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### Company Information

ASX Code	KIS
Share Price	A\$0.12
Ord Shares	135.15m
Options	9.00m
<b>Market Cap</b>	<b>A\$17.30m</b>
Cash (Mar 14)	A\$1.25m
Total Debt	A\$0
<b>Enterprise Value</b>	<b>A\$16.05m</b>

### Directors

Non-Executive Chairman	Johann Jacobs
Non-Exec Director	Allan Davies
Non-Exec Director	Chris Ellis
Project Manager	Alvin Johns

### Company Details

Address	Level 26, 259 George Street Sydney NSW 2000
Phone	+612 8622 1400
Web	www.kingislandscheelite.com.au

### Top Five Shareholders

Mr and Mrs Chadwick	13.3%
Chrysalis Investments P/L	13.1%
Catherine Morritt	10.3%
HFTT P/L	9.9%
Pacific Road Provident	4.2%

### 1 Year Price Chart



# King Island Scheelite (KIS)

## High Grade Tungsten – Ready for Development

*Recommendation: Speculative BUY*

### Key Points

- *The King Island Scheelite Mine is a high grade historic tungsten producer, having produced in the order of 9.7Mt @ 0.64% WO<sub>3</sub>*
- *The Company is currently scoping a low capex staged open cut and underground operation over the historic operations, to produce approximately 36,000t of WO<sub>3</sub> from a LOM mill feed of 400,000tpa, grading at an average of ~0.83% WO<sub>3</sub>*
- *The current proposal combines elements of two past fully permitted development plans - a proposed 2006 open cut and 2012 underground operation*
- *Development and environmental approvals are still in place – only minor changes will be required to permit the current option*
- *Our high level economic analysis indicates a robust project largely by virtue of the grade*
- *Indicative unfunded NPV<sub>8</sub> project valuation (not discounted for project stage or risk) of ~\$111 million, with an IRR of 35%*
- *Potential annual after tax free cash flows of \$22-\$29 million*

*King Island Scheelite is looking to fast track their King Island Scheelite project, with an aim to commence production possibly as soon as early 2016. This historical high grade producer still has significant open cut and underground resources, at grades significantly higher than ASX-listed peers.*

*The key to the King Island project is its grade – an average LOM feed grade of ~0.83% WO<sub>3</sub> contributes to a potentially robust operation. There is also good exploration potential on the flanks of the mineralising intrusives.*

*The register is dominated by key stakeholders in the project (including the directors), and hence we see significant motivation to generate value in the Company, which will benefit all shareholders.*

*We see good value in King Island Scheelite, with our high level economic analysis indicating a robust project with a potential value well above current price levels. Key price drivers will include securing an offtake deal, and, down the track, successful project funding and then execution.*

### Company Overview

King Island Scheelite (ASX: KIS, “King Island” or “the Company”) has completed a DFS and supplementary studies for re-opening the historic King Island Scheelite Mine located on King Island, in Bass Strait, Australia.

Current open cut and underground hard rock resources are in the order of 6.4Mt @ 1.20% WO<sub>3</sub> (10.6Mt @ 0.93% WO<sub>3</sub> using a lower cut-off), with additional low grade resources in the tailings dam.

The Company is considering a staged open cut and underground development, and is looking to fast track development of the project. Little needs to be done with regards to permitting by virtue of approvals being in place from previous work, with this development not proceeding due to circumstances largely out of the Company’s control.



## Investment Thesis

### King Island Scheelite Mine

*King Island is currently scoping a 15 year staged operation at the historic King Island Scheelite Mine*

King Island Scheelite (“King Island” or “the Company”) is currently scoping a combined open cut, limited tailings retreatment and underground operation at its 100% held King Island Scheelite Project (“the Project”), with the potential to produce up to 36,000t of WO<sub>3</sub> over a 13 year mine life. This is in effect a hybrid of two previous studies – a 2006 DFS that was based on a large open cut at the historic Dolphin Mine, and a 2012 study based on tailings retreatment followed by underground mining at Dolphin and Bold Head.

The historic King Island operations operated at various times between 1917 and 1990, when they closed due to very depressed tungsten prices.

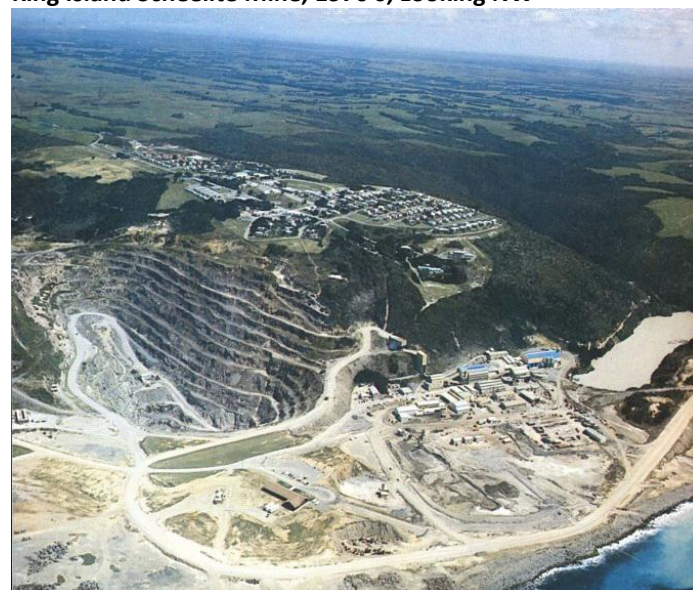
#### Location Map



*King Island is located in Bass Strait, between Tasmania and the mainland of Australia*

Source: Adapted from KIS

#### King Island Scheelite Mine, 1970's, Looking NW



*The mine operated in various periods between 1917 and 1990*

Source: KIS



*Our work indicates robust economics*

## Robust Indicative Economics

We have carried out a high level economic analysis of the proposed operation, and using an ammonium paratungstate (“APT”) price of US\$375/mtu (currently US\$367/mtu) and an AUD/USD exchange rate of 0.90, the project has an indicative NPV<sub>8</sub> of \$111 million, with an IRR of 35%. This is most sensitive to prices and exchange rates.

