

BHP LTD  
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#BHP

## News Release

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BHP LIMITED

QUARTERLY REPORT ON EXPLORATION AND DEVELOPMENT

September 2000 - December 2000

This report covers exploration and development activities for the quarter ended December 31, 2000.

Unless otherwise stated, BHP's interest in the projects referred to in this report is 100%.

### DEVELOPMENT PROJECTS

The following projects are in various stages of development:

### MINERALS

#### Copper Projects

Escondida Phase IV Expansion, Chile (BHP 57.5% interest)

BHP and its joint venture partners in the Escondida copper mine in northern Chile committed to the Escondida Phase IV development project during the quarter. Phase IV represents a major brownfield expansion of a core BHP asset and supports the Company's strategy to add material and high value growth to its Minerals business.

The Phase IV expansion will increase ore processing capacity by 85 per cent resulting in an average increase in copper production of 400,000 tonnes per annum (average total production of 1.2 million tonnes per annum) over the first five years of production.

The development has an estimated capital cost of US\$1,045 million. BHP's share is US\$600 million. Contractor mobilisation to site commenced in December and bulk earthworks are ongoing. First production is expected in September 2002 with full production achieved by April 2003.

Escondida Norte, Chile

(BHP 57.5% interest)

The pre-feasibility study on the Escondida Norte deposit is currently approaching completion, with the internal review scheduled for the second quarter of 2001.

A new mineral resource model for the sulphide ores, suitable to support the feasibility study, was completed in December 2000 and is awaiting external audit. Condemnation drilling for the proposed waste dump area is complete, with oxide mineralisation intersected below the selected crusher/conveyor site requiring additional follow-up drilling.

Conceptual engineering is 90 per cent complete, with various timing and process options considered to permit project optimisation with current mining and strategic development plans, including the Phase IV expansion. An environmental impact study for the project is complete and has been presented for public and governmental review.

Escondida, Chile – Revision of Resources & Reserves

(BHP 57.5% interest)

In conjunction with the recently announced Phase IV expansion project a significant review of copper resources and reserves models at the Escondida mine is in progress.

The first stage of this review was completed in February 2000 with an updated geological interpretation and resource model, which included significant infill drilling in the areas of current mine production combined with a change to the Mineral Resource classification criteria.

The primary purpose is to improve geological knowledge and confidence as the open-pit expands to exploit the more complex and variable contact zone between the quartz-monzonite porphyry intrusion and the host andesite volcanic sequence.

A more rigorous interpretation of the Measured, Indicated and Inferred Resource classifications has resulted in a movement of tonnes to lower confidence levels. This realistically reflects variable confidence in geological and grade continuity in various parts of the deposit.

The significant increase in the estimated resources is due to the release, for the first time, of "Low Grade Ore". (Low Grade Ore is material that is below the current concentrator cut-off grade, but has a copper grade above the economic cut-off grade.) This material is currently being stockpiled and will be processed through the concentrators at the end of active mining.

Also newly reported is "Mixed Ore" material (mixed oxide-sulphide mineralogy) occurring at the top of the enriched copper ore horizon. This may be processed to produce concentrate or cathode. As the process option has not been defined at this time, this material is reported as a Mineral Resource only.

Mineral Resources and Ore Reserves estimates for the Escondida mine at 31 December 2000, compared to the previous 30 June 2000 estimates, are tabulated below. All Resource and Reserve figures are reported in 100% terms and include depletion from mining in the period July to December 2000. All tonnes and grade information has been estimated more precisely than the rounded numbers that are reported, hence small differences may be present in the totals. It is important to note that the Total Mineral Resources are inclusive of resources that are used to define Ore Reserves.

Table 1 Escondida Ore Reserves as at 31 December 2000

Proved Ore Reserve

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Probable Ore Reserve

Total Ore Reserves

TonnesGradeRec. MetalTonnesGradeRec. MetalTonnesGradeRec. Metal**Metall. Rec.Ore type**(millions)(%TCu)(%SCu)(million lbs)(millions)(%TCu)(%SCu)(million lbs)(millions)(%TCu)(%SCu)(million lbs)(%)**Reserves at 30 June 2000**

