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**EL19/2001**

**ANNUAL REPORT, 2014**

**KING ISLAND**

**NW TASMANIA**

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## **EXECUTIVE SUMMARY**

EL19/2001 is an integral component of the tenement package required for the development of the King Island Scheelite Project. The EL covers 7km<sup>2</sup> of prospective ground around the Grassy Granite and hosts a number of significant deposits and exploration targets including the Bold Head Mine, Investigator 21 and Grassy West.

During 2013-2014, King Island Scheelite (KIS) have reviewed the 2012 DFS with the aim of modifying the operation to reduce upfront capital. There is potential to commence operations through production from several open pit mines and the construction of a lower cost gravity concentration plant. It is anticipated that the mill will be upgraded to the full DFS design and the Dolphin Mine rehabilitated after the operation starts.

Work completed by KIS during 2014 has focused on the development of the Dolphin deposit and construction of the plant. Mining Lease 1M/2006 was granted and environmental permitting is ongoing. Resource infill drilling and geotechnical drilling commenced in October within the Dolphin open Pit and surrounding areas. Mine design, metallurgical testwork and process design work was ongoing throughout the year.

As all resources were directed to the development of the Dolphin deposit, specific field work was completed on EL19/2001 during 2014.

## 1 INTRODUCTION

The King Island Scheelite Project is located in the southeastern corner of King Island, Tasmania (Figure 1). Project tenure includes a Mine Lease (1M/2006), a Retention License (RL2/1998) and two Exploration Licenses (EL19/2001 and EL16/2002). The full tenement package is integral to the development of the King Island Scheelite Project. The tenements are held by Australian Tungsten Pty Ltd a wholly owned subsidiary of King Island Scheelite Limited (KIS) a public company listed on the Australian Securities Exchange.

The Dolphin Mine located on 1M/2006 was originally operated by Geopeko Ltd. along with the satellite Bold Head Mine located several kilometers to the north on EL19/2001.

The Dolphin and Bold Head Scheelite Mines operated intermittently since their discovery and start up in 1920 until the 1990's, with several forced shutdowns due to low tungsten prices. The site was decommissioned and rehabilitated in 1990.

KIS have been investigating the potential of re-opening the mines. Initial investigations into the viability of an open cut and seawall were inconclusive and the focus has changed to rehabilitation of the underground workings and production from remnant resources. KIS completed a definitive feasibility study into a 350ktpa mine and processing facility producing 5700t of concentrate per annum over an 11 year mine life in early 2012.

Project funding has proved to be difficult in the current financial climate and KIS are revising the project to a staged start up commencing with a gravity concentration plant and several low cost open cut mines in the first few years of operations. Ramp up to full production is anticipated in year three with dewatering and rehabilitation of the Dolphin Mine.

Mine rehabilitation and mill construction are scheduled to commence within twelve months of securing full project funding.

Resource and reserve estimation of the Dolphin and Bold Head Deposits and historic tailings storage facility (TSF) have been completed by KIS and form the basis of the King Island Scheelite Project (Table 1 and 2).

<b>TABLE 1. KING ISLAND SCHEELITE PROJECT RESOURCES</b>			
	<b>Tonnes</b>	<b>WO<sub>3</sub></b>	<b>Tonnes WO<sub>3</sub></b>
<b>Dolphin</b>	0.70% WO <sub>3</sub> cutoff		
Indicated	4,752,000	1.29	61,300
Inferred	7,000	0.73	50
<b>Total</b>	<b>4,759,000</b>	<b>1.29</b>	<b>61,350</b>
<b>Bold Head</b>	0.50% WO <sub>3</sub> cut off		
Indicated	1,500,000	0.93	13,950
Inferred	150,000	1.22	1,830
<b>Total</b>	<b>1,650,000</b>	<b>0.96</b>	<b>15,780</b>
<b>TSF</b>	0.08% WO <sub>3</sub> cut off		
Measured	2,700,000	0.17	4,590
<b>Total</b>	<b>9,109,000</b>	<b>0.90</b>	<b>81,720</b>

<b>TABLE 2. KING ISLAND SCHEELITE PROJECT RESERVES</b>			
	<b>Tonnes</b>	<b>WO<sub>3</sub></b>	<b>Tonnes WO<sub>3</sub></b>
Dolphin Probable	2,687,000	1.04	28,060
Bold Head Probable	609,000	0.76	4,640
Tailings Proven	1,910,000	0.19	3,630
<b>Total</b>	<b>5,196,000</b>	<b>0.70</b>	<b>36,330</b>

