

**Ore Reserve Statement for Dolphin Orebody**

**26 April 2010**

**Prepared for: King Island Scheelite Project**

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## Executive Summary

The following ore reserve report has been produced to determine the ore reserve that may be estimated for the purpose of underground mining of the Dolphin Orebody at the former North Ltd Dolphin Mine.

The reserve has been produced from underground 3D models of the former mine openings that were produced by digitising old survey paper plan data. Fault and ore lens models have been produced by similar means. A digital resource model produced by Tim Callaghan of Resource and Exploration Geology was used as the Resource base for the estimation.

Two open stope voids (Lower Wedge W62 and Pit Dag) not included in the underground data set were generated and added to the data to deplete the resource to the appropriate level.

The reserve estimate assumes the use of post pillar mining on the former 14m centre grid system with 8m wide drives and 6m square post pillars. Up to 54% of ore reserve is contained within areas designated for post pillar stoping, a further 18% of the reserve may be recovered through long hole benching methods, 10% of the reserve is located within recoverable pillars and the remaining 18% of the reserve is contained in remnant zones.

Remnant ore is located within areas of known extremely poor ground conditions and low recovery of this material is anticipated. It is assumed that remnant and pillar ore will be mined last immediately prior to abandoning the mine except where the voids produced can be immediately filled to prevent subsidence and/or caving.

The ore reserve estimate for the Dolphin Mine contains a total of: -

**1,630,000 tonnes at 1.30% WO3 2,115,000 mtu's (Probable)**

## Table of Contents

Executive Summary	2
1. Introduction	4
2. History	4
3. Geology	6
4. Mining Method	7
5. Geological Resource	9
6. Mining Reserve	10
7. Statement of Capability	11
8. References	12
9. Appendices	13
9.1 Reserve Calculation Sheets	
9.2 Competent Person Statement	

## 1. Introduction

This report presents an estimate of the ore reserve that could be anticipated from an underground mining operation at the former Dolphin Mine on King Island. The mining method primarily assumed is post pillar as was formerly practiced with bench stoping assumed for parts of the mine where there are voids within 10m vertical distance above the stope backs.

## 2. History

A number of mining methods were previously practiced at the Dolphin Mine as follows: -

### *Post Pillar Stoping*

The principal mining method in use was post pillar cut and fill. The post pillar mining method utilised 8m wide x 4-5m high drives and cross cuts with 6m square pillars on a chequerboard pattern i.e. a 14m centre grid. The pillars were fixed in position and exposed by each successive lift. The horizontal cut at the time of closure was 4m for each successive "lift". The method returned an ore recovery of 82.5% and a nominal dilution of 10% which consisted of fill and waste dilution. Dilution levels were low as most of the over break was either ore grade or marginally sub-grade material.

The first Sill or Undercut lift was mined as full face development and all subsequent lifts were mined as horizontal slices with all production using development jumbo equipment.

### *Open Stoping*

Two open stopes were mined during the mine history. The Lower Wedge W62 stope was mined in W62 panel between 260 and 200 metre levels. The stope was successfully mined but the void failed when it was left unfilled for an extended period. The failure had a significant impact on surrounding ground conditions. A second smaller Pit Dag open stope was mined in the Swan B-lens. This stope was mined and filled successfully.

### *Sill Benching/Top Slicing*

During the early 1980's a number of sill levels were mined in advance of the post pillar stopes (vertically above) to accommodate short fall's in production tonnes and/or grade. Subsequently as the post pillar stope advanced these voids had to be mined into utilising long hole benching. Initially the vertical distance for sill benching was 6m which was successful for competent ground such as the Lower Pit but led to the failure of one such bench in the mid wedge 150ml area. The method was abandoned in favour of filling the bottom level and stripping the floor from the upper level in a form of development top slicing.

