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ASX: PRW

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## PROTO RESOURCES & INVESTMENTS LTD

### Quarterly Activities Report for the quarter ended 30 June 2013

Proto Resources & Investments Limited ("Proto", "the Company") is pleased to provide Shareholders with the update on the Company's 2013 progress to date.

Managing Director, Mr Andrew Mortimer said today, "Proto is continuing to work on its exploration assets as well as advancing the Barnes Hill project in Tasmania, however recent weakness in base metal prices has made this difficult. The Company wishes to assure shareholders that the focus of Proto remains to build a substantial resources company."

Mr Mortimer continued to state that, "Proto has made solid progress on all of its assets during the May/June quarter. A special note should be given to the Barnes Hill Definitive Feasibility Study ("DFS") which shows the project to be economically robust before any additional benefits from waste stream optimisation and iron product sales."

Victory Mines Limited ("Victory Mines") continues to develop the copper nickel sulphide discovery at the Clara Hills joint venture with Proto where it has announced the discovery of broad zones of copper and nickel sulphide close to surface.

Proto has also greatly enlarged its ground position in the Sandfire region by entering into a joint venture with Duorado Resources Limited ("Duorado") (ASX:DUO) on their Mooloogool project.

Despite several of Proto's mineral assets increasing in value as a result of solid progress being made, global metal markets and global commodity markets have acted as a severe head wind to the share prices of junior mining and exploration companies worldwide.

Even though a firm iron ore price indicates solid commodity demand and usage overall, base metal prices, especially the nickel price and the gold price, have underperformed in the last 12 months, resulting in a halting of investment decisions on project financing that has adversely affected Proto. This has led to a decrease in Proto's market capitalisation which the Company is working hard to address with corporate reforms as well as ongoing project work and development.

"Proto is still supremely confident in the global metals market long term noting that China continues to grow at approximately 7%+, which compounded on growth from past years has led to a substantial increase on the size of their economic activity since even 2008," said Andrew Mortimer.

"In 2010, Proto's market capitalisation bounced back from levels similar to today's, to much higher levels by early 2011 with the assistance of QE2 before the nuclear tragedy at Fukushima in Japan and the withdrawal of QE2 helped lead to deterioration in economic activity."



“Proto believes that ongoing quantitative easing currently underway in America and Japan and the solidifying of the new Chinese leadership will continue to stimulate economic growth that should lead to an upswing in demand for all resources including base metals and not just iron ore.”

On the Board front, Proto would like to thank both Mr Ian Campbell and Mr Aziz (Greg) Melick, who have both recently resigned, for their contribution to the Company over the years. It is thanks to our former Chairman and Non-Executive Director that we have had various successes over the year.

With a reduced Board and necessary cost reductions across the Company, the Board would like to assure shareholders that they are looking after the best interests of shareholders.

The Board of Proto is pleased to provide shareholders with an update on the Company's activities for the quarter ended 30 June 2013.

### **LINDEMANS BORE PROJECT, NORTHERN TERRITORY**

As announced to the market on the 26th of June 2013, Proto completed its drilling program of a fourth hole at Lindeman's Bore in the Northern Territory.

The drill hole intersected a strong zone of alteration within the Inverway metamorphics suggestive of a significant hydrothermal system that has pervasively and aggressively altered the surrounding country rock. The intersection of a porphyry unit in LBD2 some 2km north with high gold and palladium signatures (7m @ 1.1g/t Gold ("Au") from 424m, including 1m @ 5.32g/t Au 1m @ 0.45g/t Palladium, and 14m @ 0.11% Copper ("Cu") from 467m in metamorphosed shale) could be of significance spatially to the alteration seen in LBD4, assuming that connecting conduits are present.

Sections representing approximately 80m will be (have been??) cut and assayed in 1m sections to determine if the gold and palladium associated with a porphyry unit in LBD2 is associated with similar rocks discovered in LBD4.

Proto's Managing Director, Mr Andrew Mortimer said "Proto looks forward to receiving the laboratory results from the alteration zone intersected by this diamond drill hole."



**Figure 1:** AMWD drilling completing Diamond Drill hole LBD4

The geological setting and observations during logging of the core are summarised below.

### **Limbunya Group (0-325.9m)**

The Limbunya Group (0-325.9m) sediments are dominantly a succession of dolomitic muds and silts although lesser amounts of coarser grained sand and smaller intervals of fine to medium grained conglomerates were also observed. Bedding is flat lying and facing is right way up.