*The mineralisation is high grade, one factor leading to robust economics*

## High Grade Mineralisation

One key factor in the potential robust economics of the project is the high grade of the mineralisation. Underground reserves, as calculated for the 2012 DFS, grade at 1% WO<sub>3</sub>. At current APT prices, a concentrate discount of 30% and a gold price of US\$1320/oz, this equates to around a 6g/t gold equivalent.

This is significantly higher than most peers, even when by-product credits are taken into account for the other companies. This also helps offset the potentially high power costs, with diesel generation being required, and diesel being needed to be shipped in from the mainland.

*The project is fully permitted*

## Fully Permitted

The Project is for all intents and purposes fully permitted, with an approved development plan and environmental management plan for the 2012 DFS in place. Some changes will be required; however these will partly revert back to the approvals as originally granted in 2007 based on the original open pit proposal.

*The board, management and key stakeholders have extensive experience in the resources sector as well as significant stakes in the Company*

## Strong Board and Management

The Company’s board and management have a proven track record in the resources industry, and delivering value to shareholders, whether in public or private companies. This, allied with the point below indicates personnel motivated towards shareholder return.

*In addition to the current resources there is significant exploration potential*

## Strong Register

The Company has a tightly held register, with directors, interested parties and the project vendors holding significant stakes in the Company. The top 20 currently hold around 77% of the shares in King Island.

*King Island is one of a number of ASX-listed tungsten explorers/developers*

## Exploration Potential

There remains good exploration potential in the immediate region of the proposed operation around the mineralising granite intrusive. As is usual with a number of operations, exploration was put on the backburner, and thus the broader area around the mine can be considered as underexplored.

In addition there is the potential for further underground resources, which will be tested once access is gained to the historic underground workings.

## Peers

The following table lists ASX-listed tungsten developers. As noted above, the noticeable feature of King Island is the high grade of the mineralisation. This table also presents the enterprise value per tonne of the company’s share of contained WO<sub>3</sub> in JORC-compliant resources. In the case of Wolf Minerals we have used the reserve that the current development is based on rather than the resources.



## King Island Peer Group

Company	Cap (\$Am)	EV (\$Am) EV/t WO <sub>3</sub>	Project	JORC Resources	Stage/Notes
<b>Wolf Minerals</b>	\$254.08	\$209.18 (\$4,123/t)	Hemerdon, England	401.4Mt @ 0.13% WO <sub>3</sub> 521,820t	Development on a 26.7Mt @ 0.19% WO <sub>3</sub> (50,730t) reserve 0.02% Sn credit. Figures include issue of 608.6m shares @ \$0.30, still awaiting shareholder approval DFS underway.
<b>Hazelwood Resources</b>	\$44.58	\$42.58 (\$1002/t)	Cookes Creek, Pilbara WA	24.42Mt @ 0.174% WO <sub>3</sub> 42,490t	Also has a majority interest in the recently completed 4,000tpa nameplate ATC ferrotungsten plant in Vietnam
<b>Venture Minerals</b>	\$41.66	\$35.42 (\$787/t)	Mt Lindsay, Tasmania	45Mt @ 0.1% WO <sub>3</sub> 45,000t	DFS completed 2012. 0.2% Sn, 17% DTR magnetite credits. Also has nearby Mt Riley DSO iron, which is being developed
<b>Carbine Tungsten</b>	\$23.71	\$24.41 (\$355/t)	Mt Carbine, Qld	59.3Mt @ 0.12% WO <sub>3</sub> 68,760t	Tailings retreatment underway, feasibility study on hard rock stockpile treatment. Also has a portfolio of exploration projects for other commodities
<b>King Island Scheelite</b>	\$17.30	\$16.05 (\$196/t)	King Island, Tasmania	9.11Mt @ 0.9% WO <sub>3</sub> 81,990t	Review of DFS, looking to fast track development
<b>Tungsten Mining</b>	\$9.91	\$5.41 (\$400/t)	Kilba, Pilbara WA	5.0Mt @ 0.27% WO <sub>3</sub> 13,500t	Commencing DFS work. Cash and structure dependent upon current rights issue take-up
<b>Vital Metals</b>	\$7.72	\$6.40 (\$93/t)	Watershed, Nth Qld	49.2Mt @ 0.14% WO <sub>3</sub> 68,880t	All approvals in place, expanded DFS underway. In partnership with JOGMEC (30%). Also has Doulnia Gold Project in Burkina Faso

EV is enterprise value – market capitalization less cash plus debt – the value of non-tungsten projects have not been deducted from the EV

Source: IRESS, Company reports, EV as at close of trade April 24, 2014

## Risks

*We see key risks being on the revenue side, including pricing and exchange rates*

As with any resources project or company there are risks involved.

We see the key risks being on the revenue side, including marketing, commodity prices and exchange rates.

Firstly, given the nature of the tungsten market, King Island will need to negotiate an offtake agreement to sell product. This will be made somewhat more difficult by the molybdenum content in the mineralisation, with not all offtakers being able to use this product, thus restricting the number of potential customers.

Tungsten prices have historically been reasonably volatile, and very reactive to global economic conditions. In addition, there are risks with the Chinese domination of the market. Exchange rates also feed into the pricing equation. Our analysis indicates that the project is most sensitive to tungsten prices, however this is somewhat mitigated by the high grade of the deposit which provides a buffer for falling prices/rising exchange rates.

