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# **ASX Announcement**

Company Update – Pre-Feasibility Study highlights world class potential of the Isabel Nickel Project (San Jorge and Kolosori deposits)

# **Highlights**

- Economics:
  - After-Tax Net Present Value (NPV<sup>1</sup>8%) of US \$188M and an IRR of 95%, based on most recent Nickel market forecast.
  - Net Profit Margin<sup>2</sup> of 35% over Life of Mine.
- Low CAPEX: US \$18.2M.
- Low Operational FOB cost: US \$11.49/WMT<sup>3</sup> currently one of the most competitive in the region.
- Production: an average of 2.2 WMT per annum.
- Life of Mine:
  - 18 years.
  - First five years of mining schedule developed using mostly Measured and Indicated Resources.
- Deposit:
  - The Isabel Nickel Project will be able to produce a consistent, saprolite product for which customers will pay
    a premium, unlike other supply sources such as the Philippines.
  - Significant opportunity to upgrade resource in both grade and tonnage through further drilling.

Axiom CEO Mr Ryan Mount states "The pre-feasibility study has confirmed the economic viability and the world class potential of the Isabel Nickel Project. It also highlights the competitiveness of our operation and validates our previously published scoping details. We will continue to work with the Solomon Islands government to bring this project into production as quickly as possible."

<sup>&</sup>lt;sup>1</sup> NPV: Net Present Value

<sup>&</sup>lt;sup>2</sup> Net Profit Margin: Profit margin after income tax and royalties

<sup>&</sup>lt;sup>3</sup>WMT: Wet Metric Tonnes



### **Summary**

Axiom Mining Limited ('Axiom' or 'the Company') is pleased to announce the positive results from the Pre-Feasibility Study (PFS) conducted by IMC Mining Pty Ltd (IMC) on the world class nickel bearing deposits of the Isabel Nickel Project in the Solomon Islands. This study builds on the JORC Mineral Resource upgrade which was completed and announced on 29 December 2015 and establishes a detailed mine plan that defines the 18 years of mine life.

This report presents the mine operations plan for nickel laterite mining on the Kolosori and San Jorge deposits, collectively known as the Isabel Nickel Project ('The Project'). The Kolosori deposit is currently not owned by Axiom, however the company has re-applied for the Prospecting Licence. The Company currently owns 80% of the San Jorge deposit, and it is anticipated it will own 80% of the Kolosori tenement, if successful with the application.

The deposits are located 135 km north-west of the capital Honiara; San Jorge is adjacent to Santa Isabel, as shown in Figure 1.1.

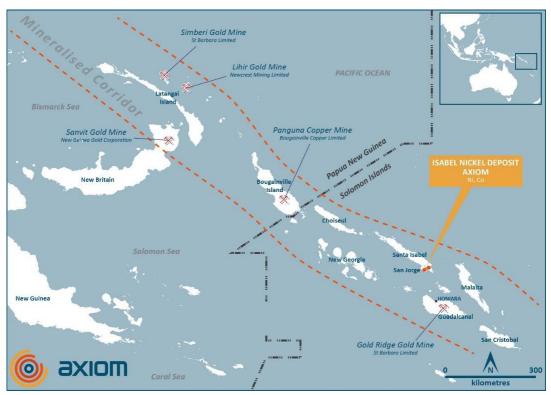


Figure 1.1 Geography of the Isabel Nickel Project

Based on a Life of Mine (LOM) of up to 18 years, this PFS is focussed on the development and production of a mine production target of 1.5 Mtpa (wet) product in year one to full operating capacity of 2.2 Mtpa (wet) product by year three.

The scheduling of mining operations has been carried out on the basis of developing the best balance between the optimisation of the resource and maximising the NPV of the project. This has been achieved by dividing the scheduled mine development into mining phases which include year's one to five (Phase 1) targeting saprolite material that would result in an average of 1.6% Ni (insitu).

For years six to eighteen (Phases 2-4) the PFS incorporates the historical drilling by Inco, which in many cases did not define the full profile of the laterite.



### **Financial Evaluation**

The PFS confirms the financial viability of The Project with an NPV of US \$188M and a Net Profit Margin of 35% over the life of the project. IMC have estimated an operational FOB cost of US \$11.49/WMT which is low in comparison to other worldwide nickel laterite DSO<sup>4</sup> projects.

