

Blackthorn Resources Limited (ASX:BTR, formerly AIM Resources Ltd) is an Australian based resource company with zinc and gold interests in Burkina Faso and copper interests in Zambia.

## Company Data

ASX Code	BTR
Share Price (\$)	0.47
Shares on Issue (m)	122.9
Options (m)	5.2
Market Cap (fully diluted, \$m)	60.2

Valuation	\$m	\$/share
<b>Valuation at Forecast Zinc/FX</b>		
Perkoa	59.5	0.48
Mumbwa	59.5	0.48
Cash	14.2	0.12
Debt	-	-
Exploration (nom)	5.0	0.04
Total Valuation	138.2	1.12
Share Premium/(Discount) to valuation		-58.2%
<b>Valuation at Spot Metal/FX*</b>		
Total	106.5	0.87
Share Premium/(Discount) to valuation		-45.8%

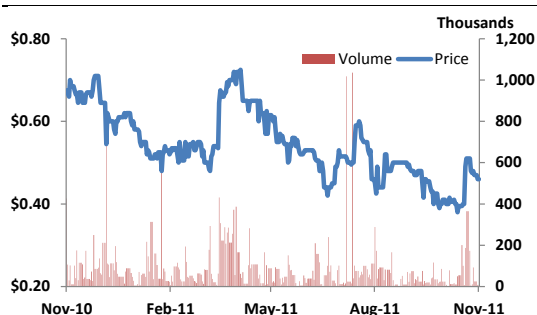
## Board

William Cash	Non-Exec Chairman
Scott Lowe	Managing Director
Nicole Bowman	Non-Exec Director
Michael Oppenheimer	Non-Exec Director
Peter Kalkandis	Non-Exec Director

## Top Shareholders

Glencore	13.04%
North Sound	8.06%
JP Morgan Chase & Co	7.05%

## Share price performance



## Analyst

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## RECOMMENDATION: SPECULATIVE BUY

Our base case valuation for Blackthorn is \$138m or \$1.12 per share. Even at the currently depressed zinc price and high A\$/US\$ exchange rate, we value the stock at \$0.87 per share, an 85% premium to the current share price. This valuation takes no account of the potential plant upgrade at Perkoa, and is based on a conservative zinc price.

We rate Blackthorn Resources as a Speculative Buy, based on strong operational cash flow from the Perkoa Zinc Project, upside from Mumbwa, further exploration success and the deep discount to our base case valuation.

## KEY POINTS

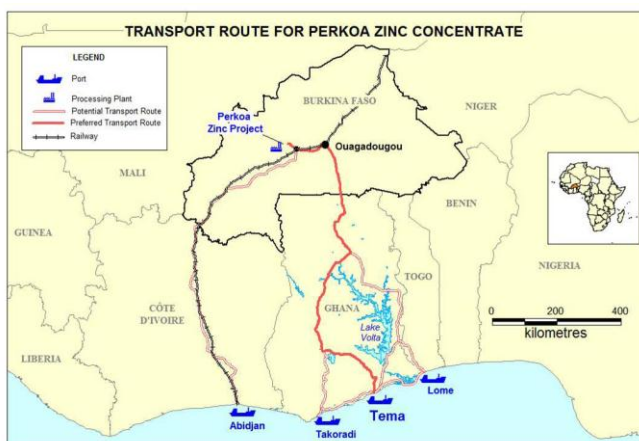
- Blackthorn has a 39.9% interest in the Perkoa Zinc Joint Venture in Burkina Faso. Glencore International AG (50.1%) will operate and manage the Joint Venture, and will also be responsible for sourcing funding facilities, including a working capital facility. The Government of Burkina Faso holds the remaining 10% of the project.
- The project is expected to be in production by the second half of calendar 2012. Annual zinc concentrate production is expected to be approximately 170,000t containing 90,000t (BTR share ~36,000t) of zinc metal over a nine year mine life. The production plan is based on an ore reserve of 6.3Mt grading 13.9% zinc. There is also potential improvement to the business case adding silver and lead to product stream and increasing capacity.
- The involvement of Glencore at both the operating and financing levels is seen as a major positive. The project should generate strong cash flow, providing funding for Blackthorn's other activities.
- We currently value Blackthorn's 39.9% interest in the project on a DCF basis at \$59.5m or \$0.48 per share, based on our medium and long term outlook for zinc and the A\$/US\$ exchange rate. At the current zinc price and exchange rate, the valuation drops to \$27.9m and \$0.23 per share.
- The company's second project is the Mumbwa iron oxide copper-gold (IOCG) project in Zambia. BHP Billiton, which has financed two additional phases of drilling since 2009, recently advised that it had withdrawn from the project, leaving Blackthorn with 100% ownership. BHP Billiton retains a 2% royalty from future mining.
- Mumbwa has an inferred resource of 87Mt at 0.94% copper and small amounts of gold and other minerals. Ongoing exploration continues to provide excellent results.
- As the project is still at the exploration stage, we have valued Mumbwa on an enterprise value per resource tonne of copper equivalent basis. Applying a peer group EV/t CuEq of \$60/t (2.7c/lb) values the project at \$59m or \$0.48 per share.
- The stock is trading at a 58% discount to our base case valuation of \$1.12 per share. Clearly, no value is being attributed to the Mumbwa Project or exploration upside in Burkina Faso or Zambia.