*The high grade helps buffer against adverse changes in operating costs*

The grade of the deposit makes it fairly impervious to changes in operating costs, however this will be a relatively high cost operation largely due to the high power generation costs, at least initially.



*The nature of the mineralisation may cause some challenges in underground mining*

Technically, we see the main risk in re-opening the underground workings; from accounts we have received the underground mining was at times challenging, including grade control being difficult.

On the resource side, the commonly poddy and discontinuous nature of skarn mineralisation also does result in some element of resource risk. This will feed into mining (and the grade control issue mentioned above) – there is the potential to not know what is there until material is being mined, however on the other hand there is reasonable confidence in the resource, as evidenced by the various estimates that have been completed.

*The project is de-risked with regards to permitting*

The Project is de-risked with regards to permitting and community relations – the project is to all intents and purposes fully permitted, however changes will need to be made to the permitting to reflect the change in proposed operations. These however should not prove an obstacle – the Project is partially reverting back to that as originally permitted in 2007.

*All indications are that the local community is largely behind the project*

All indications are that the King Island community is largely behind the project, which has the potential to deliver significant benefits to the Island. The Company has also been proactive with community relations – in our view a vital aspect of any such proposed project.





## Project Review

### King Island Scheelite Project

*The King Island Scheelite Project is located in SE King Island, adjacent to the old mine town of Grassy*

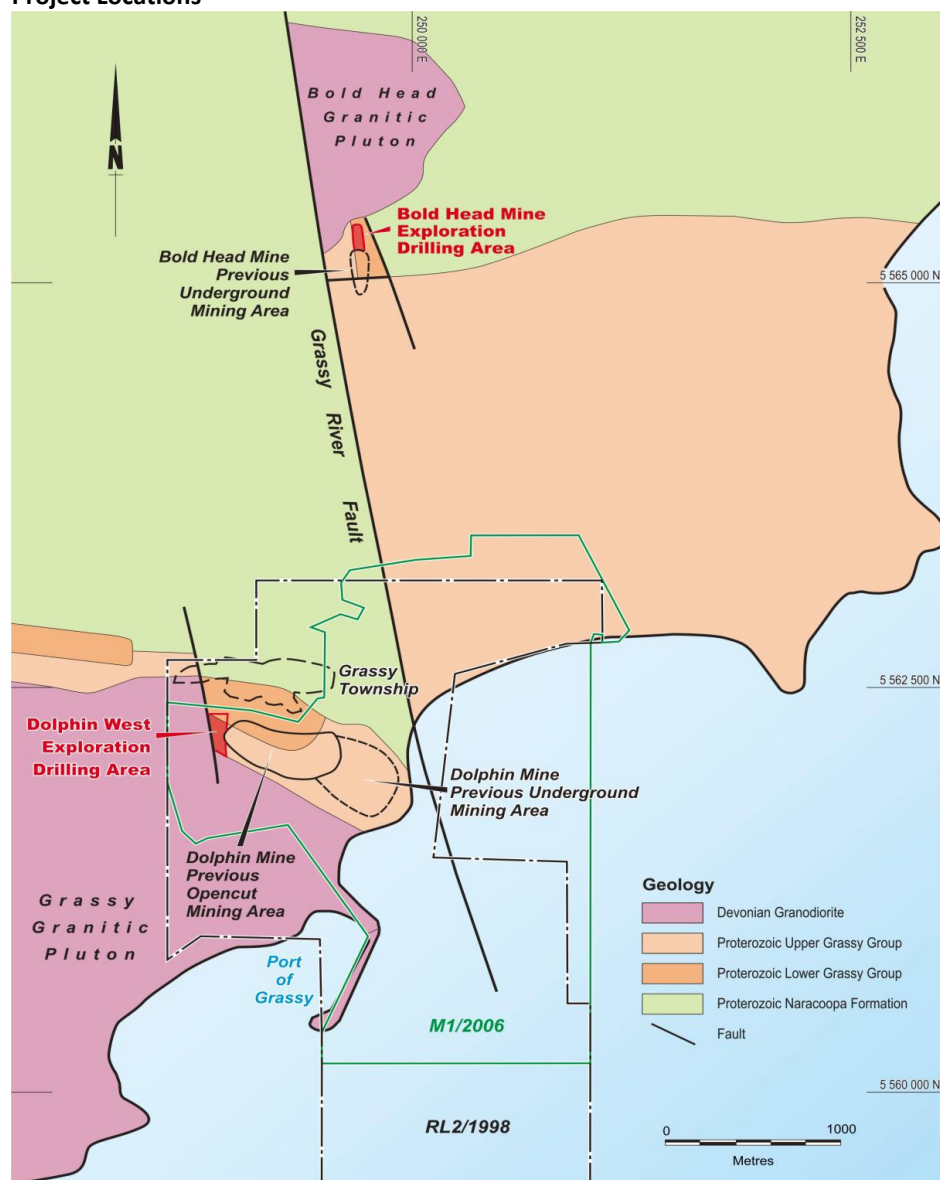
The Company's project covers the historic King Island Scheelite operations, a past significant tungsten producer, located adjacent to the town of Grassy (the original mine town) on the south eastern corner of King Island.

The mines operated at various times between 1917 until closure in 1990 due to very depressed tungsten prices. Mining was purely by open cut at Dolphin until 1972, when the Bold Head underground operation was commenced, followed by the Dolphin underground in 1973. Production ceased from the Dolphin open cut in October 1974.

Apparently total production was in the order of 9.7Mt @ 0.64% WO<sub>3</sub>.

### Project Locations

*The Project is located over the historically mined Dolphin and Bold Head deposits, which produced ca. 9.7Mt @ 0.64% WO<sub>3</sub>*



Source: King Island Scheelite

*The project is held 100% by KIS*

The project, now held 100% by King Island, comprises two exploration licenses (EL 19/2001 and EL 16/2002) totalling 109km<sup>2</sup>, Mineral Retention License RL 2/1998 (8 km<sup>2</sup>), and Mining Lease Application 1M/2006 (544ha). The ML application will be readily converted to a granted lease once development works commence and a bond is paid.



