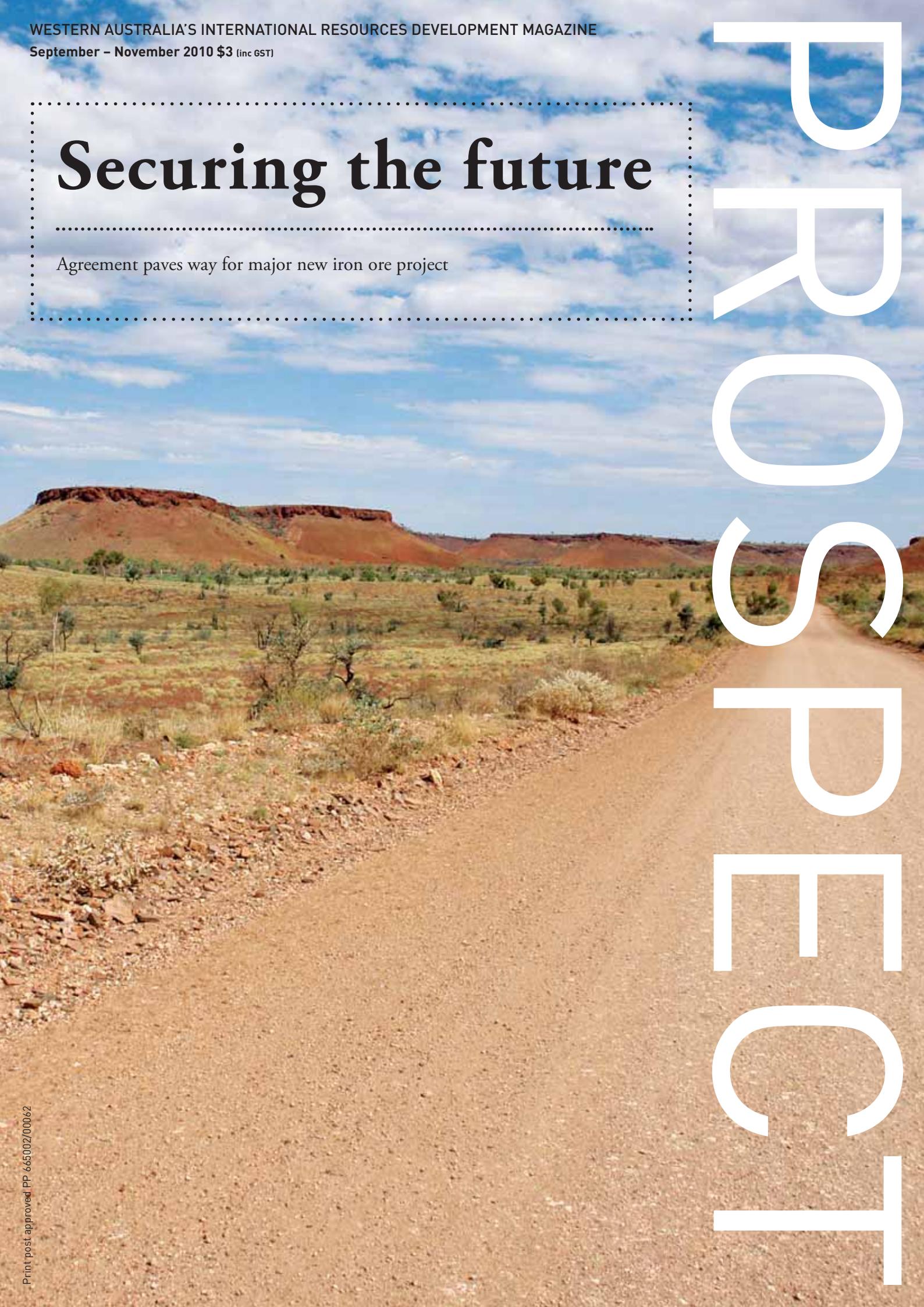


# Securing the future

Agreement paves way for major new iron ore project



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## Securing future resources growth

Western Australia's resources sector is going from strength-to-strength with a number of significant projects set to transform the State's north-west and help secure the future growth of the State's resources industry.

In June, the Western Australian Government signed a historic agreement with the State's two largest iron ore producers that will secure further development of the Pilbara iron ore industry and increase Western Australia's royalty income.

The agreement with BHP Billiton and Rio Tinto presents a new chapter in the State's resources industry.

Also in June, the Western Australian Government gave the green light to a dedicated railway for the transportation and export of Roy Hill iron ore.

The project will see a 300 kilometre railway connect the Roy Hill mine with port facilities in Port Hedland and, on completion, will enable greater access for smaller miners to rail infrastructure in the region.

The Roy Hill mine is expected to be a feature in Western Australia's resource industry for many years to come, delivering jobs, investment and prosperity in the Pilbara.

Another significant project for the north-west is the new deepwater port at Anketell, located 30 kilometres east of Karratha.

The multi-user, multi-commodity deepwater port and strategic industrial area will promote regional development and boost Western Australia's growth and export potential.

These projects add to Western Australia's reputation as being one of the world's greatest mineral precincts and will help secure the State's future resources growth, delivering long-term benefits for all Western Australians.

**Colin Barnett**  
**PREMIER OF WESTERN AUSTRALIA & MINISTER FOR STATE DEVELOPMENT**

**Norman Moore**  
**MINISTER FOR MINES AND PETROLEUM**

### Prospect

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Cover photo: Roy Hill Iron Ore Mine site in the Pilbara. A State Agreement with Roy Hill Infrastructure Pty Ltd will see the mine connected to infrastructure in Port Hedland. Photo courtesy of Hancock Prospecting Pty Ltd.

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Department of **Mines and Petroleum**  
Department of **State Development**

GOVERNMENT OF  
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# AGREEMENT

## on major new Pilbara iron ore mine and infrastructure project

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Western Australian Government support for construction of a 300 kilometre railway will enable development of a major new iron ore project in Western Australia's Pilbara region.

A State Agreement between the Government and Roy Hill Infrastructure Pty Ltd allows for construction of a railway, in a corridor connecting the Roy Hill Iron Ore Mine with Port Hedland Port.

The Agreement also provides for port facilities that include stockyards, rail loops, train unloading facilities, conveyors and other infrastructure, to transport the iron ore to Port Hedland's Inner Harbour, where the company will construct two new berths and ship loading facilities.

Construction of the iron ore mine is expected to commence in mid-2011, with production beginning in 2014, and reaching optimum production of 55 million tonnes per annum in 2018.

Roy Hill Iron Ore says that exploration has defined more than 2.3 billion tonnes of low phosphorus iron ore at indicated and inferred Joint Ore Resources Committee (JORC) classification levels.

The Roy Hill mine, rail and port project has an estimated total cost of approximately A\$7.2 billion and is expected to employ 1500 people during

peak construction and about 750 people when operational.

The project is being developed by parent company, Hancock Prospecting Pty Ltd, an established Western Australian minerals exploration and development company, with other participants including the Republic of Korea's Pohang Iron and Steel Company (POSCO) and STX Corporation.

The Agreement also includes provision for smaller miners to access the rail infrastructure, either directly, or through the company providing haulage services.

As part of the Agreement, the company will consult with communities in the region and their local governments to prepare a community development plan.

This plan will include strategies for developing a regionally based workforce, providing training and employment opportunities, local procurement of goods and services and contributing to community services, facilities and development activities.

Western Australia's Premier Colin Barnett announced the Agreement in July, 2010 congratulating Hancock Prospecting and its Korean partners.

"The Roy Hill mine is expected to be a feature in Western Australia's resource industry for many years to come, with a

proven resource base that will sustain the project for at least the next two decades," the Premier said.

"This project adds to this State's reputation as being one of the world's great mineral precincts, vital in feeding the powerhouse economies in north Asia.

"It will also create new opportunities for smaller miners in the Pilbara by providing better access to rail and port infrastructure."

The Agreement is currently before the Western Australian Parliament for ratification.

The Department of State Development, on behalf of the State Government, negotiated the Roy Hill Agreement and has ongoing responsibility for overseeing its implementation.

After initial discussions in 2009, formal negotiations on the Agreement, which began in March 2010, were concluded in June.

Roy Hill Iron Ore has environmental approval to construct and operate its mine, and the Department, as the Western Australian Government's lead agency for the project, is assisting with the timely completion of relevant approvals processes for the infrastructure project. ■



Western Australian Premier Colin Barnett (fifth from left) with representatives of HPPL, POSCO and STX at Parliament in June.



Hancock Prospecting Chair and Director Gina Rinehart and exploration staff at Roy Hill Camp. Images courtesy of Hancock Prospecting.

# PILBARA HEADS OF AGREEMENT

A historic agreement between the Western Australian Government and the State's two largest iron ore producers will increase the State's royalty income and enable greater flexibility for the companies' operations in Western Australia's Pilbara region.

Between them, BHP Billiton and Rio Tinto export more than 330 million tonnes of iron ore annually from the Pilbara, and their operations have an estimated combined annual output value in excess of A\$25 billion.

Across a vast 160,000 square kilometre area in Western Australia's North West, they employ about 20,000 people, operating 21 iron ore mines, more than 2,400 kilometres of railways and five shipping terminals.

The two companies pay the lion's share of Western Australia's iron ore royalty earnings, which in 2009 totalled more than A\$1.7 billion.

Both are making major investments in expanding their Pilbara operations that will increase the combined annual export capacity to between 500 to 600 million tonnes within 10 years.

These operations are conducted under 13 State Agreements with the Western Australian Government. These are contracts between project proponents and the State that are ratified by Acts of Parliament.

State Agreements specify the rights, obligations, terms and conditions for development of specific projects, and establish a framework for ongoing relations and cooperation between the State and the project operator. They can be amended with the consent of both parties.

In June this year, Western Australian Premier Colin Barnett, announced a Heads of Agreement, signed by both companies and the State Government that would enable significant amendments to the State Agreements.

These include removing concessional royalty rates for iron ore fines and beneficiated ore, raising the royalty rate from 3.75 per cent to 5.625 per cent, in line with that paid

by other producers, and generating an estimated additional A\$340 million in State royalties for the 2010-11 financial year.

In addition, the companies have agreed to make a one-off joint A\$350 million payment to the State which the Premier has indicated will help fund a new children's hospital.

Legislation to implement these changes has been passed by the Western Australian Parliament.

The Heads of Agreement also provides for greater efficiency and flexibility for Rio Tinto's and BHP Billiton's current operations, through sharing infrastructure and blending ore across their networks.

Negotiations are underway on the detail of variations to the State Agreements of both companies to enable this integration of operations.

Both companies have identified significant potential efficiencies from such arrangements and are also considering fully integrating their Pilbara operations in a Joint Venture, subject to the approval of competition authorities in Australia and internationally.

"This is a win-win deal which gives the companies greater flexibility to integrate their operations and ensures a better return to the community," Mr Barnett said.

"Western Australia's iron ore industry has come a long way since the first State agreements were signed with Rio Tinto and BHP Billiton in the early 1960s.

"The old agreements recognised the pioneering role the companies would play in the region and offered a discounted royalty rate to acknowledge that fine ore was not a valued product in the market at that time.

"Since then the companies have made significant investment in infrastructure in the region, including developing towns, roads, rail and ports.

"Today, fine ore has become the main iron making feedstock, the Pilbara is known as a world-class iron ore producing area and the industry in

Western Australia is well-established with 10 producers and at least 80 companies actively exploring for iron ore."

Rio Tinto Executive Director and Chief Executive of the Iron Ore Group, Sam Walsh said the agreement would deliver profound benefits for Rio Tinto's iron ore business, local Pilbara communities and the State in general.

"This agreement continues Rio Tinto's drive for operational efficiency, which is important in an increasingly competitive global market. It will also assist us for when we are able to launch the next phase of our Pilbara expansion plans," Mr Walsh said.

Marcus Randolph, BHP Billiton's Chief Executive Ferrous and Coal agreed.

"The ability to blend iron ore from any of our mines, and the flexibility in the use of all rail and port infrastructure, will be major enablers for our operations," Mr Randolph said.

"This will improve our operating efficiency and we are pleased to be able to share the gains from this enhancement with the people of Western Australia."

In January, BHP Billiton announced approval for US\$1.93 billion capital expenditure to underpin the further accelerated growth of its Western Australia Iron Ore business.

As the sixth phase of its Rapid Growth Project, this investment is expected to increase installed iron ore production capacity to 240 million tonnes per annum during calendar year 2013.

Also, since the agreement was signed, Rio Tinto has approved a US\$1 billion investment, in expanding its Pilbara export capacity to 330 million tonnes per annum, by 2016.

