THE RAVENSTHORPE NICKEL PROJECT AND THE EXPANSION THE YABULU REFINERY (BHP BILLITON 100%)

The combined Ravensthorpe Nickel Project and Yabulu Refinery expansion is a US$1.4 billion project in regional Australia that will produce high quality nickel metal and cobalt for global export markets.

The project represents the next major step in BHP Billiton’s global nickel growth strategy since the successful Cerro Matoso Line 2 expansion in Colombia, delivered three months ahead of schedule and under budget.

The two components of the project are:
- Construction of a new mine and processing facility at Ravensthorpe in Western Australia (Ravensthorpe Nickel Project) to produce a mixed nickel and cobalt hydroxide intermediate product (MHP);
- Expanding QNI Yabulu Refinery near Townsville, North Queensland to process the intermediate product from Ravensthorpe (Yabulu Extension Project).

Up to 220,000 tonnes of MHP from Ravensthorpe will be exported for processing at the Yabulu refinery each year. This will increase the annual production of the refinery to 76,000 tonnes of nickel and 3,500 tonnes of cobalt. This is an increase in production for nickel and cobalt of 44,500 tonnes per year (140%) and 1,400 tonnes per year (70%) respectively. Nickel ore imported from the Asia-Pacific region will also continue to be processed at Yabulu.

BHP Billiton’s combined nickel capacity from its Australian and Colombian operations is estimated to exceed 130,000tpa by 2007, reinforcing its position as one of the largest global suppliers of finished nickel and cobalt products.

TIMELINE

Work has commenced on detailed engineering design for the project together with procurement activities for long lead equipment. Limited site activities commence at Ravensthorpe in May 2004 and at Yabulu in early 2005. The first shipment of MHP to Yabulu is expected in the second quarter of 2007 and first metal in the third quarter of 2007 with full production from the second half of 2008.

THE RAVENSTHORPE NICKEL PROJECT – IN BRIEF

The Ravensthorpe Nickel Project is the proposed development of a mine, treatment plant and associated infrastructure to produce a mixed nickel and cobalt hydroxide intermediate product (MHP) over approximately 25 years. RNP involves the mining and beneficiation of nickel laterite ore, hydro-metallurgical processing of the upgraded ore using the Enhanced Pressure Acid Leach process and packaging and shipping of MHP through the Port of Esperance to Queensland’s QNI Yabulu Refinery near Townsville.

The long-term supply of MHP from Ravensthorpe will help sustain the future of the Yabulu operation. Construction will take approximately two and a half years and involve up to 1000 workers.

THE YABULU EXTENSION PROJECT – IN BRIEF

The Yabulu Extension Project is the extension of the metal refining section – or back-end of the existing refinery - to process MHP - or partially processed ore - from Ravensthorpe.

The MHP will enter halfway through the refining process. The extension of the refinery will be wholly contained within the existing plant “footprint”. Construction will involve one major new building, a new steam generator and several smaller process facilities. While the production process will be essentially the same as the current process, equipment based on latest technology and computerised instrumentation will be installed. Construction will take approximately two and a half years and involve up to 400 workers.

RAVENSTHORPE NICKEL PROJECT

The project is located 35 kilometres east of the town of Ravensthorpe and 155 kilometres west of the deep-water port of Esperance in the central south coastal region of Western Australia. The nickel laterite deposit straddles the South Coast Highway.

The project involves open pit mining from three adjacent orebodies, and a hydrometallurgical process plant to treat both limonite and saprolite ores to produce up to 50,000 tonnes p.a. of contained nickel and 1,400 tonnes of contained cobalt in MHP.

The three orebodies of Halleys, Hale-Bopp and Shoemaker-Levy have a proved reserve of 125.3 Mt @ 0.73% nickel and 0.032% cobalt and probable reserve 137.9 Mt @ 0.57% nickel and 0.026% cobalt, giving a total proved and probable reserve 263.3 Mt @ 0.65% nickel and 0.029% cobalt. The reserves ensure a project life of 25 years.

Mining by open cut is the most appropriate method for the ore, which is shallow and flat lying.
Mining of up to 13mtpa will commence at the Halley’s deposit and is expected to continue for the first 11 years of operation.

