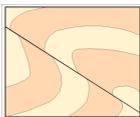




Tim Callaghan – Resource and Exploration Geology



Tim Callaghan – Resource and Exploration Geology

3 Main Rd Penguin 7318 ph. 0428 888 896 email: timcallaghan@netspace.net.au
ABN 50886857181

1M/2006

DRILLING REPORT, 2011

KING ISLAND

NW TASMANIA

Prepared for: Scheelite Management Pty Ltd.

Tim Callaghan, February 2012



EXECUTIVE SUMMARY

During 2011, King Island Scheelite (KIS) have focused on a revised Definitive Feasibility Study into the reopening of the Dolphin and Bold Head underground mines and the reprocessing of the historic tailings. Numerous concurrent technical studies are in progress or have been completed during the past year including resource and reserve estimation, metallurgical testwork, environmental management plans and permitting, mining plans, process design, construction, cost estimates and financial modeling.

A limited exploration diamond drilling program consisting of 3 holes for 946.7m testing the potential for resource extensions south of the Dolphin Mine was completed in winter 2011. The Dolphin South Exploration Target extends from the southern boundary of the reserve to the southern granite contact. Additional resources from the Dolphin South area will have immediate strategic importance to the underground Dolphin Mine.

The surface exploration drilling program has reduced the potential for additional C-Lens resources south of the existing mine reserve with drillholes KI001 and KI002 intersecting only B-Lens before intersecting the granite. The potential for increased B-lens resource has been demonstrated with both holes intersecting B Lens mineralisation. KI001 intersected Scheelite mineralisation including 1.0m @ 0.6% WO₃ from (298.0 – 299.0) from a larger zone between 296.0 – 299.0 containing 3.0m @ 0.3% WO₃.

KI002 intersected high grade Scheelite mineralisation between 341.0 and 343.0m for 2.0m @ 6.4% WO₃. The lower B Lens contact returned a low grade intercept between 351.0 and 352.0m of 1.0m @ 0.2% WO₃.

KI003 was designed to test the Decline Conceptual Exploration Target between the Decline and Grassy River Faults. The drill hole was abandoned at 239m due to technical difficulties drilling from surface adjacent to the Decline Fault. The target remains untested.

Due to the high cost of surface exploration drilling, the program was terminated with future exploration expected to be conducted from an exploration drill drive when operations commence.

The exploration program for 2012 and is likely to involve historic data collation and target generation. Exploration drilling of the tenement package is likely to resume in 2013 once mining operations have commenced.

The project work program for 2012 is scheduled to include mine dewatering and re-commissioning, mill engineering, procurement and construction and tailings reclamation and infrastructure development.



CONTENTS

Executive Summary	2
1 Introduction	4
2 Geology	6
3 Exploration Drilling Program, 2011	11
4 Results and Discussion	12
5 Proposed Work 2012	20
Additional Notes	21
References	22

LIST OF FIGURES

Figure 1	King Island Project Geology, Tenements and Major Prospects	6
Figure 2	Regional Geology Northwest Tasmania	8
Figure 3	Stratigraphic column of the Grassy Group	10
Figure 4	Dolphin South Exploration Targets	15
Figure 5	Section 563,770mN, Swan Extended and Decline Target	16
Figure 6	Section 563,710mN, Swan Extended and Decline Target	17
Figure 7	Section 563,710mN, proposed development and drilling	18



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 development of the King Island Scheelite Project.

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.

King Island Scheelite (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 are completing a definitive feasibility study into a 350ktpa mine and processing facility producing 5700t of concentrate per annum over an 11 year mine life. Mine rehabilitation and mill construction are scheduled to commence in 2012.

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

TABLE 1. KING ISLAND SCHEELITE PROJECT RESOURCES			
	Tonnes	WO₃	Tonnes WO₃
Dolphin	0.70% WO ₃ cutoff		
Indicated	4,752,000	1.29	61,300
Inferred	7,000	0.73	50
Total	4,759,000	1.29	61,350
Bold Head	0.50% WO ₃ cut off		
Indicated	1,500,000	0.93	13,950
Inferred	150,000	1.22	1,830
Total	1,650,000	0.96	15,780
TSF	0.08% WO ₃ cut off		
Measured	2,700,000	0.17	4,590
Total	9,109,000	0.90	81,720

TABLE 2. KING ISLAND SCHEELITE PROJECT RESERVES			
	Tonnes	WO₃	Tonnes WO₃
Dolphin Probable	2,687,000	1.04	28,060
Bold Head Probable	609,000	0.76	4,640
Tailings Proven	1,900,000	0.19	3610
Total	5,196,000	0.70	36,310



Technical studies associated with the Definitive Feasibility Study that have been completed or are in an advanced stage include:

- Resource Estimation
- Mining Studies
- Reserve Estimation
- Metallurgical Testwork
- Process Flow Sheet design
- Environmental Management Plan
- Market Off take agreements
- Financial Modelling
- Negotiations with Funding Facilities
- Resource Extension Drilling

Most of the work over the past year has focused on the Mine Lease 1M/2006 technical studies assisting development of the Definitive Feasibility Study.

A limited exploration drilling program was completed testing for resource extensions southeast of the existing Mine reserve in 2012.

The potential for near mine exploration resource drilling adjacent to the Dolphin Mine is of particular importance to support the reopening of the remnant resources within the Dolphin underground mine. Positive results from exploration will benefit the life of mine which at present are based purely on remnant resources in the Dolphin and Bold Head Mines and the historic tailings dam.



Tim Callaghan – Resource and Exploration Geology

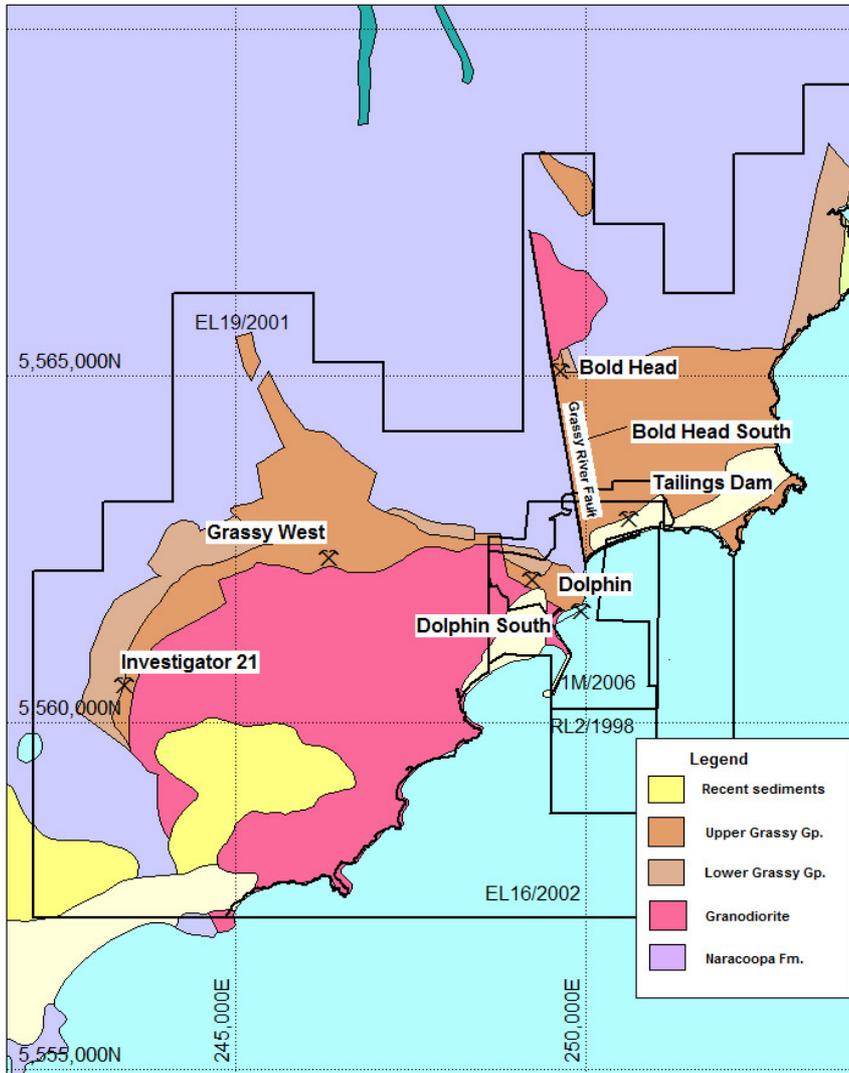


Figure 1. King Island Project Geology, Tenements and Major Prospects.