The Department of State Development had a leading role in the negotiations, which Premier Barnett described as considerable and often tough, between the State Government and the producers that resulted in the Heads of Agreement. ■



*A Heads of Agreement between the State Government and BHP Billiton and Rio Tinto will lead to more efficient and productive iron ore operations and spur further investment in the Pilbara. Photo courtesy of Rio Tinto.*

# ANKETELL

## the Pilbara's next major deepwater



Anketell, 30 kilometres east of Karratha, has been identified as the next major deepwater iron ore port for the Pilbara.

# L port

The transformation of Western Australia's north has taken a further step forward with Western Australian Premier and Minister for State Development, Colin Barnett, endorsing a new deepwater port at Anketell in the Pilbara.

Located 30 kilometres east of Karratha and 10 kilometres from Cape Lambert, the multi-user, multi-commodity deepwater port and strategic industrial area (SIA) will promote regional development and boost Western Australia's growth and export potential.

"This project will help Western Australia develop, and the revenue it will generate will help pay for our schools, hospitals and other services," the Premier said.

Anketell will join other projects, including Rio Tinto's Cape Lambert port expansion and the state-initiated Oakajee Project in the Mid-West, aimed at accommodating Western Australia's rapidly growing mineral exports, particularly iron ore.

"The strength of Western Australia's iron ore exports and the growth plans of current users are testing the capacity of the existing Pilbara ports," Mr Barnett said.

"The Anketell port and industrial precinct will provide opportunities for new exports and processing of iron ore and other minerals."

In 2009-10 the Pilbara exported more than 366 million tonnes of bulk commodities, mainly iron ore, which is forecast to reach more than 530 million tonnes per annum (Mtpa) by 2015 and as much as 750Mtpa by 2020.

The precinct would ultimately include a port with up to 350Mtpa export capacity, an industrial area of at least 1000 hectares and a corridor for transport and services.

Anketell has been earmarked for industrial development since the 1970s.

The most recent government assessment confirmed its suitability for a future multi-user facility.

Anketell will complement both Port Hedland and Dampier ports to overcome current capacity constraints and will join them as another of the world's largest mineral export facilities.

Three companies have expressed interest in developing port facilities at Anketell: Australian Premium Iron (API) for its 30-40Mtpa West Pilbara Iron Ore Project, China Metallurgical Group Corporation for its 15Mtpa Cape Lambert Iron Ore Project, and Fortescue Metals Group (FMG) for its 30-60Mtpa Solomon Project.

API and FMG have aspirations to expand their projects once established.

The State Government was briefed in February this year on a conceptual layout suitable to cater for the current and future companies.

The port will act as a catalyst for other proponents in the central and west Pilbara.

The sharing of infrastructure and costs will provide opportunities for junior operators to minimise start-up costs when entering the market and help monetise resources that might otherwise remain uneconomic.

The precinct will be funded by a private proponent, along with a proportion of social infrastructure costs, but will ultimately be managed and owned by the Dampier Port Authority for the port and infrastructure corridors and LandCorp for the industrial precinct.

The Department of State Development is the lead agency responsible for delivery of the project.

The State Government will spend A\$3.5million during the next three years to plan and prepare an Industrial Precinct Development Agreement for the project.

The development of Anketell will provide a number of opportunities for the region including direct and indirect employment, improved social and industrial infrastructure and the development of the towns of Wickham, Roebourne and Karratha, while minimising the environmental and social impacts that could result from the development of a number of single-user ports.

Flow-on benefits will be delivered from increased royalty payments to the State.

It is planned that the port should commence operations by 2015, preceded by a two-year construction period. ■

# SUCCESSFUL CO-FUNDED DRILLING PROJECTS ANNOUNCED

A total of 62 projects were successful in gaining co-funding from the second round of the Co-funded Exploration Drilling program for drilling to be undertaken in 2010–11.

Mining and Petroleum Minister Norman Moore said the Co-funded Exploration Drilling program was a key component of the five-year A\$80 million Exploration Incentive Scheme (EIS) funded from Royalties for Regions.

“A number of innovations were introduced in this round including an increase in co funding to A\$200,000 for projects consisting of a single deep hole, a special category introduced for applications by prospectors and handicapping of multiple applications from the same applicant,” Mr Moore said.

Despite the handicapping applied to second and subsequent applications, several companies still managed to gain co-funding for two or three projects.

Applications were submitted using an online system that required applicants to address a number of criteria related to the projects for which they were seeking co funding.

All applications were assessed against these criteria and were subsequently ranked according to their total score.

The assessments were undertaken by a small team of independent geologists with significant exploration industry experience. This online submission process resulted in an increase in the quality of applications.

The process of assessment and the subsequent rankings were endorsed by an Advisory Committee representing Association of Mining and Exploration Companies, the Chamber of Minerals and Energy, Australian Petroleum Production and Exploration Association, the Amalgamated Prospectors and Leaseholders Association of Western Australia, as well as the research sector.

An independent probity auditor endorsed the integrity of the process.

Mr Moore said successful applications were well distributed across Western Australia and covered most commodities.

“It is particularly pleasing that among the successful projects this year are two geothermal energy projects, showing

commitment to supporting development of alternative energy sources,” he said.

Other successful energy applications include one coal and one onshore oil and natural gas project.

Gold is the mineral featuring in the largest number of applications with 29 projects listing gold as the main or one of the commodities sought, followed by copper in 22 projects.

Other commodities being targeted are nickel and uranium, both in 11 projects, as well as manganese, silver, iron, zinc, cobalt and lead.

Three projects are being co-funded to A\$200,000 as they will be drilling deep holes to 1500 metres or deeper.

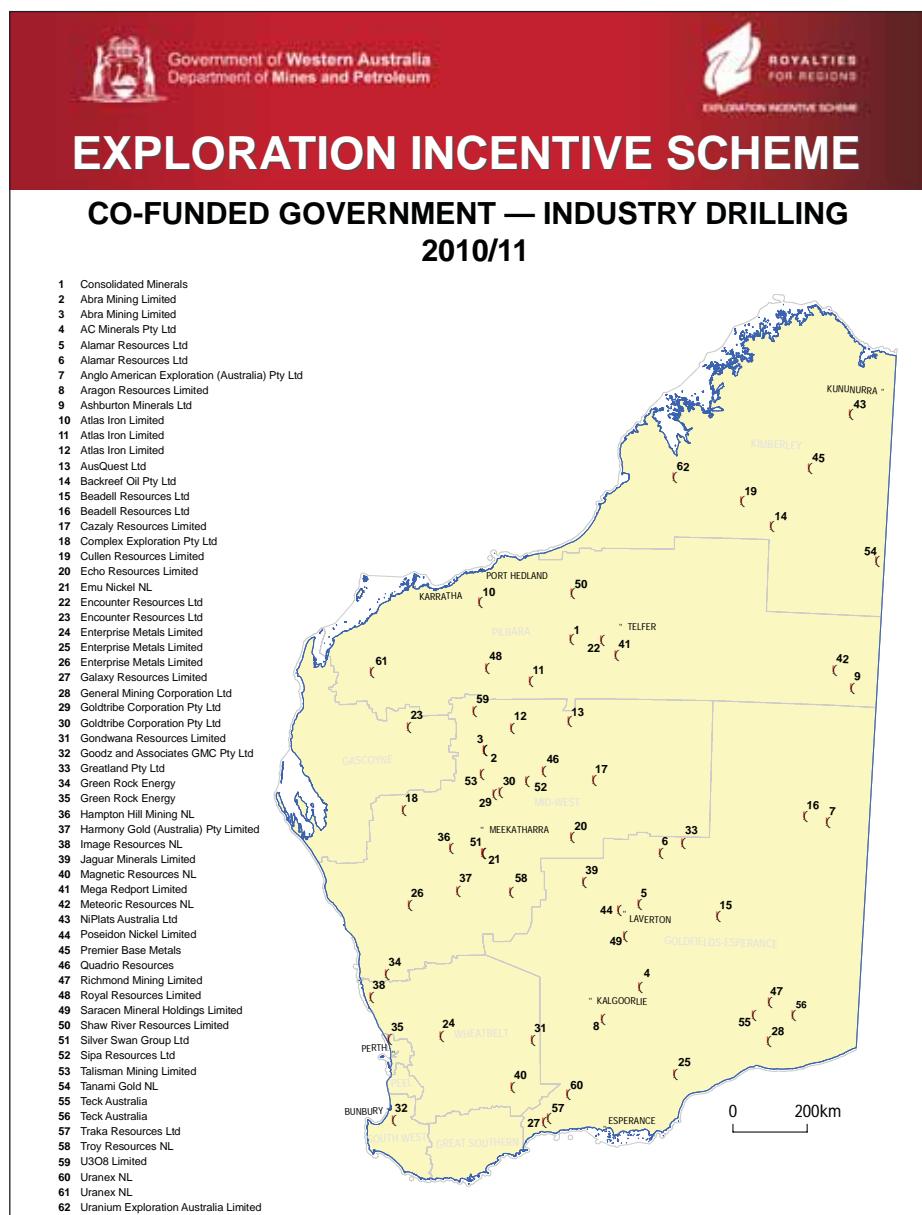
The core obtained from drill holes funded by the program must be submitted to one of the Department of Mines and Petroleum’s core libraries and will be made available to the public.

Most successful applicants were small exploration companies.

Mr Moore said further co-funding would be available in future years with about A\$6 million on offer in 2011–12.

“Details of this next round of co-funded drilling will be advertised later this year,” he said.

For more information visit [www.dmp.wa.gov.au/EIS](http://www.dmp.wa.gov.au/EIS) or contact Margaret Ellis (margaret.ellis@dmp.wa.gov.au). ■



The successful Co-funded Drilling applications covered a wide area of Western Australia, including some very remote areas.



## INTEGRA ENTERS GOLDEN AGE

*Primary, secondary and tertiary crushers at Integra's Salt Creek processing facility.*

Integra Mining is on track to become the newest Australian gold producer with its Randalls Gold Project.

Located in the Eastern Goldfields, 60 kilometres south-east of Kalgoorlie, and 100 per cent owned by Integra, the project is only the second integrated gold mining and processing project based on a new discovery in Australia in the past 10 years.

Integra Managing Director Chris Cairns said that Integra's mantra was to create shareholder wealth through the discovery and development of new gold deposits.

Commissioning and first gold production for the Randalls Gold Project is on target for September 2010.

The project will be developed in two stages with the first focused on the Maxwells and Salt Creek pits.

It is considered low risk due to its low operating and capital costs and high grade, and has very strong prospects of good financial returns.

Mr Cairns said the project would have an average grade of 3.1 grams per tonne of gold over the initial four-year mining period from the two pits.

"The first 15 months of production, however, we are scheduling higher

grade material and we are going to be putting 3.6 grams open pit material through the mill," he said.

"That's almost unheard of in WA in terms of open pit grade; typically people are operating at half that grade."

"The Salt Creek discovery we made in May three years ago and, three years later, we are now mining that deposit."

"It's been a very, very fast development of the project."

The initial development has an estimated capital cost of A\$64 million and is set to deliver a production rate of more than 90,000 ounces per annum for four years.

The project is expected to bring in an operating profit of A\$75 million in the first year post-commissioning.

"As we move into construction we have also been aggressively exploring and more recently we have been putting out some drill results from a new discovery at a prospect called Majestic, which is showing great signs as a potential open pit source of feed to supplement what we've already got," Mr Cairns said.

Three high grade underground mine developments at Maxwells, Santa and Cock-Eyed Bob are currently being evaluated to supplement stage one production.

The inclusion of underground production is expected to extend the mine life to 10 years.

"Our ambition is to go up to 140,000 ounces plus by incorporating underground production from the three BIF (banded iron formation) deposits, also, open pit production emerging from Majestic is looking very solid," Mr Cairns said.

Integra aims to extend the life of the project and define sufficient ore reserves to justify a plant upgrade.

The stage two expansion has a target to initially increase gold production to 100,000 ounces per annum with plans to ultimately expand processing capacity by 50 per cent to bring production to a rate of more than 140,000 ounces per annum.

Exploration of the Aldiss Project could lead to the development of a second mining operation targeting a combined 250,000 ounces per year.

"Majestic is providing very good encouragement in terms of an additional open pit," Mr Cairns said.

"We are confident that all the stars are aligning in terms of doing the mill expansion and taking the project up to 140,000 ounces." ■

# A GROWING PARTNERSHIP: WA AND KOREA

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Significant changes are underway in Western Australia's important and long standing economic relationship with the Republic of Korea, as the North Asian industrial powerhouse moves to secure the mineral and energy resources it needs for future growth and economic development.

Over the past 22 years merchandise trade between Western Australia and Korea has grown at an average annual rate of almost 14 per cent, from A\$450 million in 1988/89 to A\$7.7 billion in 2009/10, making Korea Western Australia's fifth largest trading partner.

