March 2012 and extended a year later.
- **Project scope includes design, EPC and O&M** of the IPP and ancillary infrastructure, including the high voltage connection line to the main grid.
- **The Ngaka mine will supply coal to the project.** Supply and coal quality risk is mitigated by the potential blending of coal to achieve the desired quality specifications. The delineation of a maiden reserve at Ngaka is targeted within six months.
- **The PFS for the power station is complete** and PPA term sheet negotiations are drawing to a close.

We highlight the following key points from the energy sector overview in Appendix II that substantiate the importance and viability of this project: the huge demand for power in Tanzania; the lack of fuel-powered generation substitutes; and, most importantly, the track record of privately-owned power generation projects in-country.

Table 12: Project Ngaka Task Force

Members	
Trade*	Finance*
Energy and Minerals* Attorney General	Bank of Tanzania Vice President's Office

*Ministries; Source: Company data

Ngaka Development Milestones

IEC has discussed numerous key milestones and laid out a detailed road map to account for its activities in reaching the key milestone – financial close. It anticipates achieving this in 1Q15. We outline some of the key milestones below:

- 3Q13 – Receive government guarantees and commitment to be paid in US dollars under the PPA.
- 3Q13 – Sign PPA term sheet.
- 1Q14 – Power Project BFS completed and initial full PPA agreement (subject to conditions precedent).
- 3Q14 – Coal fuel supply agreements signed, EIS and permitting complete, EPC selected and BFS updated.
- 1Q15 – Financial close.

Following financial close, a construction period of ~33 months has been assumed, after which commissioning and commercial operation will commence.

Malawi does not have reliable base load power or sufficient electricity generating and transmission capacity

Malawian Government has been steadfast in its commitment to nurture foreign investment

Pamodzi Power Plant (100%, Malawi)

Malawi does not have reliable base load power or sufficient electricity generating and transmission capacity, which restricts industrialisation and development. Moreover, it's estimated that only ~8% of its population have access to power.

Malawi has enough coal resources to support major base load electricity generation at the Pamodzi power plant, after initially utilising coal barged across Lake Malawi from the Tancoal mine in south-west Tanzania. This imported coal will be fully replaced by Malawian coal over the first few years of operation.

Coal can not only generate sufficient and reliable base load electricity to meet the needs of Malawi, but can also create revenue from the export of electricity to neighbouring countries and provide substantial multiplier benefits in job creation, urbanisation and industrialisation.

The Malawian Government has been steadfast in its commitment to nurture foreign investment in IPPs; this has attracted IEC, which, with its portfolio of coal assets, is able to deliver coal-fired power.

Pamodzi Project Summary

We outline the key aspects of the project below:

- **MOU to develop a 120MW coal-fired power station** was signed with the Malawian Government in March 2013 to supply power to ESCOM.
- **Separate PPAs** with third parties allowed under the MOU.
- **The government has stated that the project is of primary importance**, and multiple briefings with the president have taken place.
- **Project scope includes design, EPC and O&M** of the power plant and ancillary infrastructure.
- **The power plant PFS is complete** (initial site feasibility, grid stability and connection, preliminary technology selection and economic assessment are all complete).
- **Coal fuel supply based on a mix of Malawian coal and importation from Ngaka (Tanzanian coal)**; subject to financing and exploration success, resource/reserve delineation activities will then re-affirm the quantum of domestically available coal. IEC is exploring the various projects that may supply coal to the project and is targeting a maiden JORC resource at North Rukuru and Nkhachira within six months. It is anticipated that 20-25Mt reserves are required (converting to 15Mt reserves).
- **IPP site location is close to key load centres, port and transmission lines** to the southern grid (serviced by hydropower).

The Malawian Government has identified the lack of energy infrastructure as an issue that impedes its ability to reduce poverty. We highlight key points from our overview of the Malawi energy sector (see Appendix III) that identifies the power supply shortfall, requirement to diversify power generation fuels and the low probability of energy importation.

Pamodzi Development Milestones

Despite Pamodzi discussions commencing with the government at a later date than the Ngaka Project, the timelines and key milestones for both projects are very similar. Only the receipt of the guarantees from the World Bank is anticipated to take longer; IEC is targeting approval by 1Q14.