Cavities intersected around sixty metres could be due to the dissolution of carbonate within the more dolomitic units therefore exhibiting Karst like qualities.

Stromatolitic textures within the group suggest that the original setting of the paleo-surface was one of a shallow marine environment that was quiescent in energy terms with little or no tidal interference.

The base of the unit is a well-rounded very coarse grained conglomerate and associated coarse grained sand and grits suggesting a paleo-river like setting before deposition of younger sediments above.



**Figure 2:** Typical Upper Limbunya Group sediments

### **Inverway Metamorphics (325.9-504m end of hole)**

Underlying the Limbunya Group unconformably is the dominantly mafic Inverway metamorphics. The mafics appear to be basalts with elevated Ti and Ni values according to PXRF analysis. Hyaloclastic auto-breccia can be observed with paleo-weathering pronouncing the textures considerably.

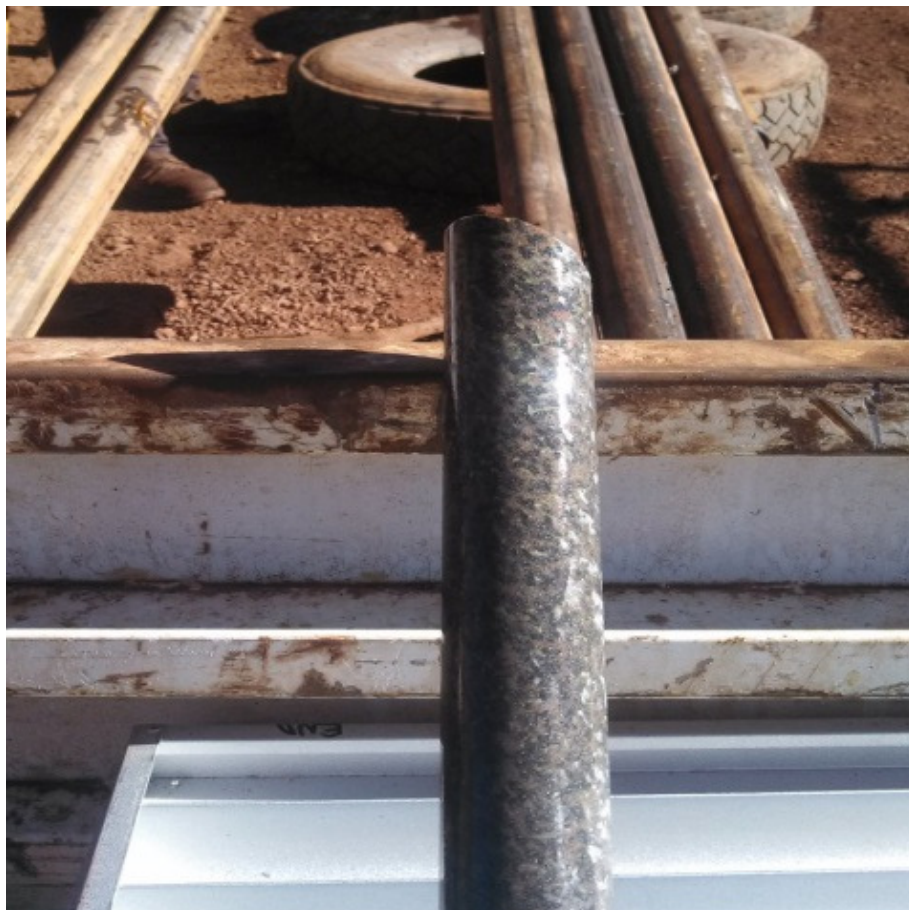
Below the basalt (373.48 – 432.85m) an undifferentiated strongly altered mafic is present with Carbonate dominant with lesser hematite-biotite-epidote alteration. The appearance is mottled and “leopard” spot like (Figure 4). PXRF analysis reveals high K (~4000ppm); probably due to mica and the hematite alteration gives it a pinkish/red hue to the core. The alteration suggests pottasic influence by either structure emplacement and / or porphyry spatial association. Rare pyrite disseminations are also present.

Magnetic susceptibility is  $\sim 0.2 \times 10^{-3}$  SI which is significantly higher than the Limbunya sediments above ( $\sim 0.015 \times 10^{-3}$  SI).