Technical studies associated with the Definitive Feasibility Study are ongoing and include:

- Resource estimation
- Mining studies
- Reserve estimation
- Metallurgical testwork
- Process flow sheet design
- Cost estimates and construction plans
- Environmental management plan
- Negotiations with potential market off-taker
- Financial modeling
- Negotiations with potential project funding providers
- Resource infill drilling

Work over the past year focused on the feasibility of commencing mining operations through initial open cut operations on the Dolphin Pit and upper Bold Head mines. Resource definition and extension drilling programs were conducted at Bold Head and the Dolphin Mines.

EL19/2001 is integral to the development of the King Island Scheelite Project and is expected to add longevity to the project through exploration once operations recommence.

It is anticipated that exploration will focus on resource extension and regional exploration once project funding is completed and construction has commenced in late 2015-16.

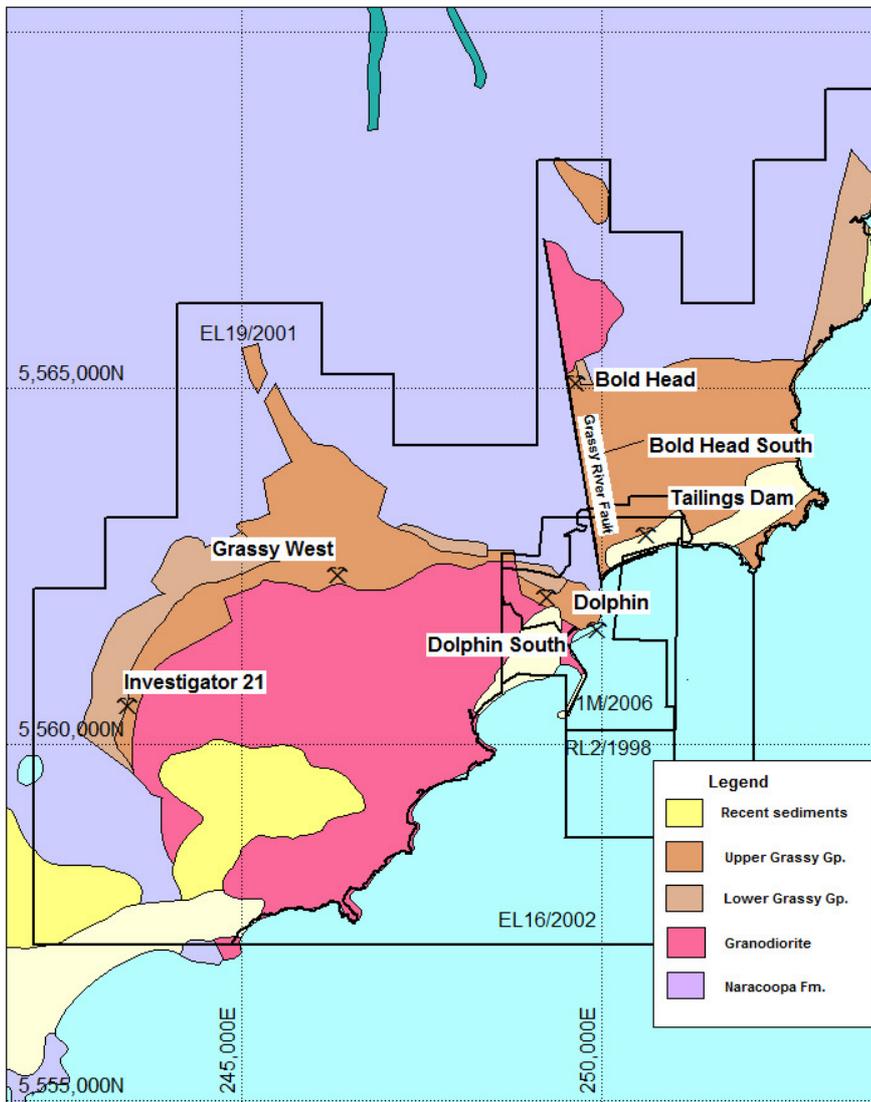


Figure 1. King Island Project Geology, Tenements and Major Prospects.