### 3. Geology

The Dolphin mine orebody is a skarn orebody formed when a granite igneous intrusion altered the neighbouring host rocks by contact metamorphism. Typically skarns appear as haloes in the country rock reflecting the outline of the intrusion. In the case of the Dolphin orebody subsequent faulting has disrupted and dislocated the skarn deposit. The four elements of the orebody the wedge, central, pit and swan orebodies represent faulted sections of the original skarn lying between a series of well defined fault zones. The fault zones at Dolphin Mine are associated with poor ground conditions

The main economic components of the Dolphin Mine orebody are contained within the B and C Lens horizons. C Lens has historically been subdivided into distinct units or domains as follows: -

- Lower C banded hornfels group associated with low to medium scheelite grades.
- Marble Marker – an unmineralised geological marker between Upper and Lower C.
- Upper C massive garnet hornfels associated with medium to high scheelite grades.
- PGH pyroxene garnet hornfels is a distinct lighter coloured very hard unit containing generally low background levels of scheelite but is occasionally mineralised with high scheelite grades in a nuggetty manner

There is no sub-division of the B lens. The Upper C lens formed the principal mining target with the Lower C unit also being mined where the grade was economic. The PGH was not frequently mined because of generally lower grades and metallurgical factors.

Although the B lens unit may be found throughout the Dolphin Mine it was not mined as a specific target because of inconsistent grade and metallurgical properties.

## 4. Mining Method

It is proposed that the following mining methods be utilised under the circumstances described.

*Post Pillar Stopping* – As formerly utilised this method would form the main mining method. Post pillar stopping would be used to extract ore in existing and unmined areas where there is no pre-existing development or stopping within 10m of the backs of any proposed post pillar stope. The previous practice of mining 8m wide drives on 14m centres in orthogonally opposed directions creating 6m square post pillars is assumed. The recovery for this method is  $R=82.5\%$  and dilution  $D=10\%$  with the dilution representing fill and unplanned waste dilution.

*Uphole Benching UHB* – Uphole benching will be conducted as transverse uphole stopes where the lower level is open and the upper level filled. A 9m wide stope with the long axis centred on the original Lower Wedge crosscut system will be mined retreating from hangingwall to footwall. A 5m wide rib pillar is left between adjacent stopes to control fill and provide back support and a 2m crown pillar will be left prevent encroachment of fill into the stope. Uphole Bench stopes are to be filled prior to mining further stopes within 30m of the sidewalls of the stope. Recovery for the method is  $R=51\%$  and dilution  $D=10\%$  with the dilution representing fill and unplanned waste dilution.

*Downhole Benching (DHB)* – Downhole benching will be conducted as transverse downhole stopes where both the upper and lower levels are open. A 9m wide stope with the long axis centred on the original Lower Wedge crosscut system will be mined retreating from hangingwall to footwall. A 5m wide rib pillar is to be left between adjacent stopes to control fill and provide back support. Bench stopes are to be filled prior to mining further bench stopes within 30m of the sidewalls of the stope. Recovery for the method is  $R=64\%$  and dilution  $D=10\%$  with the dilution representing fill and unplanned waste dilution.

*Remnant Stopping* – Remnant stoping is assumed to be conducted as uphole retreat stoping with the dimensions determined by access and orebody shape. Where practicable individual stopes should be small enough to present a possibility for post filling and breaking into filled areas should be avoided. The Recovery assumed for remnant stoping is set low at R=50% with Dilution D=10% (most dilution will be ore). The special case of mineralisation around the old W62 collapse zone has been considered. In the immediate area of the stope recoveries have been set to R=0% whilst in surrounding areas typical recoveries for post pillar and benching stopes have been reduced to reflect the potential for additional ore loss.

## 5. Geological Resource

The Mineralised resource for the Dolphin orebody was prepared for an underground option by Resource and Exploration Geology. This model exhibits improved geological domain grade control of the resource by utilising the well defined Upper C (garnet-hornfels), Lower C (banded garnet-hornfels) and PGH (pyroxene-garnet-hornfels) to improve the respective grade estimation.

The global mineral resource is shown in Table 1 as follows.