- 3Q13 – Sign PPA term sheet with ESCOM.
- 4Q13 – Implementation Agreement term sheet signed with the government.
- 1Q14 – Initial full PPA agreement (subject to conditions precedent) and sign Implementation Agreement.
- 3Q14 – Coal fuel supply agreements signed, EIS and permitting complete, EPC selected and BFS updated.
- 1Q15 – Financial close.

Other Assets/Projects

AAA Drilling (100%)

IEC owns and operates its own rigs in the East Africa region in order to increase efficiency and productivity given how poorly serviced the region is. IEC has related party management with other companies operating in the region; arms-length transactions between these entities should ensure that the rigs achieve a 35% return on equity (ROE). The three drill rigs, including the newly-acquired Hanjin D&B45D rig, have over 12 months of work programmes ahead, although the contracts are yet to be finalised.

A -A\$1.4m debt facility has been used to fund the acquisition. It is estimated that, at an utilisation rate of 33%, net cashflows would come to -US\$400-500,000 pa.

CBM NuEnergy Gas JV (100%)

IEC has established a Coal Bed Methane (CBM) JV with NuEnergy Capital Ltd's wholly-owned subsidiary NuEnergy Gas (Tanzania) Ltd.

NuEnergy (Tanzania) holds a 70% equity interest in the joint venture and full operating rights. It will fund the CBM development costs in full and will receive a 30% contribution from the IEC subsidiary's operating profits and revenues from a negotiated 5% royalty to be paid to the companies from gas sales.

We do not apply any value to this asset as we view the JV as free optionality with no exposure to any upfront costs.

Management and Board

Board

Graeme Robertson, Executive Chairman

Graeme joined the board in November 2010 and was appointed Executive Chairman in January 2011. He has over 30 years' experience in the coal, infrastructure and power development industries. Graeme was CEO and Managing Director of New Hope Corporation (1987-2005). During this period he pioneered the development of major international companies, including as President Director of Adaro Indonesia, the largest single open-cut coal mine in the southern hemisphere (+45Mtpa), President Director of Indonesia Bulk Terminal, a 12Mtpa capacity bulk coal port, and an adviser to the development of the 1,230MW Paiton power station, the first IPP in Indonesia.

Jonathan Warrand, Executive Director and CFO

Mr Jonathan Warrand is the Managing Director of Intrasia Capital Pty Ltd, a proprietary investment firm in Sydney, and through its related operations has offices in Singapore and Mauritius. He has over 23 years of corporate advisory experience across various sectors, including soft and hard commodities, financial services and real estate, and has experience in equity and debt capital markets, strategic planning, capital management and corporate advisory.

David Mason, Executive Director, Exploration and Business Development

David Mason has a broad business, corporate and mining background, having worked in the mining industry for 30 years throughout Australasia. David was on the Board of Directors of Overseas & General Limited (ASX:OGL), a coal producer in Indonesia. Prior to this, David was Operations Director of Haddington Resources (now Altura Mining, ASX:AJM) a diversified resource company. David was formerly General Manager of the Minvest Group, and assisted in the development of the Adaro Indonesia coal mine, the MHU coal mine, a suite of exploration assets and mining service companies.

Bill Paterson, Non-executive Director

Bill graduated in 1964 from Auckland University with an honours degree in civil engineering. From 1973, for 27 years, he made major contributions as a director to the growth and success of one of Australia's premier engineering consultancies. That business became a listed engineering services provider in 2002, and is now known as Worley Parsons Ltd. Bill has extensive experience and continuing involvement in the planning, design and implementation of a wide range of civil, infrastructure and building projects in the commercial, industrial and energy-related sectors.

Gideon Nasari, Non-executive Director

Gideon is currently the Managing Director and Chief Executive Officer of the National Development Corporation (NDC), a statutory organisation wholly-owned by the Government of the United Republic of Tanzania with the mandate to implement strategic industrial development projects in partnership with the private sector. He has more than 30 years' experience in mining, manufacturing and leadership. He has served as Manager, Deputy General Manager of Tanzania Portland Cement Co Ltd, and later as Executive Director, Corporate Affairs in 1998, having risen through the ranks from a Mining Geologist in 1978. In 2007, the President of the United Republic of Tanzania appointed him to his current position.