## 2 GEOLOGY

The regional geology of King Island is best described in Tasmanian Geological Record 2007/02, *Some Notes on the Geology of King Island* (Calver, 2007). Much of the geology described in this section is summarized from this publication (Figure 2).

The geology of King Island consists primarily of Proterozoic rocks with lesser Devonian Granites and extensive wind blown Pleistocene to Recent sand cover. The Proterozoic Geology of the eastern half of the island (hosting the Bold Head and Dolphin WO<sub>3</sub> deposits) is distinctly different from the geology of the western half. The relationship between the western and eastern halves remains problematic.

The western half is dominated by the Mesoproterozoic (1300Ma) Surprise Bay Formation. The Surprise Bay Formation is dominantly a N-S striking regionally metamorphosed amphibolite grade meta-sedimentary unit with minor mafic intrusives. The western margin of the Surprise Bay Group was intruded by a 790Ma granite body (Calver, 2007) post dating the 760Ma Wickham Orogeny (Cox, 1989, Turner *et. al.* 1998).

The Eastern half of the Island is dominated by the (1000-750Ma) Naracoopa Formation which appears to be a correlate of the Cowrie Siltstone in NW Tasmania (Calver, 2007). The Naracoopa Formation consists of a thick succession of relatively unmetamorphosed shale, siltstone and fine grained muscovite-quartz sandstone. Along the Southeast Coast the siltstone is conformably overlain by the 580Ma Grassy Group which is considered a correlate of the Togari Group in NW Tasmania, (Calver, 2007).

The Grassy Group in the City of Melbourne Bay area is well described by Calver (2007) and Meffre *et al* (2004). A summary of the Grassy group stratigraphic sequence is described below:

**Cottons Breccia** - A basal unit of polymict cobble to boulder diamictite.

**Cumberland Creek Dolostone** - Calcareous sediments, shale with limestone/dolomite inter-beds. (Host Horizon for the King Island Scheelite Mineralisation).

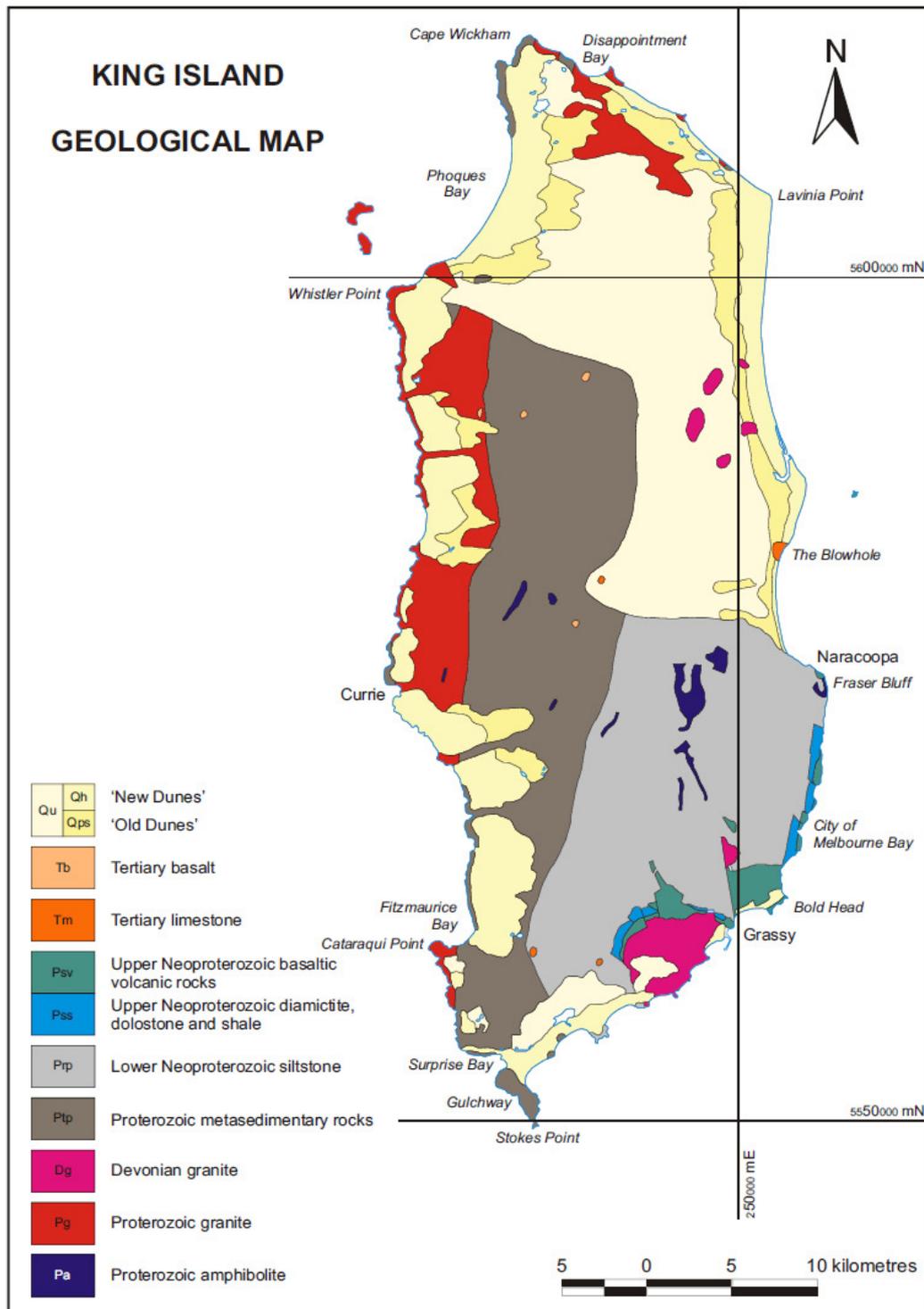
**Yarra Creek Shale** - Planar laminated shale with rare volcanoclastic interbeds.

