



Tim Callaghan – Resource and Exploration Geology



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**BLYTHE RIVER PROJECT**

**ANNUAL REPORT**

**EL6/2005 CUPRONA**

**NW TASMANIA**

**Prepared for: Forward Mining Limited**

**Tim Callaghan, August 2012**

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## **MAP CONVENTIONS**

Coordinates in this report and in digital data associated with this report are recorded as GDA94 Zone 55.

RL's in this report are MSL.



## **EXECUTIVE SUMMARY**

This report covers exploration activities completed on EL6/2005 Cuprona. The EL forms part of a tenement package prospective for magnetite, Hematite and tungsten mineralisation around the House Top Granite in NW Tasmania.

Only limited reconnaissance field work and data compilation was completed in 2012.

The Natone Skarn, originally identified by Shell exploration in the 1980's consists of magnetite-pyrrhotite skarn mineralisation is located at the south end of the EL. Red River Resources attempted to replicate magnetite mineralisation identified in Billiton Drillhole NT3 with diamond hole RRDH001 but did not identify any significant magnetite or tin mineralisation.

Several hematite silica bodies are associated with breccias on the Precambrian-Cambro-Ordovician boundary extending over a strike length of 5km. The iron mineralisation occurs as lenses and bluffs of high grade >50% Fe and silica, forming prominent bluffs and ridges. Three significant bodies have been identified historically including Rutherford's, Blythe River and Cuprona.

Future exploration should include systematic sampling and drilling of the deposits as a first pass assessment of their resource potential. A series of 50m spaced, short drillholes are proposed. Triple tube diamond drilling is recommended to maximize sample recoveries. Six 50-80m drillholes are recommended for the Rutherford's, Blythe and Cuprona ironstones.

Samples for metallurgical testwork should be collected to assess the suitability of the Iron for direct shipping or beneficiation prior to export..

Drilling and sampling should proceed in conjunction with sampling of the Kara No 2 Magnetite deposits.



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## 1 INTRODUCTION

EL6/2005 Cuprona is one of 6 current exploration licenses held by either Red River Resources Ltd (RVR) or Iron Mountain Ltd (IRM) and managed by Forward Mining Ltd (FWD). FWD is in the process of purchasing the tenements off RVR and IRM with the change over of titles pending at the time of reporting. Tenement details are listed in Table 1.

<b>EL</b>	<b>Name</b>	<b>Held By</b>	<b>Size</b>	<b>Expiry</b>	<b>Comments</b>
EL6/2005	Cuprona	IRM	22km <sup>2</sup>	9/2011	Extension Expires Sept 2012
EL15/2006	Camena	IRM	30km <sup>2</sup>	6/2011	Apply for Extension
EL25/2009	Highclere	RVR	33km <sup>2</sup>	5/2015	3 years remaining
EL35/2006	Hampshire 1	RVR	89km <sup>2</sup>	2/2012	Extension Expires early 2013
EL18/2007	Hampshire 2	RVR	103km <sup>2</sup>	7/2012	Expires mid 2012
EL53/2007	Mt Everett	IRM	47km <sup>2</sup>	12/2012	1 year remaining

Permission to submit a combined annual report for all tenements in the Blythe Project was granted on 10<sup>th</sup> June 2009. The board of FWD decided to return to separate annual reporting for the tenements in early 2012. This report contains information on exploration activities completed on EL6/2005 which have been partially reported in the Combined Annual Report for the district submitted in November 2011 (Callaghan, 2011).

Five of the six tenements are near the end of the term of tenure and will require terms of extension and diligent commitment to work programs. The majority of the work completed over the last year was focused on EL18/2007 Hampshire 2 and EL25/2009 Highclere with only limited reconnaissance work and data compilation completed on EL6/2005. A term of extension of 1 year is required for EL6/2005 in early September 2012.

The Blythe River Iron Project (BRIP) consists of a number of small to medium size magnetite skarn deposits located in NW Tasmania, approximately 30km south of Burnie (Figure 1 and 2). Exploration is focused on resource delineation of semi massive to massive magnetite deposits to provide a resource base for a magnetite mining operation for the iron ore market.

EL 6/2005 measures 22km<sup>2</sup> and is located 20km south east of Burnie in NW Tasmania. The area comprises hilly farmland, mainly dairy cattle, and contains localised areas of remnant Tasmanian bush (Figure 1). The Blythe river gorge is a steeply incised valley running through the axis of the EL, exposing steep bluffs of silica hematite mineralisation.