Axiom is able to differentiate itself from other laterite nickel projects due to the following factors:

- A large proportion of saprolite can be readily accessed;
- Very low stripping ratio (almost no waste overlays);
- Access to a readily available labour force;
- Easy access to port and world shipping networks; and
- Low initial pre-production capital outlay.

The combination of the above factors indicates that the Project's operations will be a low cost saprolite nickel producer able to provide a steady and reliable premium product to its customers.



Figure 1.2 Aerial view of the Isabel Nickel Project

<sup>&</sup>lt;sup>4</sup> DSO: Direct Shipping Ore



# **Basis for the Financial Evaluation**

Table 1.1 provides the assumptions and calculations on which the financial evaluation is based upon.

Category	Measurement
Commencement Date	2016
Mining Rate (Years 1 to 5)	10.07 WMT
Life of Mine (LOM)	18 years
Average Stripping Ratio	(0.83:1)
Nickel Prices	2016 to 2035*
Total Pre-Capital Costs (Chart 1.2)	\$18.2m
Total Operating costs – FOB (Chart 1.3)	\$11.49
Mineral Royalty	3%
Discount Rate	8%
Tax Rate	35%
Net Present Value (NPV) (Base Case)	\$188m
Internal Rate of Return (IRR)	95%
Net Margin (after tax and royalties)	35%
Payback on Capital Costs	< 3 years
PFS Accuracy	+ / - 25%

**Table 1.1 Financial Assumptions** 

\*based on Wood Mackenzie forecast

All dollars reported in this document are US \$ unless otherwise stated.



# **Sensitivity Analysis**

The nature of fixed cost makes the project positive sensitive to changes in LME<sup>5</sup> nickel prices. Axiom has sourced the latest Nickel prices forecast outlook from leading industry experts Wood Mackenzie.

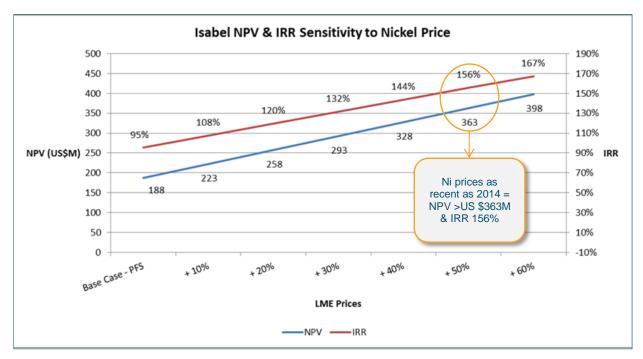


Chart 1.1 NPV and IRR relative to LME price

<sup>&</sup>lt;sup>5</sup> LME: London Metal Exchange

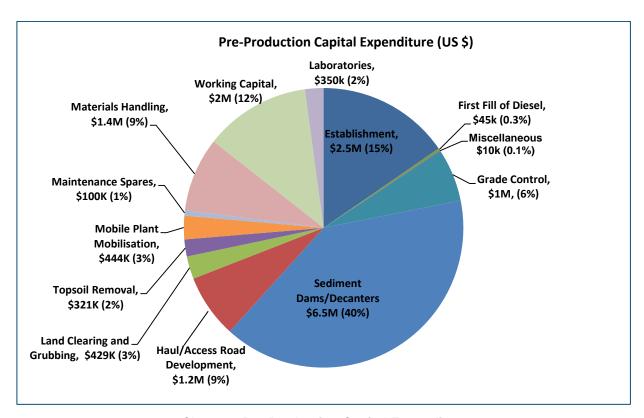


# **Capital Cost**

The pre-production capital expenditure required for the Project deposit is US \$18.2M. This constitutes pre-production capital expenditure of US \$16.3M plus US \$1.9M for Ancillary Plant Equipment to be used for road clearing and construction of facilities.

At the commencement of mining operations at the San Jorge deposit in year twelve of the mine schedule, a similar expansion capital layout will be required. A capital expansion value of US \$15M has been included in the project cost model in year eleven for this purpose.

Sustainable capital of US \$0.8M pa for year one to five and US \$2M pa for year six to eighteen are accounted for in the project cost model.



**Chart 1.2 Pre-Production Capital Expenditure** 



### **Operational Cost**

IMC have developed operating costs of US \$11.49/WMT from first principles on the assumption that mining will be conducted by contract mining. Unit rates were sourced via IMC's experience with other regional laterite projects, and from Axiom's current operations in Solomon Islands.

