Barnes Hill DFS moves a step closer… Doolgunna-Yerrida Basin exploration set to commence

FY 2012 is likely to be a milestone year for the Company as it completes the long awaited definitive feasibility study (DFS) at the Barnes Hill Nickel Laterite project (JORC Inferred and Indicated Resource of 6.6Mt @ 0.81% Ni, 0.05% Co) near Beaconsfield in Tasmania. Metals Finance Ltd (ASX: MFC) is earning 50% via the completion of a DFS and the arrangement of project finance.

The innovative process design flow sheet has the potential to significantly reduce CAPEX and OPEX through the use of ion exchange to avoid iron removal prior to nickel recovery from leach solutions.

The base case scenario is premised on a 500,000tpa plant producing around 3-4Ktpa of nickel metal based on a CAPEX of around A$60 million with target C1+ C2 costs of production under US$3.0/lb. An electrolytic flow sheet is also being trialled at Australian BioRefining’s laboratory at Evans Head in northern New South Wales by Proto Resources & Investments controlled Barrier Bay Pty Ltd. This process aims to recycle acid hence eliminating the requirement for an acid plant, limestone and large tailings ponds.

Financing for Barnes Hill has been given a recent boost with JV partner MFC signing a letter of intent with Dow Chemical (Australia) in respect to the provision of finance for the Lucky Break Ni-Co laterite project in northern Queensland (Metallica Minerals Ltd). Should this venture be successful, there is an excellent chance in our view of Dow Chemical providing some form of financial assistance for Barnes Hill.

Another interesting development is the acquisition of the Casey, Great Doolgunna, Killara and Magellan North tenements in the Doolgunna-Yerrida Basin area south and south-east of Sandfire Resources’ DeGrussa deposit (14.6Mt @ 4.6% Cu. 1.6 g/t Au). Recent finds such as Enigma (Sipa Resources Ltd ASX: SRI, ASX Announcement 19/8/2011) and further high-grade copper intersections at Thaduna/Green Dragon (Ventnor Resources Ltd, ASX: VRX, ASX Announcement 29/8/2011) have seen an exponential growth in exploration in the region.

As noted in our recent Yerrida Basin-Goodin Dome review (What’s Going On? RM Research, 1/9/2011), the area to the south of DeGrussa and north of Proto Resources & Investments Yerrida Basin-Goodin Dome tenement has become the focus of intensive exploration by Dourado Resources Ltd (ASX: DUO) (RM Research, 14/09/2011), Enterprise Metals Ltd (ASX: ENT), Great Western Exploration Ltd (ASX: GTE) and Thundelarra Resources Ltd (ASX: THX) with kilometre scale Cu+/Au geochemical anomalies forming a “necklace” the Goodin Dome.

The Tibooburra Gold Project is also showing signs of life with recent high-grade gold intercepts by Meteoric Resources Ltd (ASX: MEO) at the joint ventured Bendigo Gold Prospect with RAB drilling under shallow cover returning intersections of up to 20 metres at 5.2 g/t gold.

Near term share price drivers are likely to focus around the commencement of exploration at the Casey, Great Doolgunna, Killara and Magellan North tenements together with the completion of the DFS at Barnes Hill.
INVESTMENT CASE

Doolgunna-Goodin Dome-Yerrida Basin Exposure: The Company holds some interesting acreage (Great Doolgunna, Casey, Killara, Magellan North Projects) in the Doolgunna-Goodin Dome-Yerrida Basin region where the spectacular DeGrussa discovery (14.6Mt @ 4.6% Cu, 1.4 g/t Au) of Sandfire Resources (ASX: SFR) DeGrussa Project has been followed up by Sipa Resources Ltd (ASX: SRI) recent Enigma copper discovery together with further high-grade intercepts at Ventnor Resources Ltd (ASX: VRX) Thaduna/Green Dragon deposits (both located around 40 kilometres east of DeGrussa).

Tibooburra JV at Meteoric’s New Bendigo Project (New South Wales): This gold prospect has recently come back into focus on the back of recent high-grade gold intersections by Meteoric Resources Ltd (ASX: MEO) including 20 metres down-hole @ 5.2 g/t. Proto has a 8.88% stake in the private company holding the project where Meteoric can earn up to 75%.

Barnes Hill Financing Complete: The innovative approach to process design for this nickel laterite project has been a labour of love for the Company however the completion of a successful DFS by joint venture partner Metals Finance Ltd (ASX: MFC) is likely to be a major value adding event for the Company in 2Q 2012. RM Research believes the new processing options being examined have the potential to substantially reduce CAPEX and OPEX.