While Western Australian resources exports - petroleum, iron ore, gold, alumina and a range of other minerals - account for the bulk of this trade, Korea is a significant source of industrial goods and advanced technology and an important market for Western Australia's agricultural exports.

Korean students already make up a significant proportion of overseas students enrolled in Western Australian tertiary institutions, and Korean and Western Australian universities are developing stronger partnerships, specifically aimed at enhancing research, knowledge and skills in areas such as geology, engineering and science.

The significance of this growing relationship was underlined last year, when the Energy and Mineral Resources Development Association, a peak body for Korean heavy industry and resources development companies, invited Western Australian Premier and Minister for State Development, Colin Barnett, to contribute a message to its inaugural publication.

Securing energy and mineral resource supplies is the key factor in Korea's future economic success, according to Dr Churl-Gyu Lee, managing director of the Energy and Mineral Resources Development Association, whose 70 members include some of Korea's largest companies.

Dr Lee says that Korean industry regards Western Australia as rich in resources, and attractive for investment and participation in development projects.

"Western Australia is a very stable resource supplier in terms of government policy, high technology and a strong educational system and social infrastructure," he said.

"Korean companies can safely predict the future outcomes of their activities in Western Australia, because the data, project planning and government policies on which they are based are reliable and transparent.

"Industry interest in Western Australia will focus on six strategic resources - iron ore, bituminous coal, uranium, nickel, copper, and zinc - and the Korean Government is working to secure the nation's energy supplies for the future.

"I also expect Korean industry will be interested in playing a greater role in providing infrastructure and equipment, including advanced electronics systems, for resources development projects, as we are very competitive in terms of high technology, abundant experience, cost efficiency, and the Korean Government is very supportive."

Dr Lee also sees broader opportunities for co-operation between Korean and Western Australian businesses and researchers.

"Biotechnology, medicine, environmental technology and sustainable and renewable energy are areas in which Korean industry will increase its investment," Dr Lee said.

"These are areas in which Western Australia has significant expertise so there is great potential for co-operation.

"Beyond doubt, Korean companies and our Government think of Western Australia as a great partner and a stable resources supplier and investment opportunity, and firmly believe our relationship will be reinforced in the future.

"We also think there is great potential for the Western Australian Government and industry to take more opportunities in developing businesses and investment initiatives in Korea by building closer relationships."

Dr Lee makes it clear that while Western Australia is a significant focus for Korean industry and government, in a fiercely competitive world, Korea is pursuing a balanced approach to securing its future supplies.

"Compared to Africa and the Middle East, Western Australia offers lower risks with lower returns, but a mixed portfolio is essential for balanced management," he said.

The Department of State Development's Western Australian Trade and Investment Office in Seoul, helps identify trade and investment opportunities for, and build links between, businesses, educational institutions and government agencies.

The office also maintains a strong relationship with the Energy and Mineral Resources Development Association of Korea. ■



*Energy and Mineral Resources Development Association Managing Director Dr Lee.*

## KEY REPUBLIC OF KOREA INTERESTS IN WESTERN AUSTRALIA (AS AT 10 AUGUST 2010)

### OIL & GAS

#### KOGAS

*The world's largest LNG importer.  
61% Korean Government owned*

- Long term customer of the North West Shelf Venture (since 2003) and has an office in Perth
- Purchase agreement with Chevron's Gorgon Project
- 5% equity investment in Chevron's Wheatstone LNG Project
- 20 years purchase agreement (1.5mt/y) with Chevron's Wheatstone Project

#### GS Caltex

*Korea's number two oil refiner, major benzene/unleaded gas producer, fuel retailer and gas and electricity utility, jointly owned by GS Holdings and Chevron*

- Purchase agreement with Chevron Australia

### MINING

#### POHANG IRON AND STEEL COMPANY (POSCO)

*World's third largest steel maker in 2009*

- 20% interest in the POSMAC Joint Venture agreement with BHPBIO (65%), Itochu (8%) and Mitsui (7%) – Area C deposit in the Pilbara

- 13.91% shareholding (largest shareholder) in Murchison Metals
- 16.65% shareholding in Jupiter Mines Ltd and up to 50% offtake agreement (Investment of \$7.81mil)
- 19.99% equity interest and up to 30% offtake agreement with Sandfire Resources a mineral explorer and developer, with significant base metal holdings
- 3.75% interest in the Roy Hill Iron Ore Project (Hancock Prospecting) with a plan to buy up to 15% of the project
- 24.5% interests in Aquila Resources' West Pilbara iron ore project (investment of \$182million)

#### STX Corporation

*Major shipping operator and resources trader, also shipbuilding and heavy engineering*

- Has an interest in Roy Hill project with permanent Perth based staff

#### LS-Nikko Copper

*Operates world's third largest copper smelter*

- Acquired a 12.5% strategic interest in Sandfire through an A\$93.9 million share placement (23 July 2010)

#### Hyundai Steel

*Second largest electric steelmaker in the world*

- Purchase agreement with BHPBIO

#### Daewoo International

*A major trading and investment company*

- Joint Goldfields nickel venture between White Cliff Nickel and a Korean consortium comprising Daewoo International and the Korea Resources Corporation (Korean Government)
- Daewoo Shipbuilding & Marine Engineering (DSME) has an office in Perth

#### Samsung C&T Corporation

*South Korea's largest conglomerate including Engineering & Construction Group and Trading & Investment Group*

- Has an office in Perth
- Invested A\$40 million into Perdaman Industries A\$3.5 billion coal-to-urea plant in Collie

#### Western Australian/ RoK joint Korea National Oil Corp (KNOC)

*State-run oil developer*

- Joint project with Woodside in Block 8 and the northern part of Block 6-1 in the East Sea in Korea ■



*KOGAS LNG terminal in Incheon, South Korea. Image courtesy of KOGAS.*

# PLANNING UNDERWAY

## for Ashburton North LNG precinct

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The Department of State Development has the lead agency role to progress the State Government's objectives for the development of Ashburton North as a multi-user, liquefied natural gas (LNG) and hydrocarbon based industrial area and associated deepwater port.

This is in line with the department's strategic objective of enabling the development of industrial land and infrastructure to meet industry needs.

The project will involve the delivery and co-ordination of priority projects on behalf of the State Government and the facilitation of approvals to provide serviced industrial and port land to support key LNG and gas projects.

The decision to create a Strategic Industrial Area (SIA) at Ashburton North was made by Cabinet in October last year, following on from principal approval by Western Australian Premier and Minister for State Development, Colin Barnett, in December 2008.

At the time, the Premier wrote to Chevron, BHPB Petroleum and ExxonMobil earmarking land at Ashburton North to enable the companies to investigate the feasibility of the site for LNG and domestic gas processing facilities.

The development of Ashburton North as a gas processing precinct for the southern Carnarvon Basin will complement the State's existing gas-based industrial precinct on the Burrup which services the North West Shelf gas, and the future gas processing facility at James Price Point, north of Broome, which is planned to service the Browse Basin.

Foundation proponents are Chevron (Wheatstone LNG Project) and BHP Billiton (Macedon Domestic Gas Project), while BHP Billiton/Exxon Mobil (Scarborough LNG Project) is investigating the site but will not be a foundation member.

The projects currently proposed for development at Ashburton North contain a domestic gas supply component, which will diversify supply if they succeed and provide an additional 60 per cent of the current domestic gas market.

A steering committee has already been established with representatives from DSD, LandCorp and the Dampier Port Authority (DPA), along with Chevron Australia.

Current issues being worked out by the steering committee revolve around critical planning and design issues

related to the Wheatstone Project and the port.

If the Macedon and Wheatstone projects get the green light, it is expected that the SIA will stimulate both the local and State economy through the construction stages, with ongoing benefits resulting from operational phases.

The business case for establishing LNG facilities at Ashburton North is to provide gas processing facilities to a number of relatively small gas fields in the southern Carnarvon Basin.

The offshore Carnarvon Basin contains a number of important gas finds and is a highly prospective area for petroleum discoveries, with significant activity occurring in the area.

Technical improvements in the recovery and processing of gas will also assist in commercialising Carnarvon Basin gas, making the area an important strategic asset with long-term growth potential.

If successful, the Ashburton North SIA will provide many opportunities including the promotion of regional development and boosting Western Australia's growth and export potential.

The SIA would also minimise the environmental and social impacts that



*Investigative works at Ashburton North – the Ashburton North Strategic Industrial Area is located 11 kilometres south-west of Onslow in Western Australia's Pilbara region.*

could otherwise result from a number of single-user ports, and increase the domestic gas supply and assist in the development of a related hydrocarbon industry.

Cabinet has authorised A\$3.5 million of funding up to 2012 for site studies, planning and statutory approvals, and for legal commercial and engineering advice for the development of the SIA.

## RELATED PROJECTS

### **Chevron – Wheatstone LNG Project**

Chevron is investigating the feasibility of an LNG project based on its Wheatstone and Lago gas fields to be located at Ashburton North.

The project will also process gas from third party fields in the Carnarvon Basin.

Chevron entered FEED (Front End Engineering Design) in July 2009 with a final investment decision planned for mid 2011. Gas to market is scheduled for 2015/16.

The project is to have an initial capacity of two 4.3Mtpa LNG production trains, expandable to five, and a 2000TJ/d domestic gas plant.

In August this year, Chevron announced one of its biggest gas discoveries in

Australia following drilling success in the Carnarvon Basin.

The Acme-1 exploration well, located 150 kilometres offshore from Onslow, encountered about 273 metres of net gas pay.

The discovery is expected to help underpin potential expansion opportunities at the Wheatstone project.

### **BHPB – Macedon Domestic Gas Project**

The Macedon gas field, about 90 kilometres west of Onslow, was discovered in 1992 during drilling of the West Muiron-3 well and is estimated to contain a gas resource of up to 6000bcf.

BHP Billiton Petroleum (Australia) Pty Ltd and Apache Energy Limited are currently progressing the necessary approvals for a domestic gas project for Western Australia. The development will involve a number of sub-sea gas wells connected to the gas field, offshore and onshore wet gas pipelines, an onshore gas processing plant 15 kilometres southwest of Onslow, and a sales gas pipeline connected to the Dampier-to-Bunbury Natural Gas Pipeline.

Daily production is expected to be in the order of 200TJ. Construction is expected

to start in late 2010, and gas production to commence in late 2012.

### **ExxonMobil/BHPB – Scarborough LNG Project**

The Scarborough gas field was discovered in 1979 with the drilling of the Scarborough-1 well in more than 900m of water in the Carnarvon Basin with (P50) probable reserves of around 8 Tcf of gas. The gas field is a relatively flat structure at a depth of roughly 1800m.

In May 2006, ExxonMobil (EM) announced that it is now interested in assessing the potential development.

BHPB and EM are now jointly conducting feasibility studies of various development options, including floating LNG, to assess the viability of converting the gas to LNG. BHPB is continuing its exploration in 100 per cent owned WA-346-P tenement where it has a 73m gas/condensate intersection in the Thebe-1 hole.

In November 2008, EM and BHPB were allocated land within the Ashburton North SIA (refer to D12709) for a period of three years (from 27 November 2008 to 26 November 2011) to conduct feasibility studies. The land allocation will cease if certain conditions are not met. ■

# ENERGY 2031 – AN ENERGY VISION

The Office of Energy is approaching a major milestone with the finalisation of the Strategic Energy Initiative (SEI) Energy 2031 *Directions Paper*.

In August last year, Minister for Energy Peter Collier announced that the Government would outline a vision and broad plan for the energy sector for the next twenty years.

The major theme within the scope of the energy initiative was to ensure the provision of secure, reliable, competitive and sustainable energy for Western Australians.

Recent energy supply disruptions in Western Australia, such as the gas disruptions of 2008, highlighted the dependence of the State's economy on uninterrupted energy supply.

Dr Paul Biggs from the Office of Energy, and Project Leader of the Strategic Energy Initiative, said security of energy supply would be addressed through a range of measures including diversification of supply, increasing the sources of domestic gas, and management of infrastructure.

"Benefits to the mining industry from the SEI would include better planning for the necessary market conditions and infrastructure to meet future energy needs," Dr Biggs said.

"The role of Government is to ensure an effective market and regulatory environment for major resource projects to access energy needs most effectively and efficiently."

He said that role was reinforced following feedback from stakeholder consultation.

"The principles that came strongly from the consultation session were for the Government to facilitate effective markets - not to be the supplier of energy to the mining sector, nor to dictate fuel types," he said.

"Energy 2031 will look to remove impediments to adoption of alternative fuels and help facilitate their adoption if required by national or other regulatory processes."

Energy consumption in Western Australia has doubled in the past 20 years, and while traditional energy sources will continue to play a central role, a range of alternative fuel sources will likely be available to meet future needs.

This includes electricity produced from renewable sources such as solar, wind, biofuels/biomass, wave, tidal and geothermal power.