**Figure 3:** Limbunya Group Basal Conglomerate



**Figure 4:** Hematite-biotite-epidote altered "Leopard Rock"





**Figure 5:** Hematite-biotite-epidote altered "Leopard Rock"

Between 432.85 and 433.5m a small intense interval of strongly hematite-quartz-carbonate altered mafic is present with some large clots (1cm) of pyrrhotite –pyrite observed. This interval was the only interval with relative moderate sulphide development. Shearing at around 441m could be the reason for the strong hematite alteration as it seems to emanate both up hole and down hole from this position.



**Figure 6:** Hematite-biotite-epidote altered "Leopard Rock" with pyrite observed

Strong quartz – carbonate alteration associated with hematite-epidote +/- biotite continues throughout the rest of the hole with the exception of a black shale unit also observed in LBD3 from 475.4 – 486.6m. This unit is also strongly altered with quartz-carbonate, seen as well foliated veins and veinlets. Minor disseminated pyrite is also present.

The remaining interval of the hole is again a well altered undifferentiated mafic similar in appearance to that up hole but has strongly increased hematite with magnetic susceptibility readings to  $10 \times 10^{-3}$  SI which is a significant increase to the rocks above and may well be the cause of the targeted EM anomaly.

The Lindemans Bore results summarised above are highly encouraging, however, the Company has not received the laboratory assays as yet from the fourth drill hole. The Company plans to continue its exploration program throughout the second half of 2013 and is in discussions with other interested parties who wish to join in the joint venture on the project. In addition to pursuing further exploration at Lindeman's Bore, Proto also aims to implement an aggressive exploration campaign in its newly acquired Mooloogool project as outlined below.

### **ACQUISITION WITH DOURADO RESOURCES LIMITED ON THE STRATEGIC MOOLOOGOOOL PROJECT, WA.**

On the 13th of June 2013, Proto announced the acquisition of strategic Goodin Dome-Yerrida basin tenements, WA. Proto entered into a binding term sheet with **Dourado** to acquire a 51%-70% interest in its Mooloogool Exploration project in the Goodin Dome-Yerrida Basin area of Western Australia. The consideration provided for these exploration licences is AU\$50,000 in cash and \$600,000 in Proto shares (subject to due diligence and Proto board approval), whilst **RM Corporate Finance** has agreed to provide up to A\$2.5 million in funding over three years. In conjunction with Mt Vettors and Lindemans Bore, the acquisition of the Goodin Dome-Yerrida basin tenements will provide Proto with significant exploration potential for copper and gold.

The Northern part of the Mooloogool Licenses are located approximately 40 kilometres south of the DeGrussa operating copper gold mine. Proto has acquired a 51% interest in eight exploration Licenses, (1,461 square kilometres), covering deformed Proterozoic metasediments around the Goodin Dome, a large ellipsoidal granite that may have acted as a fluid source for mineralising solutions in the region. Combined with its existing portfolio of Magellan North, Mt Killara, Great Doolgunna, Casey and Station Bore, Proto's tenement position in the region now totals approximately 1,967 square kilometres.

