

**SIRIUS RESOURCES NL**

**ASX:** SIR

**ABN:** 46 009 150 083

**Street address:**

253 Balcatta Road  
Balcatta  
Western Australia 6021

**Postal address:**

PO Box 1011  
Balcatta  
Western Australia 6914

**Tel:** +61 8 6241 4200

**Fax:** +61 8 6241 4299

**Email:**

admin@siriusresources.com.au

**Web:**

www.siriusresources.com.au

**Projects:**

**Fraser Range** nickel-copper, gold

**Polar Bear** gold, nickel, platinum



# NOVA-BOLLINGER SCOPING STUDY

## *Globally significant nickel project indicated*

### HIGHLIGHTS

- Scoping Study indicates 70% Sirius owned Nova-Bollinger as a technically low risk and economically robust nickel project
- Projected life of mine nickel revenue of A\$4.6 billion (on a 100% basis)
- Projected net cash flow of A\$2.8 billion (on a 100% basis including capital)
- Estimated C1 cash operating cost of A\$1.75/lb Ni in concentrate (after by-product credits) positions Sirius in the lowest 20% of nickel producers globally
- Estimated capital cost to first concentrate production of A\$471 million including A\$51 million of contingency
- Production of premium quality separate nickel and copper concentrates planned to commence in mid-2016 with an initial mine life of 10 years
- 1.5 mtpa throughput plant resulting in average annual production of 28,000t nickel and 11,000t copper in concentrate
- Mining inventory of 13.9mt grading 2.0% nickel, 0.82% copper and 0.07% cobalt for a contained 276,000t nickel, 114,000t copper and 9,300t cobalt
- Over 91% of the tonnes and 95% of the nickel metal included in this mining inventory are in the Indicated Resource category
- Definitive Feasibility Study on track to be completed by mid 2014 enabling underground development and on-site construction to start in Q3 2014
- In excess of A\$200 million expected to be paid in WA State royalties
- Cash balance of A\$36.4 million as of 31 August 2013

### SCOPING STUDY PARAMETERS – CAUTIONARY STATEMENT

The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the

conclusions of the Scoping Study will be realised. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the conversion of Inferred Mineral Resources to Indicated Mineral Resources or that the production target itself will be realised. The Company advises the Scoping Study results and production targets reflected in this announcement are preliminary in nature as conclusions are partly drawn from Inferred Resources, which comprise less than 9% of the total resource tonnes and less than 5% of the nickel metal in the mining inventory.

The Scoping Study outputs contained in this report relate to 100% of the project. Unless otherwise stated all cashflows are in Australian dollars, are undiscounted and are not subject to inflation/escalation factors and all years are calendar years.

The Company has concluded it has a reasonable basis for providing the forward looking statements included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement and in particular in the appendix A headed "Forward Looking and Cautionary Statements".

## SUMMARY

Sirius Resources NL (ASX:SIR) ("Sirius" or the "Company") advises that the Scoping Study for its 70 per cent owned Nova-Bollinger nickel deposit, located in the Fraser Range, 700 km east of Perth, Western Australia has been completed.

The Scoping Study was compiled with the assistance of a number of WA-based engineering companies with input from other key contributors and industry experts as well as in-house Sirius personnel. It highlights the economically and technically robust nature of the Nova-Bollinger nickel-copper-cobalt deposit.

Average annual production following ramp-up is estimated to be 28,000tpa of nickel in concentrate, 11,000tpa of copper in concentrate and 900tpa of cobalt in concentrate over an initial mine life of 10 years, positioning Sirius as a globally significant nickel producer.

The project is strongly leveraged to movements in the nickel price, with the project cash flow changing by approximately A\$440 million over the life of mine for each one US\$/lb movement in the nickel price.

C1 cash operating costs (after by-product credits) over this period are forecast to average A\$1.75/lb nickel in concentrate. This would position Sirius in the lowest 20% of global nickel producers with regards to C1 cash costs.