COMPANY OVERVIEW

Proto Resources and Investments Ltd (“Proto Resources and Investments“, PRW or “the Company”) listed on the Australian Securities Exchange (“ASX”) on 29/11/2006 raising A$3.5m through the issue 17.5m shares @ 20c per share. The Company has assembled a portfolio of mineral exploration projects in Australia prospective for gold, copper, nickel, rare earths and uranium.

The Company’s recent focus has been on the Barnes Hill nickel-cobalt-iron project near Beaconsfield in Tasmania which contains JORC Inferred and Indicated Resources of 6.6Mt @ 0.81% Nickel and 0.05% Cobalt. Recent metallurgical testwork has focussed on the recycling of acid in an attempt to significantly reduce CAPEX/OPEX. PRW is also exploring its Lindeman’s Bore, Wave Hill and Waterloo projects for nickel sulphides. The completion of a DFS by Joint Venture partner MFC in 2Q 2012 is likely to provide the market with a good indication of the success, or otherwise, of the new process design flow sheets that have been trialled over recent years.

More recently (ASX Announcement 19/8/2011) the intersection of high-grade oxide Cu mineralisation (including 8m @ 3.7% Cu) at the Enigma Prospect (Thaduna Project) by SRI together with further high-grade Cu intersections by VRX at their Thaduna/Green Dragon Projects (RM Research, Ventnor Resources, 1/9/2011) situated approximately 40 kilometres west of DeGrussa (JORC Inferred and Indicated Resources of 14.6Mt @ 4.6% Cu, 1.6 g/t Au), has highlighted the potential of the Company’s portfolio of tenements in the Doolgunna region of Western Australia in what we consider to be a potentially world-class Cu+/Au province.

[FIGURE 1: Proto Resources & Investments Ltd project locations (source: Proto Resources & Investments Ltd website September 2011).]
EXPLORATION OVERVIEW  Doolgunna Projects (PRW: 100%)

Location and Access
In the Doolgunna Region of Western Australia (northeast of Meekatharra) (Figure 2), PRW has two granted exploration licences and three pending applications covering 357km². In addition to the DeGrussa deposit, the region also hosts Ivernia Inc’s Magellan Lead Mine (Measured & Indicated Resource of 22.1Mt @ 4.8% Pb).

Geology and Mineralisation
The Doolgunna-Yerrida Basin-Goodin Dome region is made up of the Bryah, Padbury and Yerrida Basins. The applications are interpreted to sit within the Palaeo-Proterozoic Yerrida Basin, Proterozoic mafic volcanics and intrusives of the Killara Formation and sedimentary rocks of the Finlayson Sandstone and the Juderina and Maraloou Formations.

As noted in “What’s Going On?” (RM Research 1/9/2011), it appears there is now a concerted exploration push in the Yerrida Basin-Goodin Dome area where an ellipsoid shaped highly deformed Archaean Granite that outcrops approximately 50km south of Sandfire’s DeGrussa deposit appears to be providing a fluid source for Cu-Au mineralisation. A review of geological, geophysical and geochemical data in this region including data from ENT, DUO, GTE and THX reveals extensive Cu+/- Au anomalism associated with regional structures which demonstrate good continuity over extensive areas.

Great Doolgunna and Station Bore Projects
The granted Great Doolgunna project (E51/1455) is situated 60 kilometres southeast of the DeGrussa Deposit and adjoining GTE’s Doolgunna Project. The Station Bore (E69/2872) application is located nearby a further 10 kilometres southeast). Exploration immediately east of the application area by the Geological Survey of Western Australia and Great Western Exploration has outlined a broad poly-metallic geochemical soil anomaly along with several VTEM conductors.

Casey Project
The recently granted Casey Project (E51/1457) is situated approximately 55 kilometres northeast of Meekatharra and covers a portion of the southwest margin of the Yerrida Basin. The large license area covered by the Casey project is near the holdings of DUO. DUO have conducted extensive geophysical and geochemical exploration programmes and have so far highlighted 13 anomalous zones (for copper and/or gold) which appear to show a close correlation to identified structures.

Killara Project
The project area (E53/1580) is 10 kilometres north of the township of Wiluna and contains volcanics of the Killara Formation.

Magellan North Project
This project area (E53/1581) lies north of the Magellan Lead Mine and the Company considers the area prospective for further base metals. Compilation of historic exploration work is currently underway.
Barnes Hill Ni-Co-FE-Mn Project (PRW: 50-100, MFC earning 50%)

Location & Access
The project is located 40 kilometres northwest of Launceston (northern Tasmania), close to port and infrastructure. The Barnes Hill exploration licence (EL 17/2006) covers 76km² and the Company has also a granted Mining Lease (1872P/M) over the central portion of EL17/2006 (Figure 3).