*The Company also hold the surface rights, and are looking at a quick start up to development*

*The skarn mineralisation is hosted in Neoproterozoic dolomitic units, intruded by the mineralising Devonian/ Carboniferous granite*

The Company also holds freehold surface title to the areas required for mining and ancillary operations.

The Company is looking at commencing development of the operation in Q2, 2014, starting with dewatering of the Dolphin open cut.

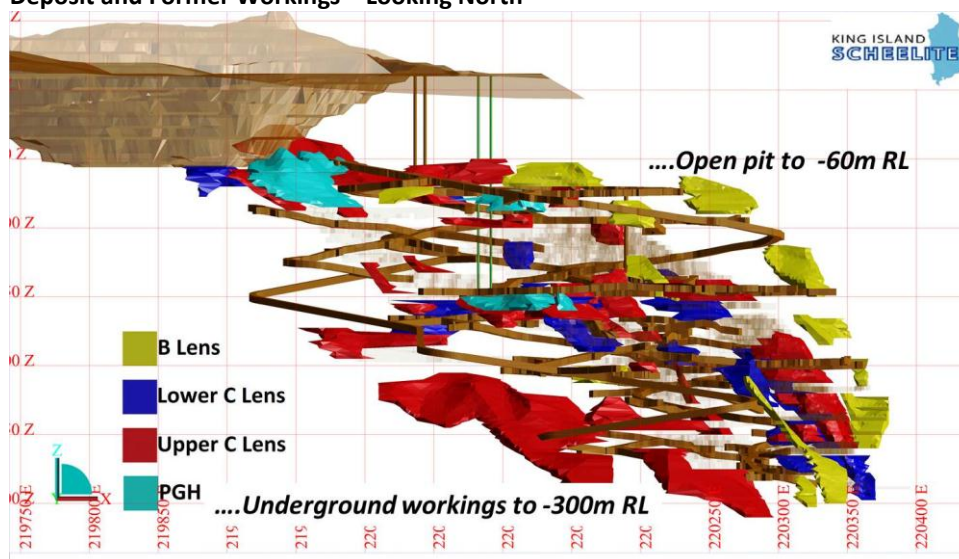
## Geology and Mineralisation

The mineralisation occurs as a series of lenses and pods, generally around 20-25m thick, in a skarn hosted by late Proterozoic to lower Cambrian units comprising dolomite, shale and tillite, which overlies a +7,000m thick Neoproterozoic pelitic sequence. The units have been deformed into a number of folds, with dips varying between 20°-50° to the south and east, and have been contact metamorphosed.

The sedimentary sequence has been intruded by a series of late Devonian to early Carboniferous granites, which are the source of the mineralising fluids which have metasomatised the carbonate units within the contact aureole of the granite.

The tungsten minerals include scheelite with minor powellite, a molybdenum bearing form of scheelite, with no wolframite being detected. There are also trace amounts of sulphides in the ore. The presence of molybdenum will affect revenues in that it can attract a penalty on concentrate sales prices.

### Deposit and Former Workings – Looking North



Source: KIS

## Resources

*Total hard rock open cut and underground resources are 10.6Mt @ 0.93% WO<sub>3</sub>.*

*Resources and reserves are currently being recalculated*

Current resources and reserves are as listed in the following tables. These include figures for the Dolphin and Bold Head deposits, as well as a lower grade tailings resource. The Dolphin figures do not separate open cut and underground resources, however the reserves presented are underground reserves as used in the 2012 BFS.

**Total hard rock resources, using the 0.7% cut-off for Dolphin are 6.41Mt @ 1.20% WO<sub>3</sub>; using the 0.25% cut-off these total 10.6Mt @ 0.93% WO<sub>3</sub>.**

The Company is currently recalculating resources and reserves, following completion of a limited resource definition drilling programme targeting open pit remnants at Dolphin and potential open pittable material at Bold Head. These will be used for final planning and reserves calculations for the current development option (discussed later).



*The area holds good exploration potential – both on surface and underground*

There is good exploration potential for new discoveries on the flanks of the granite intrusions, with this being relatively under explored. The Company notes that limited historical exploration drilling has resulted in some tungsten intersections that are yet to be followed up.

There is also the potential for extensions to the south east of the underground Dolphin mineralisation. Given that this extends under the sea, it is difficult to drill from the surface, and will be tested once access is gained to the underground workings.

This adds the potential for extensions to the planned mine life, and the Company has allocated an exploration budget in the project economics.

#### Dolphin Mineral Resources

Category	0.25% WO <sub>3</sub> Cut off			0.70% WO <sub>3</sub> Cut off		
	Tonnes (000)	WO <sub>3</sub> (%)	Contained WO <sub>3</sub> (t)	Tonnes (000)	WO <sub>3</sub> (%)	Contained WO <sub>3</sub> (t)
Indicated	8,419	0.95	79,980	4,752	1.29	61,300
Inferred	524	0.50	2,620	7	0.73	50
<b>Total</b>	<b>8,943</b>	<b>0.92</b>	<b>82,600</b>	<b>4,759</b>	<b>1.29</b>	<b>61,350</b>

Source: KIS

#### Bold Head Mineral Resources

Category	0.50% WO <sub>3</sub> Cut off		
	Tonnes (000)	WO <sub>3</sub> (%)	Contained WO <sub>3</sub> (t)
Indicated	1,500	0.93	13,950
Inferred	150	1.22	1,830
<b>Total</b>	<b>1,650</b>	<b>0.96</b>	<b>15,780</b>