Heavy and ancillary equipment costs are driven by operating hour's costs.

Driver and labour cost are based on one x 12 hour shift, six days a week, resulting in 2,533 hours annually.

Barge loading and cartage from stockpile operations have been assumed to be two 12-hour shifts, resulting in 4,684 scheduled hours annually.

Conventional truck and shovel operations within the pits coupled with smaller trucks to cart the product to the port and between stockpiles will be implemented for mine operations. 90 tonne excavators with 5.1m<sup>3</sup> buckets will load the product and waste onto 40t ADT's and transport to nearby stockpiles and dumps.

Front end loaders will be located at the ROM stockpiles, production stockpiles and the port stockpile for loading on to barges.

The average diesel fuel consumption for the first 5 years of production is approximately 3.7M litres pa with Axiom providing fuel for the mine equipment contractors.

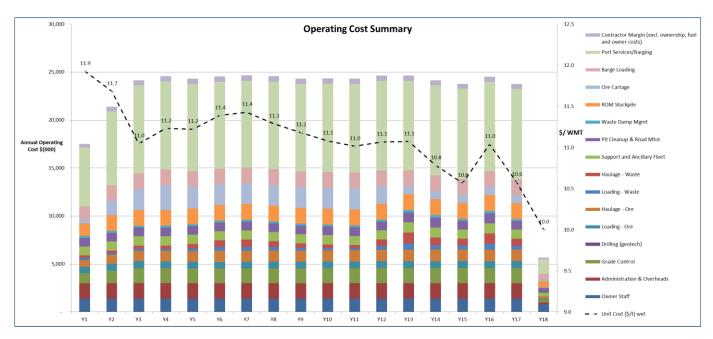


Chart 1.3 Operating Costs Over 18 Year LOM



# First Five Years of Mine Schedule based on JORC Kolosori Resource Estimate<sup>6</sup>

The schedule has been based on producing a consistent product, both in terms of quantity and quality.

A constant saprolite product of 1.2 WMT pa at 1.55% Ni (shipped) has been targeted for the first five years of operation (with an increase over the first two years).

The saprolite schedule becomes slightly less structured after the first five years, as production scheduling then focuses on the historical drilling which generally does not test the full profile of the laterite – missing the higher grade saprolite in many instances. However it is anticipated with further resource drilling this will define further the resource, and in turn upgrade the saprolite production profile after year five.

The sequencing has been structured to allow for a timely and economical production. The strategy takes into account the following points:

- Early development from easily accessible locations, such as the Havihua ridge;
- Early development to establish the haul road and sediment containment structures along the spine of the ridge;
- Mining targeted in areas that will establish in-pit and waste dump capacity in relatively flat lying parts of the deposit;
- Moving to take advantage of the nearby established haul road;
- Delay development in new water catchment areas as long as possible to defer capital requirements for haul road and sediment containment structures;
- Mine long haul and short haul locations concurrently in order to balance trucking requirements; and
- Ramp up over three years to reflect operator and company efficiency improvements.

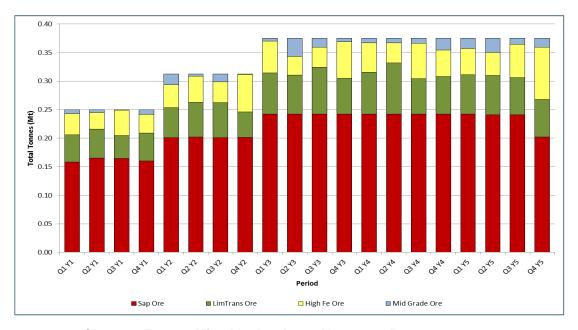


Chart 1.4 Tonnes Mined by Product - Years 1 to 5

<sup>&</sup>lt;sup>6</sup> ASX Announcement dated 29 December 2015, "JORC Resource upgrade Isabel Nickel Project defines first 5 years of production"



### **Four Product Types**

IMC have developed different potential product scenarios for the project, to determine the appropriate mix of the product. A key cost driver for smelters is having a consistent and reliable feed for the smelters – the Projects can offer this unique reliable product, as opposed to other nickel laterite DSO destinations such as the Philippines.