Resources and Reserves
Snowden Mining Industry Consultants have estimated (18/10/2010), a resource for the Barnes Hill portion of the deposit (the Barnes Hill project contains three laterite deposits) of 6.6Mt at 0.82% Ni and 0.06% Co (cut-off grade of a 0.5% Ni). This includes 5.6Mt of Indicated Resources.

The Anderson’s Creek Ultramafic Complex is the dominant lithology and trends NNW over a strike of 20 kilometres and is up to 3 kilometres in width. This consists mostly of serpentinite, pyroxenite and gabbro.

Metals Finance Joint Venture
The Company has a financing and technology agreement with MFC whereby MFC will provide the required technology and finance to put the project into production in return for a 50% net profit interest. In the interim, PRW will continue to fund the resource drilling and permitting required to develop the project.

The next phase of the project’s development is the completion of a pilot programme based on the leaching of a bulk sample from Barnes Hill and to further define the Barnes Hill resource.

Processing Technology
In recent months there has been ongoing testwork at Australian BioRefining Pty Ltd’s independent laboratory in Evans Head, northern New South Wales. This facility, which is currently performing the testwork on behalf of Barrier Bay.
Pty Ltd (50% owned by Proto Resources & Investments), is demonstrating the potential for significant OPEX and CAPEX savings in the treatment of nickel laterites through the recycling of acid and water. The process is now in its fourth year of piloting.

As part of this study, the Company is likely to extract a series of representative bulk samples from representative ore horizons at Barnes Hill.

Feasibility Study

MFC is earning 50% of Barnes Hill (via the completion of a DFS and arrangement of project finance) and is nearing completion of a DFS on Barnes Hill. A Mining Lease was recently granted over the resource with a DFS based on a new flow sheet design that has evolved from various studies at the Lucky Break (Metallica Minerals Limited) (ASX: MLM) nickel-cobalt laterite project (Queensland).

This new process has the potential to significantly reduce CAPEX and OPEX through the use of ion exchange to avoid iron removal prior to nickel recovery from leach solutions. The ion exchange process has been successfully used at MFC’s Palabora project that was recently sold to Rio Tinto Ltd. At the front end of the plant, saleable nickel and cobalt are extracted from acidic solution using a Dow resin in a low pH process developed and applied by MFC at their previously owned Palabora mine (South Africa). At the back end of the process (which Barrier Bay has rights over the world-wide patents to), saleable iron and magnesium are extracted from acidic solution with the sulphuric acid being recycled.

In early 2013, the joint venture partners will be aiming to commission a 200 litre per hour demonstration plant, based on this innovative flow sheet and incorporating the steps that are currently being piloted by Barrier Bay at Evans Head (NSW).

Based on published data to date, we believe the following metrics are within the range of MFC’s current study (Table 1).

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<tr>
<th>PRODUCTION Metrics</th>
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<td>Resource (mt)</td>
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<tr>
<td>Throughput (tpa)</td>
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<td>Mine Life (yrs)</td>
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<tr>
<td>Ni Production (tonnes p.a.)</td>
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<td>Ni- Price (US$/lb)</td>
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<td>Ni-Recovery (%)</td>
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<td>OPEX Target (US$/lb)</td>
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<td>Payback Target (yrs)</td>
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The Dow Chemical LOI has the potential to include Barnes Hill

The final DFS is scheduled for completion in 2Q 2012 which, if positive, could have significant implications for not only Barnes Hill, but many other lateritic deposits which are currently dependant on expensive High Pressure Acid Leach (HPAL) or Atmospheric Leach technology. The technology would materially alter economics and open up projects unsuitable for HPAL.
NICKEL MARKET OUTLOOK

Macro themes continue to weigh on nickel outlook

Base metals remain under pressure and extended the declines as hopes that the eurozone debt crisis will be tackled swiftly have faded, while China’s third-quarter GDP data released today came in below par. China’s third-quarter GDP growth rate came in at 9.15%, below the forecast of 9.3% and a drop from 9.5% in the second quarter. On a brighter note September industrial production beat expectations, rising 13.8 percent year on year against the forecast of 13.5%, while September retail sales increased by 17.7 percent year on year, exceeding an estimate of 17.1 percent.

RM Research remains optimistic that the eurozone will stabilise in 2012, however we see a flat outlook for commodity prices in the near term, in particular nickel which is heavily reliant on stainless steel production

Today, Nickel closed at US$9.12/lb, up 5.78 cents but stocks fell further - down 486 tonnes at 90,438 tonnes, a fresh low since February 2009. Cancelled warrants also climbed 13 percent to 7,020 tonnes. The nickel price (Figure 5) remains in backwardation.