Based on independent consensus nickel and copper pricing forecasts over the life of the mine and independent consensus A\$/US\$ average exchange rate of 0.90, the project is anticipated to generate average net cash flows (after sustaining capex and royalties) of A\$350 million per annum once in steady state production and the life of mine nickel revenue is forecast to be A\$4.6 billion, generating a net cash flow of A\$2.8 billion (on a 100% basis).

Sirius' Managing Director, Dr Mark Bennett said "The release of the Scoping Study is an important milestone for our Company. It confirms the exceptional quality of the Nova-Bollinger deposit and demonstrates the likelihood that Sirius will become a significant Australian and world scale nickel producer with operating costs in the lowest 20% of nickel production globally."

"The Scoping Study highlights our base case production scenario, with scope to improve the project economics through further exploration success from our extensive regional portfolio."

“We are encouraged by the strength of net cash flow, estimated to be A\$2.8 billion over the life of mine using US\$10/lb for nickel and US\$3.30/lb for copper. Using the Wood Mackenzie independent pricing the life of mine net cash flow would increase to A\$4.2 billion highlighting the leverage of Sirius to an improving nickel and copper price and exchange rate environment” he added.

## MINERAL RESOURCE AND MINING INVENTORY

The Scoping Study is based on the Nova-Bollinger JORC Resource, announced in an ASX announcement on 15 July 2013, which was completed in accordance with the guidelines of the JORC Code (2012 edition) and summarised in Table 1.

	Nova-Bollinger Mineral Resource - July 2013							
	Tonnes (Mt)	Grade				Contained Metal		
		NiEQ%	Ni %	Cu %	Co %	Nickel (kt)	Copper (kt)	Cobalt (kt)
<b>Measured</b>	-	-	-	-	-	-	-	-
<b>Indicated</b>	11.7	2.8	2.5	1.0	0.08	294	120	9.8
<b>Inferred</b>	2.9	1.2	1.1	0.5	0.04	31	14	1.2
<b>Total</b>	<b>14.6</b>	<b>2.5</b>	<b>2.2</b>	<b>0.9</b>	<b>0.08</b>	<b>325</b>	<b>134</b>	<b>11.0</b>

**Table 1: Nova-Bollinger Mineral Resource estimate reported at a 0.6% nickel equivalent\* (NiEq) cut-off grade.**

*\*Refer to appendix A*

Over 90% of the contained nickel metal in the combined Nova-Bollinger Mineral Resource is in the Indicated Resource category, which is of higher confidence than the Inferred Resource category.

This Mineral Resource forms the basis of a mining inventory after the application of a range of modifying factors including minimum mining width, cutoff grade, mining dilution and mining recovery.

The mining inventory that forms the basis of the Scoping Study comprises 13.9mt grading 2.0% nickel, 0.82% copper and 0.07% cobalt for a contained 276,000t nickel, 114,000t copper and 9,300t cobalt. Over 91% of the tonnes and 95% of the nickel metal included in this mining inventory are in the Indicated category. As such, the dependence of the outcomes of the scoping study and guidance provided in this announcement on the proportion of lower confidence Inferred category mining inventory material is minimal (refer Appendix A). This minor component of Inferred Resource is largely situated around the margins of the deposit rather than being spatially mixed with the Indicated category material, and as such it has little impact on the project economics.

## PLANNED MINING APPROACH AND SCHEDULE

The planned mining schedule comprises an underground mine accessed by a decline (*see Figure 1*). Initial material is expected to be mined in Q2 2016 with full scale mine production at a 1.5 mtpa rate from Q3 2017.