Source: KIS

#### Tailings Mineral Resources

Category	0.08% WO <sub>3</sub> Cut off		
	Tonnes (000)	WO <sub>3</sub> (%)	Contained WO <sub>3</sub> (t)
Measured	2,700	0.17	4,590
<b>Total</b>	<b>2,700</b>	<b>0.17</b>	<b>4,590</b>

Source: KIS

#### Underground Mineral Reserves

Deposit	All Probable		
	Tonnes (000)	WO <sub>3</sub> (%)	Contained WO <sub>3</sub> (t)
Dolphin	2,687	1.04	2,806
Bold Head	609	0.76	464
<b>Total</b>	<b>3,296</b>	<b>0.99</b>	<b>3,270</b>

Source: KIS

### Metallurgy and Processing

As part of recent studies, the Company has reviewed the metallurgy. Further metallurgical drilling is also planned once the pit is dewatered – although the metallurgy is well understood, this will be used to refine understanding of the metallurgical variability within the mineralisation.

The 2012 DFS included conventional three stage crushing, followed by grinding to 80% passing 90µm. Scheelite would then be concentrated by rougher whole ore flotation, attritioning (to remove deleterious coatings on the scheelite grains) followed by cleaner flotation to form the final concentrate.

Subsequent work has indicated that pre-concentration utilising an upfront gravity circuit could remove 30% of the waste, whilst recovering 96% of the tungsten prior to flotation, resulting in only 70% of the mill feed needing to be floated. This will also enable coarser

*Metallurgy is fairly simple, with the potential for a pre-concentration using gravity methods followed by standard flotation*





*We envisage an 85% recovery to a 55% concentrate*

grinding, with a grind size of 250 µm. These factors will help reduce capital and operating costs. We have assumed an overall recovery of 85%.

One issue with King Island ore is the presence of 1-2% molybdenum in the scheelite concentrate – this can result in penalties being applied to the sales price. The Company is looking at producing a 55% WO<sub>3</sub> concentrate, rather than the higher value 65% product, which testwork indicates will help lower the molybdenum in concentrate.

King Island envisages discounts from the APT price of 22% for the concentrate grade, and a penalty of 8% for the molybdenum content, thus resulting in a total 30% discount to the APT price.

## Project Studies

Since acquiring the project in 2005, King Island has completed two feasibility studies investigating various development options, with these being fully permitted.

### 2006 Feasibility Study

*King Island originally completed an open cut DFS in 2006, which was subsequently fully permitted*

This was based on a 13.4Mt @ 0.64% open pit resource, to a depth of 308m below sea level. The study envisaged an initial 10 year, +600,000tpa operation, mining a 180m deep pit, and extracting up to 6.8Mt @ 0.55% WO<sub>3</sub>. The strip ratio was 8 to 1 on a bank cubic metre (“bcm”) to tonne of ore basis. Depending upon information gained during the initial stage, and gaining the necessary approvals for an expanded pit, there would then be the potential to extend the pit to a depth of 248m.

This plan required the building of a seawall to stop water ingress into the pit, and an anticipated start-up capital of \$85 million. The capex was subsequently revised upwards to \$95 million.

This project was fully approved, with these approvals still in place, albeit with changes due to the subsequent 2012 development option.

### 2012 Feasibility Study

*Following a JV with Hunan Non-Ferrous Metals, a DFS that envisaged underground mining and tailings retreatment was completed, and again fully permitted.*

In 2007, King Island entered into a joint venture with Hunan Non-Ferrous Metals Corporation (“Hunan”) to develop the Project, with this terminated in 2010 due to re-prioritising of projects by MinMetals, following their takeover of Hunan.

As part of the JV, Hunan took a share placement (4.4 million shares at \$1.00/share) and later provided a loan of \$3.9m to King Island, to fund a revised feasibility study. On termination of the JV the loan was converted to a 2% NSR, capped at \$3.9 million.

The revised study, instigated under the JV with Hunan, was completed in 2012 and envisaged a 10 year, 350,000tpa operation, including underground mining at Dolphin and Bold Head, and retreatment of some of the tailings. Resources and reserves for this operation are as presented in the relevant section in this note.

Again all approvals were obtained for the proposed operations, with only revisions to the original documents being required.

The estimated start-up capital was in the order of \$140 million, with a project IRR of 21-29%.



*More recently the Company has been looking at lower cost options, including a 15 year project combining aspects of both of the previous studies*

### **2013 Value Engineering Study ("VES") and Current Options**

Given the economics of the 2012 study, King Island has been undertaking further studies looking at lower cost operations. We have based our indicative project valuation on one scenario, which is in effect a hybrid of the previous two studies, and was released to the market on April 9, 2014.

This scenario includes:

- An initial 4 year open cut operation, mining remnants from the Dolphin pit and mining a small pit at Bold Head:
  - Mining rate of 400,000tpa @ 0.60% WO<sub>3</sub> at a 2.5:1 strip ratio
  - Grade is 2013 VES resource grade (0.67% WO<sub>3</sub>) less 10% mining dilution
  - Annual production of 2,040t of WO<sub>3</sub>
  - There is the potential to stockpile low grade material (included within the current waste) for later retreatment
  - Start-up capital of \$41 million (we have used \$50 million in our modelling)
- A second phase 9 year underground operation at Dolphin and Bold Head:
  - Underground mining rate of 350,000tpa @ 1% WO<sub>3</sub>, with this augmented by tailings retreatment at 42,000tpa @ 0.35% WO<sub>3</sub>,
  - This results in an average of 392,000tpa @ 0.93% WO<sub>3</sub> being milled, recovering 3,100tpa of WO<sub>3</sub> at a mill recovery of 85%.
  - Capital required will be in the order of \$30 million to be funded out of open cut cash flow, with dewatering of the underground workings and construction to be carried out in the final year of open cut mining.
  - Underground grades are reserve grades from the 2012 DFS, tailings grades are selective higher grade areas as in the April 9, 2014 release.