Management

Michael Steiner, Head of Energy

Michael Steiner is responsible for executing IEC's power development strategy. He has extensive experience in the power industry, leading the project management of the 1,100MW CCGT Merida Power project in Spain since September 2008. Among other achievements, Michael led a 1,000MW peaking plant bid in South Africa, was a leading key member in the acquisition of a majority stake of a Turkish hydro plant owner and developer, and part of the core team closing the US\$1.4bn Maritza East I 600MW lignite power plant in Bulgaria (awarded PFI deal of the year in 2005). Mr Steiner also spent three years as Local Project Director for Alstom Power in Mexico City, overseeing the execution of a 480MW re-powering project.

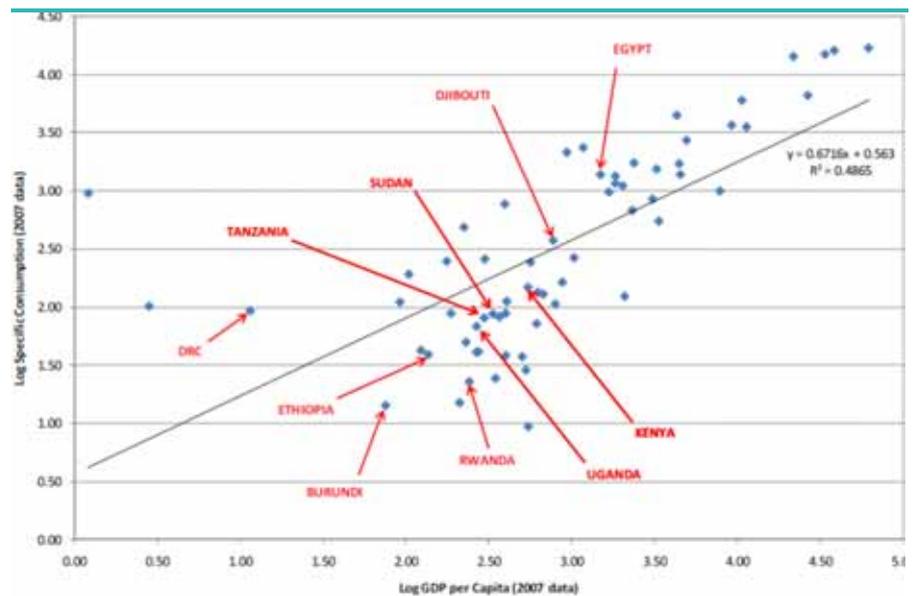
Appendix I – East Africa

In 2011 the International Monetary Fund (IMF) listed five eastern African nations (Uganda, Rwanda, Mozambique, Tanzania and Malawi) as amongst the world’s fastest growing countries from 2005-10. Malawi is expected to emerge from its 2012 economic crisis and return to solid growth, while sustained growth in Tanzania looks set to continue. Most countries in the region are expected to grow at rates of between 5-7% pa according to the most recent African Economic Outlook Report (2013).

Looking to the future of both Malawi and Tanzania, we focus on a key theme integral to the foundations of their economic growth – electricity. To this end we refer to the 2011 EAC Regional Power System Master Plan (PSMP) report. In this document it was observed that electricity consumption (and, hence, generation) is correlated to GDP per capita, as shown in Figure 17 below.

In our brief review of East Africa, we overview the GDP structure, outline current energy policies, discuss the status of the energy sector in-country and look at coal mining in the region.

Figure 17: Peer Country Comparison of Electricity Consumption



Source: EAC Regional Power System Master Plan and Grid Code Study - Final Master Plan Report

Figure 18: Real Malawi GDP by Sector (2006-11)



Source: IMF Country Report 2012

Malawi

The economy of Malawi is predominantly agricultural, with about 90% of the population living in rural areas. Agriculture represents approximately 28% of GDP, accounts for over 80% of the labour force, and represents about 80% of all exports. Its most important export crop is tobacco, which makes up some 70% of export revenues. Price inflation is a key issue, with annual inflation of 25.5% reported in August 2012, an increase from 21.7% the prior month.

Tanzania

The Tanzanian economy also depends heavily on agriculture, which accounts for around 43% of GDP, provides around 85% of exports, and employs 80% of the workforce. Topography and climatic conditions, however, limit cultivated crops to only 4% of the land area. The second largest sector of the economy is the service sector, which accounts for approximately 36% of all economic activity. The industrial sector of the economy makes up the remaining 21% of economic activity and has traditionally featured the processing of agricultural products and consumer goods. Some 26% of Tanzania's population is living in urban areas (as at 2010), and this represents an increasing trend, with the urban population forecast to grow at 4.7% over the period 2010-15.