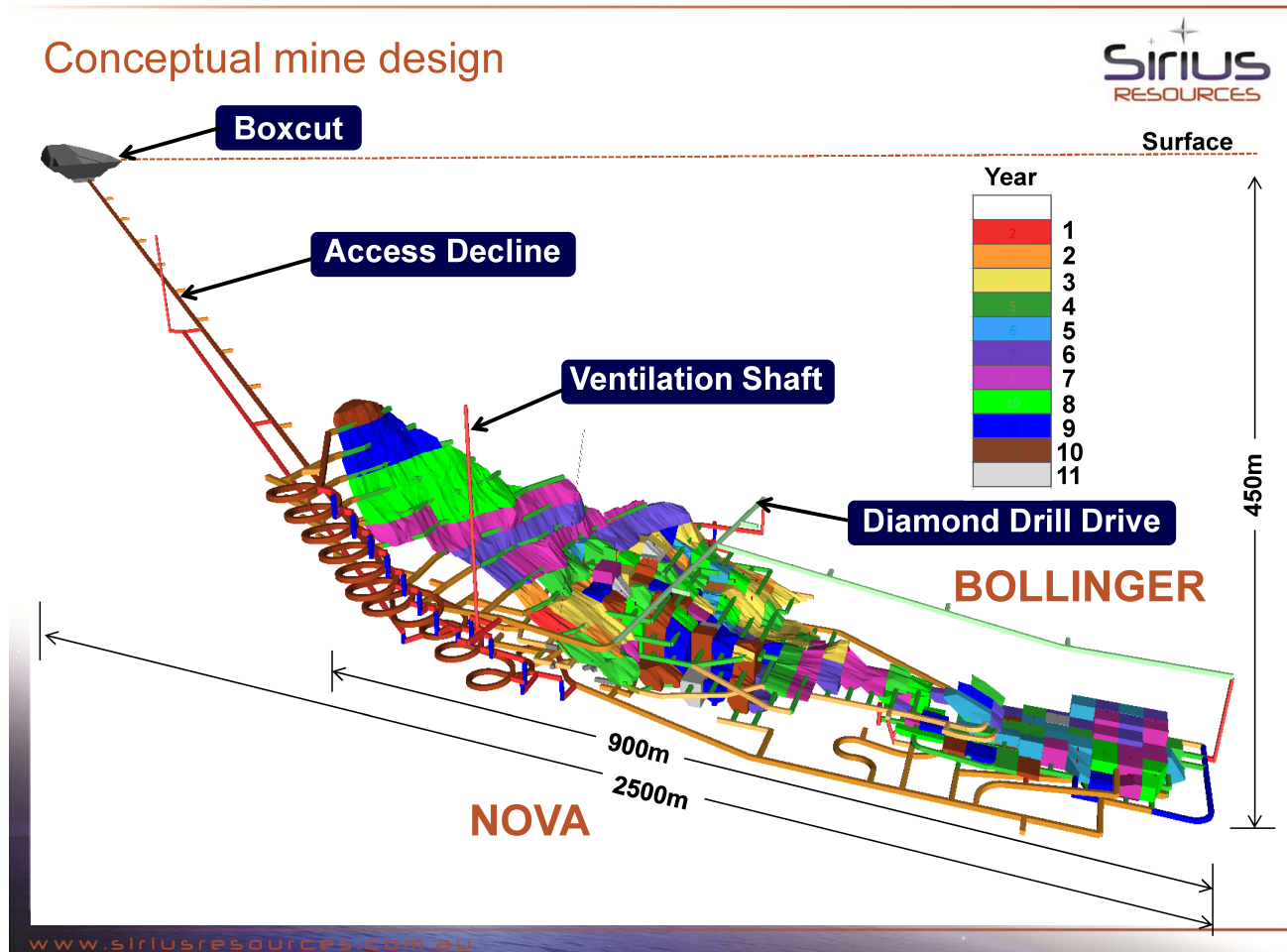
Underground extraction will be predominantly by a sublevel open stoping mining method. This method, together with the planned use of stabilised backfill, will enable maximum extraction of the mineralisation.

A trucking operation to transport mined material and waste to surface is planned under the Scoping Study. An underground crusher and conveyer to surface option will be considered as part of the various

alternatives to be reviewed within the Definitive Feasibility Study (DFS, analogous to a Bankable Feasibility Study, or BFS) which is now underway.