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 WO₃ 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.

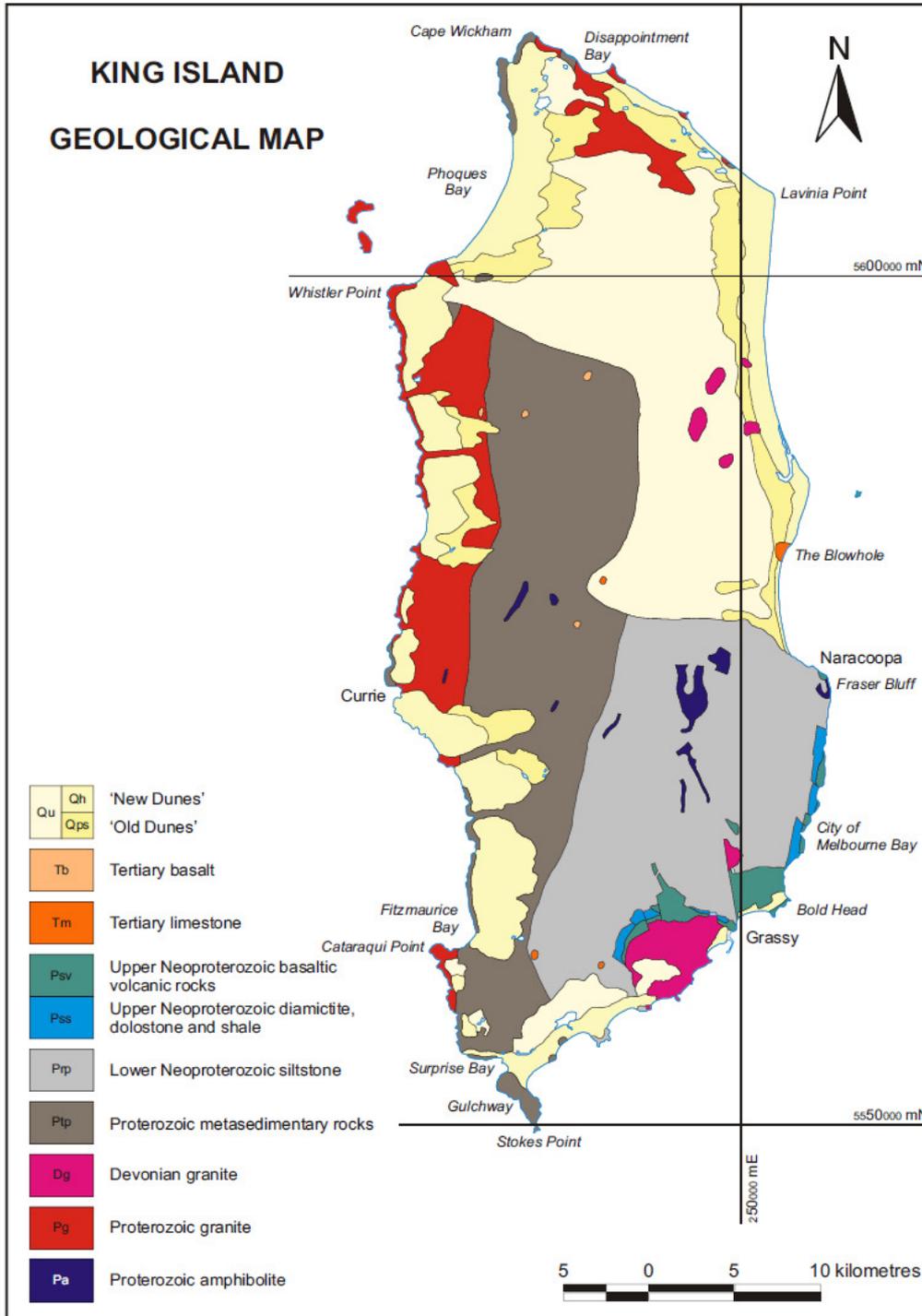


Figure 2. Regional Geology of King Island, (Calver 2007). Coordinates GDA94.



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

Code	Geology
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.



Tim Callaghan – Resource and Exploration Geology

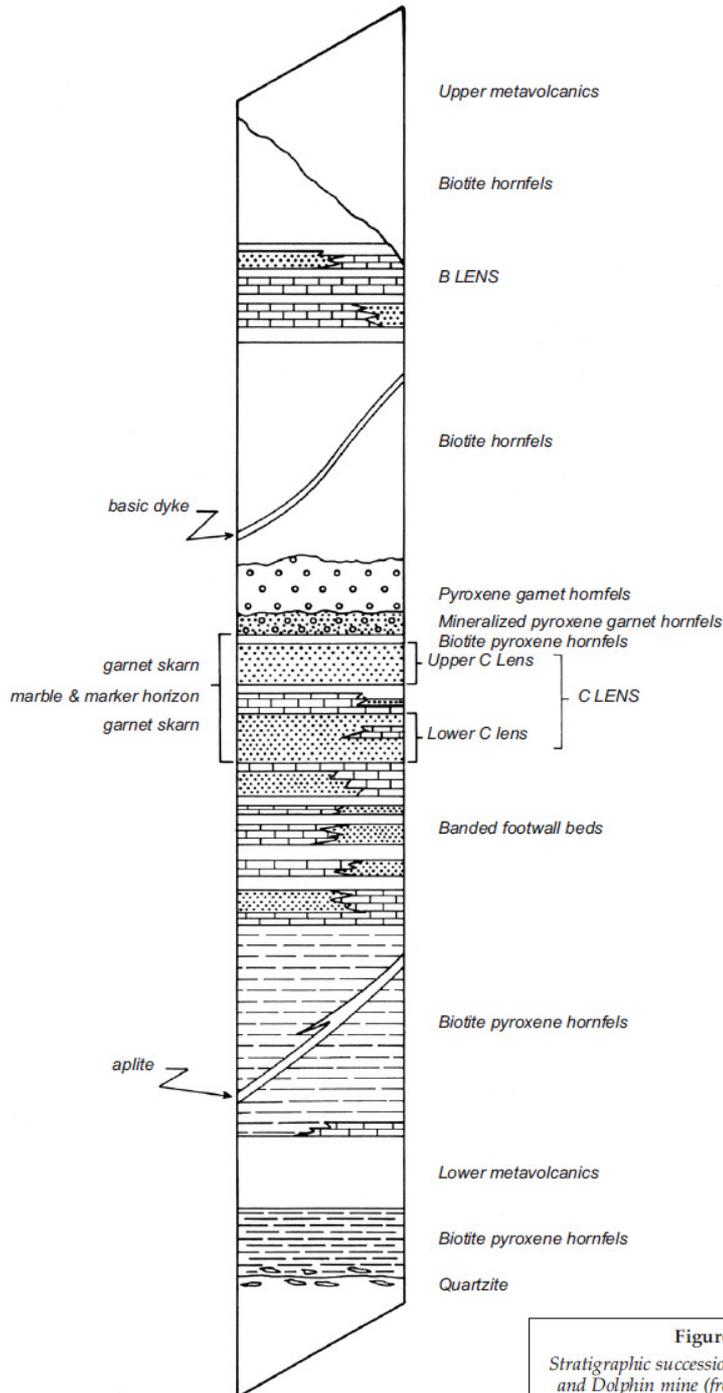


Figure 4
Stratigraphic succession, No. 1 Open Cut and Dolphin mine (from Brown, 1990).