It is intended that the SEI: Energy 2031 will outline the strategies required to deliver secure, reliable, competitive and sustainable energy.

The Office of Energy has assembled a project team which includes officers from the Departments of State Development (DSD) and Mines and Petroleum (DMP), Synergy and Horizon Power, while an Industry Reference Group and an Inter-Agency Group were formed to provide advice.

An *Issues Paper* was released in December 2009 to seek the views of community and industry stakeholders on the key issues affecting the energy sector, followed by extensive consultation.

## Key issues

The consultation process identified a range of issues that need to be addressed to ensure that the energy sector can accomplish the SEI goals.

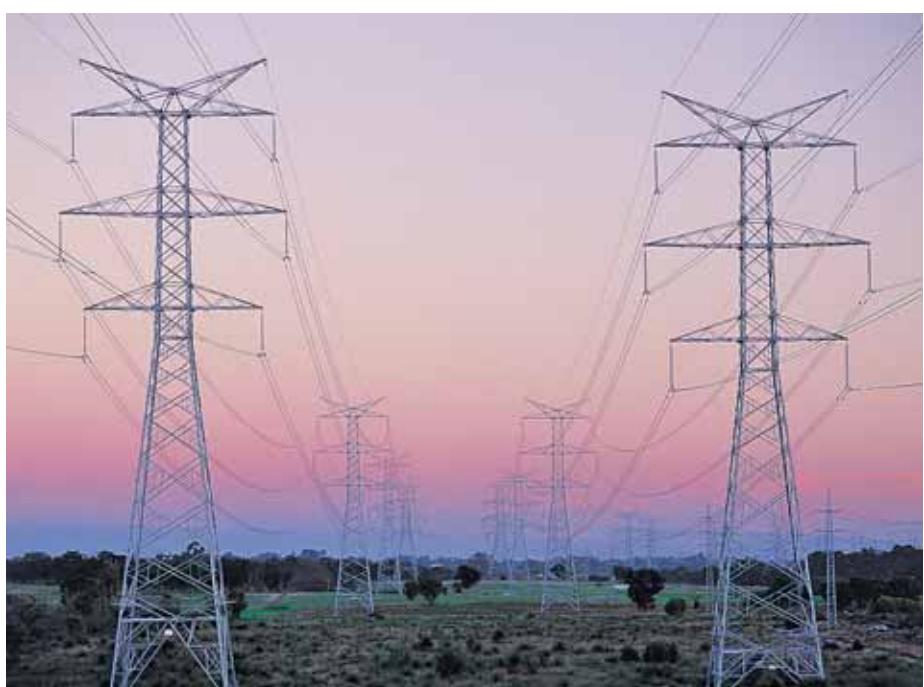
It also revealed that a broad consensus existed in relation to some of the longer term challenges faced by the State and the issues to be addressed.

Among the key issues and challenges were:

- removing impediments to, and promoting alternative fuels and technologies
- ensuring ongoing gas availability in a globally competitive market
- managing climate change mitigation measures and impacts on the energy sector
- coordinated planning of energy infrastructure investment
- ensuring the reliability of energy supply across the supply chain
- limiting exposure to energy cost increases
- slowing the growth of energy demand and improving energy efficiency
- ensuring that regulated prices reflect the costs of supply to support the ongoing availability of those services
- providing transparent support mechanisms to secure social and regional objectives without market distortion.

Energy Minister Peter Collier plans to release the *Directions Paper* later this year.

The Office of Energy will begin its second round of consultation over the remainder of 2010, where it will seek input that will inform the State Government in deciding its final strategies. ■



*Energy 2031 will deliver a plan for the energy sector for the next twenty years.*

# WA AND CHINA BUILD BRIDGES ON LNG



During their visit to Western Australia participants in the Australia-China LNG Training Program also had time for some sight-seeing.

The Australia-China LNG Training Program recently celebrated the graduation of a sixth class as the scheme, which began in 2005, goes from strength to strength.

The training program is a collaborative effort by the Australian Centre for Natural Gas Management (ACNGM) and the Australia-China Natural Gas Technology Fund.

Thirteen Chinese executives recently completed the first course, The Leadership Imperative, of the innovative modular program during a visit to Western Australia.

The participants are part of an intake of 32 professionals from China to the program this year, with the remainder scheduled to visit Western Australia later in the year.

Participants are given the opportunity to learn, build relationships and share experiences in the natural gas sector at an individual and national level.

The underlying purpose of the program is to create opportunities

for professional development, expand horizons and build institutions in China.

The representative of the 2010 Leadership Imperative contingent, Tang Yong Xiang, praised the program.

"Each lecturer has made a good impression on us with his or her professional knowledge, experience and responsible attitude," Mr Tang said.

Mr Tang acknowledged the direction and delivery of the program, describing coordinators' efforts as "careful and attentive" and thanked those involved on behalf of all course participants.

As part of an agreement for Western Australia to supply liquefied natural gas to China for 25 years, the Australia-China Natural Gas Technology Fund was formed to expand opportunities for training, research and technology transfer between Australia and China.

In late 2009 the ACNGM, a joint venture between Curtin University and the University of Western Australia, was awarded a new five year contract by the fund to deliver three new programs.

The design of these programs draws on the latest research and practice related to leadership and management in the natural gas sector, at an organisation, industry and policy level.

The ACNGM seeks to achieve excellence in international executive and management education in the energy sector within Australia and throughout Asia.

This expertise is complemented by briefings by industry and regulators.

To date it has benefited managers and executives from some of China's leading LNG organisations, including the China National Offshore Oil Corporation, Shenzhen Energy, Guangdong Dapeng LNG, Shenzhen Gas Group and Chongqing Gas Group.

This year, for the first time, an Australian delegation will travel to China as part of the technology fund process, to gain a first-hand understanding of the national natural gas sector. ■

# DIVERSE PROJECTS FOR THIS YEAR'S GOLDEN GECKO AWARDS



2010 marks the 19th year of the Golden Gecko Awards and a diverse array of submissions have been received for what is one of the highest environmental accolades achievable in the Western Australian resources sector.

Assessment of the submissions is now complete for this year's Golden Gecko Awards for Environmental Excellence.

The awards program offers companies and individuals in Western Australia an opportunity to be recognised for innovation and leadership in environmental management within the resources sector.

Eleven submissions have been received from mining and petroleum companies, as well as several service providers.

"It is pleasing to once again see such a high calibre of submissions," Department of Mines and Petroleum Environment Director Phil Gorey said.

"The initiative taken by these companies to minimise their environmental impact is to be commended."

Entries are assessed on their commitment to environmental excellence; demonstrated excellent environmental outcomes; community engagement; and ability to demonstrate innovation and leadership, provide a new industry standard, or demonstrate performance above and beyond compliance.

The assessment process is in two phases with a panel of government representatives firstly meeting with entrants and undertaking some site inspections, then a selection committee, comprised of three people external to the public sector, reviews the

assessment panel's findings before recipients are selected.

The Minister for Mines and Petroleum presents award recipients with a bronze Golden Gecko Award sculpture, crafted by local artist George Kosturkov.

A Certificate of Merit may be awarded to entrants who demonstrate determined efforts towards achieving excellence and leadership in environmental performance.

The names of all award and certificate recipients are recorded on a perpetual sculpture displayed at the Department of Mines and Petroleum's head office at Mineral House, Perth.

The successful applicants will be announced at the awards ceremony in September.

The 2010 candidates are:

## **AMC Solids Control Unit**

Typical onshore drilling activities require significant earthworks to clear a drill pad and a sump to manage water flow, with water to be sourced at each drill location. Rehabilitation is required post drilling.

AMC has developed a unit to minimise these environmental impacts, specific to Australian conditions.

AMC's Solids Control Unit separates and removes drill cuttings from the fluid allowing the cleaned fluid to be used for ongoing drilling operations. AMC provides onsite training to operational staff.

Removing drill cuttings from the fluid ensures more efficient use of available

water as it is being recycled and used several times over, including being transported and used over numerous drill sites.

Significant earthworks are also avoided by eliminating the need for clearing a large drill pad and associated sump, and the subsequent earthworks required to rehabilitate the area.

## **ANGLOGOLD ASHANTI Integrated approach to protecting environmental values**

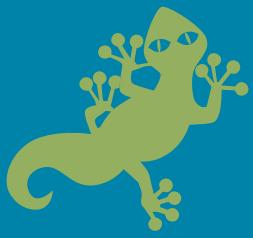
AngloGold Ashanti is exploring greenfield areas at the edge of the Great Victoria Desert. The Tropicana and Viking Project areas are under 285 program of works approvals and over varying land ownership including the Department of Environment and Conservation (DEC) managed lands.

A comprehensive integrated management system has been implemented to ensure exploration project design minimises environmental impact and manages all their activities under their approvals.

The system ensures that exploration activities minimise impact and avoid high value environmental and heritage areas, and provide an understanding of cumulative impacts across a large area.

## **BLUPOINT Recycled Ground Engaging Tools**

Blupoint has designed an innovative way of welding worn teeth from ground engaging tools so that they can be reused up to three times. Mine sites typically have a high turnover of worn teeth from excavating ground engaging tools.



## THE 2010 CANDIDATES



*Blupoint Pty Ltd*



*AMC*



*AngloGold Ashanti*



*Buru Energy*



*Chevron*

Sites are provided with a specifically designed measuring gauge to determine when the teeth are at their maximum wear. Worn teeth are collected in skip bins provided by Blupoint and are then transported for remodelling with hardened steel.

The Blupoint recycling process reduces the overall input of material required for maintaining ground engaging tools and is an innovative way of extending the life of these tools.

### **BURU ENERGY Bunda 3D Seismic Survey**

In 2009, Buru Energy, through contractors Terrex Seismic, completed a 3D seismic survey over 223 square kilometres of the Canning Basin.

Several innovative techniques were employed for the seismic line preparation to prevent typical clearing disturbance and ensure minimal impact. This included dynamic line clearing, allowing 20 metre variance on a straight line to avoid large trees and sensitive areas. Raised blade clearing maintains existing roots and seed stock and reduces the formation of windrows.

Active speed monitoring and driver training is important to avoid the degradation caused by poor driving. Access roads were also disguised to avoid use by recreational vehicles. This low impact line preparation also minimised the need for active remediation earthworks, and promoted natural regeneration.

Overall this avoids the clearing and subsequent rehabilitation of 2500 square kilometres of seismic lines.

### **CHEVRON**

#### **Gorgon Project: CO<sub>2</sub> Seismic Baseline Survey**

This survey was undertaken in 2009 to acquire high quality seismic data to be used as a baseline for ongoing monitoring of injected greenhouse gases from the Gorgon CO<sub>2</sub> Injection Project on Barrow Island.

The project planning involved using GIS data to identify environmentally sensitive areas to be avoided. Existing clearings were utilised where possible.

On ground vehicle disturbance was minimised by transporting equipment to the required drill sites by helicopter and staff walking out the seismic equipment, as well as walking between drilling locations rather than driving.

Modifications to the equipment were also undertaken to minimise impact. Future monitoring surveys will not require helicopter transportation of drill rigs or explosives.

Overall the survey resulted in only 19 hectares of temporary disturbance over a total survey area of 13,500 hectares.

#### **CLIFFS ASIA PACIFIC IRON ORE Management of Malleefowl at Mt Jackson**

Cliffs Asia Pacific Iron Ore's Koolyanobbing project is within an important habitat area for Malleefowl, a species listed as vulnerable.

Cliffs has established strong collaborative relationships with the government, the community and the Malleefowl Preservation Group, and supports the group to undertake annual regional surveys of activity at Malleefowl mounds.

All of the survey data that is recorded by the group is provided to the National Malleefowl Database so that the information is widely available.

Cliffs' strong partnerships and ongoing commitment to surveys to monitor the effectiveness of management actions is an important contribution to the conservation of Malleefowl.

### **COMPASS**

#### **Origin Foods – An environmentally sustainable food service**

Compass Group is a mine site catering company, operating as ESS. As part of providing catering on Barrow Island, the Compass Group was required to comply with the quarantine requirements and ensure careful management of their foodstuffs and waste. In order to minimise this high risk pathway, Compass developed a program known as Origin Foods.

Origin Foods involves the partial or complete preparation of food by suppliers in Perth prior to transport to site. At Barrow Island the company Toxfree collects all food waste for transport off the island.

This program has now been adopted at 80 remote site villages across Western Australia.

Preparation at a central facility also provides a higher quality assurance of the food that is transported, thereby increasing the usage of the transported goods. Greenhouse emissions are also reduced by minimising transport volumes. Energy and water consumption typically incurred at each site is minimised through economies of scale in food preparation in Perth.