Appendix II – Energy – Tanzania

Electricity Demand and Supply

The PSMP demand forecast projects an average annual increase in peak demand of around 7.2% over the period 2011-2038. This leads to a sevenfold increase over that period. An average annual increase in peak demand/generation of this nature would obviously require a significant amount of annual investment in generation, transmission and distribution – a challenging task for the Tanzanian Government both in terms of funding and fuel supply.

The main source of primary energy supply for Tanzanians is biomass-based fuels, particularly fuel wood (charcoal and firewood), both in urban and – especially – rural areas. Biomass-based fuel accounts for more than 90% of primary energy supply. The Tanzanian Energy and Water Utility Regulatory Authority (EWURA) 2007 data suggests electricity is available to only approximately 11% of the population, of which 80% is supplied in the urban areas.

Current Commercial Power Supply

As the government-owned utility and single buyer of power, TANESCO operates the transmission system, a major part of generation and the distribution. Since the lifting of the government monopoly in 1992 private players have entered the sector, with new participants including Independent Power Tanzania Limited and Artumas Inc.

Approximately 51% of commercial electricity is now hydro-based, with the remainder thermal (including emergency plants). It should be noted that the use of natural gas will be increasing after its relatively recent introduction.

The installed capacity of the Tanzanian network is currently 1,095MW, including 180MW from temporary sources. Private capacity accounts for 480MW (44%), including temporary sources. The existing transmission network consists of a total of 2,624km of 220KV, 1,442km of 132KV and 486km of 66KV transmission lines.

Future Power Projects

While renewable (predominantly hydro) power will continue to play a crucial role in Tanzania's power generation (see Table 13), conventional generation (mainly from coal) is expected to grow as a percentage of total generation. Critically, coal-fired generation is base load and not subject to climate-driven variability; the reliability of supply is vital in an increasingly industrialised economy.

Table 13: Planned Energy Projects in Tanzania

Project	MW	Type	Region	Project	MW	Type	Region
Ngaka	200MW	Coal	Ruvuma	Stiegler's Gorge	2,100MW	Hydro	Pwani
Mnazi Bay	300MW	Gas	Mtwara	Mnyera	700MW	Hydro	Morogoro
Kinyerezi	150MW	Emergency HFO	Dar es Salaam	Ruhudji HEP	358MW	Hydro	Iringa
Mchuchuma	600MW	Coal	Ruvuma	Mpanga	144MW	Hydro	Morogoro
Kiwira	200MW	Coal	Mbeya	Rusumo Falls	60-80MW	Hydro	Kagera
Nyakato	60MW	Emergency HFO	Mwanza	Rumakali HEP	22MW	Hydro	Mbeya
Majani	70MW	Emergency HFO	Tanga	Singida East Africa Project Phase I	50MW	Wind	Singida

Note: Excludes projects <20MW; Source: Intra Energy (African Energy Issue 244, 29 November 2012, media reports)

Appendix III – Energy – Malawi

Energy Policy

The new government, in power since April 2012, has approved Malawi's second Growth and Development Strategy. The strategy's principal objective is poverty reduction through sustained growth and infrastructure development. The plan gives high priority to removing bottlenecks in energy and transport infrastructure that have been widely cited as impediments to investment and economic diversification.

Consequently, the government of Malawi is increasing national investment, including in electricity generation and supply, transportation and irrigation, and in selected priority areas (agriculture, manufacturing, mining and tourism).

Electricity Demand and Supply

According to the World Bank, only 8% of Malawi's population of approximately 16m has access to electricity. Malawi's peak demand for power stood at 300MW in January 2011, with an available capacity of 287MW, resulting in a generation shortfall. This is projected to grow rapidly.

Existing Capacity and Generation Mix

Nearly 95% of Malawi's electricity supply is provided by hydropower from a cascaded group of interconnected hydroelectric power plants. Total installed capacity of these hydropower plants is 282.5MW. The stand-by thermal power plants in Blantyre (15MW gas turbine plant) and Mzuzu (1.1MW diesel power plant) are insufficient to provide Malawi with power when hydropower falls short.