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 DRILLING PROGRAM 2011

A three hole diamond drilling exploration program for 946.7m was completed on the Mine Lease during the winter of 2011.

Contract Diamond Drilling Company E-Drill were mobilized to King Island in late May. A truck mounted P4 drill rig and accessories were used to complete three drill holes. The program was terminated in November and the rig demobilized as the drilling conditions resulted in a high costs with the last hole terminated in bad ground short of the target position due to technical difficulties.

All three holes were all located just south of the Dolphin Mine on the coastal landfill area and were designed to test the southern extension of the Resource (Figure 4).

Drill logs and assays results are located in Appendix 1. The objectives of the program and a discussion of results are located in Section 4.



4 RESULTS AND DISCUSSION

Structurally the Dolphin Deposit is located at the base of the Grassy Group on the northern side of the shallow north dipping Grassy Pluton. The Grassy Group dips shallowly south towards the granite and is truncated by a series of Northwest and North trending and brittle faults. The host sequence is bound to the east by the steeply west dipping Grassy River Fault and the south by the granite intrusion. The host sequence outcrops to the north and west away from the granite. Mineralisation is best developed adjacent to either the granite contact or major brittle fault structures such as the Decline, Central, Swan, Wedge and Grassy River Faults.

The proximity of the granite roof and major brittle faults on the host sequence is very important in the development of the large tonnage pyrometasomatic skarns of the Dolphin and Bold Head Ore bodies. Identifying similar geological settings is paramount to any exploration efforts.

Most of the diamond drilling around the Dolphin Ore body consists of short resource definition diamond drilling with little strategic resource exploration drilling completed in the last decade of operation. Consequently there is potential to add to the Dolphin Resource in and around the previously mined area.

A digital estimation of the remnant resource utilizing historic Geopeko plans, sections and hard copy drill logs is listed in Table 1 (Callaghan, 2010).

Table 1. Dolphin Mineral Resource

Classification	0.25% WO ₃ Cut Off			0.70% WO ₃ Cut Off		
	KTonnes	WO ₃ %	Tonnes WO ₃	KTonnes	WO ₃ %	Tonnes WO ₃
Indicated	8,419	0.95	79,980	4,752	1.29	61,300
Inferred	524	0.50	2,620	7	0.73	50
Total	8,943	0.92	82,600	4,759	1.29	61,350

The estimation includes all remnants including pillars and areas sterilized by historic mining. Redevelopment of the underground Dolphin Mine is based on the recovery of a Probable Reserve of 2.69Mt @ 1.04% WO₃ at a 0.5% stope cut off (Fudge, 2011).

Grieve Brown (1982) suggested there is the potential to add an additional 100,000t on existing mining blocks within the historic reserve. The updated digital mine model, resource and reserve estimation has allowed the potential for additional resources within the existing Mine infrastructure to be systematically reviewed. Most areas of potential have been included within the global resource estimation. The reserve has delineated areas that can be practically mined given the current financial and mining constraints. Potential changes in mining techniques or economic circumstances may result in increases or decreases in the mining reserve. It is unlikely that the resource base will change significantly within the limits of the mine infrastructure. Most additions will be derived from resource extension and/or green-fields exploration.

The Dolphin Resource remains open to the southeast where there is potential to add additional resources below -250mRL, immediately west of the Grassy River Fault and east of the granite contact. This area has been referred to in a previous report by



Lindsay Newnham (2008) as Dolphin South and by Brown (1982) as the Southern Orebody. This area remains the highest priority target as it has immediate benefit to the underground project.

At the end of mining operations, stoping was taking place in the south east of the mine in the C-Lens Swan and Wedge stopes with minor development in the B-Lens between the Decline Fault and Grassy River Fault. Ground conditions between the Decline Fault and Grassy River Faults are reported to be poor (Fudge, Sheehan, Curtain *pers comm.*)

Two areas for potential resource additions exist in the Dolphin South area (Figures 4 and 5):

- Deposits in the B and C horizons south of the Swan Stope and west of the Decline Fault (Swan Extended of Newnham, 2006)
- Deposits in the B and C horizons between the Decline and Grassy River Faults (Decline Orebody).

One surface diamond drillhole (D300/8) was drilled 200m south of the Dolphin Mine infrastructure and underground exploration envelope in the early 1980's (Brown, 1982). This hole intersected the granite at depth after passing through moderately mineralised B lens in the upper mine sequence (Figure 4). The hole limits the potential west of the Decline Fault to an area of approximately 500 x 150m (Swan Extended, Figure 4), which Brown, (1982) considered may potentially host an exploration target of 0.5 Mt.

Two additional diamond drill holes testing north of D300/8 and south of the mine infrastructure and underground drilling were completed by King Island Scheelite in 2011. The drilling program was designed with first pass 100m spaced holes testing the potential of mineralised mine series (B-lens and C-lens) between the limit of underground drilling and the granite outcrop to the south. Two holes were designed to test west of the Decline Fault (Figure 4) in an area known as Swan Extended (Brown, 1982) and the third more speculative hole was designed to test for mine series rocks between the Decline Fault and the Grassy River Fault in an area named the Decline Orebody (Brown, 1982).

Diamond hole KI001 intersected B-Lens between 290.5 and 319.0m. The carbonate was moderately metasomatised, particularly near the contacts forming a pyroxene-garnet assemblage with sporadic low grade Scheelite mineralisation. Best intersections include 298.0 – 299.0 for 1.0m @ 0.6% WO₃ from a larger zone between 296.0 – 299.0 containing 3.0m @ 0.3% WO₃.

Diamond Drillhole KI002 intersected B-lens between 338.2 and 352.0m downhole. Metasomatised pyroxene–garnet hornfels was intersected on the margins of B-lens with strong Scheelite mineralisation occurring on the skarn/carbonate contact. A downhole intercept between 341.0 and 343.0m returned a very high grade 2.0m @ 6.4% WO₃. The lower contact returned a low grade intercept between 351.0 and 352.0m of 1.0m @ 0.2% WO₃.

Both holes failed to intersect the better mineralised C-Lens which appears to have been cut off by the granite intrusion (Figures 4-6). Historic underground drillhole D160/22



Tim Callaghan – Resource and Exploration Geology

intersected mineralised C-Lens 75m NW of KI001 and historic drillhole D300/5 intersected mineralised C-Lens 80m east indicating the presence of discontinuous C-Lens in the Swan Extended area. Despite the discontinuity of the historically better mineralised C-lens, the high grade B Lens intercept in KI002 suggests additional B Lens resources will be added to the King Island Scheelite project from the Swan Extend Area. However the potential has been diminished and is likely to host a small exploration target of 1-200,000t.

There is potential to add additional underground resources from between the Decline Fault and the Grassy River Fault in the southern extensions of what is known as the Decline Target (Figure 4). The Decline and Grassy River Faults diverge to the south opening up the tonnage potential in this area. It is worth commenting that the grades in both B and C lens increase towards the Decline and Grassy River Faults suggesting these were major fluid pathways for mineralisation. Brown, 1982 suggests any additional ore found in this area is likely to be of a higher grade, similar to that of the Lower Wedge Orebody (1.2% WO_3). There is the potential to host 0.5 - 1Mt of mineralisation in this area with further potential existing to the south if Mine sequence is present.

However the geometry of the granite and host sequence is not known in this area. There is the possibility that the granite has intruded the mine sequence limiting the potential for resource additions.