The mining schedule envisages systematic development of the main part of the deposit with the aim of having 3-4 large stopes on line at any one time, with some of these measuring up to 75 metres high. As a result, the majority of material being mined at any one time will be in the Indicated Resource category. During the first twelve months of production 89% of the material scheduled to be mined is based on Indicated Resources and only 11% is based on Inferred category material. As such, the dependence of the outcomes of the Scoping Study and guidance provided in this announcement on the scheduling of mining of the lower confidence Inferred category mining inventory material is minimal (refer Appendix A).

## Conceptual mine design



**Figure 1: Conceptual Mine Design showing planned production sequenced in time.**

## PROCESSING

The Scoping Study contemplates a 1.5mtpa capacity processing plant. Processing will comprise conventional crushing, milling and classification circuits followed by two stages of conventional flotation plus dewatering and filtration to produce separate nickel (+cobalt) and copper (+silver) concentrates.

The processing facility, to be constructed at an estimated cost of A\$119 million including A\$15 million of contingency, is scheduled to commence construction in Q3 2014, with a two year time frame for commissioning.

## METALLURGY AND CONCENTRATE PRODUCT QUALITY

Metallurgical testwork to date has shown that the Nova-Bollinger mineralisation is amenable to producing a nickel concentrate grading 15-17% nickel at recoveries of 92-95% nickel and a copper concentrate grading 22-25% copper at recoveries of 95% using hyper-saline site water.

Economic evaluations have concluded that a split concentrate option will achieve a higher revenue than a combined concentrate, due to the likelihood of increased payability for both nickel and copper in separate products. The production of separate concentrates will also provide greater flexibility and marketing options.

The plant will produce approximately 180,000 - 190,000t of nickel concentrate and 40,000 - 50,000t of copper concentrate per annum, containing 28,000t of nickel in concentrate and 11,000t of copper in concentrate per annum.

Assays of the concentrates produced to date confirm they are low in magnesium, arsenic and other deleterious elements.

## INFRASTRUCTURE, TRANSPORT AND LOGISTICS

A 400 person permanent accommodation village has been incorporated into the Scoping Study in addition to an approximately 35km long sealed road from the proposed Nova-Bollinger mine site to the Eyre highway and a 2 kilometre, all weather aerodrome, capable of being licensed to accept aircraft with a capacity of up to 100 passengers. Power will be provided by on-site diesel generation.

Total infrastructure costs are calculated at A\$233 million including A\$30 million of contingency.

It is proposed to transport separate nickel and copper concentrates in sea containers, by road to the port of Esperance.

## CAPITAL EXPENDITURE

The capital expenditure required to production of first concentrate totals A\$471 million, as follows:

Capital Cost Estimates	AUD\$M
Processing plant	104
Site infrastructure	203
Pre-production mine development costs	113
Contingency	51
Total Project Development	471
Life of mine sustaining capital	104
Total project development and sustaining capital	575

**Table 2: Capital Cost Estimates**

These capital expenditure estimates assume that all plant and equipment is purchased new. The DFS will be based on more definitive cost estimates and provide a more precise outcome. It will also assess options to



reduce these capital costs through mine optimisation, leasing mobile and plant equipment, purchasing near new second hand infrastructure (eg, accommodation village) and rationalising other major infrastructure.

## OPERATING EXPENDITURE

A breakdown of operating cost estimates for the proposed Nova-Bollinger mine is as follows:

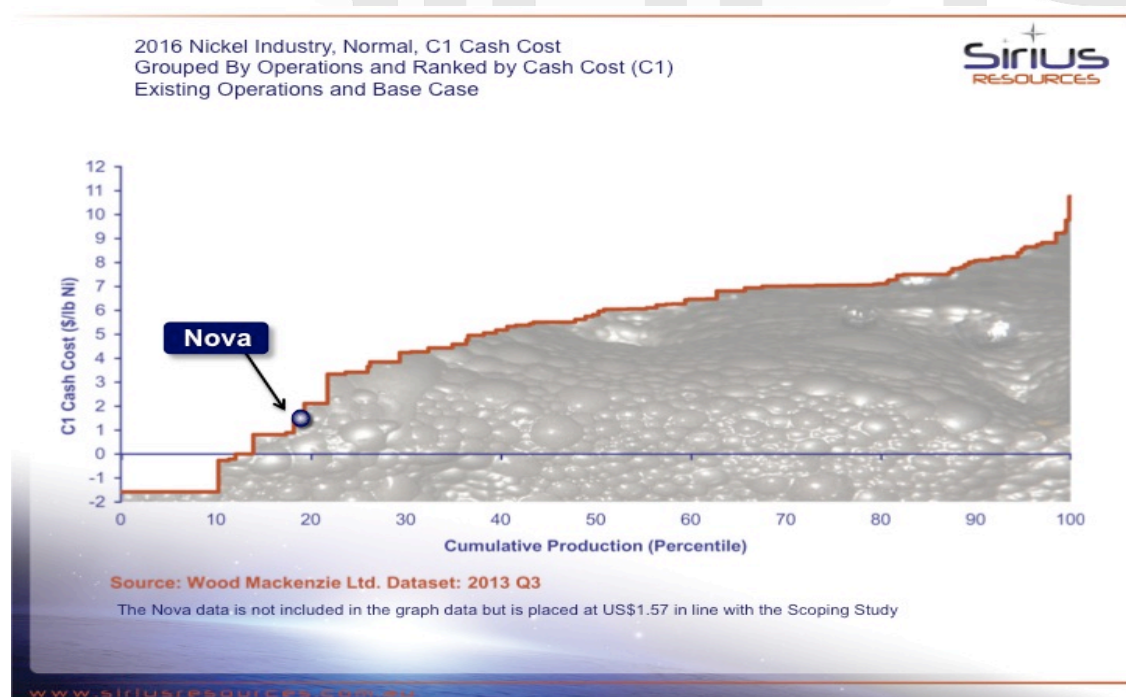
Life of Mine Operating Cost Estimates	Material mined (A\$/tonne)
Mining	58
Processing	38
Administration	12
<b>TOTAL</b>	<b>108</b>

Life of Mine Operating Cost Estimates	Nickel in Concentrate (A\$/lb)
Mining	1.39
Processing	0.92
Administration	0.29
Transport	0.59
By-product credits	(1.44)
<b>TOTAL</b>	<b>1.75</b>

**Table 3: Life of Mine Operating Cost Estimates**

Sirius' cash operating costs are estimated to be A\$1.75/lb nickel in concentrate (after by-product credits) which positions Sirius in the lowest 20% for nickel producers globally, specifically as the 8<sup>th</sup> lowest cost nickel producer in the world (see Figure 2).



**Figure 2: World nickel industry cost curve showing projected position of Nova in the lowest 20 percent of producers (courtesy of Wood Mackenzie).**

## PROJECTED REVENUE AND COMMODITY PRICE ASSUMPTIONS

Revenue and cash flow forecasts have been derived using a consensus of analyst forecasts for the nickel price, the copper price and the cobalt price over the forecast life of mine. An independent consensus A\$/US\$ exchange rate of 0.90 has been used.

Key Assumptions			
Commodity Price Assumption (US\$/lb)			FX Assumption
Nickel	Copper	Cobalt	A\$/US\$
10.00	3.30	12.00	0.90