Sulphide Ore

1,051

1.32

-

26,077

852

1.06

-

16,976

1,903

1.20

-

42,924

87

Oxide Ore

140

-

0.77

1,980

140

-

0.64

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1,645

280

-

0.71

3,651

85

Reserves at 31 December 2000

Sulphide Ore

984

1.31

-

24,244

631

1.08

-

12,810

1,615

1.22

-

37,054

87

Low Grade Ore

219

0.62

-

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2,332

257

0.62

-

2,751

476

0.62

-

5,083

80

Total Sulphide

1,203

1.18

-

26,576

888

0.95

-

15,560

2,091

1.08

-

42,137

-

Oxide Ore

124

-  
0.71  
1,606  
95  
-  
0.54  
942  
219  
-  
0.63  
2,548  
85

Table 2 Escondida Mineral Resource as at 31<sup>st</sup> December 2000

Measured Resource													
	Tonnes	Grade		Cont. Metal	Tonnes	Grade		Cont. Metal	Tonnes	Grade		Cont. Metal	Tonnes
Ore type	(millions)	(%TCu)	(%SCu)	(million lbs)	(millions)	(%TCu)	(%SCu)	(million lbs)	(millions)	(%TCu)	(%SCu)	(million lbs)	(millions)
Resources at 30 June 2000													
Sulphide Ore	1,069	1.31	-	30,873	954	1.03	-	21,663	332	0.92	-	6,734	2,355
Oxide Ore	143	-	0.76	2,396	152	-	0.61	2,044	15	-	0.48	159	310
Resources at 31 December 2000													
Sulphide Ore	989	1.31	-	28,580	718	1.05	-	16,621	572	1.04	-	13,090	2,279
Low Grade Ore	236	0.61	-	3,174	433	0.61	-	5,823	402	0.61	-	5,406	1,071
Total Sulphide	1,225	1.18	-	31,754	1,151	0.88	-	22,444	974	0.86	-	18,496	3,350
Oxide Ore	134	-	0.68	1,992	123	-	0.48	1,302	94	-	0.50	1,036	351
Mixed Ore	60	0.64	0.23	847	176	0.64	0.23	2,483	136	0.84	0.29	2,519	372

## Notes to the tables

- TCu = total copper; SCu = acid soluble copper
- Rec. Metal = Recoverable Metal; Metall. Rec. = Metallurgical Recovery;  
Cont. Rec. = Contained Metal
- Competent Person - Sean Brennan
- Cut off Grades: Sulphide Ore  $\geq 0.7\%$  TCu, Low Grade Ore  $\geq 0.53\%$  TCu and  $<0.7\%$  TCu, Oxide Ore  $\geq 0.2\%$  SCu
- Proved Reserves include current stockpiles of sulphide and oxides ores (above respective cut-off)
- Recoverable metal is calculated by applying metallurgical recovery factors and then deducting a further 2% of metal to reflect estimated global mining losses.
- "Total Sulphide" is the sum of Sulphide Ore and Low Grade Ore

As is customary at Escondida, Measured, Indicated and Inferred Resources are used to generate an Ultimate Pit shell. This allows the maximum size of the pit to be used in strategic mine planning activities and reasonably reflects the future mining potential of the deposit, subject to future infill drilling. Resource management practice at Escondida is to maintain future production in the period 0 to 10 years, drilled out to Measured + Indicated only resource categories. The current infill drilling program is in part aimed at ensuring less than 5% tonnage contribution of Inferred Resource in this period. Beyond 10 years there is an increased proportion of Inferred Resource contributing to the production schedule, averaging 30% in the period 11 to 20 years.

Reported Proved and Probable Reserves (Table 1) are derived from the Measured and Indicated Resources within the ultimate pit after mining factors have been applied. Removing Inferred Resources from pit optimization results in a smaller, intermediate pit and a consequent reduction in the reserve base. Proved and Probable Reserves of Sulphide Ore, Low Grade Ore and Oxide Ore in this smaller pit, as at end December 2000, are reduced to 1,405 million tonnes at 1.27% TCu, 332 million tonnes at 0.62% TCu, and 156 million tonnes at 0.63% SCu, respectively.

### Tintaya Oxide Project, Peru

The updated feasibility study has been completed and detailed engineering continues. The feasibility study is now being reviewed by senior management prior to Board submission.

Subject to approval, construction of the Oxide Project will take approximately 15 months. Annual production is expected to peak at 34,000 metric tonnes of Grade 'A' cathode at a direct cash cost of less than US40 cents per pound.