A third hole KI003 was designed to test for mineralised mine sequence east of the Decline Fault and west of the Grassy River Fault in the Decline Target. The hole made very slow progress due to numerous sub parallel faults with squeezing clays which are considered to be part of the Decline Fault system. Unfortunately the hole was lost at 239m after the barrel disengaged from the rod string and the hole collapsed behind it. Attempts to retrieve the hole were not successful. Given the high cost of drilling all three diamond holes a decision was made to discontinue the surface exploration drilling. Exploration of the eastern side of the Decline Fault is planned to recommence from mine infrastructure where the drilling costs are considered to be substantially lower and technically less difficult.

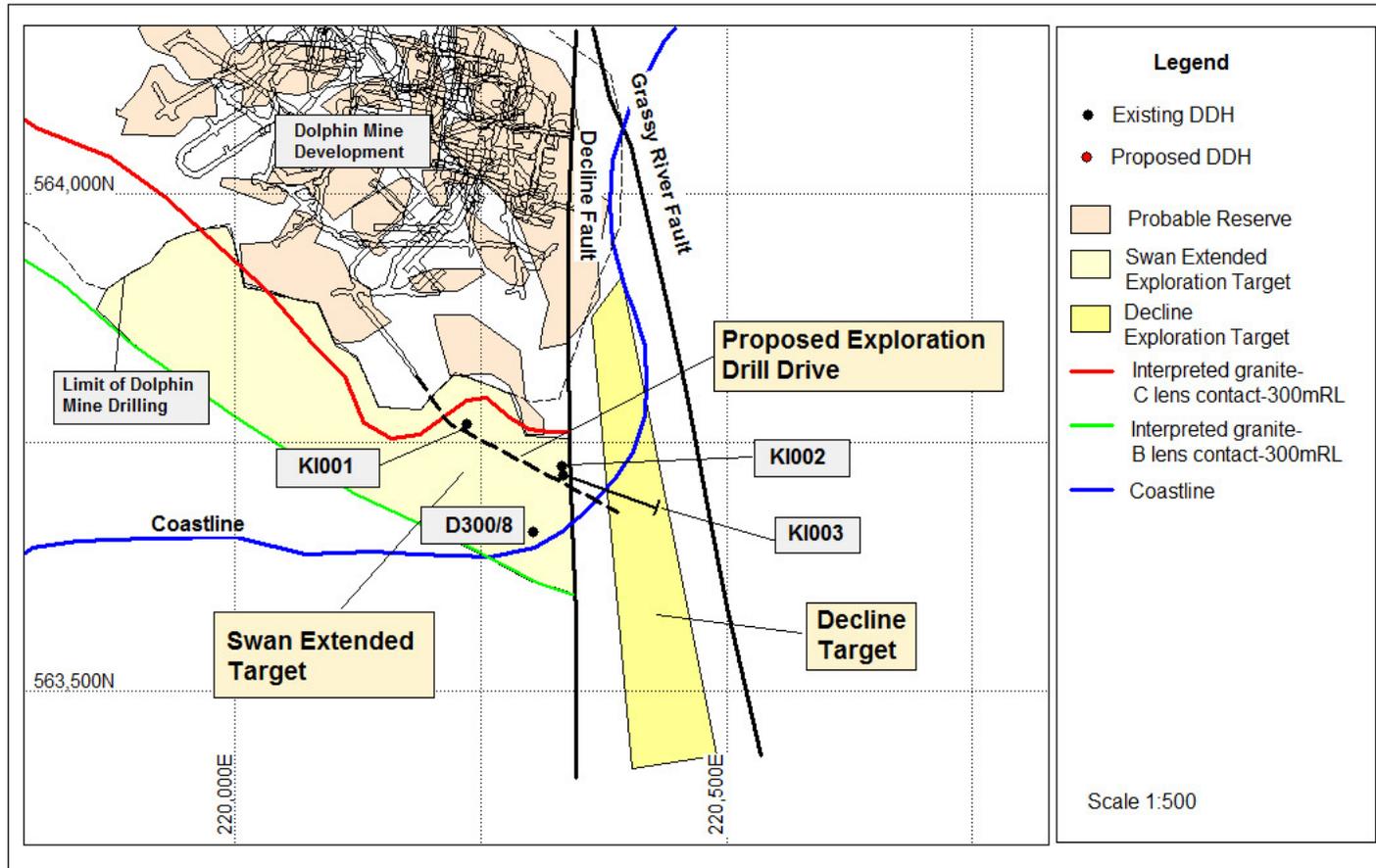


Figure 4. Dolphin South Exploration Targets.

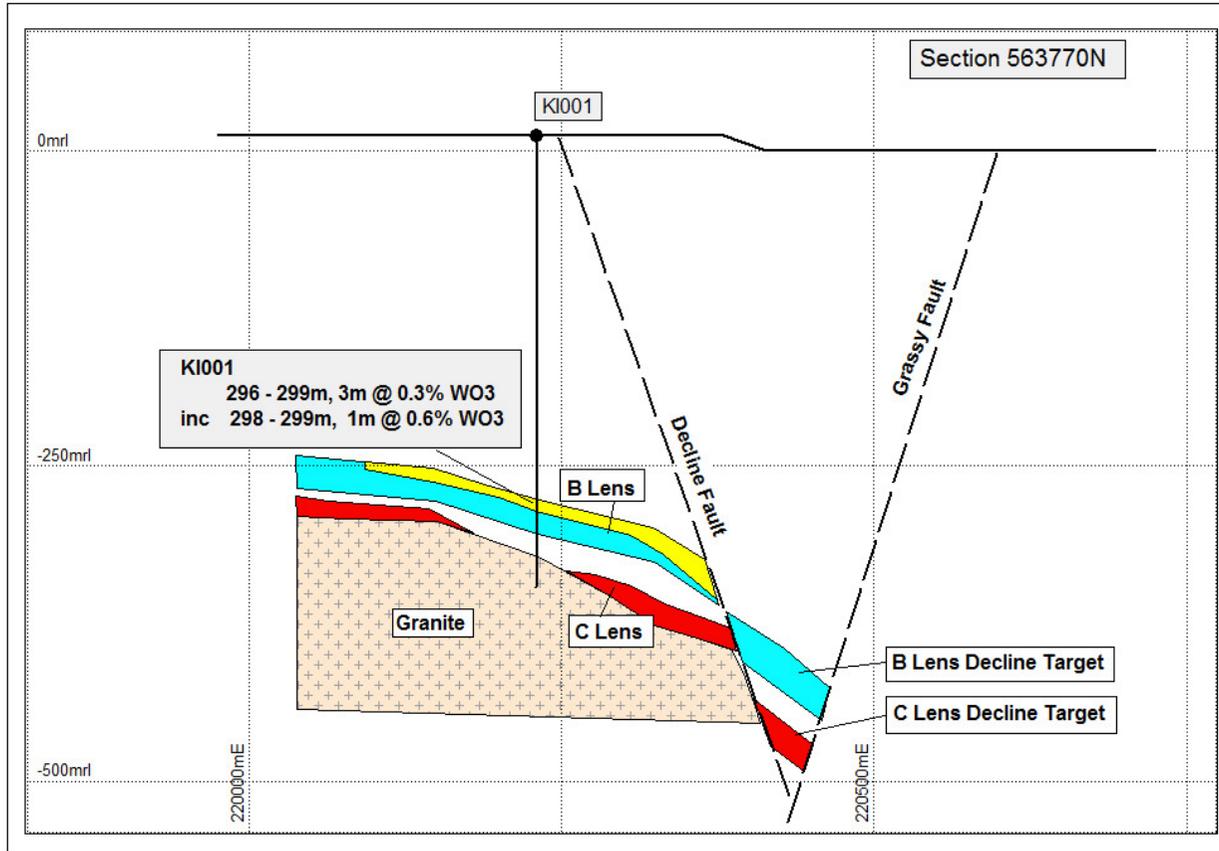


Figure 5. Section 563,770mN, Swan Extended and Decline Target.