As almost 95% of the power generation mix is based on hydro plants on the same river, the supply base is very sensitive to incidents related to the Shire River (eg, flooding, infestation or siltation). In the years 2001 and 2009 significant levels of capacity were taken out for several months.

Table 14: Planned Energy Projects in Malawi

Project	MW	Type	Region	Status
Kamwamba	1,000MW	Coal	Neno	<ul style="list-style-type: none"> Chinese proposed project utilising imported coal from Mozambique - Malawi lacks sufficient FX reserves to import such volumes as required for a 1,000MW plant. Reliant on proposed Vale infrastructure build (railway across Malawi from Mozambique to coast for exports), hence significant lead time.
Kapichira II	60MW	Hydro	Chikwawa	<ul style="list-style-type: none"> The Malawi government has contracted China Gezuba to build the US\$60m power station, on the Shire River, in the south of the country. Non base load. Environmental concerns raised about the project.

Note: Excludes projects <20MW; Source: Intra Energy (African Energy Issue 244, 29 November 2012, media reports)

Demand-supply Gap

From the demand projections and the current supply base, including project plants and the possible 300MW of import capacity from Mozambique, a substantial demand-supply gap exists and will increase dramatically over the next few years.

Therefore, coal-fired plants provide a reliable and cost-effective source of additional power generation. This is in line with the strategy of ESCOM, which sees coal-fired power plants as a significant contributor to filling this gap.

Appendix V – East African Mining Sector

Table 15: Eastern Africa Mining and Statistics

	Pop (m)	Est 2013 Real GDP % Growth	Operating Mines	Mining Projects	Exploration Projects
Burundi	8.9	5	0	1	1
DR Congo	71.4	8	14	20	42
Kenya	43.9	5.8	1	1	8
Madagascar	22.6	3.5	2	4	29
Malawi	16	6.2	3	1	17
Mauritius	1.3	4.3	0	0	0
Mozambique	25.0	7.8	4	10	26
Rwanda	11.2	7.0	0	1	1
Tanzania	49.2	7.4	9	14	138
Uganda	36.8	7.2	1	0	10
Zambia	14.3	7.1	11	10	36
Total -Eastern Africa	300.6	7	45	62	308

Source: Intra Energy (World Bank, IMF, Ernst & Young, Register of Africa Mining)

Table 16: Coal Mining Projects in Eastern Africa

Project	Region	Status
Tanzania		
Tancoal (IEC)	Ruvumu	• Only producing coal mine (JORC 423Mt).
Tanzacoal (IEC)	Mbeya	• Development/mine planning (JORC 100Mt). • Exploration (JORC 109Mt). • Owner Kibo Mining plc looking for partner for project, lacks finance to develop project.
Kiwira	Mbeya	• Isolated site near Lake Rukwa part accessible only by 4WD. • Part of Liganga Iron Ore project owned by Sichuan Hongda.
Mchuchuma	Ruvumu	• Development dependent on iron ore project development, timetable for which is unknown.
Rukwa	Mbeya	• Edenville Energy plc conducting Environmental Impact study.
Songea	Songea	• JORC-compliant resource of 39Mt. • Owner Uranex is focused on uranium exploration.
Malawi		
Nkhachira (IEC)	Karonga	• In early production.
Ngana and North Rukuru (IEC)	Karonga	• Exploration and resource development.
Kenya		
Mui Basin	Kitui	• Chinese company Fenxi Mining Industry won contract to explore and develop Block C and Block D in Mui basin. • High Court blocked mining contract between the government and Fenxi due to contravention of local residents' rights; Fenxi's financial capacity questioned by MPs. • Additional exploration blocks yet to go to tender.
Uganda, Burundi, Rwanda – no operating coal mines or current exploration		
Zambia		
Maamba	Southern Province	• Maamba Collieries owner Nava Bharat (Singapore) recommenced mining in 2011 in south-west Zambia near the Zimbabwe border.