Nickel Laterites increasingly the dominant source

Nickel sulphide deposits have historically been and are currently the dominant source of mined nickel generally accounting for some 58% of total mine production versus 42% derived from laterite operations. In terms of remaining global resources however, laterite deposits account for >70% while sulphide deposits account for <30% due to a long history of exploitation. Direct shipping of low grade nickel laterite feed (<2% nickel) from the Philippines, Indonesia and New Caledonia to produce a nickel pig iron (NPI) that is used by the Chinese stainless steel industry is likely to remain the primary source of nickel.

Nickel Pig Iron costs reducing

Costs for nickel pig iron production are believed to have been reducing in China which accounts for around 50% of global consumption. Nickel comprises around 60% of NPI costs which indicates break-even costs are in the range of US$18,000 to US$19,000. The construction of more efficient ferronickel operations using electric arc furnaces which rely on high-grade DSO nickel laterite ores from the Philippines and Indonesia have reduced power consumption by up to 50%.

Nickel to move into Surplus in 2012

The surplus for nickel is projected to rise to 60,000 metric tons from 12,000 tons in 2011, with new mines projected to boost supply 11% in 2012, the most in 17 years according to a recent statement by Macquarie Group Ltd. Construction and transport account for 37% of nickel demand, with another 18% used in machinery and electrical applications, according to UBS AG. Following a rebound in demand following industrial disputes at Vale SA’s Sudbury and Voisey Bay mines in Canada, over 50% production increases are projected into 2012.
OTHER PROJECTS

- **Clara Hills**: (PRW 80%, Kimberley-Western Australia): Nickel, Copper & PGE’s.
- **Metal Rocks**: (PRW 100%, Yilgarn, Western Australia): Uranium, Gold.
- **Lindemans Bore**: (PRW 60%-JV North West Discovery Ltd, south-west Katherine, Northern Territory): Nickel, Copper, PGE’s.
- **Waterloo**: (PRW 100%, SW Katherine, Northern Territory): Nickel, Copper, PGE’s.
- **Tibooburra**: (PRW 8.88%, north Broken Hill, NSW): Gold.

RISK ANALYSIS

- Reconnaissance exploration at the projects Doolgunna-Yerrida Basin projects may not be successful in detecting Cu+/Au anomalism. Anomalies (in particular Cu) in the region could be due to buried, transported sediments or other recent cover sequences.
- Follow up exploration at neighbouring projects by SRI, VRX, DUO, VRX, ENT THX and Alchemy Resources (ASX: ALY) may not live up to expectations. This may have a negative impact on the securities of the Company.
- The Company is primarily exposed to nickel, cobalt and to a lesser extent through its exposure to the Doolgunna-Yerrida Basin region, copper. The recent European economic weaknesses together with a slowing US economy may continue to put downward pressure on metal prices.
- There are significant risks associated with the development of new process technologies associated with the treatment of nickel laterite ores. The processes could fail to deliver the targeted outcomes. Due to the early stage nature of the technologies (at piloting stage), there could also be significant delays in further testwork to enable its commercial deployment.
- Further declines in equity markets may continue to put pressure on junior resource companies as investors switch out of “risk” into perceived safe haven investments such as cash, gold and counter cyclical equities. Our medium term view is that the risk premium has been eroded for many junior resource companies and we see near term upside.

The flat to declining outlook for nickel may put added pressure on the Company

New process technologies have often proved more challenging to implement at the commercial level
DIRECTORS AND MANAGEMENT

Ian Campbell, NON-EXECUTIVE CHAIRMAN
Ian brings knowledge of the Australian regulatory environment with a particular focus on industry and the environment. In 2008 Mr Campbell retired from Federal politics after 17 years in the Australian Senate where he was a member of Cabinet and the Expenditure Review Committee from 2004. During his time as Parliamentary Secretary to the Treasurer, Mr Campbell initiated the Corporate Law Economic Reform Program. These reforms covered Takeovers, Fundraising, Accounting (including the introduction of IFRS), and Financial Markets. Mr Campbell is a member of the Boards of Austal Limited, ASG Group, and Solco, a solar energy company. He is on the Advisory Board of the Australian-based international geothermal developer Green Rock Energy Limited.