### Tintaya Antapaccay Project, Peru

The geologic model has been updated based on the results of last quarter's drilling program and a revised structural model. A new block model was created based on this information. Mine planning and scheduling is now in progress to determine the optimum sequence. Work towards land compensation agreements continued through the period.

### Agua Rica, Argentina

(BHP 70% interest)

The joint venture is continuing to evaluate development options for the project that may reduce capital and operating costs. Activity at the field site was limited to environmental monitoring and tenement management.

## Iron Ore Projects

### Mining Area C, Western Australia

(BHP 85% interest)

Negotiations with registered groups under the Native Title Act Section 29 notice proceeded during the quarter and agreement has been reached with one group in relation to an infrastructure title and with another group in relation to

the mining lease.

Pre-feasibility Study work is now moving to the final stages, with the Eastern rail alignment accepted as the preferred route.

Yandi Lump, Western Australia

(BHP 85% interest)

BHP is examining the possibility of producing an iron ore lump product from its Yandi operations in Western Australia and currently has a one million tonne trial underway with the Japanese Steel Mills.

BHP is the first company to produce a lump product from the Yandi type deposits. The development of the market has been in conjunction with the Japanese Steel Mills. The project is in the pre-feasibility phase and has potential to add another higher value product to BHP.

Orinoco HBI Plant, Venezuela

(BHP 50% interest)

Construction on Module 2 was essentially complete by the quarter ended 31 December 2000. Production has been delivered from both modules and three of the four trains during the second half of calendar year 2000. Train 4, which was scheduled to be commissioned by the end of the calendar year, did not start up until 18 January 2001.

The plant has a capacity of 2.2 million tonnes per year. Production has been constrained due to significant ramp-up difficulties.

### Coal Projects

San Juan Underground, New Mexico, USA (

BHP 100% interest)

San Juan underground mine development received BHP Board approval during mid-October. Notice was received from the United States Bureau of Land Management that BHP's bid for lease NMNM 99144 had been accepted contingent on Justice Department review. With the acquisition of this lease, BHP will have sufficient reserves to meet contracted sales requirements through to 2017.

Development work commenced during early November utilizing leased equipment and contract miners. Thirty-four permanent underground employees were hired out of a planned underground work force of 200. A contractor was selected to complete the surface facilities construction and commenced detailed engineering and preliminary earthworks. In addition, the contractor selected to complete pressure grouting at the shaft site commenced work during December.

Bids were received for the ventilation shaft contract, which will be awarded in January with work scheduled to commence during March. Underground development equipment was ordered, with first deliveries made late in the quarter. Bids were also requested and received for the longwall mining equipment. Selection of this equipment will be made during mid-February.

Goonyella Mine, Queensland

(BHP 52.1% interest)

Exploration mining ceased in mid-November in accordance with the scope and budget requirements. The outcomes of the exploration mining phase are now being fully analysed and documented as part of the feasibility study.



More drilling is planned in 2001 to ascertain coal quality in an adjoining area. It is also expected that an additional 3-D seismic survey will be completed by April-May 2001, subject to the impact of the wet season conditions.

Saraji Mine,

**Queensland** (BHP 52.1% interest)

Exploration activities for the Saraji longwall pre-feasibility study continued with 20 line kilometres of 2-D seismic surveys and six coal quality drill holes.

Dendrobium, Illawarra Coal (BHP 100%)

During the quarter, feasibility scope of work continued. This included additional exploration, technical studies in mine design covering strata control, ventilation, gas drainage and hydrology. Engineering studies have continued, covering underground equipment, stockpile, rail transport, processing and surface infrastructure aspects. This has led to detailed discussions with potential equipment/service providers.

These efforts are being conducted in parallel with widespread stakeholder and community consultation while progressing the Government approval process, including the development of an Environmental Impact Statement which will be submitted early next year. Work to date is on schedule and within budget allocations.

#### Base Metal Projects

Gag Island Nickel, Indonesia

(BHP 75% interest)

Discussions continue with both PT Aneka Tambang and Falconbridge to resolve the various issues relating to Falconbridge joining the Gag Island joint venture. Progress on these issues includes:

- BHP has proposed clarifications to several commercial issues and PT Aneka Tambang is studying the proposal
- BHP has had numerous meetings with the Indonesian Department of Forestry seeking a 'comfort letter' recognizing PT Gag Nikel's prior right to use surface mining techniques in a forest that was later declared protected
- Discussions with Falconbridge on the Scope of Work for studies and the Feasibility have begun. Process investigations have not been finalized

Preparation is underway on the island for a resumption of drilling, pending resolution of the above issues. In Newcastle NSW, BHP's pilot facilities are being reassembled and upgraded after relocation from Reno, Nevada.