**RISKS**

- Blackthorn operates in two African countries, Burkina Faso and Zambia, which are both regarded as 'mining-friendly'. Nevertheless, it does mean exposure to sovereign/country risk.
- The Perkoa Zinc Project is still in the development stage and therefore carries construction risk. Once in production, it will be subject to normal operational, commodity and exchange rate risks.
- The Zambian assets are still in the relatively early exploration stage and although drilling results continue to enhance the Mumbwa Project, there is no guarantee that the current or future exploration success will lead to future mining operations.

**PERKOA ZINC PROJECT**

The project is located in the Sanguie Province of Burkina Faso, 120km west of the capital Ouagadougou. The project lies 35km by road from the country's third largest town, Koudougou, which is linked to the neighbouring states of Cote D'Ivoire, Ghana and Togo by tarred roads and by rail to Abidjan, capital of Cote D'Ivoire. In addition, a rail line, built eight years ago, passes through Koudougou within 30km of the mine site.



The Perkoa deposit is a classic volcanogenic massive sulphide (VMS) deposit hosted by the Lower Proterozoic Birimian Belt. The deposit is unusual for its high concentrations of zinc and barium mineralisation, and relatively low levels of lead and copper. The prospective Birimian rocks in Burkina Faso are the

same sequences which host major gold deposits in neighbouring Ghana and Mali.

Blackthorn Resources acquired 100% of the project in January 2005. Snowden Mining Industry Consultants completed a Bankable Feasibility Study (BFS) in December 2005. In March 2007, Blackthorn transferred a 10% interest to the Burkina Faso government in accordance with statutory requirements.

Construction at the Perkoa Zinc mine commenced in March 2007 following the grant of an exploitation licence for mining purpose. The development of the box cut was finalised during 2008, with construction of the portal, which forms the main entry point to the decline, commencing in May 2008.

Construction at Perkoa was suspended in July 2008, and the Project was placed on a care and maintenance program as a result of a decline in global metal prices. At this time, construction was approximately 50% complete.

In late 2010 a joint venture between Blackthorn (39.9%) and Glencore International AG (50.1%) was formed which has allowed construction and development activities to progress the operation towards start-up. Under the JV arrangements, Glencore has agreed to invest US\$80 million in the project to fund the remaining capital expected to be required to commission the Perkoa Zinc Mine. The first US\$50 million of investment by Glencore will be in the form of equity contribution, with up to a further US\$30 million of investment to be provided in the form of project finance to the JV. The first US\$5m cash flow will accrue to Blackthorn. The Glencore loan will be repaid prior to dividends being declared.

Perkoa contains a measured and indicated mineral resource of 6.72Mt grading 16.4% zinc and 35.4g/t silver at a 5% Zn cut off. The estimated ore reserve totals 6.3Mt at a grade of 13.9% Zn.