The PFS has concluded the following four product blends to be appropriate for the forecast market conditions and the particular characteristics of the Isabel Nickel Project.

- a) Primary Product Saprolite: The deposits contain large amounts of medium to high grade saprolite materials. IMC confirm this saprolite material can be mined as a standalone product and will form the key income stream.
- b) Secondary Product Limonite: The limonite product has been divided into three types nickel grade material above 1.1% Ni insitu, High Fe material nickel grade between 0.9% and 1.1% Ni with Fe above 45%, mid-grade limonite with Fe below 45% and Ni between 0.9% 1.1%.

Product	Ni CoG (%)	Fe CoG <sup>7</sup> (%)	
Saprolite	> = 1		
Limonite/Trans High Ni	> = 1.1		
Limonite/Trans Hi Fe	0.9 = < Ni 1.1	> = 45	
Mid-Grade	0.9 = < Ni < 1.1	< 45	

**Table 1.2 Product Summary** 

#### **Forecast Commodity Prices**

The revenue forecast for LME used in Axiom's financial evaluation to determine the viability and returns on the project has been based on a commodity prices outlook provided by Wood Mackenzie.

IMC have recommended that pricing of the product should be based on a payment of variable percentages of the LME price of Nickel – with the variable percentage being linked to Ni and Fe grades.

For each product it is assumed that the pricing regime in (\$/t), is based on a variable percentage of the LME price. These percentages are linked to the Ni and Fe grades, which are variable throughout the four different stages on production during the LOM.

<sup>&</sup>lt;sup>7</sup> CoG: Cut of Grade



## Mining Strategy

Mine design and staging work has been completed to a standard for a pre-feasibility level study. The final pit shells has been designed on a vertical basis to take the saprolite down to the lowest block with a cut-off grade above 1% Ni.

Laterally, the pit shells have been developed as follows:

- 1. High value stage of mining (Year 1 to Year 5) design based on lateral extents of the Measured, Indicated and Inferred Mineral Resources that are shown to be of the best economic value. This first stage pit outlines targeted saprolite material that would result in an average grade of 1.6% nickel (insitu);
- Lower value stage of mining targeting the residual saprolite above 1% nickel that was not contained in the stage 1 pits (Year 6 to Year 9);
- 3. The unclassified estimates within the Kolosori deposit that are outside the Measured, Indicated and Inferred zones but above cut-off; and
- 4. The unclassified estimates within San Jorge island.

Unclassified estimates are based on historical drilling and pit sampling and have been used to determine the potential mine life. It is anticipated that Axiom will drill out these areas to test and define the full profile of the mineralised deposit. This will in turn increase the Resource in both grade and tonnage, lengthen the LOM and upgrade the NPV.

### **Production Schedule**

The scheduling of mining operations has been carried out on the basis of developing the best balance between maximising project NPV, practical achievability of the schedule, minimising disturbance area and optimising timing of capital expenditure.

The scheduling goals for the Project deposits are:

- Multiple faces and mining areas must be open concurrently in order to enable the targets to be achieved;
- Target finalising each area mined in order to facilitate adjacent in-pit dumping and minimise ex-pit dump requirements;
- Sequence mining to balance truck haul hours to avoid spikes in trucking requirements;
- Maintain constant stripping ratio during the development of each Phase to optimise the use of the in-pit truck fleet and the excavators; and
- Develop consistent feed for saprolite product.

# **Grade Control & Stockpiling**

It has been assumed that grade control will be achieved on multiple fronts, including:

- Grade control drilling prior to mining (air core);
- Face sampling during mining;
- ROM Stockpile sampling;
- Production stockpile sampling; and
- Shipping stockpile sampling.

Multiple open mining faces and multiple ore stockpiles are required in order to provide the flexibility and control to achieve shipping products



### **Exploration data**

In December 2015 the company announced an upgrade to the independent JORC (2012) Mineral Resource estimate of Prospecting Licence 74/11 area (the former Kolosori tenement) of the Isabel Nickel Project, Solomon Islands.