**Table 4: Consensus Case Pricing Assumptions**

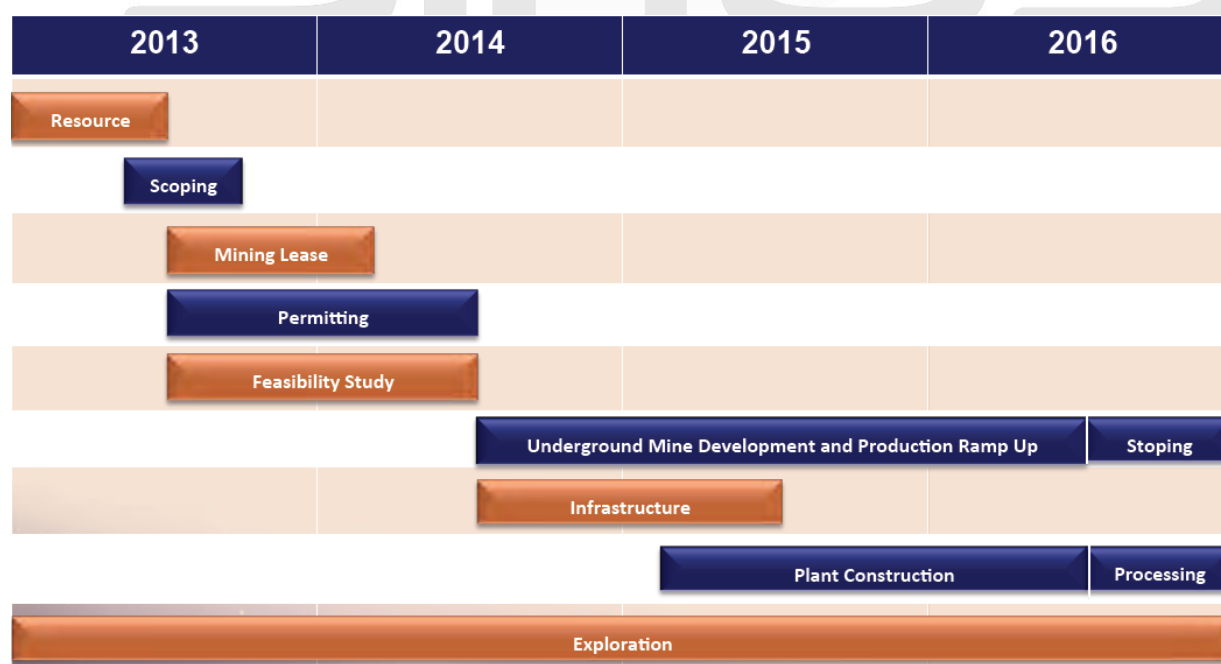
The table below shows other nickel and copper prices that could have been used and their impact on the life of mine revenue:

	Commodity Price Assumption (US\$/lb)		Life of mine nickel revenue
	Nickel	Copper	A\$ billion
Consensus	10.00	3.30	4.6
Wood Mackenzie	13.02	3.39	6.1

**Table 5: Life of mine revenues using a range of nickel pricing assumptions**

## TIMELINE TO PRODUCTION

The Scoping Study contemplates the commencement of construction in Q3 2014 with a decline extending to 280 metres depth below surface. Planned extraction of the first mineralisation from development is in Q2 2016.



**Figure 3: Proposed Development Timetable (calendar years).**

Appropriate financing, joint venture decisions and final development approvals, the grant of a mining lease and a number of environmental and regulatory approvals and permits will be required before mine development and production can commence. The schedule shown in Figure 3 is subject to satisfying these requirements.

## **NEXT STEPS**

Following the robust Scoping Study results, Sirius will now progress through to completion of a DFS. Work conducted through the course of the DFS has the scope to further improve the Nova project's already robust economics by optimising factors such as stope sequencing. Sirius is already well advanced on many of the key components of the DFS positioning the Company to complete this in Q2 2014.

Key areas of additional work will include water exploration and paste fill characterisation. The proposed mining and processing operation will require process water and it is therefore necessary to quantify the amount and quality of water available for this future purpose. Detailed assessments of water supply have commenced and studies are underway to characterise the paste fill required for the proposed mining schedule.

The Company continues to make progress in baseline environmental surveys and studies. Flora, fauna, waste characterisation, tailings characterisation, soils and landforms studies have all commenced and are proceeding well. The Company expects to be in a position to make its approval submissions on schedule in Q2 2014.

The DFS will be progressed in conjunction with the ongoing exploration program both within the Company's 70% owned Fraser Range Joint Venture ground and also its 100% owned Fraser Range ground holdings.