**Grimes Intrusive Suite** - Gabbroic intrusive sills of andesitic composition.

**City of Melbourne Volcanics** - Tholeiitic pillow lava, peperite and volcanoclastic sandstone.

**Shower Drop Volcanics** – Picritic, high MgO pillow lava and hyaloclastite.

**Bold Head Volcanics** – Tholeiitic basalt, volcanoclastic sandstone and conglomerate.



**Figure 2. Regional Geology of King Island, (Calver 2007). Coordinates GDA94.**

Three granite bodies, the Grassy, Bold Head and Sea Elephant plutons intrude the Proterozoic sediments on the southeast coastline of King Island. The intrusions are classified as I-type monzogranite-granodiorite (Calver, 2007). The Bold Head Granite may be a sliver of the larger Grassy granite, separated by the N-S trending Grassy River Fault (Figures 1 and 2).

The Bold Head Granodiorite is porphyritic with large pink k-feldspar phenocrysts. The mineralogy consists of quartz, k-feldspar, plagioclase, biotite and amphibole with minor apatite, allanite, sphene, magnetite and zircon.

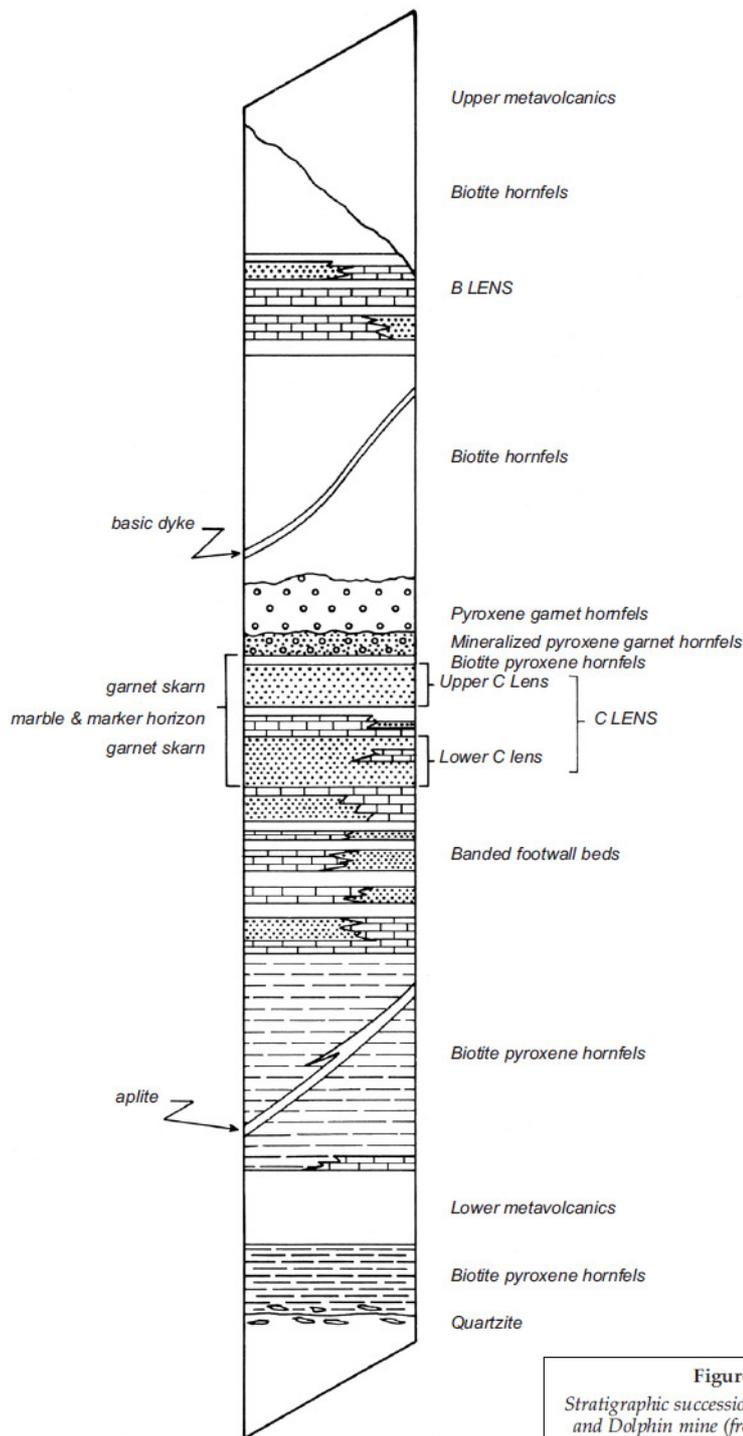
Scheelite skarn mineralisation has formed within the metamorphic aureole of the Bold Head and Grassy Granodiorite plutons where they have come into contact with the calcareous sediments and carbonates of the Lower Grassy Group Cumberland Creek Dolostone. Both the Bold Head and Grassy mineralisation is hosted in a similar stratigraphic sequence, although the carbonate units appear to be thicker in the Grassy area (Danielson, 1975, Figure 2). Mineralisation has formed by selective