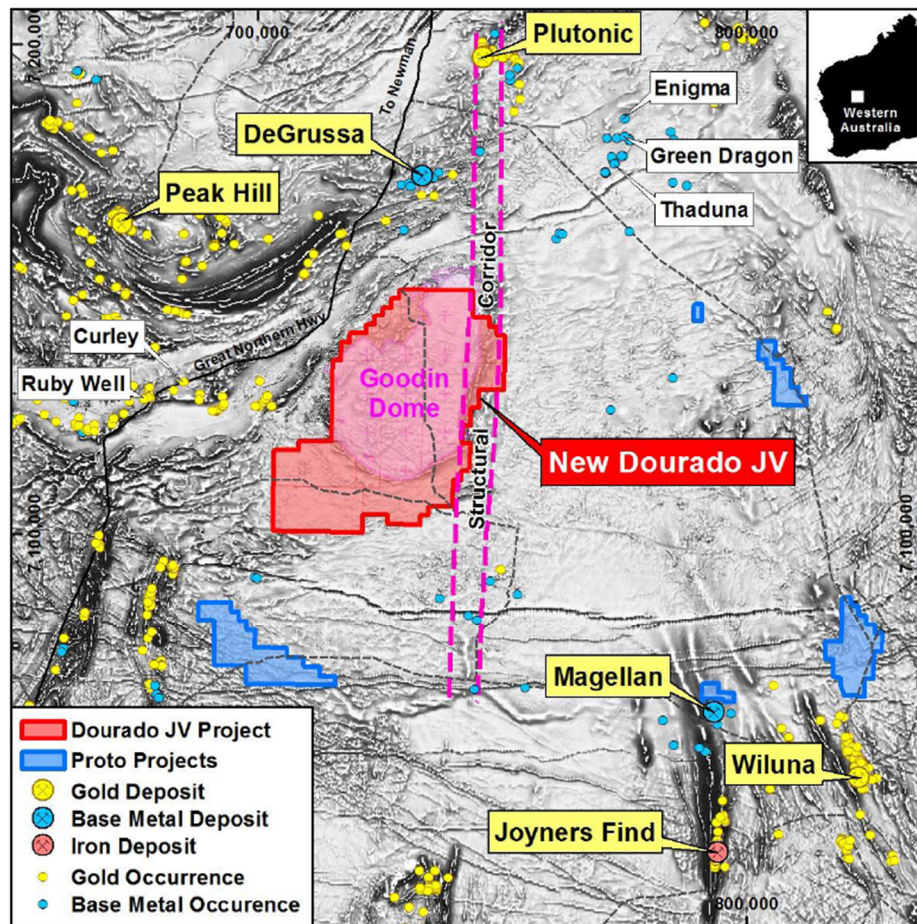
Exploration success in the vicinity of the Mooloogool Tenements has continued with **Enterprise Metals Limited** (ASX: ENT) continuing to return encouraging gold results from its Vulcan and Scotty prospects on the adjoining tenements to the North-West of Mooloogool. Enterprise Metals Limited has also been active in the region for a number of years and has recently accelerated their exploration program. As is set out in their most recent Quarterly Activities report (March 2013), there are two prospects near the north-eastern boundary of **Dourado's** E51/1215 and E51/1325 namely Scotty and Vulcan that have returned encouraging reverse circulation (RC) and aircore (AC) intercepts.

More recently **Sipa Resources** (ASX: SRI) also achieved exploration success in the area with recent news including the intersection of several impressive copper intersections from a 5 hole, 1,098 metre program beneath earlier encouraging copper intersections at the old Ricci Lee copper mine (Figure 7). The recent RC drill program demonstrates that mineralisation in the eastern lode of the Ricci Lee system is largely continuous. This lode was previously intersected by THC001 and THC003

Sipa Resources has intersected substantial copper and gold. Please refer to their website for the JORC compliant results (<http://www.sipa.com.au/>).

The above regional drilling results form a great part in the rationale for Proto moving into this region as Proto believes the area is relatively underexplored. Initial exploration will aim to complete the reconnaissance work that was commenced by Dourado and will include surface mapping, infill and extension geochemical sampling and subject to results, follow up Aircore +/- RC drilling.





**Figure 7:** Plan showing new Dourado Joint Venture licenses (Mooloogool Licenses) and existing Proto licences in the Yerrida-Goodin Dome Region.

Tenements	Blocks	Area km <sup>2</sup>
E51/1185	47	141
E51/1186	69	207
E51/1213	55	165
E51/1215	60	180
E51/1325	54	162
E51/1340	70	210
E51/1341	70	210
E51/1342	62	186

**Table 1:** Table showing Dourado Joint Venture licenses (Mooloogool Licenses).



Based on the recent exploration success of Sipa Resources and Enterprise Metals in the Goodin Basin area, Proto believes that the recently acquired Duorado project provides significant exploration potential. There is potential for stratiform copper, volcanogenic massive sulphide and mesothermal/hydrothermal gold mineralisation. There also exists the possibility of greenstone hosted Archaean gold mineralisation at depth. The Plutonic Gold Mine (Barrick Gold Corporation, JORC Probable Reserves of 2Mt @ 6.3g/t Au for 420,000 oz of Au) is situated approximately 90 kilometres north of the Mooloogool Licenses on the southern end of the Plutonic Well Greenstone belt. Examination of regional magnetics suggests the possibility that this greenstone belt may extend under cover on the eastern side of the Goodin Dome.