**Table 1: Dolphin Mineral Resource**

Classification	0.25% WO <sub>3</sub> Cut Off			0.70% WO <sub>3</sub> Cut Off		
	Tonnes	WO <sub>3</sub> %	Mtu's	Tonnes	WO <sub>3</sub> %	Mtu's
Indicated	8,419,000	0.95	7,998,000	4,752,000	1.29	6,130,000
Inferred	524,000	0.50	262,000	7,000	0.73	5,000
<b>Total</b>	<b>8,943,000</b>	<b>0.92</b>	<b>8,260,000</b>	<b>4,759,000</b>	<b>1.29</b>	<b>6,135,000</b>

## 6. Mining Reserve Estimation

The Dolphin mine reserve estimate was prepared by developing perimeter sets for individual stopes or mining zones at 5m intervals on East-West sections. The perimeter sets were designed to represent realistic mining shapes containing mainly mineralisation above 0.7% WO3. The different ore domains were modelled separately to permit separate consideration of different ore types. This methodology was utilised for the following reasons: -

- To remove isolated units of mineralisation that would otherwise be processed in a global model evaluation.
- To remove mineralisation that could not reasonably be expected to be mined because of its location beneath old filled stopes, in post pillars or in areas of extremely poor or failed ground.

Both of the above could lead to significant overestimation, particularly in the case of previously mined deposits, if not appropriately considered.

The perimeter sets were processed into wireframes utilising Datamine Studio 2 software to produce a mining resource of undiluted tonnes within the mining shapes. The data was entered into a spreadsheet format and appropriate recovery and dilution factors were applied to estimate an ore reserve.

The ore categorisation of the mining reserve is “Probable as the resource model contains principally “Indicated” category resources. The Mining Reserve (see Tabulation in Appendix 1) estimate may be summarised as follows: -

**Table 2: Mining Reserve Estimate Dolphin Mine April 2010**

Item	Tonnes	WO3	Mtu's	Category
Global Resource	4,752,000	1.29	6,130,000	Indicated
Mining resource	2,192,000	1.46	3,204,000	-
Mining Reserve	1,630,000	1.30	2,115,000	Probable

## 7. Statement of capability

This review has been undertaken by Alan Fudge, of Polberro Consulting. Alan Fudge is a qualified mining and geotechnical engineer with over 30 years experience of mining projects principally in Australia, UK and Zambia. He has extensive experience in the areas of reserve estimation, mining method selection, providing of mining and geotechnical technical support (for underground and surface mining operations), scheduling, mine design and project feasibility. He has been involved in all stages of mine development from feasibility to closure and has worked at both open-pit and underground mines.

Alan Fudge is a Member of the AUSIMM and has prepared reserve statements as a competent person as defined by the 2004 Edition of the JORC code. He has worked on and produced reserve statements for tin, copper, nickel, zinc, lead, tungsten, magnetite, gold and uranium.

### *Limitations and consent*

This report is provided to the King Island Scheelite Pty Ltd in the context of an Ore Reserve Statement conducted on behalf of KIS for the Dolphin Mine and should not be used or relied upon for any other purpose.

The report has been prepared using information available to the author at the time of writing. The opinions stated herein are given in good faith and with the belief that the basic assumptions are factual and correct and the interpretations reasonable.

This report is not intended for use as a public document nor, in whole or in part, in a public document without written consent to the form and context in which it appears.

### *Statement of independence*

Alan Fudge has no material interest or entitlement in the securities or assets of King Island Scheelite Pty Ltd or any associated companies.

## 8. References/Software

The following documents and data were referenced and form the principal basis for inferences drawn and recommendations made in this report. Only documents that could be studied and commented on within the time frame of this review are included and areas not covered by these reports and references have not been considered in this review.

1. Resource and Exploration Geology – April 2010 Ore Resource Estimate
2. Resource and Exploration Geology – Digital Block Model *Dolphin\_bm410.mdl*
3. Polberro Consulting - Independent review of Underground Mining at the Dolphin Mine on King Island : Revision 1 March 2010
4. Processed using Datamine Studio 2