Thereafter, the Shoemaker-Levy then Hale-Bopp deposits will be mined. Conventional mining methods have been selected with hydraulic excavators and dump trucks to handle ore and waste. The ore from the Shoemaker-Levy deposit will be transported to the process plant via an overland conveyor.

Rehabilitation objectives are achieved through a planned mining sequence that enables progressive backfilling of mined pits.

Approximately 150,000tpa of limestone is required for the process and will be mined from a local quarry.

The Ravensthorpe orebody is distinctive in that it has a high silica content which enables the limonite ore to be upgraded to almost twice the mined grade through a beneficiation plant – a simple scrubbing and screening process to remove the barren, hard silica. The saprolite ore also upgrades but to a lesser extent.

Limonite and saprolite ores are to be treated separately in two purpose-built beneficiation circuits, thereby increasing the nickel grade of the ore prior to leaching.

The project’s hydrometallurgical flowsheet is a combination of pressure acid leach (PAL) and atmospheric leach (AL), called Enhanced Pressure Acid Leach (EPAL).

The EPAL process entails separate mining, stockpiling and beneficiation of limonite (high iron, low magnesium and calcium, upper levels) ore and saprolite (low iron, high magnesium, deeper levels) ore. The limonite is treated by PAL, whilst the saprolite is treated by AL using the PAL discharge and additional acid. The process enables better utilisation of all ore types within the Ravensthorpe resource, and the recovery of an additional 15,000tpa of nickel. It also has a number of cost and operational benefits.

The process downstream of the leaching circuit uses the proven Cawse flowsheet with partial neutralisation, followed by separation of the barren tailings from the nickel bearing solution, further impurity removal and precipitation of MHP. This intermediate product is then transported to the QNI Yabulu Refinery.

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UTLITIES - RAVENSTHORPE

Sulphuric Acid Plant
The plant produces acid for the leach circuits and high-pressure steam for the process plant and power generation.

Power and Steam Generation
The Power and Steam Generation Plant is made up of three steam turbines, three package boilers, two diesel generators and mechanical and electrical equipment.

Water
The project uses seawater that will be piped from the Southern Ocean and pumped to the site via a 46km long pipeline system. Seawater will be desalinated on site to produce freshwater for steam production while the waste brine stream will be used in the beneficiation circuit.

Tailings Storage Facility and Evaporation Pond
Construction of the tailings storage facility (TSF) and evaporation ponds (EP) will be staged and utilise a multi-cell configuration to provide maximum operational flexibility and progressive rehabilitation during operational life. The tailings storage facility has been carefully designed to ensure the best possible containment.

Infrastructure
A combination of multi user regional infrastructure and project infrastructure is required to support the implementation and operation of the project. The multi user infrastructure includes upgrade of local roads, new shire airstrip, emergency services, sewered land, housing, education, power and water and other basic services. Project infrastructure includes site buildings, accommodation village, communication, plant roads, construction camp and port facilities at Esperance.

RESIDENTIAL WORKFORCE PREFERENCE

BHP Billiton has a strong preference for a residential workforce rather than a fly-in/fly-out operation at Ravensthorpe. The project’s relative proximity to the three communities of Hopetoun, Ravensthorpe and Esperance creates a unique opportunity to advance regional development on the south-east coast of Western Australia.

If a residential option proceeds, it is estimated 300 project employees and hundreds more indirectly employed by the project, and their families, will become part of the local community.

A decision to proceed with a residential option is dependent on whole-of-government participation in community infrastructure including upgraded water, power, educational and other community facilities as well as roads.

PORT OF ESPERANCE

BHP Billiton plans to use the Port of Esperance for the import of raw materials and export of product. For this, expansion of the port facilities will be required including container handling facilities, which will be of further benefit to other Port customers.

Requirements through the Port of Esperance include:
- Importation of approximately 500,000 tonnes pa of prill, a granular form of sulphur sourced from Vancouver Canada and the Middle East – 10 shipments per year.
- 40,000 tonnes pa of magnesia shipped from Queensland and China.
- Shipment to Townsville of approximately 220,000 tonnes pa of MHP in purpose built, sealed containers equating to approximately 15 shipments.