metasomatism, mainly within and immediately adjacent to carbonate horizons. The deposits formed over a 100-200m sequence of complex skarn mineralogy located in the lower part of the Grassy Group, with two main host horizons known as B and C lens hosted in carbonates of 10-30m thickness separated by a similar thickness of skarn altered volcanic sediments. Mineralisation appears to have occurred where carbonates come into direct contact with the intrusion, or adjacent to brittle faults tapping into the nearby intrusion. Mineralisation grades increase towards major structures such as the Central, Decline and Grassy Faults at Grassy and the Number 2 and Boundary Faults at Bold Head.

Mine sequence rocks have been intensely contact metamorphosed and metasomatised and are described in Geopeko drill logs and maps by the resultant skarn mineralogy and not the stratigraphic protolith described in the regional geology. Geopeko logging codes include:

#### **DDH logging codes**

<b>Code</b>	<b>Geology</b>
um	Upper metavolcanics
bh	Biotite-actinolite hornfels
pbh	Pyroxene-biotite hornfels
pgh	Pyroxene-garnet hornfels banded pyroxene andradite skarn (+/- Scheelite)
gh	Garnet hornfels, andradite skarn (+/- Scheelite)
ch	Marble
bfb	Banded footwall beds, interbedded marble and biotite-pyroxene grossularite skarn (+/- garnet, Scheelite)
lv	Lower metavolcanics

Mineralisation occurs predominantly as coarse Scheelite with lesser Powellite in either garnet-hornfels, pyroxene garnet hornfels and garnet-pyroxene altered banded footwall beds.