The Company is currently progressing work on these development options, and has recently completed resource definition drilling adjacent to the existing mines to further define the potential open pit resources.

### **Mining Methods, Infrastructure**

#### **Mining**

*The proposed operation will use industry standard mining and processing methods*

The initial phase will be by conventional open cut mining, which will also involve some limited pit cut backs. A number of mining techniques are proposed to deal with the gently dipping nature of the underground mineralisation, including post pillar cut and fill, simple cut and fill and bench stoping. Fill will be provided by cemented paste.

#### **Processing and Transport**

The plan is to process 400,000tpa of ROM ore, to produce, on our estimates, between 3,700 and 5,600 tonnes of 55% WO<sub>3</sub> concentrate per year. This would be bagged into bulka bags, and loaded into 40 foot containers for transport off the island.

Grassy Port, adjacent to the Dolphin site, can handle 5,000 tonne vessels.

#### **Tailings**

It is planned to utilise existing spare capacity and expand the existing tailings dam by raising the embankment, which will provide the capacity to accept tails from the project. It is also planned to use tailings for the cemented fill once underground operations commence.



*Power is a key consideration on King Island – the Company will need to provide its own power source, initially to be diesel generators operated by a third party*

## Power

Power availability is a key consideration on King Island, with the local supply not sufficient to supply the estimated mine requirements. The plans are, initially at least, to use diesel generation using a third party provider, with an estimated cost of \$0.40/kWh. This cost is exacerbated by having to ship diesel to the island.

There is the potential down the track to use power from the proposed TASWind wind farm to run the mill and underground mining equipment, although diesel will still need to be shipped for surface machinery.

The TASWind project envisages 200 3MW wind towers for installed capacity of 600MW, with an undersea cable supplying electricity into the grid at Melbourne. The project has an estimated capital cost of \$2 billion, with our calculations estimating approximately half of this being in the cable link to the mainland. This project is no certainty to proceed.

## Water

Sufficient water for the Project is available in the existing Lower Grassy Dam

## Workforce

It is planned to use local labour wherever possible, however they will be the need for some fly-in fly-out personnel for specialised jobs.

## Indicative Economics

*Our high level economic analysis indicates a robust project*

We have undertaken an indicative high level ungeared DCF analysis of the project using the scenario as presented above. This is not intended as a per share valuation or to set a price target – this will depend on the structure of funding for the proposed development, more rigorous DCF modelling and applying risk factors to the unrisks NPV.

We have largely used figures as publicly released by the Company, however have verified these against standard cost curves, and been more conservative in some areas, including capital expenditure and open cut mining costs.

Parameters and outcomes are as in the table below.

### Indicative DCF Model Parameters and Results

Item	Details
<b>Operation</b>	Four years open cut, milling 400,000tpa @ 0.60% WO <sub>3</sub> Nine years underground, mining 350,000tpa @ 1% WO <sub>3</sub> , augmented by 42,000tpa @ 0.35% WO <sub>3</sub> from tailings
<b>Estimated Capital Costs</b>	A\$50 million phase 1, A\$30 million phase 2
<b>Estimated LOM operating costs</b>	A\$165/mtu – includes cash costs, site administration, royalties
<b>LOM Mill Feed</b>	5.13Mt @ 0.83% WO <sub>3</sub>
<b>LOM Production</b>	36,000 of WO <sub>3</sub> , in a 55% concentrate, 85% mill recovery
<b>APT Price, AUD/USD ER, Concentrate Discount</b>	US\$375/tonne, 0.90, 30% discount
<b>LOM After Tax Free Cash Flow</b>	A\$235 million
<b>Base Case after tax NPV, 8% DR, IRR</b>	A\$111 million, 35%

Source: Company, Breakaway analysis

*The Project is most sensitive to commodity prices, exchange rates, metallurgical recoveries and grades*

Sensitivity analyses indicate that the Project is most sensitive to APT price, exchange rates, grade and recovery. Below we present a sensitivity matrix using APT price (also a proxy for exchange rates) and metallurgical recovery (also a proxy for resource grade).



## Indicative Sensitivity Analysis – After Tax

		Mill Recovery					
		80%		85%		90%	
		NPV	IRR	NPV	IRR	NPV	IRR
APT Price (US\$/mtu)	\$300	\$13	12%	\$31	16%	\$49	21%
	\$325	\$38	18%	\$58	23%	\$78	28%
	\$350	\$63	24%	\$84	29%	\$106	34%
	\$375	\$88	30%	\$111	35%	\$134	40%
	\$400	\$113	36%	\$138	41%	\$162	47%
	\$425	\$138	41%	\$164	47%	\$190	53%
	\$450	\$163	47%	\$191	53%	\$219	59%

Source: Company, Breakaway analysis

## Work Programme

The Company now plans to progress rapidly to development, with an indicative timeline given below for a production start-up by the beginning of 2016:

*King Island now plans to progress to development, with a potential start-up by early 2016*

- Updated resources – currently being calculated
- Offtake negotiations – currently underway
- Detailed costing, reserve calculation, mine planning/scheduling – currently underway
- Pit dewatering – possibly commence within the next month, and will take three to four months, for completion by September 2014 – this will trigger the bond payment and final grant of the Mining Lease
- Pit floor metallurgical testwork drilling – September-October 2014
- Development capital raising – October 2014
- Detailed engineering - October 2014 to March 2015
- Construction – March to December 2015

## Breakaway's View

Our analysis indicates a potentially robust project at King Island, largely due to the high grade of the mineralisation.

*King Island is a potentially economically robust project*

We note the stop start nature of project since being acquired by King Island in 2005 with two major fully permitted studies being completed, however not proceeded with. We can see potential investors querying this, however in part events have been affected by unforeseen circumstances.

