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## Hudson Resources Bauxite Portfolio: 16 bauxite exploration tenements covering over 5,000 sq kms

"Our objective is to find and prove up high grade bauxite resources to be mined and transported to alumina plants at low cost. Therefore we are focusing on bauxite deposits located close to existing transport and other infrastructure, close to coal mines, industrial centres and ports on the east coast of Australia.

"Based on 2 years of studies of information and field work in eastern New South Wales and south-east Queensland, the areas which have the best potential have been selected. On EL 6997 north of Inverell which was granted a year ago, the first stage of surface exploration and a drilling programme have been completed with encouraging results; other tenements have been recently granted, four have been offered and accepted while five are under application."

Peter Meers, CEO, Hudson Resources Limited

# Hudson Resources (ASX: HRS) is moving forward with an exploration program for bauxite in eastern NSW and south-east Queensland.

# Hudson Resources now has sixteen exploration tenements granted, offered or under application covering over 5,000 sq km of ground with bauxite deposits.

# Background

The main phase of successful bauxite exploration on the eastern seaboard was between 1950 and 1970. Significant deposits of bauxite were discovered in Weipa, Queensland in 1955 and the Weipa Port was opened in 1962.

Following the discovery of very large deposits of bauxite at Weipa and Aurukun on Cape York Peninsula, little attention was given to the bauxite deposits of the eastern seaboard of Australia.

The prevailing view was that all large deposits in Australia had been discovered and exploration efforts are being directed overseas.

Bauxite deposits in overseas countries like Brazil, Venezuela, Guinea, Laos and others are large but they are in remote locations with little infrastructure and no coal.

Hudson Resources commenced exploration for bauxite in early 2007. The decision to focus on bauxite deposits in eastern NSW and south-east Queensland was made on the basis of:

- historic reports of good quality of bauxite (gibbsite, low silica);
- existing transport and other infrastructure;
- proximity to existing aluminium smelters, existing alumina refineries and potential sites for new alumina refineries;
- coal mines located nearby (to produce alumina one needs equal amounts of bauxite and coal);
- proximity to population centres with skilled workforce (a local workforce that is committed to the success of a mine is a great advantage);
- industrial centres with engineering workshops located nearby; and
- short to medium distance to deep water ports.



Historic reports on investigations of bauxite deposits made in the period 1900–1950 provided by Geological Surveys of NSW and Queensland provided a good starting base.

In December 2007, Hudson Resources was granted its first bauxite exploration licence (EL 6997) covering the main cluster of known bauxite deposits in the Inverell region of NSW.

#### **Inverell Project**

EL 6997 was granted in December 2007 and is located approximately 20 km north-west of Inverell, in north eastern New South Wales. The licence consists of 99 units and covers an area of approximately 297 sq km.

Extensive and almost continuous outcrops of bauxite were identified during field traversing during first stage exploration. Typical outcrops of bauxite are in layers of between 3 and 12 metres (m) thick and extend in a semi-continuous manner for distances of up to 2 kms. These outcrops are found on the edges of low plateaus as well as on top of the plateaus.

Promising assay results have been obtained from samples taken from outcrops of bauxite.

A drilling programme (total of 83 shallow holes for 1,600 meters) was completed during the first stage of exploration.

At this time assays have been obtained for only two drill holes but they confirm the results of outcrop sampling which indicate that the bauxite layer has a thickness of the order of 3-12 m and that silica content is quite low.

A detailed report will be released once assays for samples from all drill holes are to hand.

#### **Resource objective in EL 6997 (Inverell)**

Hudson Resource's geologists are of the view that based on first stage sampling and assaying of bauxite outcrops and the first stage of drilling, a much larger resource may be defined in EL 6997 (Inverell) than the resource estimates in historic reports. The reason for this is that before 1950, production and use of aluminium was very small so a one million tonne bauxite deposit was considered large enough and there was little point in proving up larger deposits.