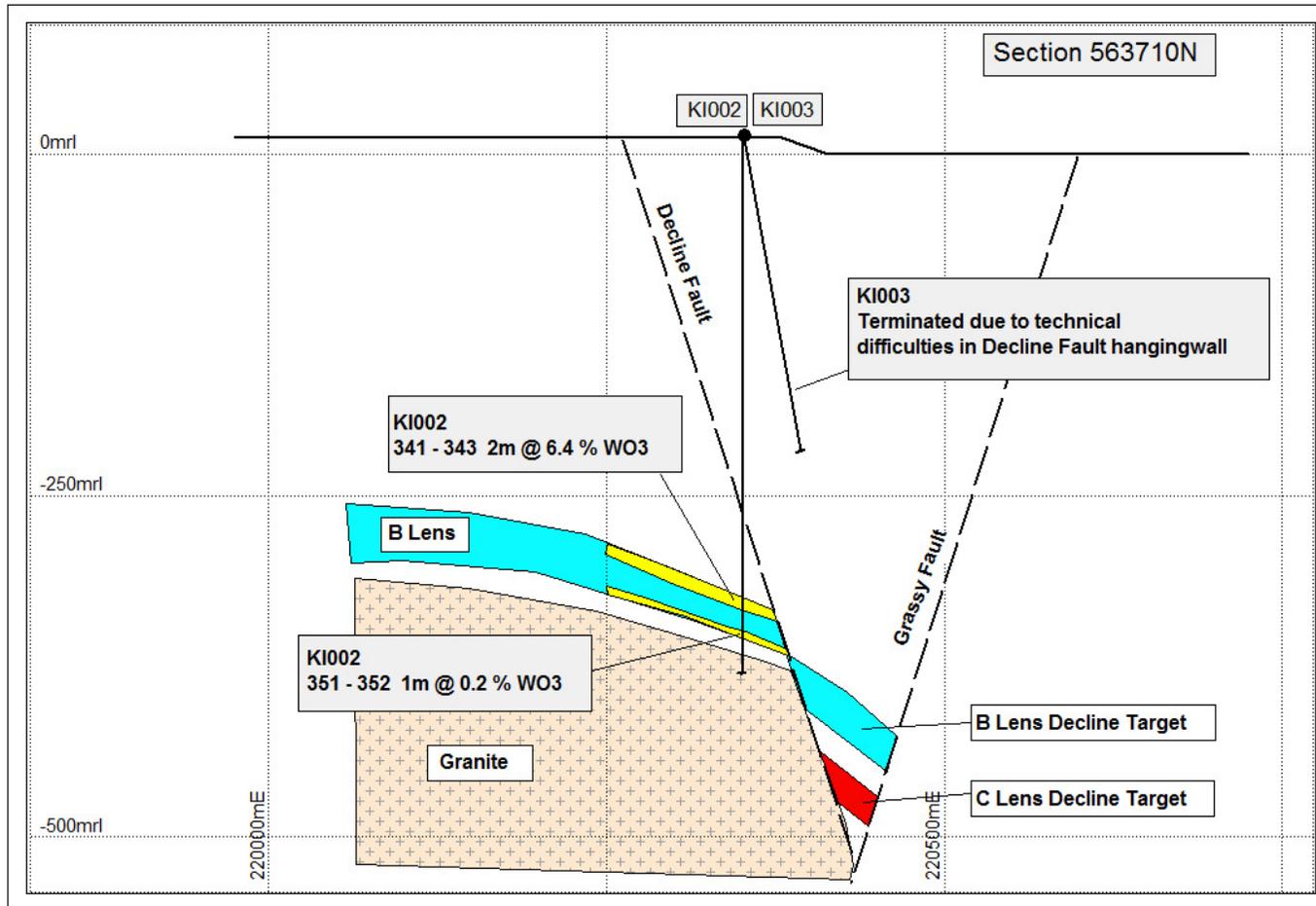


Figure 6. Section 563,710mN

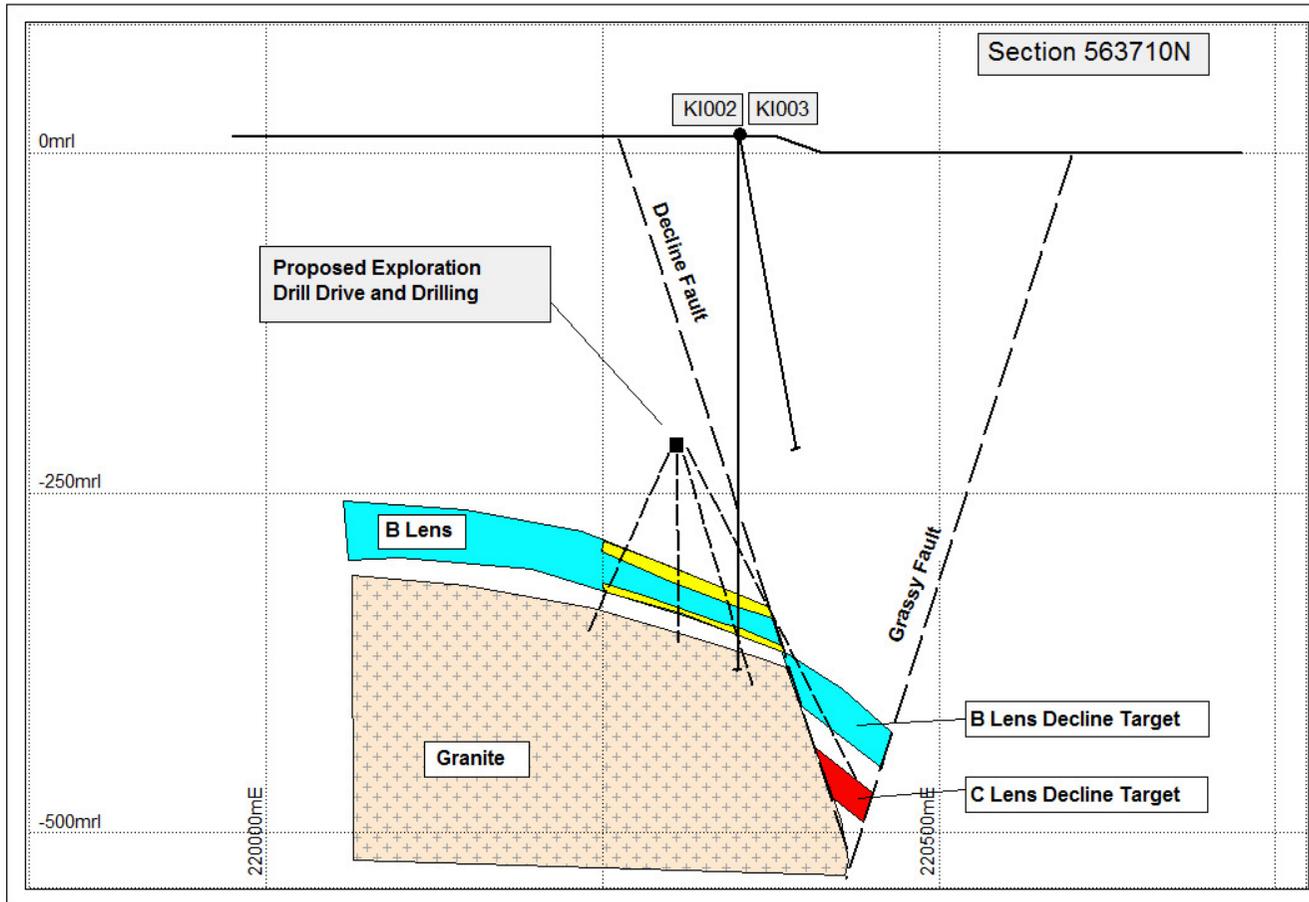


Figure 7. Section 563,710mN with proposed development and exploration drilling.