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**Figure 1 Rutherford's Hematite deposit, Natone Area Typical Landscape**



## 2 REGIONAL GEOLOGY

The Blythe River Iron Project is located on the western margin of the Dial Range Trough and is underlain by lithologies of the Late Proterozoic Oonah Formation, Owen Group Siliciclastics, Gordon Group Limestone, Devonian Granites and Tertiary Basalt (Figure 2). The Dial Trough is a structurally interesting basin that includes a possible Northern Extension of the Hellyer Fault, and significant basin bounding faults on the western and eastern sides. The Devonian post orogenic Husetop Granite dominates the geology to the south of the project area and is considered to underlie much of the southern Dial Trough. The Dial Trough has been poorly mapped and stratigraphic correlations are uncertain for many units.

### *Oonah Formation*

The oldest rocks in the district are the Proterozoic Oonah formation, consisting of poly-deformed quartzwacke, siltstone and pelite with lesser dolerite intrusives. These are overlain by a sequence of pelite-carbonate with minor mafic volcanics and conglomerate. This association is host to replacement deposits at Mt Bischoff and near Zeehan and consequently represents a potential host for similar styles of skarn mineralisation.

### *Mt Read Volcanics*

Mt Read Volcanic associations have been correlated with the felsic volcanoclastics of the Western Volcano-sedimentary sequence and the Tyndall Group quartz-feldspar phyrlic volcanoclastics.

### *Owen Group*

The Late Cambrian to Ordovician Owen Group overlies the Mt Read Volcanics and is comprised dominantly of siliciclastic conglomerate and sandstone. Locally volcanic derived conglomerates are associated with basal members. The Moina Sandstone, comprised of coarse to fine siliciclastic sandstone with minor intercalated conglomerate is the uppermost siliciclastic unit of the Owen Group and has a gradational contact with the overlying Gordon Group.

### *Gordon Group Limestone*

Conformably overlying the Owen Group is the Gordon Group limestone and dolomite sequence which is the host of the Kara district magnetite skarns. The stratigraphic thickness of the limestone is regionally variable ranging between 50-1000m.

### *Husetop Granite*

The Husetop granite outcrops in much of the Blythe River Prospect and is believed to extend below much of the area (Leaman, 1993). Leaman concludes that the Husetop granite is anomalously dense and highly magnetic, which may explain the abundance of iron metasomatism in the district. The granite is responsible for massive Magnetite-Sn-WO<sub>3</sub> mineralisation of the Kara District. The association of Tasmanian Devonian granites with Magnetite, Sn-WO<sub>3</sub>, Pb-Zn-Ag and Au mineralisation is well documented.



### Tertiary Basalt

Basaltic flows are widespread throughout the Blythe River Iron Project area, flooding Tertiary palaeo-topographic lows. The basalts vary widely in thickness and frequently have a high magnetic susceptibility creating difficulties for magnetite exploration below basaltic cover. Recent resource and exploration drilling at the Kara Mine indicates that the magnetite skarn extends below basalt cover.