No resource estimates have yet been made as assays from drilling are yet to be received. However, the area covered by first stage sampling, assaying of bauxite outcrops and first stage of drilling in EL 6997 (Inverell) is expected to contain significant tonnage because the thickness of bauxite layer is in the order of 3–12 m.

First stage drilling only covered a small part (50 sq kms) of EL 6997.

To increase the resource size in an endeavour to achieve our 150 million tonne objective subsequent drilling will expand into adjacent areas of EL 6997.

Assays obtained to date indicate that the bauxite in EL 6997 (Inverell) are as follows:

	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	LOI
Samples from majority of bauxite outcrops sampled to date	35 - 56%	7 - 36%	2 - 12%	20 - 27%
Samples <b>only</b> from bauxite outcrops in the first stage (2km by 1km) main target area	45 - 48%	19 - 26%	2 - 5%	23 - 27%

Specialist assays for reactive silica have not been undertaken, however, total silica assays reported above are relatively low so reactive silica is expected to be relatively low compared with bauxites from deposits in other parts of Australia and overseas.

Bauxite with relatively low silica (such as Hudson Resources deposits) can be used for blending with high silica bauxite from other mines.

Mineralogical studies and Loss on Ignition (LOI) data indicate that alumina is present predominantly as gibbsite which is also a significant advantage.



## Metallurgical testing - potential for beneficiation

A metallurgical testing programme is underway on samples from outcrops form EL 6997 (Inverell), consisting of several stages, including:

- optical and electron microscope studies;
- beneficiation by wet screening;
- determination of reactive silica and available alumina and other specialist chemical analyses; and
- assessment of beneficiated product quality.

First stage microscopic studies indicate that the size of grains of gibbsite and iron oxide minerals in the samples is much larger than in bauxite from deposits in northern Australia and overseas.

Trials are being undertaken to determine the feasibility of extracting a significant portion of the iron oxide mineral grains from the bauxite during beneficiation, to make a low iron, low silica product.

Removal of the iron would result in a significant increase in the alumina content of the beneficiated product, thus increasing the range of marketing opportunities.

### **Environmental issues and landowner relations**

Farmers generally do not clear the small trees and scrubs in areas underlain by bauxite because the soil is poor as nutrients have been leached out of the soil.

Removal of the bauxite layer and rehabilitation (including spreading of better quality soil that can be obtained from thick alluvial soil areas near bauxite outcrops) can result in transformation of what is currently scrub-land into fertile land for grazing and crop production.

Local communities welcome potential new business activity and a new source of jobs.

#### **Geology and exploration**

In EL 6997 (Inverell) the bauxite layer is hosted in Tertiary Volcanics which consist of alternating basalt and tuff layers. Outcrops of hard basalt layers are rare. Majority of outcrops of volcanics are weathered and friable so that it is not possible to distinguish basalt flows from layers of coarse grained tuffaceous material. The bauxite layer has formed by weathering of porous friable layer in volcanics during the Tertiary period.

Study of geomorphology based on a Digital Terrain Model led the Company's geologists to the conclusion that Tertiary Volcanics with bauxite are preserved on remnants of old surface which form larger plateaus or smaller 'mesas'.

A large thickness of bauxitic laterite is possible if the original bauxitic laterite was eroded and redeposited in a palaeo-depression or palaeo-channel. Several outcrops found in EL 6997 (Inverell) resemble thick accumulation of bauxitic laterite in a palaeo-depression or palaeo-channel. In most cases the thickness of bauxite layer observed in outcrops and in drill holes is 3–12 m.

Thick bauxite accumulations in palaeo-depressions and palaeo-channels are a new concept for east NSW and south-east Queensland which could lead to discovery of large tonnages of bauxite.

#### **Regional exploration programme in east NSW and south-east Queensland**

Hands-on experience obtained through field work on EL 6997 (Inverell) was used in extensive regional reconnaissance exploration programmes in similar geological settings in other parts of eastern NSW and in south-east Queensland.