The first of these studies, completed and permitted in 2007, had the focus changed by the entry of Hunan into the JV, who preferred an underground, rather than open cut operation, and helped fund the feasibility study that was completed in 2012.

This work on this study was delayed, firstly by the GFC and then the departure of Hunan following their takeover by MinMetals. When finally completed in 2012 (with an upfront capex of \$141 million) we were well into the current junior downturn, with development capital all but impossible to obtain on reasonable terms to existing shareholders.

*The current staged proposal requires relatively modest upfront capital*

The current staged proposal, which combines elements of both previous studies, requires a much more modest up front capital of somewhere in the order of \$41 to \$50 million, which will need to be funded through debt, equity and/or offtake. The second tranche, in



our estimates in the order of \$30 to \$40 million, for the underground development should be able to be funded out the open cut cash flow.

*Largely permitted*

The proposed operation also significantly benefits by being largely permitted.

*New eyes and technologies have the potential to benefit this historic high grade operation*

There are always risks in re-opening historic operations, particularly underground, however the studies done thus far give confidence that the project may be a success. We note the gently dipping to flat lying and faulted nature of the underground remnants – there is the potential here for issues during the proposed underground phase of operations, and comments we have received from other parties were that it was a relatively challenging operation when originally mined. However operations often benefit from new sets of eyes and advances in technology.

*We rate King Island as a Speculative Buy*

We see the potential for significant value add in King Island Scheelite, and hence rate it as a **Speculative Buy**, with price drivers including negotiation of an offtake agreement, project funding and execution.





## Tungsten

*Tungsten is unique in having the highest melting point of any metal*

Tungsten is unique, having the highest melting point and lowest coefficient of expansion of any metal. It is also environmentally benign, being corrosion resistant and thus neither breaking down nor decomposing. In the form of tungsten carbide, it is extremely hard, being 2<sup>nd</sup> only in hardness to diamond in the more common materials.

*The major use is in tungsten carbide, used in applications that require extreme abrasion resistance*

The major use for tungsten is in the form of tungsten carbide, where it is used for applications that require extreme abrasion resistance. These applications include mining drilling bits and cutting tips, and make up approximately 55% of tungsten demand. It is also an important alloying component for making hardened steels, which comprise around 20% of demand.

There are also a number of other uses, including in lighting, electronic components, armaments and sporting goods.

Tungsten is primarily found in the minerals scheelite and wolframite, and first stage processing involves beneficiation to a concentrate – either a premium +65% WO<sub>3</sub> or a lesser value +50% WO<sub>3</sub> product. The concentrates are generally then converted to an intermediate ammonium paratungstate (“APT”) product, before being converted to elemental powder and WC.

## Market and Pricing

*Tungsten demand is closely tied to global economic conditions, however the market is opaque*

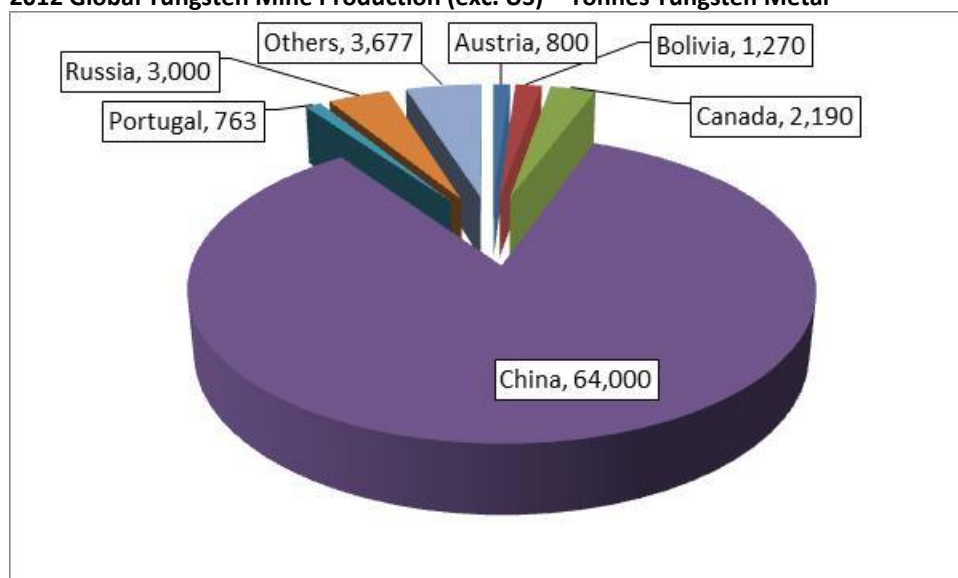
Given the specialty industrial uses for tungsten, demand is tied closely to global economic conditions. In addition, the tungsten market is opaque – different sources have different estimates of production and consumption figures, and US production figures are generally confidential.

*2011 mine production (exc. The US) was 72,000t, with 60,000t of this from China*

According to the USGS, world mine production in 2011 (excluding the US) was in the order of 72,000 tonnes of contained tungsten metal, with 60,000 tonnes (83%) of this being produced by China. Recycling of scrap is also an important source of supply, which is estimated to comprise 20-30% of total supply.

Chinese production did slow down during the GFC, due to depressed foreign demand, however domestic demand continued to grow during this period.

**2012 Global Tungsten Mine Production (exc. US) – Tonnes Tungsten Metal**



Source: USGS



*China is also the world's largest consumer, at 55% of demand*

China is also the world's largest consumer, accounting for 55% of world demand in 2010. The US (13%) and Europe (12%) were the other major consumers in that year. Chinese demand grew strongly from 2000 to 2007, and continued to grow through the GFC which severely affected other users, with an overall growth rate of ~7% pa over the last 10 years. In comparison Europe's share of consumption was 23% in 2008, falling to 12% in 2010 following the GFC.