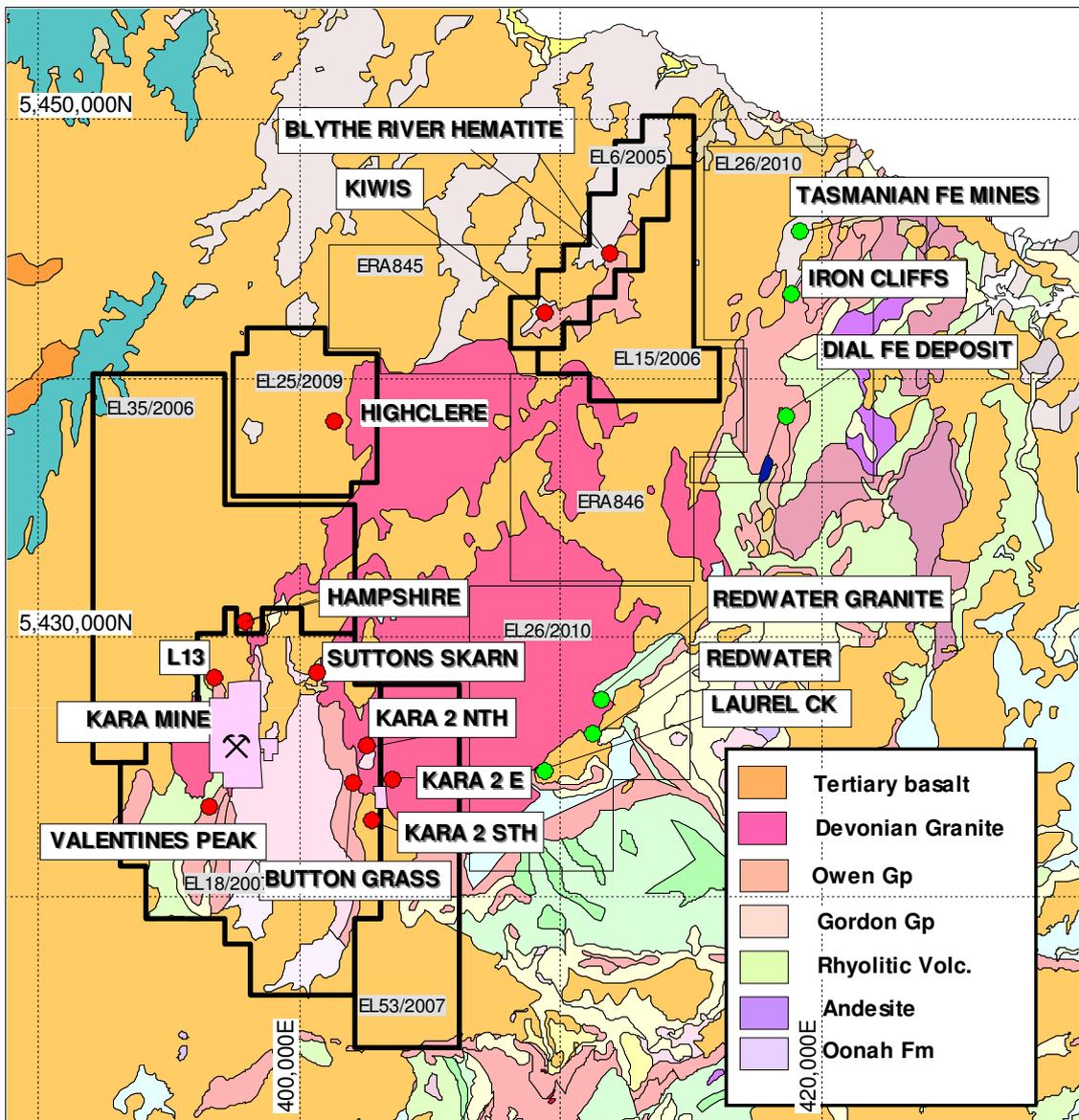


Figure 2. Blythe River Project location, Fe Prospects and MRT 250k Geology. Red dots are Blythe Project Fe prospects, green dots are other regional Fe Prospects.