**Perkoa Resources and Reserves**

Category	Tonnes (Mt)	Zinc	Cont'd	Silver	Cont'd
		Grade (%)	Zinc (’000 t)	Grade (g/t)	Silver (t)
Measured	0.43	17.2	74	41.4	18
Indicated	6.29	16.3	1,027	35.0	220
<b>Total Resource</b>	<b>6.72</b>	<b>16.4</b>	<b>1,101</b>	<b>35.4</b>	<b>238</b>
<hr/>					
Probable Reserve	6.3	13.9	873		

Following the formation of the JV, Glencore will be responsible for managing construction, as well as providing management and logistic services to the JV. Glencore will also be responsible for day-to-day operations and for sourcing funding facilities, including a working capital facility.

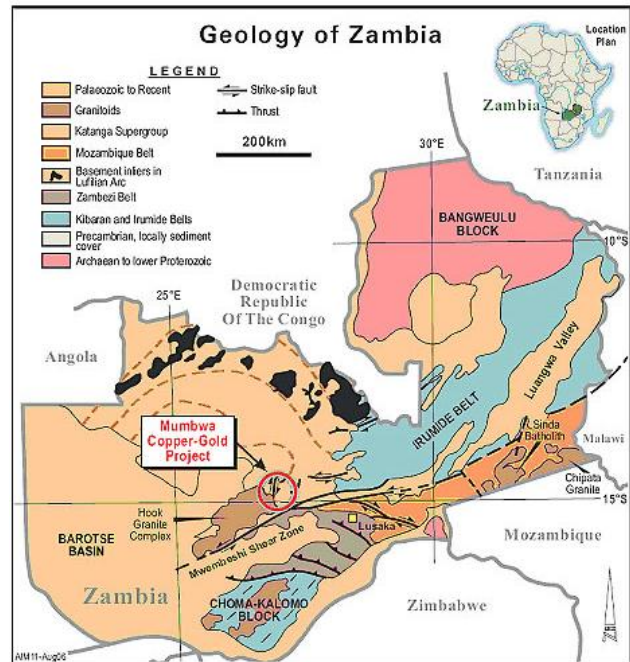
The production rate is expected to be 720,000tpa, producing 170,000 tonnes of zinc concentrate with a grade of 53% zinc. Underground mining will utilise the sub-level up-hole retreat method. The capital cost estimate is US\$72m.

The mine is currently under construction and is targeting full production in the second half of 2012.

Glencore has recently advised Blackthorn that there is an attractive investment case for a plant expansion to 1Mtpa as well as the production of a lead/silver concentrate. Open pit mining would supplement the underground mine ore. This expansion decision is subject to additional information being provided to BTR.

**MUMBWA PROJECT, ZAMBIA**

Mumbwa is an iron oxide copper-gold (IOCG) exploration project, similar to the style of mineralisation found at Olympic Dam and Prominent Hill in South Australia and the Ernest Henry mine in Queensland. The project, which covers an area of 500km<sup>2</sup>, is located in west central Zambia, approximately 200km west of the country’s capital Lusaka.



In 2004, Blackthorn entered into a JV with BHP Billiton to earn a 70% interest in the Mumbwa Project through funding three phases of exploration over a four year period. The requirements of the JV were fulfilled upon completion of the Phase 3 drilling program in 2008. BHP Billiton then had the option to ‘claw back’ up to 80% interest in the project by funding the next stages of exploration, concept and feasibility studies. In 2009, BHP Billiton elected to fund the subsequent Phase 3B and 4 drilling programs.

On 23 May 2011, BHP Billiton advised Blackthorn of its intention to withdraw from the Mumbwa Project and to terminate the Mumbwa Joint Venture. Upon termination, Blackthorn will hold a 100% interest while BHP Billiton will be entitled to receive a 2% production royalty from any future mining.

Four exploration phases have been conducted over the area since 2004. Phase 1 consisted of FALCON™ gravity and magnetic surveys which was followed up by the drilling of more than 35,000m over more than 50 holes in phases 2-4. The Kitumba deposit was discovered during the Phase 2 drilling campaign in 2007/08. Subsequent drilling allowed an inferred mineral resource of 87Mt at 0.94% copper to be delineated from 25 holes at a copper cut-off grade of 0.5%. At a 1% cut-off grade, the resource is 22Mt at 1.73% copper.