Sirius' Nova-Bollinger concentrate off-take remains uncommitted, allowing maximum marketing flexibility. The Company has received approaches from a number of potential buyers of this concentrate.

The Company has also received numerous approaches from funding providers in relation to the project development financing.

**Mark Bennett, Managing Director and CEO**



## Appendix A – Further Information

### Nickel equivalent percentage (NiEq%) calculation basis

The NiEq% is based on the following formula:  $[(\text{Cu}\% \times 0.95) \times (7655/16408)] + (\text{Ni}\% \times 0.95)$ , where the nickel price is USD\$16,408/tonne and the copper price is USD\$7,655/tonne. These metal prices are based on 12 month averages (not volume weighted) of spot prices from the London Metal Exchange (July 2012 to June 2013). The 0.95 factor is based on the metallurgical recoveries achieved in preliminary sighter flotation test work by Strategic Metallurgy Pty Ltd announced by Sirius on 20th December 2012. Preliminary sighter flotation tests on Bollinger samples yield recoveries of 99% Ni and 99% Cu in massive-breccia mineralisation and 93% Ni and 96% Cu in disseminated mineralisation. No value has been attributed to cobalt for the purposes of this calculation. This calculation was updated in July 2013 for the average 12 month metal price since the March 2013 Nova Mineral Resource, but this did not have a material effect on the reported Mineral Resource figures.

It is the company's opinion that the nickel and copper metals used in the metal equivalent calculation have reasonable potential for recovery and sale based on metallurgical recoveries in preliminary flotation test work noted above. There are a number of well-established processing routes for deposits of this type and sales of the resulting product as combined or individual concentrates.

### Forward Looking Statements

This announcement contains certain forward looking statements. The words "expect", "forecast", "should", "projected", "could", "may", "predict", "plan" and other similar expressions are intended to identify forward looking statements. Indications of, and guidance on, future earnings, cash flow costs and financial position and performance are also forward looking statements. Forward looking statements, opinions and estimates included in this announcement are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. Forward looking statements may be affected by a range of variables that could cause actual results or trends to differ materially. These variations, if materially adverse, may affect the timing or the feasibility of the development of the Nova-Bollinger project.

The Company notes that an Inferred Resource has a lower level of confidence than an Indicated Resource and that the JORC Code (2012 Edition) advises that to be an Inferred Resource it is reasonable to expect that the majority of the Inferred Resources would be upgraded to an Indicated Resources with continued exploration. Based on advice from relevant Competent Persons the Company has a high degree of confidence that the Inferred Resources for the Nova-Bollinger deposit will upgrade to Indicated Resources with further exploration work. The Inferred Resources have not been extrapolated past the last drill hole and therefore only been extrapolated to the last data point. The drillhole density was only reduced once there was evidence of reducing mineralisation.

The Company believes it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any production targets, based on the information contained in this announcement and in particular the JORC 2012 Mineral Resource for Nova-Bollinger as at July 2013, independently compiled by Optiro, together with independent geotechnical studies, determination of mining inventory, mine design and scheduling, metallurgical testwork, external commodity price and exchange rate forecasts and worldwide operating cost data.

### Competent Person Reference

The production targets and other information in this announcement that relates to Mineral Resources is based on, and fairly represent, the Mineral Resources and information and supporting documentation extracted from the report, which was prepared by a Competent Person in compliance with the JORC Code (2012 edition) and released to ASX by the Company on 15 July 2013. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements. All material assumptions and

technical parameters underpinning the Mineral Resource estimates in that previous ASX release continue to apply and have not materially changed.

### **Cautionary Statements**

The Company advises the Scoping Study results and Production targets reflected in this announcement are preliminary in nature as conclusions are drawn partly from Indicated Resources (91 % resource) and Inferred Resources (9 % resource). The Scoping Study referred to in this announcement is based on lower-level technical and economic assessments and are insufficient to support Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised. There is a lower level of geological confidence associated with mineral resources and there is no certainty that further exploration work will result in the determination of indicate mineral resources or that the production target itself will be realised.