The Mooloogool tenements have seen very little exploration in recent years with the exception of a regional geochemical program by Dourado. Approximately 10 lines of RC drilling were undertaken over 2011 on the Diamond Well tenements by Dourado immediately to the south of the Mooloogool Licenses. The lithologies encountered included intercalated siltstones, sandstones, shales and some mafic intrusives and elevated copper up to approximately 200ppm. Analysis of historical data has confirmed the presence of elevated copper associated with broadly east-west striking structures which may be the controlling structures of the mineralisation identified in this drill program. Copper assays up to 709 ppm were returned from the Diamond Well tenements immediately to the south of the Mooloogool tenements.

Subject to the settlement of this acquisition, Proto is planning to infill and extend the geochemical sampling program that was commenced by Dourado on the Mooloogool Licenses in addition to undertaking detailed geological mapping and sampling with a focus on the deformed ironstone sequences that bound the Goodin Dome. Geochemical sampling of the magnetic high's and/or radiometric anomalies will also be a priority for this first phase of exploration. Remote sensing has picked up areas of clay alteration overlying interpreted intrusive lithologies. This will also be a target for geochemical sampling.

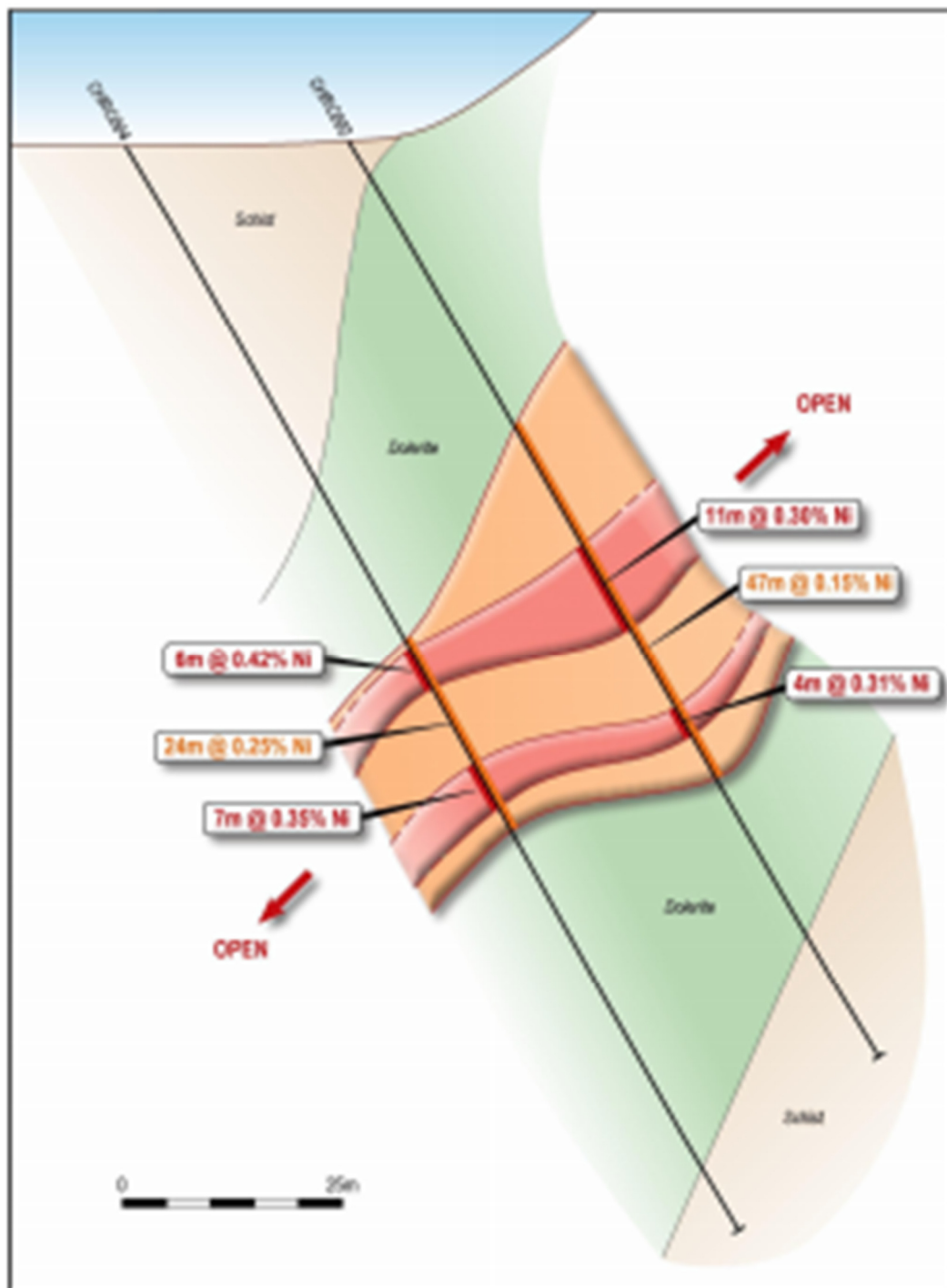
## **EXPLORATION AND DRILLING SUCCESS AT THE CLARA HILLS PROJECT WITH 7 VTEM ANOMALIES IDENTIFIED**