Further exploration of both the Swan Extended and Decline Targets in the Dolphin South area is warranted. However surface drilling costs are very high (>\$400/m) mainly due to the very poor ground conditions associated with the Decline Fault. There is limited potential for C-Lens hosted mineralisation in the Swan Extended area as it is apparent that the granite has stopped out the carbonate horizon 50-100m south of the limit of underground drilling. There remains a considerable extent of B-Lens however this is historically less well mineralised than C-Lens. The best location to target high grade B-Lens mineralisation is likely to be adjacent to the Decline Fault. This area is extremely difficult and expensive to drill from surface and is best explored from underground via a hangingwall drill drive located in the geotechnically more competent ground below the decline fault (Figure 7).

Several surface exploration holes could be drilled along the B-Lens Granite contact at the western end of Dolphin south but these are considered a lower priority target as they are expected to be lower grade due to the absence of major fault structures.



5 PROPOSED WORK PROGRAM

The project work program for 2012 is scheduled to include:

- Completion of the DFS
- Mine dewatering and rehabilitation
- Mill engineering, procurement and construction
- Infrastructure development.
- Commissioning and production is expected to commence in 2013.
- ML application for the Bold Head Mine

Because of the focus on construction and commissioning a limited exploration program is anticipated for 2012. Exploration work is likely to involve historic data collation and targeting in preparation for future exploration drilling programs. Exploration drilling of the tenement package is likely to resume in 2013 once mining operations have commenced.



ADDITIONAL NOTES

LIMITATIONS AND CONSENT

The report is provided to the King Island Scheelite Project in the context of an Annual Report and should not be used or relied upon for any other purpose.

This 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 the 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.

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.

EXPLORATION TARGET STATEMENT

In accordance with the JORC Code, readers are advised that Exploration Targets are conceptual in nature, there has been insufficient exploration to define mineral resources and it is uncertain that further exploration will result in the definition of a mineral resource.

STATEMENT OF INDEPENDENCE

Tim Callaghan has no material interest or entitlement in the securities or assets of the King Island Scheelite project or any associated companies.

**All coordinates in this report are recorded in AGD94 Zone 55 or ISG
Zone 3**



REFERENCES

- Brown, SG, 1981. Six Monthly Report to the Mines Department, Report No KI/81/5 *Unpublished company report for Warman Services Ltd.*
- Brown, SG, 1982. An Assessment of the Overall Tungsten Potential of King Island. Report No KI/82/3 *Unpublished company report for Geopeko Ltd..*
- Brown, SG, 1983. Six Monthly Report to the Mines Department EL15/1966, Report No KI/83/1 *Unpublished company report for Geopeko Ltd.*
- Callaghan TJ, 2009. Bold Head Geology, Mineral Resource Estimate and Mine Infrastructure Digital Model, July 2009. *Unpublished internal report for King Island Scheelite JV.*
- Callaghan TJ, 2010. Dolphin Mine Mineral Resource Estimate, April 2010. *Unpublished internal report for King Island Scheelite JV.*
- Callaghan, TJ, 2011a. King Island Tailings Mineral Resource Estimation. *Unpublished consultants report for King Island Scheelite.*
- Callaghan, TJ, 2011b. King Island Tailings Mineral Reserve Estimation. *Unpublished consultants report for King Island Scheelite.*
- Calver CR, 2007. Some Notes on the Geology of King Island. *Tasmanian Geological Survey Record 2007/02.*
- Cox, S F, 1989. 'Cape Wickham' in Burrett, CF and Martin CF, (editors) Geology and Mineral Resources of Tasmania, *Special Publication Geological society of Australia*, vol15, pp26 - 27
- Danielson MJ, 1975. King Island Scheelite deposits. In Knight CL (editor), Economic Geology of Australia and Papua New Guinea. *Monograph Serial Australian Institute of Mining and Metallurgy.*
- Fudge, A, 2011. Mining Inventory and Grade Tonnage Estimates from a 0.50% WO₃ Perimeter Data Set. *Unpublished consultants report for King Island Scheelite.*
- Meffre S, Direen NG, Crawford AJ, and Kamenetsky V, 2004. Mafic Volcanic rocks on King Island, Tasmania: Evidence for 579Ma break up in East Gondwana. *Precambrian research*, vol. 135 pp177 – 191.
- Newnham L, 2008. Grassy Mine Area Prospectivity Assessment, Strategic implications and Proposed Evaluation Program. *Unpublished internal report for King Island Scheelite JV.*
- Turner NJ, Black LP, and Kamperman M, 1998. Dating of Neoproterozoic and Cambrian Orogenies in Tasmania. *Australian Journal of Earth Sciences*, vol 45, pp 789 – 806.



Tim Callaghan – Resource and Exploration Geology

Appendix 1

Drill Logs and Assay Data

KI001 – KI003



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L.Cont.	Struct	BCA	Description
Dolphin	KI001	0	40		LOSS							Very poor recovery, fill and beach sand.
Dolphin	KI001	40	57.4	Cgg	bh	BiCh	A3	0.01	Ft			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse calcite-pyrite veining Coarse hornfels spotting of biotite books.
Dolphin	KI001	57.4	60		fz	BiCh	A3					Broken core, fault zone.
Dolphin	KI001	60	64.6	Cgg	bh	BiCh	A3	0.01	Ft			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse calcite-pyrite veining Coarse hornfels spotting of biotite books.
Dolphin	KI001	64.6	67.3		fz	BiCh	A3					Major fault zone, puggy, chlorite altered. 1.7m cavity at 66m. Decline Fault.
Dolphin	KI001	67.3	81	Cgg	bh	BiCh	A3	0.00	Ft			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots.
Dolphin	KI001	81	81.4		fz	BiCh	A3					Puggy fault zone
Dolphin	KI001	81.4	84.1	Cgg	bh	BiCh	A3	0.00	Ft			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots.
Dolphin	KI001	84.1	84.5		fz	BiCh	A3					Puggy fault zone
Dolphin	KI001	84.5	100.6	Cgg	bh	BiCh	A3	0.00	Ft			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots. Numerous puggy joints and crush zones.
Dolphin	KI001	100.6	101.4		fz	BiCh	A3					Puggy fault zone.
Dolphin	KI001	101.4	123.4	Cgg	bh	BiCh	A3	0.00	Sp			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots.
Dolphin	KI001	123.4	123.6	Dg	ap	KfSi	R2	0.00	Sp		70	Aplite dyke. Qtz Kfeld. Fine grained
Dolphin	KI001	123.6	136.5	Cgg	bh	BiCh	A3	0.00	Sp			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots.
Dolphin	KI001	136.5	136.8		fz	BiCh	A3					Puggy fault zone.
Dolphin	KI001	136.8	150	Cgg	bh	BiCh	A3	0.00	Sp			Massive, grey, biotite hornfelsed basaltic volcanics. Sparse vughy calcite veining Coarse hornfels spotting of biotite books. Retrograde chlorite veins and spots.
Dolphin	KI001	150	228.5	Cgg	lv	ChAc	G2	0.00				Massive, green, basaltic lithic volcanoclastic breccia. Graded beds with uphole facing. Coarse angular clasts to 5cm grading of sandy tops. Pervasive actinolite-chlorite alteration. Sparse calcite veins.