Cliffs Asia Pacific Iron Ore



Compass



Crosslands Resources



Mitchell Corp Australia



Pluton Resources



Rio Tinto Iron Ore

## CROSSLANDS RESOURCES

### Effect of exploration drilling on the Shield-back Trapdoor Spider

Crosslands Resources short range endemic surveys in 2007 at the Jack Hills Iron Ore Project identified new populations of the Schedule 1 Shield-back Trapdoor Spider. Due to the uncertainty regarding the impacts of exploration on the spiders, a 200 metre buffer distance was required between spider burrows and any drilling activity.

Crosslands commissioned Phoenix Environmental Sciences to develop a research project to assess the effects of past exploration drilling and the potential effects of vibration from a new drilling program.

The study identified that there was no immediate observable response from the spiders to drilling operations and that previous drilling had not affected recruitment. The innovative design of the study also provided new techniques for low impact fauna surveys.

### MITCHELL CORP AUSTRALIA

### Management of wastewater and hydrocarbons

Mitchells provides a road transport service to the resources industry with depots across Western Australia. Each depot supports the transport fleet in undertaking refuelling, truck washing and servicing. Mitchell identified that these activities had the potential to contaminate the soil and water at their depot areas, and has upgraded infrastructure and on site practices.

Mitchells completed audits of their Geraldton and Kewdale depots to identify opportunities for improving operations that have the potential to result in contamination.

A custom designed truck wash was designed to manage the water and overflows to be captured for treatment in a waste water facility rather than surface flows off site.

Mitchells have identified all the potential contamination risks and has upgraded its infrastructure and processes to minimise environmental impacts.

These infrastructure upgrades are supported by a monitoring program and incident reporting.

### PLUTON RESOURCES LTD

### Irvine Island Exploration Project

Pluton has demonstrated environmental commitment in all aspects of its exploration program for iron ore on Irvine Island, located in the Yampi Sound near Broome.

All measures have been taken to minimise environmental disturbance on the island, including the development and use of a Universal Drilling Platform for diamond core drilling.

The heli-portable platform is raised on adjustable legs to create a safe platform even on uneven ground, which avoids the need for earthworks on slopes and limits ground disturbance from the usual 30m<sup>2</sup> to 5m<sup>2</sup>.

All transport on the island is by foot or helicopter and an intact soil and seed profile enables natural regeneration of vegetation. The total ground disturbance for all activity on the island, including the 23 diamond core holes, is approximately 1.2 hectares.

The drilling program represents a wholly integrated approach to low impact exploration and innovative methods to working on rugged terrains.

## RIO TINTO IRON ORE

### Minimising Environmental Impacts

Rio Tinto Iron Ore manages extensive tenure across the Pilbara over which numerous environmental surveys have been undertaken and operations planned. Rio Tinto has developed three integrated and comprehensive systems to adequately capture data and better inform their operation planning.

The Environmental Characteristics and Capabilities Project developed standards to ensure the consistency of data used within the database, and captured historical data. All survey data contributed to Rio Tinto's databases must meet the data standards requirements.

The Approvals Request system is an internal approvals process to ensure all appropriate approvals are in place and plans for ground disturbance avoid any sensitive areas.

The Exploration Earthworks Management Information System uses the information provided by the Approvals Request system to guide the drivers, using a unit developed in collaboration in Micronics. This provides a visual display and audible alarms when clearing access tracks and drill pads for exploration. The units also track the vehicle movements via GPS and this information is then downloaded back into the database.

These three integrated systems enable the capture of quality data from surveys and operations which is then utilised in an innovative manner to minimise environmental impacts.

For more information regarding the awards program please visit [www.dmp.wa.gov.au/goldengecko](http://www.dmp.wa.gov.au/goldengecko). ■

# BOOST FOR MINING APPROVALS

In a big boost to Western Australian mineral explorers it is now possible to lodge and track Program of Works applications for environmental assessment online.

The new capacity is included in the Department of Mines and Petroleum's (DMP) Environmental Assessment and Regulatory System, which is freely accessible by industry.

This is the latest step in the department's improvement of exploration and development approvals processes under its lead agency role implemented by the State Government.

Environment Division General Manager of Business Development, Kaye Mulligan, said the new Programme of Works (PoW) system provided significant benefits to industry.

"It is a quicker and easier way for industry to submit their PoW applications, which the department must assess before exploration activities can be approved.

"It also allows companies to keep track of where their applications are in the system, which increases certainty regarding their investments.

"Finally, the reduction in application time and paperwork allows DMP to cut down on the time it takes to process PoW applications, in turn allowing industry members to reduce their own project timelines."

The latest departmental figures show 583 PoW applications were submitted during the second quarter of 2010, an increase of 20 per cent on the same period last year.

"Despite this large number, 91 per cent of these applications were processed within the 30 day target timeline DMP set for itself," Ms Mulligan said.

She said the new PoW system was the result of the hard work of a working group within the Environment Division, with valuable support from a number of other DMP business areas.

The department has also liaised with industry members about its planned introduction of online lodgement and tracking of Mining Proposals, which are environmental approvals granted after exploration success.

This was scheduled to be implemented by the end of August this year.

DMP recently announced the formation of working groups to improve communication, policy and operational issues in key areas impacting approvals processes.

The working groups are the Environmental Intra Agency Working Group, the Aboriginal Heritage Intra Agency Working Group and the Native Title Intra Agency Working Group.

Deputy Director General, Approvals, Tim Griffin said each had specific terms of reference.

"These cover policy and operational issues, responsibilities and expectations,

identifying and initiating actions, and establishing the department's position across the critical issues impacting on approval processes outside DMP," Dr Griffin said.

"The issues they identify will form the basis for DMP to work cooperatively with industry and other key agencies to achieve reform."

The groups will operate for a minimum of 12 months and will provide monthly progress reports.

Dr Griffin has been permanently appointed after acting in the newly created position for several months. ■



*Environmental assessments will be a quicker and easier process for Government and industry under the new Program of Works system.*



## NEW APPROVALS SYSTEMS DELIVER

*The Department of Mines and Petroleum is expanding the online Approvals Tracking system, designed to streamline the resources approvals process.*

Streamlining the complex processes involved in approvals for resource projects has seen the Department of Mines and Petroleum (DMP) develop a new system, which has recently been shortlisted for this year's Premier's Awards for Excellence.

The Approvals Tracking Project includes a number of measures, developed and implemented by the department, to assist in streamlining the resources approvals process.

These measures include online systems such as the Environmental Assessment and Regulatory System (EARS) and the Petroleum and Geothermal Register (PGR), together with quarterly reporting of key performance indicators.

The department's online tracking system deals with tens of thousands of applications. It is being expanded to capture information from other agencies involved in the approvals processes for resource projects.

The PGR system is the first of its kind in Australia and now allows petroleum and geothermal industry to remotely lodge applications, pay fees and monitor the progress of each application online.

The department has received praise for the new system from individual companies, other government departments and peak industry bodies.

Important developments were also made to EARS, including the introduction

of online submissions for Program of Works and Mining Proposals. This allows DMP to collect and process applications electronically and collect performance data in a much faster and more efficient manner.

Performance measures were also developed to enable effective evaluation of the efficiency of approval processes in the department, which are reported quarterly on the DMP website.

**Deputy Director Approvals**  
Dr Tim Griffin said the performance measures had already demonstrated marked improvements.

"The performance measures have resulted in greater transparency and accountability, while enhancing the whole of government reputation, and have already resulted in marked improvements in performance since their implementation," he said.

Working with the information gathered has resulted in more efficient processing of applications and allows for parallel processing as hard copy files moving from desk to desk are no longer required.

DMP is also focused on collaborating with external agencies to address the broader concerns of these sectors when addressing native title, heritage and environmental issues.

"Improving the approvals process assists in sustaining high risk investment in

Western Australia's resources sector, and ensures the long-term future of our State's economy," Dr Griffin said.

Dr Griffin said that the Approvals Tracking Project's success to date was the result of dedicated effort from DMP staff in reviewing and integrating activities within the department to streamlining the complex approvals process.

The Premier's Awards for Excellence cover five categories:

- developing the economy
- revitalising the regions
- strengthening families and communities
- managing the environment
- improving government.

The Approvals Tracking Project was entered into the Improving Government category which met the criteria of:

- delivering outcomes that improve public sector systems and service delivery
- enhancing efficiency, accountability, workforce capacity or community confidence in the public sector.

The applications are independently assessed with five applicants shortlisted for each category. The overall winner will be announced in November. ■

# LATEST UPGRADE OF ILUKA NARNGULU COMPLETE

In June 2010, Iluka Resources Limited completed a A\$60million upgrade at its Narngulu processing facility, near Geraldton, in order to treat up to 600,000tpa of heavy mineral concentrate (HMC) from its Jacinth-Ambrosia deposit in South Australia.

Iluka has commenced shipping commercial quantities of Jacinth-Ambrosia zircon and expects to continue activities to fine tune and optimise product quality and plant efficiency during the second half of 2010.

The upgrade is the result of the Western Australian Government's approval of a variation last year to the State Agreement covering Iluka's Mid West operations.

The variation has allowed the company to use the Narngulu plant for processing ore mined from other sources other than its Eneabba mining leases.

The opportunity to process HMC from South Australia is expected to extend the life of the Narngulu facilities by at least 10 years.

Iluka also has an active exploration program within its Eneabba licence area and within the past 18 months has stepped up efforts to identify new deposits near existing facilities.

Final capital expenditure for the project, including the Narngulu upgrade, was A\$390 million compared to the approved budget of A\$420 million.

Commencing in December 2008, the expansion activities at Narngulu included:

- Construction of new plant and equipment to transfer heavy mineral concentrate from ships, reclaim from stockpile and wash saline residue from surface.
- The existing mineral separation plant restored to dual train configuration by installation of a separation circuit.
  - Plant 1 capable of treating both Jacinth-Ambrosia heavy mineral concentrate as well as Western Australian heavy mineral concentrate.
  - Plant 2 processing upgraded and reconfigured to solely treat Jacinth-Ambrosia heavy mineral concentrate.
- Zircon finishing plant upgrade with the capacity to produce 300 thousand tonnes of zircon annually.

The first shipment of Jacinth-Ambrosia heavy mineral concentrate was shipped from Port Thevenard, South Australia

to the Port of Geraldton in December 2009 and a ramp up of production has occurred during the first half of 2010.

The company announced in June 2010 the achievement of targeted (nameplate) rates enabling regular shipments to the Narngulu mineral processing facilities with Plant 2 also achieving nameplate production rates.

Total zircon production sourced from Jacinth-Ambrosia for 2010 is expected to be approximately 150 thousand tonnes and in 2011 a full year production of approximately 300 thousand tonnes is now expected.

Iluka has commenced shipping commercial quantities of Jacinth-Ambrosia zircon and customer acceptance of the product has been highly favourable.

Its premium grade makes it suitable for ceramic applications, casting, zirconium chemical and foundry uses. Rutile and ilmenite production stream are marked for welding and other titanium-based applications.

The Narngulu operations employ about 155 people on a direct basis and an estimated 15 contractors. ■



*The Jacinth-Ambrosia mine pit in South Australia – heavy mineral concentrate from the mine will be treated at Iluka's upgraded Narngulu processing facility.*

# SAFETY REFORMS MOVING AHEAD

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There have been some key developments in the Department of Mines and Petroleum's Reform and Development at Resources Safety (RADARS) strategy over the past few months.

Safety Reform Project Director Simon Skevington said that the Ministerial Advisory Panel on Best Practice Safety Regulation identified areas of focus and three working groups have been formed to quickly progress these core components of the safety reforms.

The working groups, which include industry and union representatives, are Best Practice Safety Strategies, Financial Reporting and Transparency, and Legislative Review.

"These are areas where we can work collaboratively with industry and the unions to address key issues raised by the Panel in more detail," Mr Skevington said.

"It is an opportunity to ensure that there is alignment on how to deliver better safety outcomes across the State and ensure these are being delivered at all levels from the workers right through to management.

"Safety is everyone's responsibility and we need to ensure that everyone recognises this fact."

A phased cost recovery model is being implemented to fund the RADARS changes. The first phase was the introduction of a Mines Safety and Inspection Levy earlier this year. Cost recovery for the petroleum and dangerous goods sectors will follow as the rollout of RADARS continues.

The first Mines Safety and Inspection Levy assessment notices were issued from 16 June, based on hours worked by mining and exploration operations during the month of May 2010. This money is being used to offset the costs of developing and implementing the reforms.

The next mines safety levy assessment notices cover the period from 1 July –

30 September and will be issued from 16 October. The levy will only apply to mining and exploration operations with a quarterly total more than 5,000 hours worked.

The Legislative Review Working Group will be reviewing the levy regulations to fine tune regulations over the coming months, based on industry feedback received post-implementation.

Cost recovery for dangerous goods and petroleum is currently being developed, and industry will be consulted as part of this process.