During the quarter, Proto announced on the 12th of June that recently completed Versatile Time-Domain Electromagnetic ("VTEM") geophysical survey at the Clara Hills Project, WA has identified seven anomalies four of which have been highlighted as strong and three as moderately strong. Clara Hills is a Joint Venture (JV) between Proto and **Victory Mines Limited** ("Victory") where Victory is the Manager and Operator.

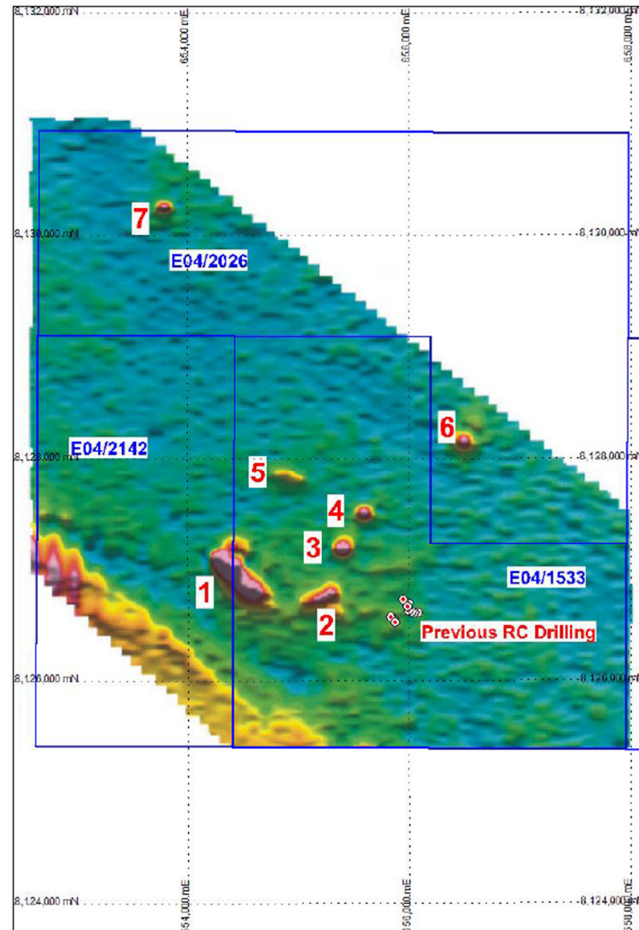
After announcing identifying broad zones of Nickel Sulphide mineralisation at Clara Hill's in early 2013, in the past quarter, Victory pursued exploration at the Clara Hill's project with the identification of 7 VTWM anomalies. Initial exploration discovered nickel sulphide mineralisation in 50% of the holes with thick intersections of up to 47 metres plus secondary copper.

The Clara Hills Drill program RC drill program in late 2013 encountered very encouraging results from three holes which were drilled into one of these weaker EM target. The results are summarized below:

- Hole CHRC002 encountered 47m @ 0.15% Ni from 36m, including 11m @0.30% Ni from 52m
- Hole CHRC003 encountered 42m @ 0.22% Ni from 14m, including 5m @ 0.39% Ni from 38m
- Hole CHRC004 encountered 24m @ 0.25% Ni from 63m, including 6m @0.42% NI from 63m
- Hole CHRC008 encountered 10m @ 0.30% Ni from 13m, including 5M @ 0.42% NI from 13m plus 1m @ 0.71% NI from 27m



**Figure 8:** Stylised section from CHRC002 and CHRC004



**Figure 7:** Location of VTEM Anomalies and Previous RC Drilling

## CONTINUED DEVELOPMENT AT PROTO'S NICKEL LATERITE PROJECT

As announced on the 26th of March 2013, Proto in conjunction with its joint venture partner Metals Finance Limited ("MFC"), completed the optimised feasibility study at the Barnes Hill Nickel and Cobalt project in Tasmania. The Optimised Feasibility Study was completed through MFC's wholly owned subsidiary **Nickel Developments Limited** ("NDL") The Project is a 50:50 joint venture between NDL and Proto.