*China controls the world tungsten market*

China controls the global tungsten market, and has put a number of measures in place to control domestic supply and restrict production and exports of tungsten. Given growing domestic demand in the near future, it is likely China may further restrict exports, thus leading to opportunities for non-Chinese producers. However falling domestic demand in China will lead to the reverse, with the potential to flood the external market with cheap product.

*There is potential for significant growth in demand, particularly in China*

There is the potential for significant growth in demand, particularly in China. Cemented tungsten carbide demand is strongly linked to GDP per capita – increasing living standards will lead to an increase in demand for these products.

Given the demand/supply fundamentals have historically been very volatile, as shown in the following graph.

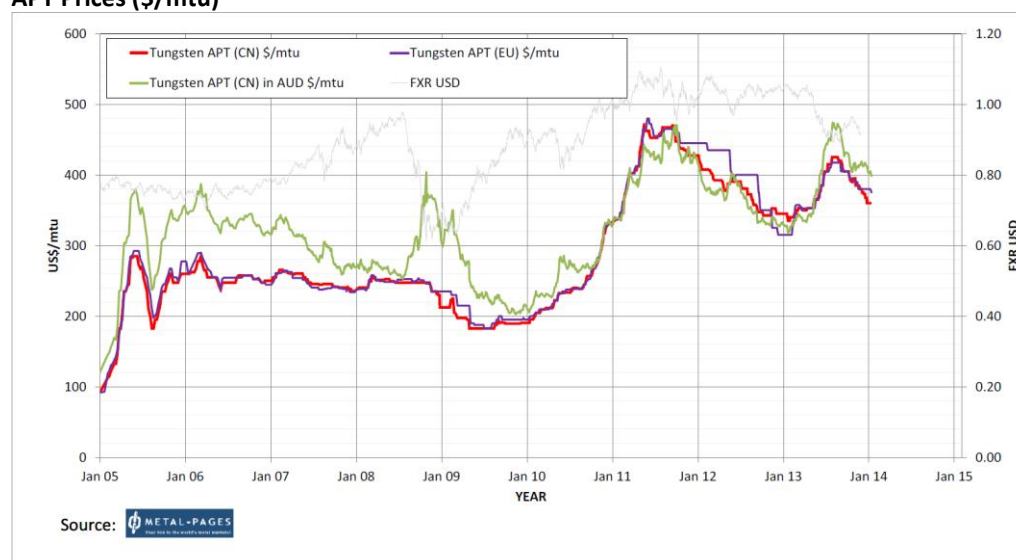
## Pricing

*Pricing is reasonably volatile, and is generally published as US\$/tonne APT. Concentrates commonly trade at a 20-25% discount to APT*

Published prices are generally for APT in US\$/mtu (an mtu, or "metric tonne unit" is equal to 10kg of WO<sub>3</sub>, which contains 7.93kg of tungsten metal) as shown in the graph below. This shows the Canadian and European prices, as well as the Canadian price in Australian dollars.

65% concentrate prices have historically traded at around a 20-25% discount to the APT price, reflecting the cost of extra processing in APT.

### APT Prices (\$/mtu)



Source: Metal-Pages via Vital Metals December 2013 Quarterly Report



## **Board and Management**

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### *Non-Executive Chairman*

#### **Johann Jacobs**

**Johann Jacobs** is an experienced resource sector executive in project development, project expansions and operational management for established and start-up mining operations in Australia, South Africa and Indonesia. He has been a Chartered Accountant in the mining industry for 34 years and is a Fellow member of both the Institute of Chartered Accountants and the Institute of Company Directors of Australia. Johann was, until 2012, Non-Executive Chairman of ASX-listed IMX Resources Limited and Coalworks Ltd. He is currently Non-Executive Chairman of ASX-listed graphite and uranium explorer, Uranex Limited and a Director of Australian Zircon NL and TW Holdings Limited.

### *Non-executive Director*

#### **Allan Davies**

**Allan Davies** is a mining engineer and has over 35 years' experience in the Australian and international coal and metalliferous mining industries. He is a registered mine manager in Australia and South Africa. Allan was a founding director of Excel Coal Limited and as Executive Director – Operations for Excel Coal Limited, Allan had direct responsibility for operations and construction projects. From 2000 until early 2006, Allan worked for Patrick Corporation as Director operations. In addition, he was an Executive Director of Whitehaven Coal from February 2009 until November 2012 and a non-executive director of QR Limited and QR National Limited from October 2008 until December 2011. He is currently a non-executive Director of Qube Holdings.

### *Non-executive Director*

#### **Chris Ellis**

**Chris Ellis** has over 30 years' experience in the exploration and mining industry in Australia and overseas. Chris was a founding member and Executive Director of coal mining company Excel Coal Limited which became Australia's largest independent coal mining company, before being acquired by Peabody Energy Inc. in October 2006. Chris commenced his career in the UK coal industry, followed by positions within Shell's exploration group in Southern Africa, and CRAE in Western Australia. He has also held senior positions for BP Coal (London and USA), Agipcoal Australia and for the Stratford Joint Venture. Chris has core skills in geology, mining engineering and minerals processing, mainly in the coal industry with some experience in gold, base metals and diamonds. He has had overall responsibility for the design and engineering of four new mines during his career with Excel. Chris is a Non-Executive Director of Ausquest Limited (AQD).

### *Project Manager*

#### **Alvin Johns**

**Alvin Johns** is an accomplished mining professional, with over 25 years' experience and has been involved in commissioning a number of processing facilities around the world as well as in Tasmania.



### **Analyst Verification**

We, Grant Craighead and Mark Gordon, as the Research Analysts, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

### **Disclosure**

Breakaway Investment Group (AFSL 290093) may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of King Island Scheelite and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

### **Disclaimer**

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