The Department will also liaise with the Chamber of Minerals and Energy WA and other peak bodies to provide industry updates regarding the Mines Safety and Inspection Levy and the RADARS strategy at their forums.

The Chamber forums will include representatives from the Safety Reform Group to present information and answer questions from industry representatives about the levy and RADARS.

The forums are in addition to the department's recent series of industry briefing sessions held in Perth, Bunbury, Kalgoorlie and Karratha between July 5 and 8.

The briefing sessions were well received by industry and are one way the department is communicating directly with industry regarding the safety reforms and the mines safety levy. Representatives from the Chamber attended the briefing sessions, along with about 66 industry employees from across the State.

Department of Mines and Petroleum Director General Richard Sellers said that communication between the department and industry was vital in establishing the reforms.

"It is through communication with industry that we develop an understanding of their expectations and potential issues with the

implementation of the reforms, including the levy," he said.

"Working with industry is the key to making a meaningful difference to safety culture on Western Australian mine sites."

National harmonisation of occupational health and safety legislation is progressing, and Resources Safety has assigned resources to prepare for its introduction.

The Best Practice Safety Strategies Working Group is looking at what strategies and tools may be required to contribute to the national harmonisation process for occupational health and safety legislation.

Improvements to data collection and IT systems have also taken significant steps forward.

The initial phase of replacing old compliance systems is underway. The internal release of the Safety Regulation System "AXTAT Plus" in July was an important milestone for Resources Safety.

The system is due to be externally accessible by the end of the year and will enable industry to submit safety data via a web portal rather than completing forms.

Companies will also be able to produce reports on the data they submit and compare it industry-wide to gauge performance.

This will also improve efficiency in the department by removing the need for staff to manually transfer the data from forms to databases.

Resources Safety recruitment has also been ramped up. New employment packages, competitive to those offered by industry, are being developed in an effort to attract applicants with the necessary skills and experience.

For further updates on RADARS go to [www.dmp.wa.gov.au/RADARS](http://www.dmp.wa.gov.au/RADARS) ■



*Collaboration with industry on safety reforms will see safety culture transformed on Western Australian mine sites.*



DMP staff members take background radiation measurements at a former Lake Way uranium exploration site south-east of Wiluna.

## DMP INVESTIGATES URANIUM CLAIMS

A recent visit by Department of Mines and Petroleum (DMP) officers to a former uranium exploration site at Lake Way found background radiation levels to be within safe limits.

Greens MLC Robin Chapple claimed the site at Lake Way, about 11 kilometres south-east of Wiluna in Western Australia's Mid-West, had unsafe levels of background radiation due to inadequate rehabilitation in the 1970s.

The department responded by sending a qualified Radiation Survey Officer from the Resources Safety Division to the site to measure current background radiation levels.

The levels detected were found to be consistent with what would be expected at a site with outcropping uranium ore associated with a shallow deposit.

The department's survey results were consistent with a survey undertaken by a radiation specialist for Toro Energy, which is now developing the site.

Concerns were also raised earlier this year that the former Western Mining Corporation Kalgoorlie Research Plant site, north of Kalgoorlie, was an ongoing danger to the public.

A visit from DMP officers found background radiation levels on the site were also low.

Officers visiting uranium exploration sites and auditing companies' performance against tenement conditions is part of DMP's responsibility in regulating the uranium sector.

Officers from the department's Environment Division were recently in the northern Goldfields visiting several uranium exploration sites, including Toro Energy's trial pit project.

As part of the environmental approvals process, mining companies must rehabilitate sites to be safe, stable, non-polluting and able to support a native ecosystem.

Protecting the health and safety of workers, the community and the environment in the uranium sector is a high priority for the Western Australian Government.

"The State has a long background in regulating radioactive materials through the mineral sands industry, and we are committed to world's best practice regulation of uranium mining," DMP Principal Uranium Policy Officer Ian Loftus said.

Handling and transportation of radioactive materials such as mineral sands and tantalum are similar to uranium and these sectors have operated without major incident in Western Australia.

This experience has given the department a solid understanding of the issues involved with uranium mining and exploration.

The successful development of the uranium sector in Western Australia is supported by State Government and uranium industry involvement in the Uranium Council (previously the Uranium Industry Framework Implementation Group), which ensures the world's best health, safety and environmental standards are used.

"Uranium mining in this State can, and will, be done in a way that protects workers, the community, and the environment," Mr Loftus said.

Investment in uranium mining has the potential to offer a significant financial return for Western Australia.

It will provide another source of employment for Western Australians and bring economic benefits to the State. ■

# RESEARCH BOOST underpins future WA resources success

Six Western Australian minerals and energy researchers have received State Government scholarships to continue their potentially lucrative work.

Minerals and Energy Research Institute of Western Australian scholarships worth A\$10,000 have been awarded to Talitha Santini of the University of Western Australia, Simon Assmann of the Western Australian School of Mines (WASM) at Curtin University, Andrew Greenwood of Curtin University, and Mohammad Sarmadivaleh of Curtin University.

Two additional A\$5000 stipends were awarded to PhD candidates David Grimsey and Zojia Vukmanovic.

Mines and Petroleum Minister Norman Moore said the support would encourage research and development and establish a strong technical base for the industries through universities and other Government or private laboratories.

"The attraction and retention of suitable candidates to undertake research

in these fields is challenging," said Minister Moore.

"These scholarships assist researchers reach their goals and provide vital data for the State's largest industry."

The State Government funds MERIWA to support the development of the minerals and extractive energy industries.

"As always, the quality of applications received this year was outstanding, and the State Government is pleased to support the research of these six successful scholarship recipients," Minister Moore said.

Mr Greenwood said the scholarship relieved some of the financial pressures of living while conducting research and also assisted in participating at conferences.

The primary objective of his research is to fully evaluate the origin of shear zone seismic reflectivity, and characterise surrounding hard rock through the use of borehole seismic methods.

He said surface seismic exploration had proven viable in mineral exploration during the past few years, yet there was currently no cost-effective tool for "check-shot" calibration of surface seismic data.

"The research grant component of this scholarship will be of great assistance in the final data collection of my research and will go towards the survey costs of comparing an industry standard three-component borehole geophone tool against the hydrophone array," he said.

"Results to date are looking very promising and the final results will be available next year.

"One of the large miners is showing interest in the technique and I would expect one or two service providers to be offering the technique within one to two years."

A list of the successful projects is on page 26. ■



MERIWA Chairman Phil Lockyer (left) and Mines and Petroleum Minister Norman Moore (second from right) with the 2010 scholarship recipients.



## MERIWA

### THE SUCCESSFUL PROJECTS

**Zoja Vukmanovic's** research into physical and chemical processes involved in remobilisation of nickel sulphides from komatiitic deposits will improve the ability to predict the shape and location of new ore bodies.

**David Grimsey** will assess amenability of Western Australian laterites to the extraction of nickel using a segregation process which should optimise processing economics.

**Talitha Santini's** research involves a study of soil formation in bauxite residue. This project will lead to improved rehabilitation outcomes associated with bauxite residue deposits and greater understanding of soil forming processes.

**Simon Assmann's** study will surround mass transfer in electrostatic liquid to liquid extraction, also known as E-L-X. This research will lead to a significant improvement in the design of an industrially applicable E-L-X cell, and potentially, the commercialisation of a superior alternative to existing technology.

**Andrew Greenwood's** primary research objective is to evaluate the origin of shear zone reflectivity and characterise the surrounding hard rock through the use of borehole seismic methods. The resulting data could greatly improve exploration targeting.

**Mohammad Sarmadivaleh's** research will specifically investigate the mechanical process of pre-existing fractures being intersected by a hydraulic fracture. The research will improve available numerical modelling to study these fracture interactions in a more realistic manner. ■



## MINERS HALL OF FAME

*The Australian Prospectors and Miners Hall of Fame is now home to a 793 C dump truck exhibition.*

The Australian Prospectors and Miners Hall of Fame recently welcomed its latest star attraction, the Australian-first exhibition of a 793 C dump truck.

Mines and Petroleum Minister Norman Moore officially opened the exhibition, giving visitors a rare experience generally restricted to those who work in the mining industry.

"The new attraction allows visitors to climb into the cab of the 793 C dump truck, where they have the

chance to interact with one of the mining industry's biggest pieces of equipment," Minister Moore said.

The 793 C dump truck has been fitted with a high-tech audio system and sub woofer, allowing visitors to gain the complete trucking experience.

The latest attraction is a major milestone for the Mining Hall of Fame and heralds a significant turning point in the future of the facility.

"This will arguably be Kalgoorlie-Boulder's biggest tourist attraction," Minister Moore said.



## WELCOMES LATEST ATTRACTION

In February, the State Government pledged to try and save the hall after it became aware of the severity of financial difficulties it faced.

The Government prepared an A\$290,000 rescue package for the hall.

"The Hall of Fame is not only important to Kalgoorlie-Boulder, it is also important to Western Australia and Australia as a showcase for the history of mining in this country," Minister Moore said.

Hall of Fame Chief Executive Andrew Govey said that with the recent funding the facility could look forward to

developing the site to a point where it could become economically viable in the future.

"It's exciting times for the Hall of Fame with a number of new up and coming projects set for commencement over the next 24 months, further promoting the Hall of Fame as a world class tourist attraction," he said.

The Hall of Fame is in the process of introducing a Pit Stop Café, mini golf course, flying fox, outdoor cinema and a Kalgoorlie-first dedicated gold shop.

"We very much have a focus on providing our visitors, whether young or old, with

an educational experience into the history, processes and techniques of mining," Mr Govey said.

"Over the last four years we have welcomed over 16,000 students to the Hall of Fame from more than 200 schools, we hope that with these new attractions we will see more schools visiting from the Northern Territory and the Eastern States."

"The Hall of Fame is a unique facility that gives visitors a hands-on learning experience of mining activities in Australia; these new attractions will further enhance that experience." ■

## Commenced Operations

### AGRICULTURE

#### Ord - Ord East Kimberley Expansion Project

WA STATE GOVERNMENT

The State Government has committed \$220 million to increase the existing amount of irrigated land in the Kununurra region by adding 8,000 hectares at Weaber Plains. This funding will provide the construction of irrigation channels, roads and off-farm infrastructure to service the future needs of the region's growing population and sustain economic growth. The Commonwealth Government has committed \$195 million of funding for social and common use infrastructure in the East Kimberley region. Construction has commenced and the package will be fully implemented by June 2012.

Expenditure: \$415m.

Employment: Construction: 218

### HEAVY MINERAL SANDS

#### Narngulu - Processing Facility Expansion

ILUKA RESOURCES LIMITED

In June 2010, Iluka completed an upgrade at its Narngulu processing facility, near Geraldton, in order to treat up to 600,000tpa of heavy mineral concentrate from its Jacinth-Ambrosia deposit in South Australia. The plant is now able to produce up to 300,000tpa of zircon. Iluka has commenced shipping commercial quantities of Jacinth-Ambrosia zircon and expects to continue activities to fine tune and optimise product quality and plant efficiency during the second half of 2010.

Expenditure: \$60m.

Employment: Construction: 100; Operation: 8

### IRON ORE

#### Pilbara - Atlas Iron Pardoo Hematite Direct Shipping Ore (DSO) Mine

ATLAS IRON LTD

Atlas Iron Ltd is an active explorer and developer, focused on iron ore projects within Western Australia. With a growing number of projects and a large landholding in the Pilbara (15,000km<sup>2</sup>) located close to existing infrastructure, the company is effectively defining resources and reserves capable of being mined with relatively low capital expenditure. Exports commenced in December 2008 starting with its Pardoo Project located some 75km east of Port Hedland. The company has now commenced mining at its Wodgina Direct Shipping Ore Project 110km south of Port Hedland.

Expenditure: \$28m.

Employment: Operation: 200

#### Pilbara - FMG Iron Ore Mine Rail and Port Development

FORTESCUE METALS GROUP LTD

FMG Chichester operates iron ore mines at Cloudbreak and Christmas Creek in the Chichester Ranges of the eastern Pilbara, serviced by a multi-user railway and port facilities at Port Hedland. FMG Chichester is currently ramping production up to 45Mtpa and is investigating increasing its production to 120Mtpa from the Chichester Ranges and areas surrounding the Solomon deposits in the western Pilbara.

Employment: Operation: 1600

#### Pilbara - Rapid Growth Project 4

BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore has obtained all relevant Government approvals for expanding its installed production capacity of its Western Australian Iron Ore operations to 155Mtpa. The increased production will be achieved through infrastructure upgrades and the creation of a Newman hub. First ore was produced, ahead of schedule, in Q4 calendar year 2009 and ramp-up continues. The Company is also undertaking a parallel expansion, Rapid Growth Project 5. Expenditure: \$1.8b.