**Figure 4**  
 Stratigraphic succession, No. 1 Open Cut  
 and Dolphin mine (from Brown, 1990).

**Figure 3. Stratigraphic column of the Grassy Group host sequence in the Grassy open cut (from Brown, 1990). The sequence is very similar to the Bold Head sequence 3km north.**

### **3 EXPLORATION PROSPECTS EL19/2001.**

EL19/2001 host several advanced prospects including the Bold Head Resource which forms a significant component of the King Island Project. Minor resource extensions are anticipated from exploration adjacent to the Bold Head Resource. A mine plan is currently being finalized for Bold Head and an ML application will be submitted on completion. Mining is envisaged to involve some small scale open cut mining and rehabilitation of the underground workings.

A significant conceptual exploration target is located at South Bold Head. South Bold Head is a purely conceptual exploration target located south of the Graham's Road Fault along the eastern side of the Grassy Fault. The Graham's Road Fault is a ductile shear with a south-side down throw of over 200m. Mine sequence is postulated to occur at depth beneath the outcropping upper volcanics of the Grassy Group.

Detailed geophysical surveys were completed in 1982 and reported in 1983 (Brown, 1983). Gravity surveys indicate a number of residual bouger anomaly highs and lows suggestive of a granite surface similar to the Bold Head setting. The presence of the upper volcanic sequence suggests there is the potential for a deep target (800m+) adjacent to the Grassy River Fault on its eastern margin. Although conceptual this target has the potential to host a world class deposit the size of the Dolphin Mine.

A seven kilometer length of Grassy Group volcanics is exposed along the northern and western margin of the Grassy Granite. The contact has been loosely defined by first pass drilling, mapping and magnetic surveys through exploration activities of the previous mine operators. Significant exploration prospects have been located further west of the Dolphin Mine adjacent to the Grassy Granite. The two most advanced of these include Grassy West and Investigator 21, both of which have several significant Scheelite intersections hosted in similar metasomatised lower Grassy Group lithologies as the Bold Head and Dolphin Deposits.

These targets have two of the three components required for large Dolphin style skarn deposits, proximity to the granite and calcareous host lithologies. The third criteria of major brittle fault structures remain to be identified. Additional detailed exploration is required including collation of drilling data and geological information and interpretation of gravity and genetic data followed by further targeted exploration drilling.

EL19/2001 of strategic importance to the King Island Scheelite project and maintaining tenure of the EL is important for the longevity of the King Island Scheelite Project.

#### **4 WORK COMPLETED 2014**

Following on from the finalization of the DFS in 2012 KIS were unable to secure funding from financiers or off take partners. A study into a staged start up involving low cost open cut mining and a gravity only concentration plant is currently underway. This has been facilitated through ongoing pit modeling, revised flow sheet design and definition drilling within the Dolphin Open Cut. Field work was undertaken on 6M/2006 and RL2/1998 during the past year.

No exploration or technical studies were specifically conducted on EL19/2006 during 2014.

## **5 PROPOSED WORK 2015**

The project work program for 2015 is scheduled to include:

- Finalize Bold Head pit design and reserve revision.
- ML application for the Bold Head Mine.
- Preliminary investigation of Grassy West and Investigator 21

With the focus on construction and commissioning next year a limited exploration program is anticipated for 2015, though some historic data collation and targeting in preparation for future exploration drilling programs is likely. Exploration drilling of the tenement package is expected to resume once mining operations commence.

## **ADDITIONAL NOTES**

### ***COMPETENT PERSON AND JORC CODE***

The information within this report that relates to Mineral Resources and Reserves and Exploration Results is based on information compiled by Mr Tim Callaghan who is a consultant geologist working for King Island Scheelite. Tim is a Member of the Australasian Institute of Mining and Metallurgy (AUSIMM) and has sufficient experience in the styles of mineralisation and types of deposits in consideration to qualify as a competent person according to the 2004 edition of the Australasian Code for reporting Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). He consents to the inclusion of this material in the form and context in which it appears in this report.

The information within this report that relates to Mineral Reserves is based on information compiled by Consultant Mining Engineer Mr Alan Fudge of Polberro Consulting, who is a Member of The Australasian Institute of Mining and Metallurgy ("AusIMM") and has a minimum of five years experience in the estimation, assessment and evaluation of Mineral Reserves of this style and is a Competent Person as defined in the JORC Code (2004). This announcement accurately summarises and fairly reports his estimations and he has consented in writing to this review in the form and context in which it appears.

### **COORDINATES**

All coordinates in this report are recorded in AGD94 Zone 55 or Bold Head Mine Grid

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