The advancements made during the optimisation study confirms the Project is economically robust, under the parameters assumed in the project's Base Case model and endorses the Company's innovative ability to maximise the economic potential of an undeveloped nickel laterite deposit by delivering a low operating cost structure along with highly efficient use of capital.

The Project is a 500,000 tpa ROM nickel and cobalt operation producing 4,800 tonnes of Ni equivalent per annum. Once developed, the Project offers the joint venture partners sustainable cash flow over the modelled 10 year period, taking into account the parameters of the business model.



Modelling of the base case parameters for the Project at a long term projected nickel price of A\$10/lb, reports an NPV of A\$143.6m (@ 12.5% discount rate) yielding a 51% IRR. The optimisation study has confirmed the project's economic metrics with a capital intensity, equivalent to \$7.50/lb annual production, and operating costs of \$5.16/lb in the first 5 years and \$5.75/lb over the first 10 years.

The Joint Venture partners will continue to work collaboratively to finalise the permitting of the project and to secure funding options for construction and development of the Project, based on this final study.

### **Optimising the feasibility study**

Optimisation	Proposition	Advantages
Leaching Vessels	Employ an agitated tank system	Reduce footprint of leach vessel and increase confidence in nickel recovery
Leach Temperature	Increase leach temperature to 80°C	Reduce residence time in leach from 120 days to 8 hours
Water Medium	Utilise saline water in the process flow sheet	Reduce operating cost by reducing water unit charge rates and acid consumption
Plant Relocation	Reposition the processing facility	Reduce site establishment capital by locating plant closer to existing road infrastructure
Power Options	Connect to existing distribution system	Reducing total power demand enables connection to nearby power system
Increase Strip Ratio	Maximises extraction of resource from deposit	Ensures total resource recovery and maximises potential mine life.

**Table 2:** Feasibility study optimisation

### **Construction Capital**

Total projected construction capital for the Project is \$78.4m. Capital is apportioned 75% for direct capital costs and 25% for indirect capital costs.

70% of direct capital costs are allocated for the main processing activities of:

- Leaching,
- Ion Exchange,
- Electrowinning, and
- Tailings treatment.

Indirect Costs are evenly divided between Engineering, Procurement and Construction expenses and percentage based line items including escalation and contingencies.

The Project has a capital intensity of \$7.50 per pound of annual Niequiv production, positioning the project as a capital efficient nickel laterite project when compared to peers.