YABULU EXTENSION PROJECT

QNI Yabulu Refinery is located 25 kilometres northwest of Townsville. Yabulu’s origins date back to 1972 with the construction of the Greenvale mine and township in north Queensland. Ore from the Greenvale mine was railed to the Yabulu Refinery from 1974 to 1993. Since 1986 the Yabulu Refinery has processed over 43 million tonnes of imported ore from New Caledonia, Indonesia, and the Philippines.

The ore is shipped to the Port of Townsville where QNI has its own materials handling facility, and then transported by rail to Yabulu Refinery.

Yabulu has an annual processing capacity of around 3.6 million wet tonnes of lateritic ore. Its annual production in 2003 was 31,200 tonnes of nickel and 1900 tonnes of cobalt. The refinery is one of the largest nickel/cobalt processing plants in the world and a leader in nickel hydrometallurgy.

Yabulu Refinery carries-out two major functions – ore processing and refining.

- The front-end or ore processing section where the nickel ore is dried, ground, roasted and leached in an ammonia-ammonium carbonate solution to extract the nickel and cobalt; and
- The back-end or metal refining section where the nickel and cobalt are recovered utilizing solvent extraction technology, separated and further refined to produce products for sale in the global market.

The Yabulu extension involves only extending the back-end or metal refining section, because the partially processed Ravensthorpe intermediate product will enter halfway through the process.

The metal refining section will be expanded to more than double its existing capacity to refine MHP to produce nickel and cobalt products for the stainless steel, chemical and battery markets.
By building on the existing equipment and processes, the expansion will dramatically reduce unit cost of production and more than double output.

The proposed new plant and equipment for the refinery expansion includes:

**MHP Receival and Treatment Facilities - container storage and unloading, primary and secondary leaching**

The MHP from Ravensthorpe will be received at the Yabulu refinery where it will be stockpiled in a weatherproof environment prior to feeding into a two stage leaching process. In order to process the additional MHP, new material handling equipment will be constructed.

**Ammoniacal Solvent Extraction (ASX) plant extension - duplication of the existing plant and an expansion of the gas recovery section**

The additional equipment required in the nickel/cobalt separation section of the plant is a duplication of the existing facilities. Minor de-bottlenecking activities will be required in the existing plant.

The new ASX circuit will operate in series with the existing plant.

Plant feedstock preparation for the cobalt plant will be based on the existing circuit. The existing circuit will be expanded to accommodate the increase in throughput.

**Line 2 Nickel Product Building**

A second nickel product plant (comprising precipitation, filtration, calcining, reduction, sintering and packaging) will be constructed to provide sufficient capacity to handle the additional throughput.

**Cobalt Plant Extension**

An extension of the existing plant will be required to increase production capacity for the additional cobalt. The new equipment will largely be installed within the existing cobalt plant footprint, with the exception of a new cobalt product storage shed.

**UTILITIES – YABULU**

Extension of the existing utilities plant will be required to provide additional power, steam and process gases. This includes a package plant for nitrogen generation by the pressure swing absorption process.

The short fall in ammonia currently produced on site will be supplemented by importing anhydrous ammonia in bulk trucks for on site storage before mixing with water to form aqua ammonia for use in the leaching process.

An existing boiler will be refurbished to generate high-pressure steam for power generation and process requirements. The project will integrate well with the Queensland Government’s coal seam gas program, in that it is planned for this boiler to be converted from oil firing to gas firing, utilising coal seam methane gas to be delivered by the new Moranbah to Townsville gas pipeline. This will assist in delivering a very environmentally efficient expansion.

A new boiler feedwater plant will also be installed.

The existing standby turbine alternator will be changed to generate power as required in conjunction with other units on site. The low-pressure steam exhausted from the turbine in addition to other steam supplies on site will be reticulated throughout the site to the new plant for heating and process requirements.

The capacity of the existing cooler water systems will be augmented by the addition of a new cooling tower to cater for the additional heat loadings.

The plant and instrument air systems will be upgraded with the provision of additional compressor units.
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UNDER FULL TIME STUDY SINCE 1997

BHP Billiton has conducted testwork, pre-feasibility and feasibility studies on this project for the past six years. Over that period US$85 million has been invested in mining reserve definition and planning, batch and pilot testwork, engineering design, environmental studies and permitting, community consultation and land acquisition. The project study phase included over 200,000 hours of engineering work.