The result was the development of a portfolio of 16 exploration tenements in eastern NSW and in southeast Queensland, covering the areas which have the best potential for commercial deposits of bauxite (see tables and maps below).



All the Company's tenements are close to existing transport and other infrastructure, alumina refineries and aluminium smelters, population centres with skilled workforce, industrial centres and ports and in most cases also close to coal mines.

Good location means major savings on capital and operating costs, as well as shorter time to production.

### Hudson Resources bauxite portfolio\*

Application No	Licence No	Project	Status	Date Applied	Date Granted	Units / Blocks	Size Sq km
Queensland							
EPMA 18014		Binjour	Application	25-02-09		50	150
EPMA 17831	EPM 17831	Hillgrove	Granted	16-09-08	25-02-09	89	267
EPMA 17830	EPM 17830	Haden	Granted	16-09-08	25-02-09	88	264
EPMA 17790		Hampton	Offered	20-08-08		112	336
EPMA 17798		Red Hill Extended	Offered	26-08-08		100	300
EPMA 17800	EPM 17800	Red Hill	Granted	26-08-08	25-02-09	100	300
EPMA 17799		Red Hill West	Offered	26-08-08		100	300
EPMA 17801		Red Hill South	Offered	26-08-08		100	300
New South Wal	es						
ELA 3579	EL 7268	Pindaroi	Granted	13-08-08	23-12-08	46	138
ELA 3304	EL 6997	Inverell	Granted		24-12-07	99	297
ELA 3644		Yarrowitch	Application	21-01-09		93	279
ELA 3626		Merriwa	Application	27-11-08		424	1,272
ELA 3648		Taralga	Application	04-02-09		100	300
ELA 3581	EL 7279	Wingello West	Granted	20-08-08		7	21
ELA 3582	EL 7269	Windellama	Granted	20-08-08	23-12-08	90	270
ELA 3661		Trundle	Application	27-02-09		84	252
* Current at 12 March 2009						1,682	5,046

Summary description of bauxite outcrops and deposits in Hudson Resources exploration tenements (from north to south)^{\rm 1}

Location	Licence / Application	Geological Description	<b>Al</b> <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	LOI
SE Queens	land					
Binjour	EPMA 18014	Loose lumps of bauxite in thick lateritic red soil profile developed on Tertiary Volcanics. No systematic exploration to date.	Not Available	Not Available	Not Available	Not Available

<sup>&</sup>lt;sup>1</sup> Assay testing certificated by ALS Chemex (Australian Laboratory Services Pty Ltd)



Location	Licence / Application	Geological Description	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	LOI
Hillgrove Haden Hampton	EPM 17831 EPM 17830 EPMA 17790	Loose lumps of bauxite in thick red soil in upper part of lateritic profile developed on Tertiary Volcanics, plus a number of outcrops of massive cemented bauxite layers – similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi). No systematic exploration to date. Range of assays quoted here include samples of bauxite lumps after removal	38 - 50%	15 - 32%	2 - 7%	24 - 28%
		of friable red soil by screening as well as representative samples across the entire thickness of massive cemented bauxite outcrops.				
Red Hill	EPMA 17798 EPMA 17799 EPM 17800 EPMA 17801	A number of widely spaced outcrops of massive cemented bauxite layers - similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi) - in upper part of thick lateritic profile developed on Tertiary Volcanics. No systematic exploration to date.	35 - 46%	21 - 34%	3 - 8%	20 - 26%
New South	Wales					
Pindaroi Inverell	EL 7268 EL 6997	A number of widely spaced outcrops of massive cemented bauxite layers - similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi) - in upper part of thick lateritic profile developed on Tertiary Volcanics.	35 - 56%	7 - 36%	2 - 12%	20 - 27%
Yarrowitch	ELA 3644	Two outcrops of massive cemented bauxite layer - similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi) - in upper part of thick lateritic profile developed on Tertiary Volcanics. No systematic exploration to date.	Not Available	Not Available	Not Available	Not Available
Merriwa	ELA 3626	Three outcrops of massive cemented bauxite layer - similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi) - in upper part of thick lateritic profile developed on Tertiary Volcanics. No systematic exploration to date.	Not Available	Not Available	Not Available	Not Available
Taralga Wingello Windellama	ELA 3648 EL 7279 EL 7269	A number of widely spaced outcrops of massive cemented bauxite layers - similar to those EL 6997 (Inverell) and EL 7268 (Pindaroi), as well as pisolitic bauxite layers - in upper part of thick lateritic profile developed on Tertiary Volcanics. Assays quoted here are for selected	45 - 50%	9 - 22%	4 - 8%	15 - 27%
<b>T</b>		samples from Wingello.				
Trundle	ELA 3661	Small outcrops of pisolitic and massive cemented bauxite surrounded by extensive areas of red soil in upper part of lateritic weathering profile in a rather flat area with poor outcrop.	Not Available	Not Available	Not Available	Not Available