## **Appendix One**

### **Ore Reserve Tabulation for Dolphin Mine**

#### **Underground Ore Reserve Estimate April 2010**

Dolphin Mine Ore Reserve Calculation Sheet - April 2010

Total

1.629,956 1.30 2,115,340

Orebody/Lens	Resource Base for Estimate			Location and Dimension			Reserve Estimation				Comments								
	Vol	SG	Tonnes	W03	Class	South	North	Lower Upper Strike	Height	PROP		Type	Rec	Dil	risk	Tonnes	Grade	G x T	
<b>Swan</b>																			
S7638U UC	1786	3.349	5,981	0.945	2.693	563760	563775	380	340	15	40	1	0.825	0.1	L	5,428	0.86	4,663	
S7834U UC	3740	3.315	12,398	0.864	2.489	563785	563845	340	290	60	50	1	0.825	0.1	L	11,251	0.79	8,837	
S8230U UC	17938	3.37	60,451	0.981	2.819	563820	563880	300	255	60	45	1	0.825	0.1	L	54,859	0.89	48,925	
S9025U UC	7552	3.386	25,571	1.214	2.914	563900	563925	250	235	25	15	1	0.825	0.1	L	23,206	1.10	25,611	
S8526U UC	13377	3.365	45,014	0.998	2.79	563850	563905	260	225	55	35	1	0.825	0.1	L	40,850	0.91	37,062	
S8924U UC	23925	3.333	79,742	0.952	2.596	563895	563960	245	210	65	35	1	0.825	0.1	L	72,366	0.87	62,629	
S0018U UC	2614	3.353	8,765	1.297	2.72	564000	564015	185	175	15	10	1	0.825	0.1	L	7,954	1.18	9,378	
S8429B B	864	2.9	2,506	0.88	2.596	563845	563865	290	280	20	10	1	0.825	0.1	L	2,274	0.80	1,819	
S8529B B	5036	3.07	15,461	1.126	2.554	563850	563895	295	260	45	35	1	0.825	0.1	L	14,030	1.02	14,362	
S9123B B	3588	3.07	11,015	1.266	2.552	563910	563950	235	205	40	30	1	0.825	0.1	L	9,996	1.15	11,505	
<b>S9520B B</b>	<b>4868</b>	<b>3.096</b>	<b>15,071</b>	<b>1.049</b>	<b>2.767</b>	<b>563950</b>	<b>563985</b>	<b>200</b>	<b>175</b>	<b>35</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>X</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	
<b>Pit</b>																			
P0116G PGH	826	3.363	2,778	1.058	2.779	564010	564025	160	140	15	20	1	0.825	0.1	L	2,521	0.96	2,425	
P0608G PGH	18005	3.356	60,425	1.549	2.736	564060	564125	85	45	65	40	1	0.825	0.1	L	54,835	1.41	77,218	
P9922L LC	1053	3.362	3,540	1.307	2.771	563990	564000	220	200	10	20	1	0.825	0.1	L	3,213	1.19	3,817	
P0118L LC	3850	3.382	13,021	1.424	2.895	564010	564030	180	155	20	25	1	0.825	0.1	L	11,816	1.29	15,297	
P0607L LC	3206	3.367	10,795	0.984	2.8	564060	564085	70	55	25	15	1	0.825	0.1	L	9,796	0.89	8,763	
P9401U UC	10477	3.366	35,266	1.46	2.797	563940	564015	175	150	75	25	1	0.825	0.1	L	32,004	1.33	42,477	
P9704U UC	27803	3.367	93,613	1.595	2.801	563975	564045	175	145	70	30	1	0.825	0.1	L	84,954	1.45	123,183	
P0608U UC	8303	3.356	27,865	1.037	2.738	564060	564115	80	55	55	25	1	0.825	0.1	L	25,287	0.94	23,839	
P9914B B	3614	3.081	11,135	0.926	2.717	563990	564025	140	125	35	15	1	0.825	0.1	L	10,105	0.84	8,506	
P1108B B	2093	3.061	6,407	1.242	2.396	564090	564110	80	70	20	10	1	0.825	0.1	L	5,814	1.13	6,565	
<b>Central</b>																			
C0417L LC	6051	3.388	20,501	1.115	2.931	564045	564060	170	140	15	30	1	0.825	0.1	L	18,604	1.01	18,858	
C1200L LC	2682	3.354	8,995	1.355	2.723	564120	564145	100	70	25	30	1	0.825	0.1	L	8,163	1.23	10,056	
C9225U UC	6453	3.384	21,837	1.318	2.902	563925	563985	250	220	60	30	1	0.825	0.1	L	19,817	1.20	23,744	
C0119U UC	17613	3.375	59,444	1.592	2.851	564015	564090	195	125	75	70	1	0.825	0.1	L	53,945	1.45	78,074	
C0811U UC	1401	3.38	4,735	1.218	2.881	564080	564090	110	90	10	20	1	0.825	0.1	L	4,297	1.11	4,758	
C1000U UC	36884	3.367	124,188	1.856	2.802	564100	564185	100	20	85	80	1	PILL	0.7	0.1	L	95,625	1.69	161,346
C0017B B	1741	3.071	5,347	1.459	2.544	564000	564020	175	145	20	30	1	0.825	0.1	L	4,852	1.33	6,436	
C0510B B	15580	3.086	48,080	1.299	2.788	564055	564125	100	75	70	25	1	0.825	0.1	L	43,632	1.18	51,526	
C0807B B	6341	3.073	19,486	1.081	2.594	564085	564115	70	50	30	20	1	PILL	0.7	0.1	L	15,004	0.98	14,745
C1005B B	3704	3.083	11,419	1.235	2.739	564105	564135	50	20	30	30	1	PILL	0.7	0.1	L	8,793	1.12	9,872
C1204B B	2530	3.08	7,792	1.03	2.698	564125	564155	40	10	30	30	1	PILL	0.7	0.1	L	6,000	0.94	5,618
<b>Wedge</b>																			
W8930L LC	8415	3.363	28,300	1.487	2.82	563890	563950	300	280	60	20	1	REM	0.5	0.1	E	15,565	1.35	21,041
W9028L LC	8700	3.37	29,319	1.317	2.914	563900	563945	280	260	45	20	1	REM	0.5	0.1	E	16,125	1.20	19,307
W9126L LC	1965	3.36	6,602	1.16	2.757	563910	563925	260	240	15	20	0.7	UHB	0.64	0.1	M	3,254	1.05	3,431
W9126L LC																			
<b>W9926L LC</b>	<b>3672</b>	<b>3.394</b>	<b>12,463</b>	<b>1.007</b>	<b>2.972</b>	<b>563990</b>	<b>564015</b>	<b>260</b>	<b>240</b>	<b>25</b>	<b>20</b>	<b>1</b>	<b>REM</b>	<b>0</b>	<b>0.1</b>	<b>E</b>	<b>0</b>	<b>0.32</b>	
W0326L LC	6132	3.393	20,806	1.161	2.956	564030	564055	260	240	25	20	0.8	DHB	0.64	0.1	H	11,718	1.06	12,368
W0326L LC																			
W0324L LC	8448	3.395	28,681	1.279	2.97	564030	564050	240	220	20	20	0.67	UHB	0.51	0.1	M	10,716	1.16	12,460
W0324L LC																			
W0524L LC	4827	3.383	16,330	1.675	2.897	564050	564070	240	220	20	20	0.67	UHB	0.51	0.1	H	6,101	1.52	9,290