Note: Mozambique projects excluded as seaborne export focused. Malawi excludes artisanal/small-scale mines; Source: Intra Energy (Register of African Mining 2012, media reports, company websites)

Research Team

Metals & Mining

Duncan Hughes, Head of Research	+61 8 9480 2518	duncan.hughes@rfcambrian.com
Craig Foggo	+44 (0)20 3440 6822	craig.foggo@rfcambrian.com
Jessica Mauss	+44 (0)20 3440 6823	jessica.mauss@rfcambrian.com

Oil & Gas

Stuart Amor, Head of Oil & Gas Research	+44 (0)20 3440 6826	stuart.amor@rfcambrian.com
Emily Ashford	+44 (0)20 3440 6821	emily.ashford@rfcambrian.com

Corporate Broking

Caspar Shand Kydd, Head of Corporate Broking	+44 (0)20 3440 6814	caspar.shand-kydd@rfcambrian.com
Jonathan Williams	+44 (0)20 3440 6817	jonathan.williams@rfcambrian.com
Tommy Horton	+44 (0)20 3440 6824	tommy.horton@rfcambrian.com

RFC Ambrian Limited

London

Level 5, Condor House
10 St Paul's Churchyard
London EC4M 8AL
UK

Telephone +44 (0)20 3440 6800
Fax +44 (0)20 3440 6801

Sydney

Level 14
19-31 Pitt Street
Sydney NSW 2000
Australia

Telephone +61 2 9250 0000
Fax +61 2 9250 0001

Perth

Level 15, QV1 Building
250 St Georges Terrace
Perth WA 6000
Australia

Telephone +61 8 9480 2500
Fax +61 8 9480 2511

info@rfcambrian.com

www.rfcambrian.com

RFC Ambrian Limited is authorised and regulated by the Financial Conduct Authority for the conduct of Investment Business in the UK and is a Member of the London Stock Exchange.

RFC Ambrian Limited is registered in England and Wales no. 4236075. Registered office - Level 5, Condor House, 10 St Paul's Churchyard, London EC4M 8AL. Phone +44 (0)20 3440 6800 Fax: +44 (0)20 3440 6801 E-mail: publications@rfcambrian.com

For the purposes of the regulatory requirements in relation to the management of Conflicts of Interest, RFC Ambrian publishes this document as non-independent research which is a Marketing Communication under the Financial Conduct Authority's Conduct of Business rules. It has not been prepared in accordance with the regulatory rules relating to independent research, nor is it subject to the prohibition on dealing ahead of the dissemination of investment research. Please refer to the Compliance Department for a summary of our conflicts of Interest Policy and Procedures.

The information and opinions in this report were prepared by RFC Ambrian Limited "RFC Ambrian". It has been approved for publication and distribution in the UK by RFC Ambrian which is regulated by the Financial Conduct Authority for the conduct of Investment Business in the UK and is a member of the London Stock Exchange.

The information and opinions contained herein have been obtained from public sources and are believed by RFC Ambrian to be reliable, but we make no representation as to the accuracy or completeness of such information.

The analyst principally responsible for the preparation of this report receives compensation that is based upon, among other factors, RFC Ambrian's overall investment banking revenue. However, such analysts have not received, and will not receive, compensation that is directly based upon one or more specific investment banking activities or transactions.

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of RFC Ambrian and are subject to change without notice. RFC Ambrian has no obligation to update, modify or amend this report or to otherwise notify the reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, or if research on the subject company is withdrawn. Prices and availability of financial instruments are also subject to change without notice. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction.

RFC Ambrian may engage in securities transactions in a manner inconsistent with this report, and with respect to the securities covered by this report, may buy from and sell to customers on either an agency, a principal investment, or market making basis. Disclosures of conflicts of interest, if any, are disclosed at the beginning of this report, or are available from the Compliance Officer. On the date of this report RFC Ambrian, persons connected with it and their respective directors may have a long or short position in any of the investments mentioned in this report and may purchase and/or sell the investments at any time in the open market as an agent. Additionally, RFC Ambrian within the previous twelve months may have acted as an investment banker or may have provided significant advice or investment services to the companies or in relation to the investment(s) mentioned in this report.

When we comment on AIM and other junior market listed shares, customers should be aware that because the rules for these markets are less demanding than for those of the Official List of the London Stock Exchange the risks are higher.

The report is confidential and is submitted to selected recipients only. It may not be reproduced in whole or in part to any other person. RFC Ambrian and /or persons connected with it may effect or have effected transactions in the investments referred to in the material contained in this report.

This report is prepared for professional clients and is not intended for retail clients in the UK as defined by the Financial Conduct Authority rules and should not be passed on to such persons. Any U.S. person receiving this report and wishing to effect a transaction in any security discussed herein, must do so through a U.S. registered broker dealer.