# **Technical team**

#### Jacob Rebek Chief Geologist

Mr Rebek joined Hudson Resources in 2005. He is a leading Australian geologist with forty years experience in exploration. From 1970 to 2003 he worked in CRA and Rio Tinto in various parts of Australia and overseas, including the roles of exploration manager for Papua New Guinea in 1970's, South Australia and Northern Territory from 1981 to 1984, Eastern Australia from 1987 to 1993 and Exploration Director for South America from 1997 to 2000; he led teams which discovered new zinc, copper, gold, coal and iron ore deposits.

#### Andrew White Geophysicist

Dr White is a consulting geologist and management consultant. He has over forty years experience in exploration, including roles as exploration manager at Comalco (the bauxite / alumina / aluminium subsidiary of CRA / Rio Tinto) and at Poseidon and is a founding director of the W.H. Bryan Mining Geology Research Centre, University of Queensland.

He has extensive experience in exploration, mining, project development and management and is a presenter of AMF and university courses on management of mineral exploration.

#### **Geo Discovery Group**

Brisbane based Geo Discovery Group has been engaged to manage and support an exploration program, notably drilling. In future, geophysical testing, to define zones with thickest accumulations of bauxite may also be undertaken.

#### For further information please contact

Peter Meers Chief Executive Officer

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# **Qualifying statements**

The information in this report that relates to Exploration Programs is based on information compiled by Jacob Rebek who is a member of Australian Institute of Mining and Metallurgy. Mr. Rebek is a qualified geologist and is a consultant to Hudson Resources Limited where he acts in the capacity of chief geologist.

Mr. Rebek has sufficient experience which is relevant to the style of mineralization 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 Resources. Mr. Rebek consents to the inclusion in the report of the matters based on information in the form and context in which it appears.

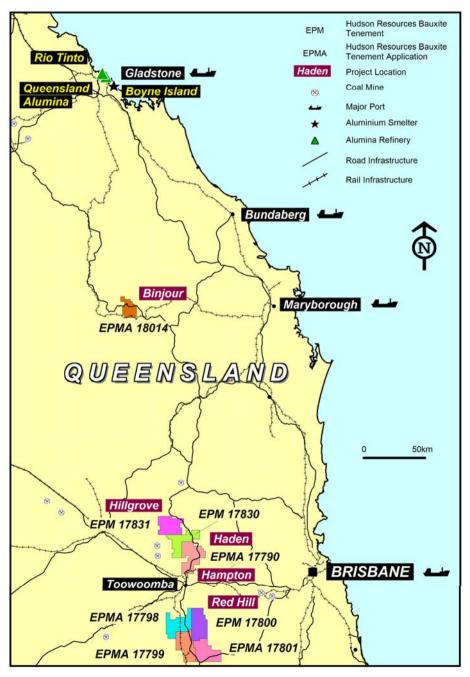




Hudson's Resources Australian bauxite tenements\*

\* Current at 12 March 2009

Hudson Resources Queensland bauxite tenements



Hudson Resources New South Wales bauxite tenements