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L.Cont.	Struct	BCA	Description
Dolphin	KI001	228.5	233.6	Cgg	lv	AcBi	A2	0.00	IR	Bd	40	Volcaniclastic siltstone. Pervasive actinolite-chlorite alteration. Strongly hornfelsed.
Dolphin	KI001	233.6	261.2	Cgg	lv	AcBi	A3		Sp			Massive, graded basaltic volcaniclastic sandstone and siltstone with minor lithic breccia. Pervasive actinolite-biotite alteration. Strongly hornfelsed.
Dolphin	KI001	261.2	266.6	Cgg	ad	Bi	B3	0.00	Sp			Massive, feldspar phyric gabbro. Pervasive intense brown phlogopite alteration.
Dolphin	KI001	266.6	271.9	Cgg	lv	AcBi	A2	0.00	IR	Bd	40	Volcaniclastic siltstone. Pervasive actinolite-chlorite alteration. Strongly hornfelsed.
Dolphin	KI001	271.9	272.3	Dg	ad	KfSi	A1	0.00				Massive, crystalline feldspar-quartz-amphibole granite/ademellite.
Dolphin	KI001	272.3	290.5	Cgg	lv	AcBi	A2	0.00	IR	Bd	40	Volcaniclastic siltstone. Pervasive actinolite-chlorite alteration. Strongly hornfelsed. Patches of diopside-actinolite alteration. Minor garnet and trace scheelite.
Dolphin	KI001	290.5	299	B	pgh	DiGt	A1	0.10	Sp	Bd	80	Massive, mottled pyroxene (diopside)-garnet skan. Altered calcareous volcaniclastic sandstone and siltstone. Dominantly pale grey diopside with patches and bands of pale brown garnet-calcite and scheelite.
Dolphin	KI001	299	302.6	B	ch	Cbgt	A1	0.00	Sp	Bd	80	Pale grey laminated dolomite. Stylolitic. Minor bands of garnet.
Dolphin	KI001	302.6	304.3	Dg	ap	qzcb	c1	0.00	sp			Massive, vuggy, crystalline aplite dyke. Griesenised with sericite and feldspar. Minor powellite in vugghs.
Dolphin	KI001	304.3	306	B	ch	Cbgt	A1	0.00	Sp	Bd	80	Pale grey laminated dolomite. Stylolitic.
Dolphin	KI001	306	306.8	Dg	ap	qzcb	C1	0.00	sp			Massive, vuggy, crystalline aplite dyke. Griesenised with sericite and feldspar.
Dolphin	KI001	306.8	318.6	B	ch	Cbgt	A1	0.10	Sp	Bd	80	Pale grey laminated dolomite. Stylolitic. Minor bands of garnet. Minor pyrrhotite and chalcopyrite near base. Trace garnet metasomatism.
Dolphin	KI001	318.6	319	B	gh	gt	B3	0.10				Intensely metasomatised garnet hornfels with coarse scheelite.
Dolphin	KI001	319	320.8	Cgg	lv	biac	B3		Sp	Bd	70	Massive, polymict volcaniclastic breccia. Large angular clasts in sandy matrix. Very poorly sorted. Indensely hornfelsed with pervasive biotite alteration.
Dolphin	KI001	320.8	321.1	Dg	ap	qzcb	C1	0.00	sp			Massive, vuggy, crystalline aplite dyke. Griesenised with sericite and feldspar.
Dolphin	KI001	321.1	326.5	Cgg	lv	biac	B3		Sp	Bd	70	Massive, polymict volcaniclastic breccia. Large angular clasts in sandy matrix. Very poorly sorted. Indensely hornfelsed with pervasive biotite alteration.
Dolphin	KI001	326.5	336.3	Dg	ad	KfSi	R1	0.00				Massive, crystalline quartz-kfeldsapr-plagioclase adamellite. EOH 336.3m.



Tim Callaghan – Resource and Exploration Geology

Geotech Sheet																			
Project	BHID	From	To	Recovery	Lithology	Weathering	Alteration	Strength	length>10cm	RQD%	No. defects	Defect sets	Defect type	bca struct 1	bca struct 2	Roughness	Fill	Comments	
Dolphin	KI001	289.1	292.1	3					3	100									
Dolphin	KI001	292.1	295.1	3					3	100									
Dolphin	KI001	295.1	298.1	3					2.9	97									
Dolphin	KI001	298.1	301.1	3					3	100									
Dolphin	KI001	301.1	304.1	3					2.5	83									
Dolphin	KI001	304.1	307.1	3					2.8	93									
Dolphin	KI001	307.1	310.1	3					2.8	93									
Dolphin	KI001	310.1	313.1	3					2.7	90									
Dolphin	KI001	313.1	314.3	1.2					0.8	67									
Dolphin	KI001	314.3	316.1	1.8					1.8	100									
Dolphin	KI001	316.1	319	2.9					2.7	93									
Dolphin	KI001	319	322.1	3.1					2.5	81									
Dolphin	KI001	322.1	325.1	3					2.9	97									
Dolphin	KI001	325.1	328.1	3					2.9	97									
Dolphin	KI001	328.1	331.1	3					3	100									
Dolphin	KI001	331.1	334.1	3					3	100									
Dolphin	KI001	334.1	336.3	2.2					2	91									



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L. Cont.	Struct	BCA	Description
Dolphin	KI002	0	22.2		FILL							Very poor recovery, fill and beach sand.
Dolphin	KI002	22.2	67		LOSS		W	0.00	Bk			Beach sand, very poor recoveries.
Dolphin	KI002	67	79	Ts	CONG		A2	0.00	Bk			Unconsolidated, pale grey clay and conglomerate. Rounded pebbles of basaltic volcanics and chert in clay matrix. Tertiary fluvial deposit.
Dolphin	KI002	79	88	Cgg	GABB	CyHe	B3	0.00	Ft			Light brown and red, weathered gabbroic volcanics. Pervasive chlorite alteration weathered to limonite and hematite. Numerous puggy fractures.
Dolphin	KI002	88	89.7		fz	CyQz	W	0.00	Ft			Puggy fault and quartz veining.
Dolphin	KI002	89.7	91.9	Cgg	bh	BiCh	A3	0.00	Ft			Massive basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration.
Dolphin	KI002	91.9	94.2		fz	Cy						Massive puggy shear zone. Soft clay.
Dolphin	KI002	94.2	113	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures.
Dolphin	KI002	113	113.2		fz	Cy						Massive puggy shear zone. Soft clay.
Dolphin	KI002	113.2	119.8	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures.
Dolphin	KI002	119.8	124.5		fz	Cy						Massive puggy shear zone. Soft clay. Milled and crushed rock
Dolphin	KI002	124.5	141.2	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures.
Dolphin	KI002	141.2	148.8		fz	Cy						Hornfels spotting with biotite actinolite porphyryblasts.
Dolphin	KI002	148.8	160.2	Cgg	bh	BiCh	A3	0.00	Ft			Massive puggy shear zone. Soft clay. Milled and crushed rock Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures.
Dolphin	KI002	160.2	163.7		fz	Cy						Hornfels spotting with biotite actinolite porphyryblasts.
Dolphin	KI002	163.7	170.6	Cgg	bh	BiCh	A3	0.00	Ft			Massive puggy shear zone. Soft clay. Milled and crushed rock Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures.
Dolphin	KI002	170.6	172.5		fz	Cy						Hornfels spotting with biotite actinolite porphyryblasts. Massive puggy shear zone. Soft clay. Milled and crushed rock