#### Diamonds and Industrial Minerals Projects

Ekati Diamonds, Canada

(BHP 51% interest)

Final results were received for bulk samples from the winter 2000 exploration reverse circulation drilling programs for the Cougar, Wolverine, Zach and Lynx pipes:

Commercial valuations were not carried out on the Cougar, Wolverine and Zach parcels because of the limited diamond recoveries. The average value of the Lynx diamond parcel reported by three Antwerp based diamond dealers (140.6 cts) is US\$139 per carat.

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The Lynx pipe (approximately 0.6 hectares) is located about three kilometres southwest of the Misery pit. The Cougar, Wolverine and Zach pipes are situated within the core zone and the Lynx pipe is located within the buffer zone.

Significant microdiamond results were received for the Kodiak, Pegasus and Wildebeest pipes which were discovered during the summer 2000 drilling program:

Drill Hole

Dip

Length

Interval

Sample Wt. (kg)

Stones (<0.5mm)

Stones (>0.5mm)

Total carats

Kodiak

00-17

-53°

205.1 m

23.3 – 203.6 m

81.7

74

17

0.087

Pegasus

00-25

-45°

194.2 m

28.4 – 194.2 m

295.3

291

62

0.330

Wildebeest

00-17

-50°

71.0 m

52.4 – 71.0 m

35.0

41

11

0.032

The Kodiak pipe is located within the core zone and the Pegasus and Wildebeest pipes are located within the buffer zone.

#### PETROLEUM

Griffin, Australia (BHP 45% interest, operated)

Two wells in the field, Griffin-8 and Griffin-1, were re-entered to either shut off water or perforate additional zones during November/December 2000. This accessed additional reserves and generated incremental production of nearly 30,000 bopd, with the Griffin Venture producing just under 70,000 bopd in early 2001.

Work continues on interpreting the reprocessed 3-D seismic data to determine potential further development opportunities in the broader Griffin field, including a potential Griffin-9 infill well.

Keith, North Sea (BHP 31.83% interest, operated)

During the quarter, production began from the Keith oil field, located north east of Aberdeen in UK North Sea block 9/8a.

The former appraisal well will access around 15 mmboe of proved and probable reserves (4.8 mmboe net to BHP) for a total capital expenditure of approximately A\$62 million (A\$19 million net BHP).

Initial daily production was approximately 15,000 barrels of oil and 15 million standard cubic feet of gas, with the average rate during the first year expected to be about 8,000 bopd.

Further development of this geologically complex field will be assessed following the acquisition of technical data during production. Future phases, if justified, offer the potential for significant additional volumes of hydrocarbons.

Liverpool Bay - Hamilton East Field (BHP 46.1%, operated)

An environmental impact assessment has been conducted by BHP Petroleum in Liverpool Bay for the proposed single well subsea development of the Hamilton East gas field.

An environmental statement will be issued for public consultation later this month with drilling currently targeted to begin during the second quarter of 2001. The well will be tied back 6.5 km to the existing Hamilton North platform. First gas is targeted for the end of the year.

Ohanet Development, Algeria (BHP 45% interest. Joint operating entity comprising SONATRACH/BHP)

The Risk Service Contract for Ohanet was gazetted on 12 November 2000, marking formal government approval of the contract.

During the quarter, SONATRACH/BHP awarded contracts to Western Geco and to an Algerian company, ENAGEO, covering a total of around 1,000 sq km of 3-D seismic acquisition. Contracts for drilling, casing, tubings and core study work are also expected to be awarded during January.

Engineering, Procurement and Construction contractor, ABB/PIL has now mobilised to the site and commenced clearance works in January 2001. Most of the longlead facilities equipment for the project has been ordered.

In December 2000 BHP announced the sale of a 15 per cent interest in Ohanet to the Woodside Petroleum group, reducing the Company's capital commitment to the project by around US\$150 million. BHP's interest in the development now stands at 45 per cent.

First production is scheduled for October 2003 and peak liquids production will be around 58,000 barrels per day gross. BHP's share of revenue is taken from its share of condensate and LPG produced.