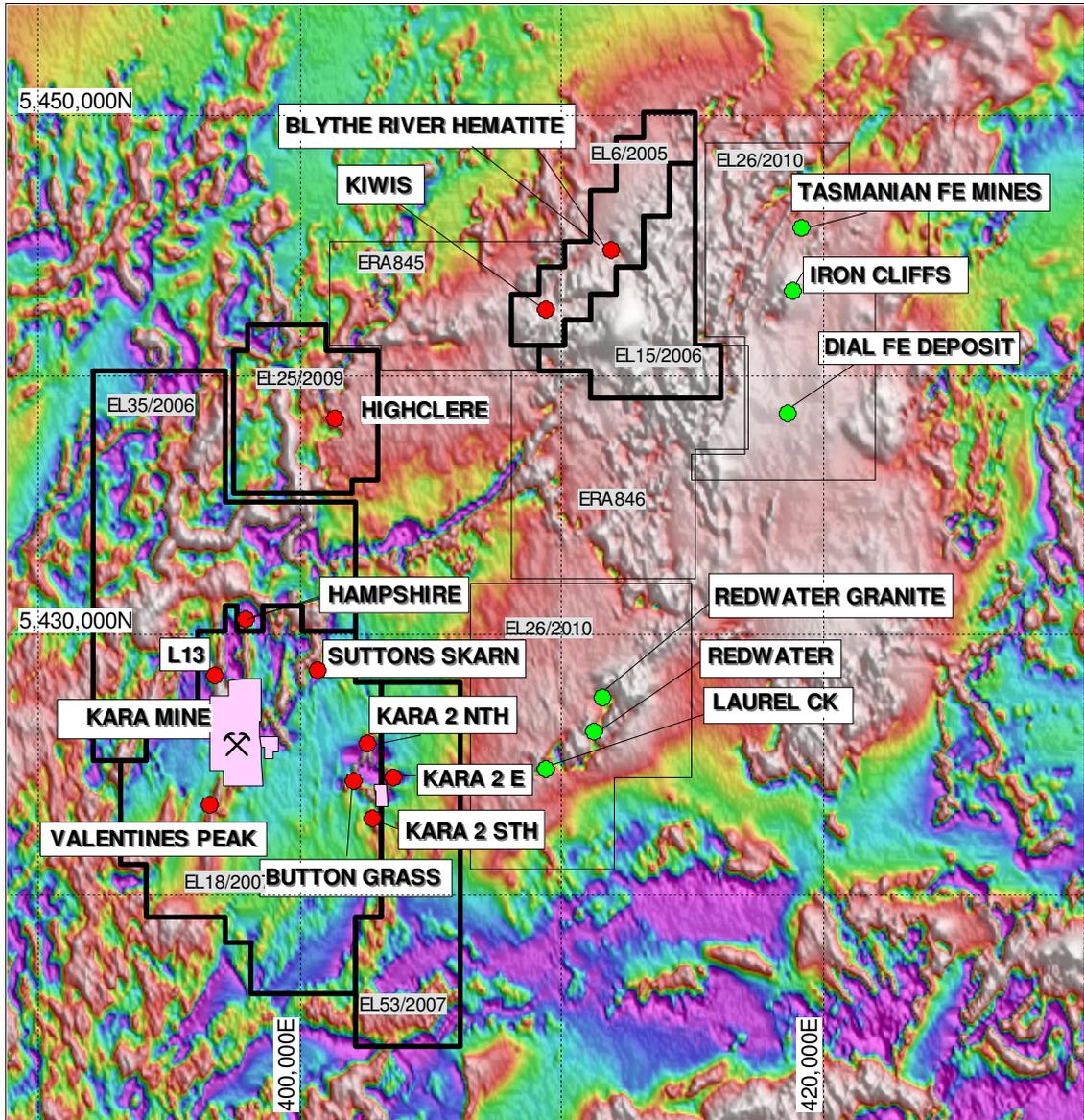


Figure 3. Blythe Project tenements, TMI and prospect locations. Red dots are Blythe Project Fe prospects, green dots are other regional Fe Prospects.



### **3 LOCAL GEOLOGY**

The geology of EL6/2005 is dominated by rocks of the Proterozoic Oonah Formation to the west and Ordovician siliciclastics and limestone to the east, bounded by a northeast trending lineament. The Ordovician clastic deposits unconformably overly the Proterozoic quartzite and shale. The Precambrian-Ordovician lineament hosts a series of massive hematite-silica bodies such as the Rutherford's (Kiwi's), Cuprona and Blythe River Iron deposits.

A Devonian granite intrusion is located in the far south of the EL and minor magnetite and pyrrhotite skarn mineralisation is associated within the contact aureole in the Natone Skarn.

Late Tertiary basalts cover 50% of the EL, covering the earlier prospective lithologies.

The hematite-silica deposits form a series of hills and prominent bluffs. Minor basemetal mineralisation is occasionally associated with the deposits but they principally appear to be composed of high grade hematite with variable amounts of silica.

The main areas of exploration interest on EL 6/2005 for Forward Mining include the Natone Skarn, Rutherford's Iron deposit, Blythe River and Cuprona Hematite Iron deposits. The Cuprona copper mineral field including the Copper King Mine occurs in the northern half of EL 6/2005.

#### **3.1 NATONE SKARN AND RUTHERFORD'S IRON (KIWI'S PROSPECT)**

Magnetite skarns are located in the far south of the EL with significant intersections identified in RC drillholes completed on the Natone Skarn (Kiwi's Prospect) by Red River in 2009. The Natone Skarn, which comprises a complex arrangement of skarn lithologies hosting localised magnetite and/or pyrrhotite mineralisation. The magnetite skarn lies 600m north east of the contact with the Husetop Granite and is hosted by the narrow band of Cambrian clastic and carbonate sediments.

Adjacent to the magnetite skarns is primary and secondary iron mineralisation, known as Rutherford's Iron Deposit. The deposit occurs as a distinct hill of outcropping massive hematite mineralisation, locally oxidised to goethite, hosted within the narrow band of Cambrian sediments, close to its boundary with the younger Oonah formation quartzite and shale. Several collapsed adits are located on the southern side of the deposit. The deposit extends for approximately 100m in length and 20-30m in width, striking NE and dipping steeply east.

Red River Mining completed 5 diamond and 5 RC drillholes for 721m and 272m respectively on the Kiwi's and Rutherford's prospects. The diamond holes were aiming to test magnetic anomalies in the search for magnetite skarn whilst the RC holes also aimed to test for magnetite mineralisation but were generally more focused on the outcropping hematite at Rutherford's Iron location (Figure 6). The RC drilling intersected narrow but significant iron mineralisation as oxidised magnetite skarn and hematite iron, with the results summarised in Table 2. Magnetic susceptibility readings suggest much of the high grade iron was hematite, particularly near the top of the holes.