## Committed Projects

### ELECTRICITY

#### Karratha 7 Mile - 7 Mile Power Station

HAMERSLEY IRON PTY LIMITED

Rio Tinto has proposed a power infrastructure rationalisation program and upgrade for its mining and port operations in the Pilbara region. Hamersley Iron Pty Limited is constructing a new power generating facility at 7 Mile near Karratha. Robe River Mining Company Pty Limited is constructing a 220kV transmission line and a sub-station at Cape Lambert. The Cape Lambert sub-station will be linked to the 7 Mile main power generator via the new transmission line. Hamersley and Robe will share the generation capacity created by the new power station. This new single station will replace the two aging plants at Dampier and Cape Lambert. Construction of the power station commenced in late 2008 and is targeted for completion in Q3 2010. Expenditure: \$700m.

### HEAVY MINERAL SANDS

#### Tutunup South - Heavy Mineral Sands Mine

ILUKA RESOURCES LIMITED

The Tutunup South mineral sands mine, located approximately 15km south east of Busselton, received environmental approval in August 2009. Iluka plans to commence site works early in Q4 2010, with first production expected in mid-2011. The project involves the construction of mine pits, screen plant, ore concentrator, solar drying dams and associated mine infrastructure. The mine is expected to produce over 1.2Mt of heavy mineral concentrate over its four to five year life, which will be transported to Capel for further processing.

Expenditure: \$30m.

Employment: Construction: 130; Operation: 30

### IRON ORE

#### Mid West Region - Extension Hill Hematite Mine

MOUNT GIBSON IRON LIMITED

Mount Gibson Iron has environmental approval for a 3Mtpa hematite mining operation at Extension Hill, 260km south east of Geraldton. The ore will be trucked to a rail head near Perenjori then railed to the port of Geraldton for export. Construction of the project has commenced with first shipments expected to be in June 2011.

Expenditure: \$73m.

Employment: Construction: 150; Operation: 100

#### Mid West Region - Karara Iron Ore Project

KARARA MINING LTD (GINDALBIE METALS LTD / ANSTEEL JOINT VENTURE)

The Karara Iron Ore Project is Karara Mining's cornerstone production project in the Mid West region. Construction commenced in November 2009. Karara will deliver some 10Mtpa of iron products before the end of 2011, comprising 8Mtpa of high grade magnetite concentrate and blast furnace quality pellets and 2Mtpa of Direct Shipping Ore hematite. The Project is underpinned by a world-class JORC-Code compliant resource base comprising a 522 million tonne magnetite reserve, a 1.853 billion tonne magnetite resource, a 10.9Mt hematite reserve and a 16.2Mt hematite resource.

Expenditure: \$1.975b.

Employment: Construction: 1500; Operation: 500

#### Pilbara - Rapid Growth Project 5

BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore has obtained all relevant Government approvals for a further installed production capacity expansion of its Western Australian Iron Ore operations to 205Mtpa, to be operating in the second half of calendar year 2011. Construction activities for the increased production, which involves mine expansions, dual tracking of sections of the railways and additional berths at Port Hedland inner harbour, are over 60% complete. The Company is in the study phases for future potential expansions.

Expenditure: \$4.8b.

Employment: Construction: 3500

### BAUXITE

#### Worsley/Boddington - Alumina Refinery - E & G Project Expansion to 4.7Mtpa

BHP BILLITON WORSLEY ALUMINA PTY LTD

BHP Billiton announced in May 2008 the go-ahead for the A\$2.5 billion Efficiency and Growth (E & G) expansion project at its Worsley alumina refinery. The expansion project will lift capacity of the refinery from 3.5Mtpa to 4.7Mtpa through expanded mining operations, additional refining capacity and upgraded port facilities. Construction has commenced and production capacity is expected to be expanded by 2012. An additional A\$500 million will be spent on a new multi-fuel cogeneration power plant to be built at the refinery.

Expenditure: \$2.5b.

Employment: Construction: 1500; Operation: 200

# Committed Projects

## Pilbara - Western Turner Syncline (Sections 10 & 258 of ML4SA)

HAMERSLEY IRON PTY LIMITED

In January 2010 construction commenced on the 6Mtpa iron ore mine at Western Turner Syncline, 20kms west of Tom Price. The mine is scheduled to come on stream to replace the production from the Tom Price mine as production decreases. Western Turner Syncline ore will be delivered by road to the processing and rail facilities at Tom Price at the initial rate of 6Mtpa. Construction is now complete and the first ore was stockpiled on 25 May 2010.

Expenditure: \$200m.

Employment: Construction: 200; Operation: 150

## Pilbara Brockman Syncline 4 - Brockman Syncline 4 Iron Ore Mine

HAMERSLEY IRON PTY LIMITED

In mid 2008 Hamersley Iron commenced construction of the mine for the Brockman Syncline 4 iron ore deposit, located approximately 60km north west of Tom Price. First ore was stockpiled in June 2010 with a full production target of 22Mtpa.

Expenditure: \$2b.

Employment: Construction: 1500

## IRON ORE PROCESSING

### Pilbara - Cape Preston - Sino Iron Project

CITIC PACIFIC

CITIC Pacific Mining, a Chinese company, is constructing a magnetite iron ore mine and processing plant at Cape Preston. The project will include a concentrator, 6Mtpa pellet plant, slurry pipeline, combined cycle power station, port facilities and desalination plant. When operational, the facility will be capable of producing 27.6Mtpa of iron ore concentrate and high grade pellets, with first production of concentrate planned for the final quarter of 2011.

Expenditure: \$5.2b.

Employment: Construction: 4000; Operation: 500

## LITHIUM

### Great Southern Region - Mount Cattlin Lithium Project, Ravensthorpe

GALAXY RESOURCES LIMITED

Galaxy Resources Limited is developing a 1Mtpa lithium project (over a 15 year mine life) at Mt Cattlin, north of Ravensthorpe. Galaxy commenced mine development and plant construction in Q4 2009 with first production of concentrates planned during Q3 2010. Lithium (spodumene) concentrate is expected to be shipped through Esperance. Galaxy's initial fast track project schedule aims to meet the growing demand for lithium-ion batteries currently being fuelled by the rapidly expanding international hybrid and electric vehicle market. Scoping studies for processing of lithium carbonate in Jiangsu, China, were completed in October 2009 and plans for commencement of the plant in Q4 of 2010 are on track.

Expenditure: \$75m.

Employment: Construction: 100; Operation: 75

## NICKEL

### Ravensthorpe - Ravensthorpe Nickel Operation

FIRST QUANTUM MINERALS AUSTRALIA NICKEL  
PTY LTD

First Quantum Minerals (FQM) acquired the Ravensthorpe Nickel Operation (RNO) from BHP Billiton (BHPB) in February 2010. FQM plans to return RNO to sustainable production by late 2011. RNO is an open cut mine and hydrometallurgical process plant that produces a mixed nickel cobalt hydroxide intermediate product. The modifications are within the plant's existing footprint in the materials handling area, including crushing, conveying and stockpiles. FQM aims to produce 39,000tpa nickel metal for the first five years after recommendation and 28,000tpa nickel metal over the current anticipated mine life of 32 years.

Expenditure: \$150m.

Employment: Construction: 200; Operation: 600

## OIL & GAS DEVELOPMENTS

### Barrow Island (Carnarvon Offshore Basin) - Gorgon Gas Processing Project

GORRON JOINT VENTURE

The Gorgon Joint Venture (GJV) made a final investment decision on the \$43 billion Gorgon Project on 14 September 2009. The GJV's foundation project on Barrow Island includes a three train LNG development capable of exporting 15Mtpa and a domestic gas project capable of delivering at least 300 terajoules per day of gas to the mainland. The development on Barrow Island also includes potentially the largest commercial geosequestration project in the world. The project obtained State and Commonwealth environmental approval in August 2009. The project is based on gas from both the offshore Gorgon and Jansz/Io gas fields. On-island activity commenced in late 2009 and will ramp up through 2010 with the processing plant construction scheduled to commence in 2011.

Expenditure: \$43b.

Employment: Construction: 3500; Operation: 300

### Carnarvon Basin - Pluto LNG

WOODSIDE ENERGY

Approved for development in July 2007, the Pluto LNG Project will process gas from the Pluto and Xena gas fields, located in the Carnarvon Basin about 190km north-west of Karratha, Western Australia. The Pluto and Xena gas fields are estimated to contain 4.6 trillion cubic feet (Tcf) of dry gas reserves and an additional 0.5Tcf of contingent resources. The initial phase of the project comprises an offshore platform, connected to five subsea wells on the Pluto gas field. Gas will be piped in a 180km trunk line to the Pluto LNG Park onshore facility located on the Burrup Peninsula. Onshore infrastructure comprises a single LNG processing train with a forecast production capacity of 4.3 million tonnes a year. Storage and loading facilities include LNG and condensate storage tanks and export jetty. The Pluto LNG Project is on track to become the world's fastest developed LNG project from discovery of the gas field in 2005 to first LNG in early 2011.

Expenditure: \$12b.

Employment: Construction: 4000; Operation: 300

### North Rankin (Carnarvon Offshore Basin) - North Rankin Redevelopment

WOODSIDE ENERGY

In March 2008 the North West Shelf Venture participants approved funding of the \$5 billion North Rankin Redevelopment Project which will recover remaining low pressure gas from the North Rankin and Perseus gas fields, and extend the field life to around 2040. The project involves the installation of a new second platform - North Rankin B - with gas compression facilities, low pressure separators, utilities and accommodation. North Rankin B will be connected by a 100m bridge to the existing North Rankin A platform and on completion both platforms will be operated as a single integrated facility known as the North Rankin hub. The North Rankin Redevelopment project also includes the necessary connections to North Rankin A and some refurbishment of the North Rankin A platform. North Rankin B is scheduled for start-up in 2013 and will support the North West Shelf Venture's onshore gas requirements to supply future customer commitments.

Expenditure: \$5b.

### Pilbara - Devil Creek Development Project

APACHE ENERGY LIMITED

Apache Northwest and Santos Offshore are continuing construction works for the Devil Creek Development Project (DCDP), a greenfield gas project comprised of an unmanned offshore gas production platform over the Reindeer gas field located about 80km northwest of Dampier; offshore and onshore gas pipelines;

an onshore gas processing plant and a sales gas export pipeline connected to the Dampier to Bunbury Natural Gas Pipeline (DBNGP). Gas plant site earthworks are complete and civil works progressed sufficiently to allow for the sequential installation of pipe rack and gas processing modules. The onshore gas supply pipeline is nearing completion and the pipeline shore crossing, installed by horizontal directional drilling methods, is well advanced. The development site is located near Devil Creek, 65km south west of Karratha where the construction workforce is being accommodated within a purpose built facility. The DCDP is designed to provide up to 200 terajoules per day of dry natural gas and between 80kl to 160kl per day of gas condensate. All gas from the DCDP will service the domestic gas market in Western Australia, with first gas delivered into the DBNGP second half 2011.

Expenditure: \$800m.

Employment: Construction: 200; Operation: 20

### Wanaea/Cossack (Carnarvon Offshore Basin) - Oil and Gas Fields

WOODSIDE ENERGY

The Cossack Wanaea Lambert Hermes (CWLH) fields, 135km northwest of Karratha, have produced 395 million barrels of oil since production began in 1995. The redevelopment work includes the purchase and conversion of the Okha floating storage and offloading facility into a floating production storage and offloading facility to replace the Cossack Pioneer in late 2010, as well as the replacement of associated subsea infrastructure. At a total investment of about A\$1.8 billion, the CWLH Redevelopment Project will support ongoing safe and reliable production from the CWLH fields beyond 2020.

Expenditure: \$1.8b.

## RARE EARTHS

### Mt Weld - Rare Earths Mine

LYNAS CORPORATION LTD

The Mt Weld deposit, located about 35km south of Laverton, contains an estimated resource of 12.2Mt at 9.7% grade for 1.18Mt rare earth oxides (REO). The development involves an open pit mine and concentrator at Mt Weld. The concentrate will be containerised on site then trucked to the Port of Fremantle for export. The ore will be shipped to a \$300 million processing plant in Malaysia, which will have an initial production capacity of 11,000tpa REO in 2011 and then expanding to 22,000tpa by 2013. Lynas raised \$450 million in equity to enable suspension of the project to be lifted in November 2009. Construction work recommenced at Mt Weld in April 2010 and the first ore feed into the concentration plant is scheduled to occur in December 2010.

Expenditure: \$135m.

Employment: Construction: 135; Operation: 90

## SILICON METAL

### Kemerton - Silicon Metal Plant Expansion

SIMCOA OPERATIONS PTY LTD

Simcoa announced in October 2009 its decision to expand the company's 32,000tpa capacity silicon metal plant at Kemerton. The first stage expansion, involving installation of a third furnace, will increase the plant capacity to 48,000tpa and commissioning is scheduled for Q3 2011. Providing world demand for silicon continues to increase strongly, a second stage expansion, involving installation of a fourth furnace could take place by late 2013 and increase plant capacity to 64,000tpa.