Andrew Mortimer, BA, LLB, MAusIMM, JOINT MANAGING DIRECTOR
Andrew is the Joint Managing Director of the Company. With a background in law/metallurgy as well as experience in investment markets, Mr Mortimer has experience in creating, structuring and preserving the necessary strategic alliances to build solid mining businesses with the potential for sustained growth. Mr Mortimer is currently Chairman of corporate advisory firm Superstructure International Pty Ltd, Director of Operations of Global Nickel Investments NL, and a Director of SA Capital Funds Management Ltd.

Lia Darby, BA, LLB, JOINT MANAGING DIRECTOR
Lia Darby is admitted to practice law in the Supreme Court of NSW but now works full-time as a mining company executive. Ms Darby also has a marketing and publishing background from her work in a legal publishing house and on other publications.

As Executive Director of corporate advisory firm Superstructure International Pty Ltd, Ms Darby has worked in corporate advisory on listing mining securities and assisting the senior management of listed companies to improve shareholder value. Ms Darby was instrumental in founding Proto Resources and acquiring and developing its portfolio of projects. Ms Darby is the Chairperson of ASX listed Global Nickel Investments NL and a non-executive director of Condor Blanco Mines Ltd.

Greg Melick, NON EXECUTIVE DIRECTOR
Greg Melick is a Senior Counsel with chambers in Sydney and Hobart whose experience includes mining investigation, occupational health and safety and corporate law. He has experience in advising and working with governments having formerly been a Crown Prosecutor/Principal Crown Counsel in the Tasmanian Crown Law Office and a Statutory Member of both the National Crime Authority and the NSW Casino Control Authority. Greg is a former Major General in the Australian Defence Force and was Assistant Chief of the Defence Force (Reserves) and Head of the Reserve and Employer Support Division. Mr Melick brings experience in corporate governance, management and legal compliance.

Kay Philip, NON EXECUTIVE DIRECTOR
Kay Philip is a geophysicist whose background embraces project acquisition, financial analysis of resource projects, and logistics. She has experience with capital raisings and holds a part-time position on the Academic Staff at the University of Sydney. She has been a Director of a number of listed and unlisted companies in the oil and gas sector. Ms Philip is currently a Director of ASX listed Alexanders Securities Ltd and Austex Ltd. Ms Philip was decorated by the French Government in 2005 with the award of Chevalier de l’Ordre National du Mérite, for facilitating collaborations between French and Australian scientists. Ms Philip is a Member of the Australian Institute of Physics, Secretary of the Australian-French Association for Science and Technology, and Fellow of the Financial Services Institute of Australia.
CONCLUSION

The financial markets have paid very little attention to the nickel laterite space for some years as projects such as Murrin Murrin (Minara Resources Ltd), Ravensthorpe (First Quantum Minerals Australia Pty Ltd) and the Cawse Nickel deposit (Norilsk Nickel) suffered enormous capital expenditure blowouts and the projected low operating costs turned out to be far more expensive than the nickel sulphide operations they were supposed to make redundant. The direct shipping operations of higher-grade nickel laterite deposits in Indonesia and the Philippines which feed nickel pig iron operations in China have also kept a lid on nickel prices in recent years.

While R&D associated with new process flow sheets can be a long arduous task, the nickel laterite industry is desperate for a breakthrough. While RM Research is yet to see sufficient data to form a firm view, the treatment of nickel laterite ores that involves the recycling of acid and the reduction of iron in solution, thereby reducing the need for large scale acid plants and large tailings deposits, has the potential to revolutionise the industry. 2Q 2012 therefore remains a critical period for Barnes Hill and potentially many other nickel laterite projects around the world.

The move into the Doolgunna-Yerrida Basin area is a wild card for the Company however the concerted exploration drive in the Doolgunna region and the subsequent Enigma discovery by SRI and further high grade Cu hits from VRX has seen an explosion of exploration activity in the region. The vast area of Cu+/Au geochemical anomalis in the Goodin Dome – Yerrida basin region would indicate that there could be significant primary mineralisation that remains to be discovered.

A high risk-high reward play however PRW provides excellent leverage to success. Speculative Buy.
RM Research Recommendation Categories

Care has been taken to define the level of risk to return associated with a particular company. Our recommendation ranking system is as follows:

Buy
Companies with ‘Buy’ recommendations have been cash flow positive for some time and have a moderate to low risk profile. We expect these to outperform the broader market.

Speculative Buy
We forecast strong earnings growth or value creation that may achieve a return well above that of the broader market. These companies also carry a higher than normal level of risk.

Hold
A sound well managed company that may achieve market performance or less, perhaps due to an overvalued share price, broader sector issues, or internal challenges.

Sell
Risk is high and upside low or very difficult to determine. We expect a strong underperformance relative to the market and see better opportunities elsewhere.

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