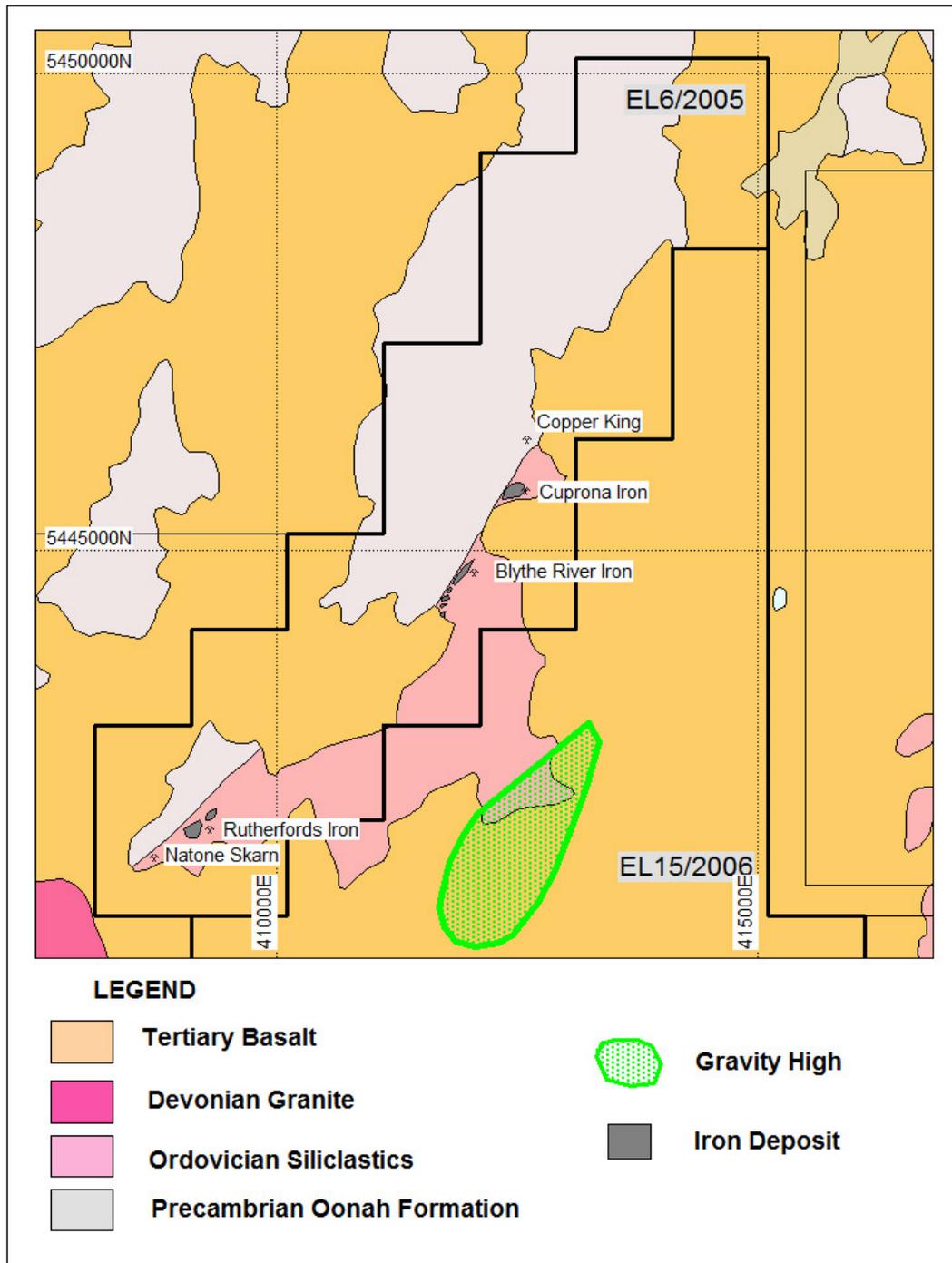


Figure 4. Cuprona Geology (from MRT1:250 000)