ROD Integrated Oil Field Development, Algeria (BHP 17.3% interest. Joint operating entity comprising SONATRACH/BHP/AGIP)

The Front End Engineering Design work is now well advanced and is expected to be completed during the first quarter of 2001. The main drilling contracts will be put out to tender during January.

During the quarter, a Final Development Report was submitted to the Ministry of Mines and Energy for the RAR discovery, which is a single well target that will be included as part of the integrated ROD development.

First production from ROD is scheduled for January 2003.

Typhoon, Gulf of Mexico (BHP 50% interest, non-operated)

The Typhoon development, consisting of the subsea completion and tieback of the four existing appraisal wells to a mini tension leg platform (TLP), is being developed jointly by Chevron (50%, operator) and BHP (50%). Peak production of 40,000 bopd and 60 mmscfd (gross) is expected, with first production scheduled for third quarter 2001.

The second well (236-2) should be completed in May 2001. Construction on the TLP hull and topsides at McDermott's yard in Morgan City, Louisiana, is continuing with installation planned in May 2001. In December the MMS (Minerals Management Service) granted Royalty Relief for the Typhoon Field.

Zamzama Extended Well Test, Pakistan (BHP 38.5% post commerciality equity, operated)

Construction of the production facilities is well advanced and the project remains on schedule to produce first gas by the end of the first quarter 2001.

Markets have now been identified and negotiations have commenced in relation to Phase 1 of the full field development.

## EXPLORATION

### MINERALS

The Discovery Group of BHP Minerals carries out worldwide grass-roots exploration for all of BHP's minerals businesses. During the quarter a process of re-organisation, to align the Discovery Group with the BHP Minerals portfolio management model, was completed.

The Discovery Group is also responsible for exploration and development work relating to existing mines.

Falcon Airborne Gravity Gradiometer Technology.

The deployment of BHP's proprietary airborne gravity gradiometer technology (called "Falcon") is continuing in Australia and North America.

The deployment of Falcon continues to progress well and has opened up new opportunities for BHP both in its own right and with partners. New targets identified by the survey over the DHK joint venture ground were recently announced by the partners and will be followed up when feasible.

Following the successful campaigns the two aircraft will be moved to Southern Africa and South America during the forthcoming quarter.

### PETROLEUM

Wells drilled during the quarter or in the process of drilling at 31 December 2000.

<u>WELL</u>	<u>LOCATION</u>	<u>BHP EQUITY</u>	<u>STATUS</u>
Chinook-1	Walker Ridge Block 425, Gulf of Mexico	70%, BHP Operator	Hydrocarbons found but not in commercial quantities.  Plugged and abandoned.
Mad Dog-3	Green Canyon Block 783, Gulf of Mexico	23.9% Operator - BP Amoco	Hydrocarbons encountered.  The need for an additional appraisal well is being determined.
Atlantis-2 ST1	Green Canyon Block 743, Gulf of Mexico	44%, BHP Well-Operator	Appraisal well confirmed a lateral extension of the known range of the Atlantis

			hydrocarbon accumulation of up to 1.6 kilometres (one mile) from the original wellbore, and also confirmed the continuity and quality of the Miocene reservoir sands.
Cavalier-1	WA-9-L, Dampier Basin, Australia	16.67%, Operator-Woodside	Plugged and abandoned.
Gaea-1	WA-1-L, Dampier Basin, Australia	16.67%, Operator-Woodside	Gas-condensate discovery. Plugged and abandoned.
Eva Eva South	Secure Block, Bolivia	41.18% Operator - Repsol	Drilling ahead.

**EXPENDITURE**

Information related to exploration expenditure will be included in the BHP Half Year Profit Report, to be released on 8 February 2001.

**COMPETENCE AND RESPONSIBILITY**

The following statements apply in respect of the information in this report that relates to any stated Mineral Resources or Ore Reserves.

- The information is based on and accurately reflects information compiled by the person named under each relevant section of the report;
- Each named person is either a Corporate Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists and is a full-time employee of a member company of the BHP Group;
- Each named person has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he or she is undertaking to qualify as a Competent Person as defined in the 1999 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Each named person consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

For information contact:

**Media Relations:**

Michael Buzzard: Senior Media Relations  
Advisor  
(BH) (61 3) 9609 3709

Mobile (61) 417 914 103

**Investor Relations:**

Robert Porter: Vice President Investor  
Relations  
(BH) (61 3) 9609 3540  
Mobile (61) 419 587 456

Francis McAllister