Category	Tonnes (Mt)	Copper Grade (%)	Gold Grade (g/t)	Silver Grade (g/t)	Uranium Grade (ppm)
Inferred	87	0.94	0.05	1.27	37

At the end of June 2011, Blackthorn announced a Phase 5 exploration program for the project. The main aim of this program is to conduct further resource drilling over the Kitumba deposit with the intention of increasing the confidence level in the existing mineral resource model and achieving a mineral resource upgrade. A series of 'infill' holes will be drilled to tighten the drill spacing and increase the confidence level for interpretation of the geological model. In addition, these holes will test the down-dip extension of the mineral resource which was considered 'open' at depth. Additional 'step out' drilling is planned to test areas of the resource model where mineralisation was considered 'open' in a number of directions. These areas are situated towards the southwest, west and far north of the current mineralisation. A total of ~8,900m will be drilled over 16 holes at a cost of approximately \$6m. The company will also commence a high level 'concept study' on the Kitumba resource.

On 27 October 2011, Blackthorn announced that the first drill hole of the Phase 5 campaign had intersected 282.7m at 1.05% copper from a depth of 178.3m, including 60m at 2.58% copper. Gold assay results will be released when they become available.

## EXPLORATION

### Burkina Faso

Assay results received from the 14 holes drilled under the exploration program at the Perkoa Project have revealed encouraging mineralised intersections for silver, lead and zinc. This diamond-core drilling program is targeting along-strike extensions of mineralisation associated with the Perkoa zinc ore body within a zone which has not been previously tested extensively for associated zinc, silver and lead mineralisation.

The presence of high-grade silver and base metals mineralisation is consistent with the assumptions used in the enhanced business case for expanding the

Perkoa mine and increasing production throughput to 1Mt per annum.

The company has 1,060km<sup>2</sup> of exploration leases in Burkina Faso. Following early stage exploration work which included soil/rock geochemistry and geophysics, rotary air blast (RAB), reverse circulation (RC) and diamond core (DDH) drilling has confirmed encouraging levels of gold mineralisation. A small JORC inferred resource of 4.1Mt at 1.06g/t gold containing 139,000 ounces of gold was delineated. The company intends to farm out gold exploration on the tenements and concentrate on zinc and other base metal potential.

### Zambia

Scout drilling is to be carried out on anomalies not tested by BHP Billiton. One of these targets, which is only 6km from the Kitumba resource area, appears to be very promising.

In Zambia, the company's wholly-owned subsidiary Blackthorn Resources (Zambia) Ltd was granted an additional large-scale prospecting licence called 'Kachindu'. This licence, covering approximately 203km<sup>2</sup>, is situated south and adjacent to the Mumbwa IOCG Project area. Blackthorn Resources now has 100% ownership of prospecting licences in Zambia covering an area of more than 388km<sup>2</sup>. These tenement holdings are in addition to the commercial interest held by the company in the Mumbwa licence.

## VALUATION

### Perkoa

Our base case valuation is based on the following parameters:

#### Physicals

Treatment Rate	Mt	0.720
Head Grade:Zinc	%	13.9
Recovery:Zinc	%	90
Zinc Concentrate	t	170,000
Contained Zinc	t	90,000
Concentrate Grade	%Zn	53
Mine Life	Years	9

### Costs

Mining	US\$/t	38
Treatment	US\$/t	30
Administration	US\$/t	4
Direct Operating	US\$/t	72
Royalties (5%)	US\$/t	8.70-7.48
Annual Capex	US\$m	10

### Revenue

Payable Metal	%	85
Zinc Price	US\$/t	2,426-2,095
Exchange Rate	A\$/US\$	1.00-0.85
Treatment/Transport	US\$/t conc	393

### Margin

Gross Revenue (avg)	\$/t ore	262
Net Revenue (avg)	\$/t ore	156
Operating Cost (avg)	\$/t ore	91
Operating Cash Flow (avg)	\$/t ore	65
Capital/Development (avg)	\$/t ore	10
Net Cash Flow (avg)	\$/t ore	55

Blackthorn anticipates C1 cash costs of approximately US\$1,500 per tonne (US\$0.68 per lb) of payable zinc. These costs, which have been audited by SRK Consulting, include all site operating costs, land transport, port charges, ocean freight and US\$303/t treatment charges. Off-site costs make up almost 60% of the total. Our modelling suggests life-of-mine costs of a similar magnitude. No allowance has been made in this calculation for Glencore's ability to reduce costs or potential silver/lead credits which represent potential upside to earnings.