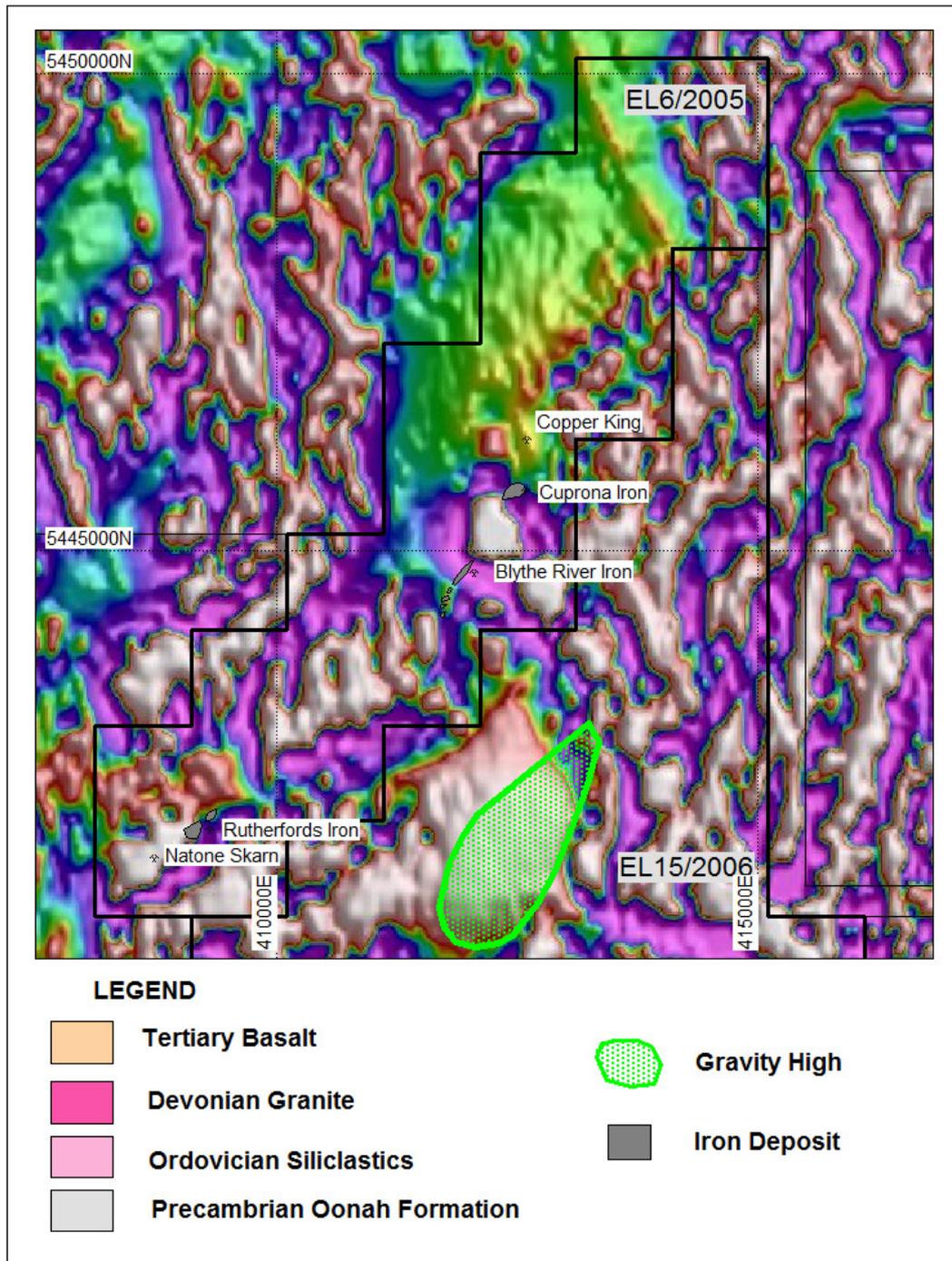


Figure 5. Camena 1VD\_TMI and gravity high.



**Table 2 Kiwi's Prospect Summary for RC Drillhole Intercepts**

Hole	Width	Fe %	Al <sub>2</sub> O <sub>3</sub> %	P <sub>2</sub> O <sub>5</sub> %	SiO <sub>2</sub> %	SO <sub>3</sub> %	SnO <sub>2</sub> %	From
KWRC002	8m	57.55	2.09	0.141	12.28	0.035	0.008	0m
KWRC002	2m	49.60	1.20	0.160	24.60	0.013	0.005	27m
KWRC003	2m	42.15	1.86	0.053	34.95	0.065	0.005	0m
KWRC003	4m	42.33	5.80	0.183	28.95	0.065	0.005	7m
KWRC003	3m	35.50	2.00	0.200	38.97	0.057	0.007	23m
KWRC003	4m	54.05	0.88	0.255	9.48	0.023	0.005	30m
KWRC004	4m	48.38	2.75	0.265	5.70	0.140	0.021	3m
KWRC005	2m	55.00	1.61	0.064	16.90	0.050	0.008	0m
KWRC005	14m	55.59	3.48	0.170	12.31	0.329	0.007	6m
Average	4.8m	48.90	2.41	0.166	20.46	0.086	0.008	

The diamond drilling encountered zones of poor recovery particularly within the more oxidised iron zones at the top of the drill holes. The limited iron mineralisation that was recovered consisted of oxidised and massive silica-hematite-goethite and clay. The Red River diamond holes were not analysed for their iron content. The holes intersected a shale-sandstone greywacke sequence after the hematite zones with little mineralisation. No significant tin mineralisation was identified