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L.Cont.	Struct	BCA	Description
Dolphin	KI002	172.5	195.6	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures. Hornfels spotting with biotite actinolite porphyryblasts.
Dolphin	KI002	195.6	208.7	fz	fz	Cy						Massive puggy shear zone. Soft clay. Milled and crushed rock
Dolphin	KI002	208.7	214.6	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures. Hornfels spotting with biotite actinolite porphyryblasts.
Dolphin	KI002	214.6	221.7	fz	fz	Cy						Massive puggy shear zone. Soft clay. Milled and crushed rock
Dolphin	KI002	221.7	222.2	Cgg	bh	BiCh	A3	0.00	Ft			Massive fine grained basaltic volcanics. Strongly hornfelsed to biotite rich assemblage. Later retrograde chlorite alteration. Numerous puggy fractures. Hornfels spotting with biotite actinolite porphyryblasts.
Dolphin	KI002	222.2	240.1	fz	fz	Cy						Massive puggy shear zone. Soft clay. Milled and crushed rock
Dolphin	KI002	240.1	304.5	Cgg	lv	BiAc	G3	0.00				Large fault. Decline fault. Much core loss. Massive, basaltic lithic volcanoclastic breccia. Graded beds with sandy tops. Uphole facing. Matrix supported coarse angular clasts to 3cm. Rare exotic siliclastic clasts. Strongly hornfelsed biotite-actinolite alteration with retrograde chlorite.
Dolphin	KI002	304.5	317	Cgg	lv							Massive basaltic lava breccia. Autoclastic aphyric basalt clasts. Intense chlorite actinolite alteration. Strongly hornfelsed.
Dolphin	KI002	317	333	Cgg	SILT	BiPh	B3	0.00	Sp	Bd	60	Massive, laminated volcanoclastic siltstone. Well bedded. Pervasive biotite-phlogopite alteration. Hornfels spotting after cordierite?
Dolphin	KI002	333	335.4	Dg	GRAN	Kf	W	0.00	Sp		20	Several low angle, thin quartz-feldspar granite dykes intruding hornfelsed siltstone. Irregular contacts
Dolphin	KI002	335.4	338.2	Cgg	SILT	BiPh	B3	0.00	Sp	Bd	60	Massive, laminated volcanoclastic siltstone. Well bedded. Pervasive biotite-phlogopite alteration. Hornfels spotting after cordierite?
Dolphin	KI002	338.2	342.6	B	pgh	DiGt	G2	0.10	Gd			Massive, pale green pyroxene-actinolite-garnet skarn. Moderate disseminated scheelite mineralisation. Talc joints.
Dolphin	KI002	342.6	351.4	B	ch	Ca	A2	0.00	Sp			Massive pale grey marble.
Dolphin	KI002	351.4	352	B	pgh	DiGt	G2	0.10	Gd			Massive, pale green pyroxene-actinolite-garnet skarn. Moderate disseminated scheelite mineralisation. Talc joints.



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L. Cont.	Struct	BCA	Description
Dolphin	KI002	352	363.3	Cgg	SILT	BiAc	B3	0.00	Sp			Massive, dark brown hornfelsed basaltic lithic volcanoclastic siltstone. Limited matrix supported exotic volcanic clasts. Patchy actinolite-diopside-garnet alteration.
Dolphin	KI002	363.3	379.4	Dg	GRAN	Kf	R	0.00				Massive, pale red-pink quartz-plagioclase-kfelspar granodiorite. Fine grained equigranular chilled margin grading to very coarse kfelspar porphyritic granite. Minor xenoliths of siltstone. EOH



Tim Callaghan – Resource and Exploration Geology

Geotech Sheet																		
Project	BHID	From	To	Recovery	Lithology	Weathering	Alteration	Strength	length > 10cm	RQD%	No. defects	Defect sets	Defect type	bca struct 1	bca struct 2	Roughness	Fill	Comments
Dolphin	KI002	330	338.2	8.2	SILT	F	Bi	VS	7.3	89		2.5	Jt	60	30	US	Ch	
Dolphin	KI002	338.2	342.6	4.1	pgh	F	DiTc	MS	3.5	85	14	2	Jt	25	80	US	Tc	Talcy soft jts
Dolphin	KI002	342.6	351.4	8.8	CARB	F	Ca	VS	8.8	100	2	1	Jt			UR	Ca	Massive marble
Dolphin	KI002	351.4	363.3	11.9	SILT	F	Bi	VS	11	92	21	2	Jt	60	20	UR	Ch	
Dolphin	KI002	363.3	379.4	16.1	GRAD	F	Kf	ES	16	98	16	2	Jt	60	20	UR	Qz	Massive granite

Assay Sheet														
Project	BHID	From m	To m		Sn	WO3	Cu ppm	Pb ppm	Zn ppm	Ag	Bi	Mo	As ppm	Rock
Dolphin	KI002	338.5	339	34019	-0.01	0.004						-1		
Dolphin	KI002	339	340	34020	0.01	0.009						107		
Dolphin	KI002	340	341	34021	0.01	0.007						359		
Dolphin	KI002	341	342	34022	-0.01	6.03						1557		
Dolphin	KI002	342	343	34023	0.01	6.81						1476		
Dolphin	KI002	343	344	34024	0.01	0.027						-1		
Dolphin	KI002	349	350	34025	0.02	0.036						8		
Dolphin	KI002	350	351	34026	0.02	0.026						6		
Dolphin	KI002	351	352	34027	0.03	0.168						87		
Dolphin	KI002	352	353	34028	0.02	0.005						-1		



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L.Cont.	Struct	BCA	Description
Dolphin	KI003	0	23		FILL							Very poor recovery, fill and beach sand.
Dolphin	KI003	23	75		LOSS		W	0.00	Bk			Beach sand, very poor recoveries.
Dolphin	KI003	75	94	Ts	CONG		A2	0.00	Bk			Unconsolidated, pale grey clay and conglomerate. Rounded pebbles of basaltic volcanics and chert in clay matrix. Tertiary fluvial deposit.
Dolphin	KI003	94	103.3	Cgg	GABB	CyHe	B3	0.00	Ft			Light brown and red, weathered gabbroic volcanics. Pervasive chlorite alteration weathered to limonite and hematite. Numerous puggy fractures.
Dolphin	KI003	103.3	110	Cgg	GABB	CIBi	A3	0.00	Ft			Massive feldspar-pyroxene gabbro altered to biotite-actinolite. Massive porphyryblasts altered to biotite after pyroxene or hornblende.
Dolphin	KI003	110	110.3		fz							Puggy Brittle fault zone. Chlorite-clay fill.
Dolphin	KI003	110.3	110.8	Cgg	bh	BiCl	A3	0.00	Ft			Massive basaltic lithic volcanoclastic greywacke. Pervasive biotite alteration and retrograde chlorite. Hornfelsed.
Dolphin	KI003	110.8	114.1		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	114.1	117.8	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite.
Dolphin	KI003	117.8	123.5		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	123.5	129.4	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite.
Dolphin	KI003	129.4	129.9		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	129.9	133	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite.
Dolphin	KI003	133	135.7		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	135.7	137	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite.
Dolphin	KI003	137	140		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	140	144.7	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite.
Dolphin	KI003	144.7	153.1		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams. Significant core loss. Broken and milled core.



Drill Log												
Project	BHID	From	To	Stratigraphy	Rock Type	Alteration	Colour	Visual S%	L. Cont.	Struct	BCA	Description
Dolphin	KI003	153.1	168.5	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite. Hornfels spotting.
Dolphin	KI003	168.5	171.4		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	171.4	177.2	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite. Hornfels spotting.
Dolphin	KI003	177.2	177.8		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	177.8	200.8	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite. Hornfels spotting. Coarse biotite patches.
Dolphin	KI003	200.8	203.8		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	203.8	210.3	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite. Hornfels spotting. Coarse biotite patches.
Dolphin	KI003	210.3	210.7		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams.
Dolphin	KI003	210.7	225.4	Cgg	bh	BiCl	A3					Massive basaltic volcanics. Aphyric lava. Hornfelsed with pervasive biotite alteration and retrograde chlorite. Hornfels spotting. Coarse biotite patches.
Dolphin	KI003	225.4	230.6		fz	CyCl	G5		Ft	Ft	60	Massive brittle ductile faultzone. Strong chlorite alteration. Puggy clay seams. Significant core loss.
												Hole abandoned after barrel lost in hole and hole collapsed.
												EOH