Risk management has been an integral part of the evaluation of the project. At Ravensthorpe, trial grade control and mining programs have been completed to confirm the mining costs and ability to deliver the planned ore blends and grade to the process plant.

Substantial bench scale testwork has been completed. In addition, fully integrated pilot scale testwork equivalent to eight months of continuous operation has been completed covering all areas from beneficiation through EPAL to production of MHP, leaching of the MHP and production of final products at Yabulu.

The hydrometallurgical equipment used in pressure acid leaching (PAL) is complex. BHP Billiton has assembled a skilled and experienced project team in Western Australia and Yabulu with direct experience in existing PAL projects. The benefits of the combined patented BHP Billiton Atmospheric Leach research and existing Yabulu nickel refining experience, has also helped to make the project technically and economically robust.

The addition of Atmospheric Leach to the Pressure Acid Leach process means all ore types within the resource can be processed. This enables recovery of an additional 15,000 tonnes pa of final product at low cost that would otherwise have been lost.

The project has been subjected to intense scrutiny including five independent external reviews and a rigorous internal review program.

The key strengths of Ravensthorpe include the low mining costs and the high leach feed grade, which is obtained through beneficiation of the orebody. The combination of pressure acid leaching, now used in around 10% of the world’s nickel supply and atmospheric leaching, matched with Yabulu’s world competitive refinery circuit, gives Ravensthorpe what is believed to be the best risk/reward profile for a greenfield laterite project.
RAVENSTHORPE NICKEL PROJECT
Process Flow Chart: Hydrometallurgical Process
Significant efforts have been made in mine planning and project design to reduce the environmental impacts of the combined projects.

In Ravensthorpe, key infrastructure facilities have been relocated onto cleared farmland areas to minimise disturbance to terrestrial flora and fauna communities. A staged approach to mining also provides benefits in terms of staged clearing and allowing rehabilitation to occur progressively throughout the life of the project.

The project is including an exclusion zone on the Hale-Bopp deposit to preserve all the sub-populations of the Kunzea similis flora species on the deposit, representing at least 40% of the project’s current population.

Additional land purchases, planned revegetation of previously cleared lands and progressive rehabilitation will ensure sufficient passage for natural migration of native species across project lands.

At Yabulu, an extensive environmental impact assessment demonstrated that the project would not significantly impact the ecological values of the region, nor would it significantly adversely impact the community in which it operates.

Environmental Management Plans relating to the construction and operation of the combined projects have been prepared to provide objectives, measures, targets, actions and identify relevant responsibilities. The project will employ best environmental practice complying with all provisions of the Australian state and federal Environmental Acts and Regulations. The Yabulu Extension Project in Queensland and the Ravensthorpe Nickel Project received state and federal environmental approvals during 2002/3 following a public consultation period.

Forward-looking statements
This release contains forward-looking statements about BHP Billiton’s development and capital expenditure plans and future production. Words such as “will,” “is expected to,” “is estimated to” and similar expressions are intended to identify such forward-looking statements. The statements are based on management’s current expectations, estimates and projections; are not guarantees of future performance; and are subject to certain risks, uncertainties and other factors, some of which are beyond BHP Billiton’s control and are difficult to predict. Certain factors that could cause actual results to differ materially are discussed in the sections entitled “Risk Factors” and “Operating and Financial Review and Prospects - General factors affecting our operating results” included in our annual report on Form 20-F for the fiscal year ended June 30, 2003, which we filed with the US Securities and Exchange Commission. You should not place undue reliance on these forward-looking statements, which speak only as of the date of this release. Unless legally required, BHP Billiton undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

The information in this report that relates to Ore Reserves is based on information compiled by Mike Bue, BSc (Mining and Engineering), MEng, PEO, CIMM. Mr Bue is a full time employee of BHP Billiton Ltd and has sufficient experience, which is relevant to the style and type of deposit and to the activity that he is undertaking to qualify as a Competent Person as defined in the 1999 edition of the “Australasian Code for Reporting of Minerals Resources and Ore Reserve”. The Competent Person consents to the inclusion in this report of the matters based on their information in the form and context in which they appear.