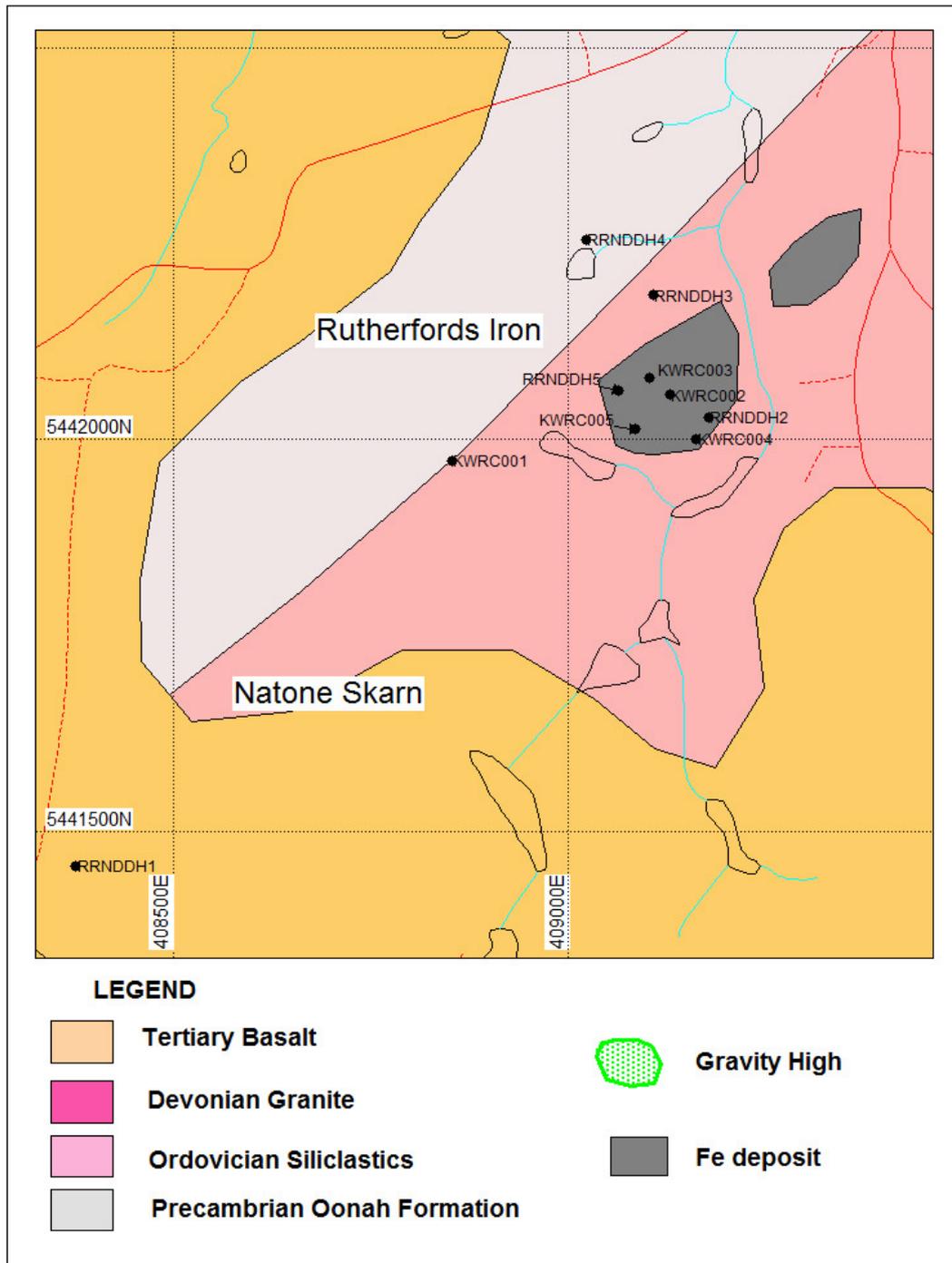


Figure 6. Rutherford's Iron, Natone Skarn and drillhole locations.



### 3.2 BLYTHE RIVER HEMATITE

In the north east half of the license, generally running close to its eastern margin, are a series of hematite outcrops hosted in the Cambrian sediments, known as the Blythe River and Cuprona Iron Prospects. Mineralisation consists of primary massive hematite bluffs occurring within a wide, lower iron grade stratabound unit. It has been described in the literature as iron mineralisation hosted by an intra-formational breccia located at the Cambrian-Ordovician unconformity with the selective replacement of quartzite beds, and having no obvious link to the Husetop Granite (Atkinson, 1958). The literature regularly makes mention of potentially high silica levels for the iron mineralisation, which is believed to be in several forms but particularly as fine intergrown crystals within the hematite. The deposits have been the subject of focused exploration assessment in the 1900's, 1920's and 1950-60's prior to the Iron Ore discoveries in the Pilbara. There has been some underground prospecting of the iron occurrences which includes a shaft and cross cuts which were historically sampled.