This JORC Mineral Resource update included:

- Phase 1 drilling of 409 drill holes for 5001m concentrated on tight 25m spaced grid drilling so as to define a
  higher degree of confidence Mineral Resources to initiate mining studies and allow early production planning
  at Havihua and Kolosori.
- Phase 2 drilling of 527 drill holes for 5476m provides coverage at a broader 50m and 100m spacing of both
  deposit extensions and regional exploration targets mineralisation indicated by historical sampling. This
  included additional deposits in Kolosori at Upper Havihua, Lower Kolosori, Upper Kolosori and Upper Suma
  and broader 200m spacing at newer prospects at Suma West and Suma North. The broad spaced drilling
  undertaken in Phase 2 tends to increase estimation smoothing, which means higher grade zones will be better
  defined with further infill drilling.
- Historical pitting and drilling from the 1960's is available for the Kolosori and San Jorge Island and is completed at 100m and 200m spacing on a regional scale.

#### Resource statement

The Mineral Resource was announced on 29 December 2015, and includes drilling up to drill hole SU-1323, and is based on 1069 Axiom drill holes with 12,719m of core samples and 14,014 assayed intervals. No subsequent work on the Kolosori deposit has been completed and the Mineral Resource is still current.

The total saprolite (magnesium silicate) Mineral Resource is as follows:

Mineral Resource	Measured	Indicated	Inferred	Total
1.0% Ni cut-off (Saprolite)	1.0 Mt @	3.4 Mt @	3.3 Mt @	7.7 Mt @
	1.7% Ni, 0.03% Co	1.5% Ni, 0.03% Co	1.4% Ni, 0.03% Co	1.5% Ni, 0.03% Co
1.4% Ni cut-off (Saprolite)	0.8 Mt @	1.8 Mt @	1.3 Mt @	3.9 Mt @
	1.8% Ni, 0.03% Co	1.7% Ni, 0.03% Co	1.6% Ni, 0.03% Co	1.7% Ni, 0.03% Co
0.7% Ni cut-off Limonite	0.9 Mt @	3.5 Mt @	3.9 Mt @	8.4 Mt @
(iron oxide)	1.1%Ni, 0.11% Co	1.1% Ni, 0.10% Co	1.0% Ni, 0.11% Co	1.0% Ni, 0.11% Co

**Table 1.3 Mineral Resource Statement** 



#### Conclusions

The study completed numerous technical evaluations for Axiom in order to determine the best development strategy for the Isabel Nickel Project.

The project differentiates itself from other nickel laterite projects due the following unique qualities:

- A large proportion of saprolite that can be readily accessed;
- Very low stripping ratio (almost no waste overlays is highly marketable);
- Access to an efficient and readily available source of labour compared to other nations;
- Easy access to port and shipping channels to Asian markets; and
- Low pre and on-going capital cost commitments.

The combination of the above factors strongly indicates that the Isabel operations will be a viable low cost nickel laterite producer with future opportunities to greatly enhance and upgrade the existing Resources.

### **Previously Reported Information**

This announcement includes information that relates to Mineral Resources and exploration results that were prepared and first disclosed under the JORC Code (2012). This information was included in the Company's previous announcements as follows:

- ASX announcement dated 29 December 2015, "JORC Resource Upgrade Isabel Nickel Project defines first 5 years of production"
- ASX announcement dated 9 May 2016, "Isabel Nickel Project update"

These announcements are available at the Company's website <a href="www.axiom-mining.com">www.axiom-mining.com</a>

The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcements and, in the case of estimates of Mineral Resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not materially changed from the original market announcement.

#### **ENDS**

### **About Axiom Mining Limited**

Axiom Mining Limited focuses on tapping into the resource potential within the mineral-rich Pacific Rim. Through dedication to forging strong bonds and relationships with the local communities and governments where we operate, Axiom Mining has built a diversified portfolio of exploration tenements in the Asia Pacific region. This includes a majority interest in the Isabel Nickel Project in the Solomon Islands and highly prospective gold, silver and copper tenements in North Queensland, Australia. The Company is listed on the ASX. For more information on Axiom Mining, please visit <a href="www.axiom-mining.com">www.axiom-mining.com</a>

#### Disclaimer

Statements in this document that are forward-looking and involve numerous risk and uncertainties that could cause actual results to differ materially from expected results are based on the Company's current beliefs and assumptions regarding a large number of factors affecting its business. There can be no assurance that (i) the Company has correctly measured or identified all of the factors affecting its business or their extent or likely impact; (ii) the publicly available information with respect to these factors on which the Company's analysis is based is complete or accurate; (iii) the Company's analysis is correct; or (iv) the Company's strategy, which is based in part on this analysis, will be successful.