## **Appendix Two**

### **Competent Person Statement**

**Competent Person's Consent Statement**  
**Pursuant to the requirements of ASX listing rule 5.6 and clause 8 of 2004 JORC code**  
**("Consent statement")**

Report name: **Ore Reserve Statement for Dolphin Orebody - April 2010**

Dated: **26<sup>th</sup> April 2010**

I, **Alan Douglas Fudge** confirm that:

I have read and understood the requirements of the 2004 edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves ("2004 JORC Code").

I am a competent person as defined by the 2004 JORC Code, having five years experience which is relevant to the style of mineralization and type of deposit described in the report, and to the activity for which I am accepting responsibility.

I am a member or fellow of the *Australasian Institute of Mining and Metallurgy* or the *Australian Institute of Geoscientists* or a '*Recognised Overseas Professional Organisation*' ('ROPO') included in a list promulgated by the ASX from time to time.

I have reviewed the report to which this consent statement applies.

I am a full time employee of .....  
OR I am a consultant working for ..... **Polberro Consulting**  
and have been engaged by ..... **King Island Scheelite JVP**  
to prepare the report for..... **King Island, Dolphin Orebody**  
for the period ended..... **30th April 2010**

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears the information in my supporting documentation relating to Ore Resources and Ore Reserves.

I consent to the release of the report and this consent statement by the directors of: King Island Scheelite Joint Venture Partners.

Signature of Competent Person

Date:



**26<sup>th</sup> April 2010**

Professional Membership:

Membership Number:

**Australian Institute of Mining and Metallurgy**

**209297**

Signature of Witness:

Print witness name and residence (Town/Suburb)



**C.S Fudge, Table Cape, 7325, TAS**