**Figure 7 Blythe River Iron Deposit Massive Hematite Exposure**

The Blythe River Gorge transects the hematite deposits with the silica hematite forming prominent bluffs.

The mineralisation has a strike direction of 030° to 045° with a steep dip ranging between 75° to 80° to the south east. The exposed mineralisation has a strike extent of 350m with an average width of the overall mineralised unit being 50-70m.

Resource estimates have been produced in the literature but are not reported to the JORC Guidelines (Atkinson, 1958) and can only be considered as Exploration Potential (5-30Mt at 40-45% Fe).



The Blythe River, Cuprona and Rutherford's Hematite mineralisation form a parallel lineament along regional geology strike (Figure 1). The area between the two prospects stretches for about 5km partially covered by Tertiary basalt of an unknown thickness. Atkinson (1958) states that an exploration shaft was sunk 500' south west of the southernmost part of the Blythe River Iron occurrence passing through basalt before encountering high grade hematite mineralisation.

### 3.3 CUPRONA IRON DEPOSIT

The Cuprona Iron Deposit is similar to the Blythe River and Rutherford's Iron deposit. It is hosted in Breccias on the Precambrian-Cambro-Ordovician boundary and consists of silica hematite mineralisation. The deposit has been historically tested by a series of costeans, adits and quarries.

Drilling by MRT in the 1960's encompassed three diamond holes for 205m from 2 locations. The drilling results are included in Table 3.

**Table 3 Blythe River Iron Deposit Downhole Drillhole Intercepts**

Hole	Width	Fe %	SiO <sub>2</sub> %	From	Comment
BR1	6m	59.3	13.3	37.3m	Part of an 24.1m true width zone
BR3	5.4m	51.2	26.5	37.0m	Part of an 19.6m true width zone
BR3	13.6m	46.6	30.6	47.9m	Part of an 26.5 m true width zone



#### **4 WORK COMPLETED**

No significant work was completed on the Cuprona anomaly during the last year. Work completed specifically on EL6/2005 included reconnaissance geological work, compilation of historic data and a report on proposed exploration for the Blythe River Iron Project.

In prior years the Red River-Iron Mountain JV completed two phases of drilling on the EL targeting the Natone Skarn and Rutherford's Iron deposits including 5 diamond and 5 RC drillholes for 721m and 272m respectively.

The Red River-Iron Mountain JV commissioned Southern Geoscience to complete a detailed gravity survey over the EL in December 2006. As part of the survey, they were asked to process and interpret open file aeromagnetic data identify a broad, weak gravity high associated with the prominent magnetic anomaly.

A ground magnetic survey and soil sampling survey was completed in the subsequent year (2008).



## **5 PROPOSED WORK PROGRAM**

The Blythe River Iron Project is focused on bringing the Kara No 2 magnetite deposits into production. Exploration of EL6/2005 is of lower priority to the immediate aims of the company. However significant iron mineralisation is located on the EL's and will require assessment to add to the longevity of the proposed Blythe River Iron project.

Future exploration should include systematic sampling and drilling of the deposits as a first pass assessment of their resource potential. A series of 50m spaced, short drillholes are proposed. Triple tube diamond drilling is recommended to maximize sample recoveries. Six 50-80m drillholes are recommended for the Rutherford's, Blythe and Cuprona ironstones.

Samples for metallurgical testwork should be collected to assess the suitability of the Iron for direct shipping or beneficiation prior to export.

Drilling and sampling should proceed in conjunction with sampling of the Kara No 2 Magnetite deposits if possible.

The total program of drilling, metallurgical sampling and reporting is expected to cost approximately \$150 000.



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## **6 ENVIRONMENTAL**

No rehabilitation is required.



## References

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## **ADDITIONAL NOTES**

### ***LIMITATIONS AND CONSENT***

The report is provided to Forward Mining Ltd 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 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***

This report was prepared in accordance with the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code") by Tim Callaghan, who is a Member of The Australian Institute of Mining and Metallurgy ("AusIMM"), has a minimum of five years experience in the estimation and assessment and evaluation of Mineral Resources of this style and is the competent Person as defined in the JORC Code. This announcement accurately summarises and fairly reports his estimations and he has consented to the resource report in the form and context it appears.

### ***STATEMENT OF INDEPENDENCE***

Tim Callaghan has no material interest or entitlement in the securities or assets of the Forward Mining Ltd or any associated companies.



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