Based on the above, we value Blackthorn's 39.9% interest in the Perkoa Zinc Project at \$59.5m or \$0.48 per share. At the current zinc price and A\$/US\$ exchange rate, this valuation falls to \$27.9m or \$0.23 per share.

### Mumbwa, Zambia

As the project is still in the exploration stage, our valuation of Mumbwa is based on enterprise value per resource tonne of contained copper equivalent. We have determined the EV/tonne of copper for a number of ASX-listed copper and copper-gold exploration companies with similar resource grades and applied the average to Mumbwa's contained copper equivalent tonnage.

	EV (\$m)	CuEq ('000t)	Cu Grade (%)	EV/t Cu (\$)	EV/lb Cu (\$)
Altona	52	1,145	0.65	45	0.021
Copper Strike	16	168	0.78	95	0.043
Hillgrove	33	292	1.0	113	0.051
Horseshoe Metals	11	48	1.0	229	0.104
Hot Chili	62	568	0.73	109	0.050
Queensland Mining	16	320	0.88	50	0.023
Rex Minerals	118	1,751	0.80	67	0.031
Syndicated Metals	9	323	0.50	28	0.013
Average/Total		577	0.75	69	0.031
Mumbwa	59.5	862	0.99	69	0.031

Based on the above, we value the Mumbwa Project at \$59.5m or \$0.48 per share.

### Other

The company is debt free and the cash balance at the end of September was \$14.2m. Exploration has been valued at a nominal \$5m.

Valuation	\$m	\$/share
<b>Valuation at Forecast Zinc/FX</b>		
Perkoa	59.5	0.48
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## BOARD

### William (Bill) Cash

### Non-Executive Chairman

Mr Cash joined the Blackthorn Board in May 2007 as a non-executive Director following an 18 month engagement as a consultant advising the company mainly on base metals concentrate



quality and marketing matters as well as product transport and shipping logistics in relation to the

# BLACKTHORN RESOURCES LIMITED (ASX: BTR)

development of the Perkoa Zinc Mine. In January 2008, he was appointed Chief Executive Officer and Managing Director until August 2008, then as an executive Director until December 2008 when he was appointed Chairman of the Board.

**Scott Lowe** **Managing Director**

Scott is currently employed as Managing Director and CEO of Blackthorn Resources Ltd. He is a senior business executive with extensive experience in the mining and maritime logistics industries.



Senior management roles have also been held in BHP Billiton, Peabody Pacific and P&O. He holds a post-graduate qualification in Business Management (MBA) along with tertiary qualifications in Mining Engineering, a Mine Manager's Certificate of Competency (Australia), and a Diploma in Marine Terminal Operations from King's Point Merchant Marine Academy New York USA. Scott is also a member of the Australian Institute of Company Directors.

**Nicole (Nicki) Bowman** **Technical Director**

Nicki Bowman joined the Blackthorn Board having gained extensive experience as a corporate and commercial lawyer in private practice within a



Top 10 Australian law firm. Nicki has held senior Corporate Counsel positions in BHP and Bluescope Steel, before moving into Senior Management and Executive positions. Her experience includes key roles in Merger and Acquisition transactions, leading contract negotiations, and managing corporate restructures. Nicki holds Bachelor of Economics and Bachelor of Law degrees from Sydney University and was recently admitted as a member of the Australian Institute of Company Directors.

**Michael Oppenheimer** **Non-Executive Director**

Michael Oppenheimer is a senior executive with over 30 years' experience in the resources sector. He has extensive business leadership and value delivery experience in the international mining industry. Now a principal and founder of a mining investment and advisory group, Mike's most recent CEO position was with Ferrrexpo Plc, where he established the iron ore company's business model and led it through a successful IPO in London in 2007. Under his leadership, the company experienced strong growth in share value resulting in Ferrrexpo being included in the FTSE 100 index. Prior to his successful stewardship of Ferrrexpo, Mike held senior positions in BHP Billiton's minerals and petroleum businesses and he also played a significant role in the BHP and Billiton merger, integrating the energy coal businesses.



**Peter Kalkandis** **Non-Executive Director**

Peter Kalkandis is a full-time employee of Glencore Australia Pty Limited, a subsidiary of Glencore International AG and is Head of Glencore's Base Metals Desk in Australia.

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