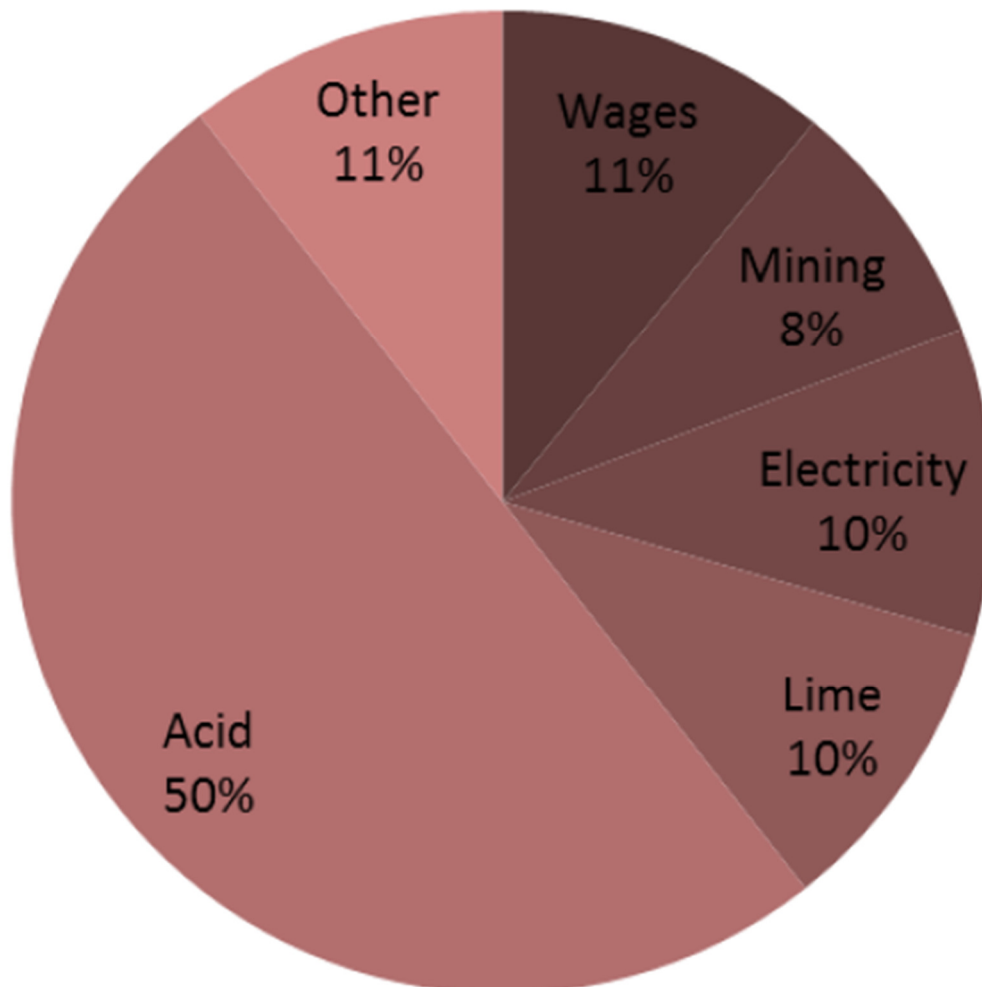
### **Mine Site Cash Costs**

Total mine site cash costs are dominated by the acid requirements of the project. Other key categories are shown in the adjacent figure.

The project economics are most sensitive to sulphuric acid pricing. NDL has engaged with acid suppliers to substantiate that the acid pricing and volume requirements can be achieved. The Company has modelled higher than prevailing acid pricing to provide the project with upside to the current scenario.

The other 5 major areas that comprise mine site cash costs are evenly distributed between; Lime - used for neutralisation, Electricity - used for electrowinning the nickel cathode production, Mining – for both ore and waste movement, Wages – for all staff, and other mine site cash costs.

The Project has a mine site cash cost of \$5.16/lb of nickel equivalent for the first 5 years of operation and \$5.75/lb for the modelled 10 year period.



**Table 3:** Mine site cash costs

### **Revenue and EBITDA**

Sales of nickel cathode and cobalt sulphate are projected to generate annual revenue of approximately \$105m annually. Revenue is based on commodity pricing of \$10/lb Ni and \$13/lb Cobalt with foreign exchange parity. Allowing for operating and marketing costs, the average annual EBITDA is approximately \$30m, inclusive of capital repayment and exclusive of project financing costs.

### **Project Economics**

The Optimisation study has provided confidence to the number used in evaluating the economic potential of the Project. The Project has the capability to retire project funding within two years of commencing production under the modelled parameters. Key operational and financial highlights include:

<b>Barnes Hill Project</b>	<b>Base</b>
Capital cost (\$ millions)	78.4
Project ROM tonne throughput (million t)	500,000
Nickel grade first 5 yrs (%)	1.01%
Nickel grade second 5 yrs (%)	0.73%
Nickel recovery (%)	90%
Life of mine nickel price US\$/lb	10.00
Foreign Exchange USD:AUD	1:1
Total revenue (\$ millions)	1,045
<b>Indicated NPV 12.5% (\$ millions)</b>	<b>143.7</b>
<b>Indicated IRR%</b>	<b>51%</b>

**Table 4:** Key operational and financial highlights



Proto is looking forward to updating the market on our progress in the coming weeks. In the meantime, please feel free to contact our office for further information.

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More details are available on the company website [www.protoresources.com.au](http://www.protoresources.com.au)

***Competent Persons Statement***

*The information in this release that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information reviewed by Tony Treasure, who is a Member of the Australasian Institute of Mining & Metallurgy. Mr Treasure has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Treasure consents to the inclusion in the release of the matters based on his information in the form and context in which it appears.*