Expenditure: \$100m.

Employment: Construction: 200; Operation: 40

# Projects Under Consideration

## AMMONIA/UREA

### Shotts Industrial Park - Collie Shotts - Coal to Urea

PERDAMAN CHEMICALS AND FERTILISERS PTY LTD

Perdaman Chemical and Fertilisers Pty Ltd is developing a coal to urea plant at the new (to be developed) Shotts Industrial Park, near Collie. The plant will use proven "best in class" coal gasification and fertiliser production technologies. Around 2.7Mtpa of coal will be used to produce approximately 2Mtpa of urea, primarily for export. Up to 100,000 tonnes of urea could be made available for local use, which would represent up to 20% of WA's needs. The urea will be transported to Bunbury Port by rail. The company is well advanced in the environmental approval processes and has Government approval to obtain land in the Shotts Industrial Park. Supply and off take arrangements are also well advanced. Financial Close is planned for September/October 2010. Construction is expected to commence in early 2011 with the first shipment of urea planned for Q4 2013.

Expenditure: \$3.5b.

Employment: Construction: 1500; Operation: 200

## AMMONIUM NITRATE

### Burrup Industrial Estate Site D - Burrup Nitrates Ammonium Nitrate Plant

BURRUP NITRATES PTY LTD

Burrup Nitrates Pty Ltd (BNPL), a joint venture between Burrup Holdings Ltd (BHL) of Australia and Yara International ASA of Norway, is conducting a feasibility study into the construction of a 350,000tpa Technical Ammonium Nitrate (TAN) plant to be located on the Burrup Peninsula. Ammonia feedstock will be supplied from BHL's subsidiary company Burrup Fertilisers Pty Ltd, which operates its facility directly adjacent to the proposed location for the new TAN plant. It is expected that all manufactured product will be sold into the Pilbara region. Regulatory approvals are in progress, with construction targeted to begin Q3 2010. The company is aiming for operations to commence by Q4 2013.

Expenditure: \$600m.

Employment: Construction: 600; Operation: 65

## ELECTRICITY

### Collie - Bluewaters III and IV, Coal Fired Power Stations

GRIFFIN ENERGY PTY LTD

Griffin Energy is planning to expand the Bluewaters Power Station Project with two additional 208MW coal-fired power stations at the Coolongatta Industrial Estate, near Collie. Commissioning of the Bluewaters III base-load power station is expected by late 2013 and commissioning of Bluewaters IV by late 2015.

Expenditure: \$800m.

Employment: Construction: 600; Operation: 50

### Mid West Region - Centauri 1 Power Project

ENEABBA GAS LIMITED (EGL)

Eneabba Gas Limited is planning to develop a 168MW Centauri 1 gas-fired turbine power station near Dongara. Generation capacity can be increased to 365MW. The project is focused on supplying additional volumes of energy for the developing Mid West iron ore industries. Besides sourcing gas from the Dampier to Bunbury Natural Gas Pipeline, the company is working to develop an underground coal gasification gas supply for the facility.

Expenditure: \$200m.

Employment: Construction: 100; Operation: 4

## GOLD

### Kalgoorlie (330kms North East) - Tropicana Gold Project

ANGLOGOLD ASHANTI/INDEPENDENCE GROUP JOINT VENTURE

AngloGold Ashanti, as Joint Venture Manager, has undertaken an intensive exploration and resource development program approximately 330kms north east of Kalgoorlie. Plans for the project are to develop an open-cut gold mine and nearby processing plant.

So far, a resource estimate of 5 million oz of gold has been identified with a mine life of at least 10 years. The feasibility study commenced in July 2009 and is ongoing. The 8 week Public Environmental Review closed on 24 November 2009. Construction is anticipated to commence in late 2010. Commissioning is expected to be around the first quarter in 2013 with production of up to 410,000 oz per annum. The recently released (19 July) 2010 EPA report has recommended project approval to the Minister for Environment.

Expenditure: \$700m.

Employment: Construction: 700; Operation: 400

## HEAVY MINERAL SANDS

### Happy Valley - Heavy Mineral Sands Mine

BEMAX CABLE SANDS (WA) PTY LTD

Located adjacent to the Bemax Gwindinup deposits, the project will involve the mining of the Happy Valley North and South mineral sands deposits situated on private land and in State Forest. The two deposits contain over 750,000 tonnes of recoverable heavy mineral concentrate, with average production expected to be around 150,000tpa over a combined mine life of eight years. The Environmental Review and Management Program document was released for public review and closed in November 2009. Subject to obtaining all relevant approvals, Bemax expects to commence mining of the North deposit in early to mid-2011 and then plan to transfer mining to the South deposit in 2013. The concentrate will be trucked to Bemax's Bunbury Mineral Separation Plant for final processing.

Expenditure: \$35m.

Employment: Construction: 100; Operation: 30

### Jangardup South - Heavy Mineral Sands Mine

BEMAX CABLE SANDS (WA) PTY LTD

The Jangardup South minerals deposit is situated 54km south of the Nannup township and adjacent to the D'Entrecasteaux National Park. Cable Sands estimates that the deposit would provide 2Mt of minerals. Feasibility and environmental studies are well advanced. An environmental impact statement for the project is being prepared.

Expenditure: \$60m.

Employment: Construction: 100; Operation: 50

### Keysbrook - Heavy Mineral Sands Mine

MATILDA ZIRCON LIMITED

Matilda Zircon proposes to develop a mineral sands mine located near the township of Keysbrook, approximately 70km south of Perth. It has ore reserves of 41Mt, containing 1.2Mt of heavy mineral concentrate. The project is expected to produce 40,000tpa of leucoxene and 47,000tpa of ilmenite, high titanium ilmenite and zircon over its eight year mine life. Keysbrook received environmental approval in October 2009. Matilda's applications for development approvals have been refused by the Murray and Serpentine-Jarrahdale Shires, and have now been referred to the State Administrative Tribunal for determination. Subject to these applications being approved, Matilda plans to obtain project finance and start development of the mining operations, with mining to commence in 2011.

Expenditure: \$18m.

Employment: Construction: 35; Operation: 30

### Shark Bay - Coburn Zircon Project

GUNSON RESOURCES LIMITED

Gunson proposes to develop the Coburn mineral sands project, located south of Shark Bay. It contains total ore reserves of 308Mt at an average grade of 1.2% heavy minerals, all of which lie within the portion of the project area that has received government environmental approvals for mining. At the proposed mining rate of 17.5Mtpa, the Coburn mine life is estimated to be 17.5 years which could be extended by six years if the northern area receives government approvals for mining. The Definitive Feasibility Study was completed in December 2009 and Gunson is continuing to advance discussions with potential strategic funding and offtake partners.

Expenditure: \$169m.

Employment: Construction: 170; Operation: 110

## INFRASTRUCTURE

### James Price Point - Browse LNG Precinct Project

WA STATE GOVERNMENT

The State Government is developing a Liquefied Natural Gas (LNG) Precinct in the Kimberley to enable processing of natural gas from the offshore Browse Basin. The LNG Precinct will be capable of accommodating LNG processing and shipping facilities for at least two proponents currently exploring for and developing these resources. This approach will minimise the environmental footprint of gas processing in the region while maximising opportunities for local people and businesses to participate in, and benefit from, employment and business opportunities. Woodside's final investment decision for the precinct is expected to be made in mid-2012.

Expenditure: \$30b.

Employment: Construction: 6000; Operation: 400

### Oakajee - Oakajee Industrial Estate & Port Project

WA STATE GOVERNMENT

The Oakajee Port will include common user infrastructure (channel, breakwater, turning basin, navigational aids, provision for tug and pilot boat pens, port administration offices and roads and utilities) funded by the State and Commonwealth governments and private use infrastructure (at least one Cape Class iron ore berth, as well as associated materials handling equipment and rail infrastructure). The Port will also include provision for a Panamax berth to provide import / export capability for value-adding industries in the Oakajee Industrial Estate. A 570km railway will link the port to mining tenements north-east of Geraldton and through existing rail to mining tenements to the south-east. The new rail line will be operated by Oakajee Port and Rail though an open access regime. Oakajee Port and Rail has now identified three foundation customers with an expected initial throughput of 45Mtpa and delivered its bankable feasibility study to the State for consideration.

Expenditure: \$4b.

Employment: Construction: 2000; Operation: 400

## IRON ORE

### Great Southern Region - Southdown Magnetite Mine

GRANGE RESOURCES LTD

The Southdown Magnetite Mine is situated 90km north east of Albany near Wellstead. Grange Resources Ltd is targeting a 2015 start up with a production of 6.6Mtpa of magnetite concentrate. The slurry concentrate will be transported via a 100km pipeline from Southdown to the Port of Albany for export and pelletising in Malaysia. The merger of Grange with Australian Bulk Minerals brings significant magnetite mining and pelletising experience to the Southdown project. Albany Port Authority (APA) is expanding the Port to allow access to Cape size vessels and to increase berth, storage and loading facilities for the Southdown operation. The APA is waiting on the appeals process and the Minister for Environment's Statement. The mine and pipeline environmental approvals were received by Grange in November 2009. Grange is aiming for an updated prefeasibility study to be completed by late 2010 and bankable feasibility studies by late 2011.

Expenditure: \$1.7b.

Employment: Construction: 2000; Operation: 600

### Mid West Region - Extension Hill Magnetite Mine

ASIA IRON

Asia Iron has primary environmental approval to produce up to 10Mtpa of magnetite concentrate, which will be transported by slurry pipeline to the port of Geraldton for export. The company is currently seeking secondary approvals.

Expenditure: \$2b.

Employment: Construction: 1000; Operation: 350

# Projects Under Consideration

## Mid West Region - Jack Hills Iron Ore Mine

### Stage 2

#### CROSSLANDS RESOURCES

Crosslands commenced trucking 1.5Mtpa hematite from its Jack Hills operations to the port of Geraldton in December 2006. Jack Hills Stage 2 would involve an increase to 25-35Mtpa of hematite and beneficiation feed ore. The ore would be transported by a new railway to a new deepwater port at Oakajee. A definitive feasibility study and exploration drilling program on the Stage 2 project is progressing.

Expenditure: \$2b.

Employment: Construction: 450; Operation: 350

## Mid West Region - Weld Range Iron Ore Mine

#### SINOSTEEL MIDWEST CORPORATION LIMITED

Sinosteel Midwest Corporation proposes to develop a 15Mtpa iron ore mine at Weld Range 65km southwest of Meekatharra, producing a mix of hematite lump and fines. The project is expected to utilise a new rail line and a new deepwater port facility at Oakajee. The company finalised a bankable feasibility study in July 2010.

Expenditure: \$1b.

Employment: Construction: 1000; Operation: 500

## Pilbara - Balla Balla

#### AUROX RESOURCES LIMITED

Aurox Resources Limited is a Perth company developing the Balla Balla Iron, Vanadium and Titanium Project west of Port Hedland, Western Australia. Operations are scheduled to commence in the first half of 2012 with the production of 6Mtpa magnetite iron concentrate and 280,000tpa of titanium concentrate. Within 4 years it is planned to expand to 10Mtpa iron concentrate, 7,000tpa ferrovaniadum and 470,000tpa titanium concentrate. Based on the currently defined JORC Ore Reserves of 238Mt grading 45% Fe, Balla Balla has a life of mine of 16 years. Conceptual mine plan studies have shown Balla Balla's mine life could exceed 26 years. The company has in place two 15 year sales contracts with major Chinese steel companies for a total of 6Mtpa; increasing to 10Mtpa production in 2015.

Expenditure: \$2b.

Employment: Construction: 680; Operation: 860

## Pilbara - Iron Ore Mine - Roy Hill and Central Pilbara

#### HANCOCK PROSPECTING PTY LTD

Hancock Prospecting is developing the world class iron ore project of Roy Hill that is located 105km north east of Newman. This project is expected to come into production in 2014 and will produce iron ore for over 20 years after ramp up at 55Mtpa. The project includes the development of the mine, a new railway and port facilities at Port Hedland. Roy Hill project was granted Major Project Facilitation status in September 2009. Environmental approval for Roy Hill mine Stage 1 was received in December 2009 and environmental approval for Stage 2 was received in March 2010. The Railway (Roy Hill Infrastructure Pty Ltd) Agreement Bill 2010 was introduced into Parliament on 24 June 2010.

Expenditure: \$7b.

Employment: Construction: 1500; Operation: 750

## Pilbara - MCC Cape Lambert Iron Ore Project

#### MCC MINING (WESTERN AUSTRALIA) PTY LTD

MCC Australia Holding Pty Ltd (MCCAH Pty Ltd) is developing a 15Mtpa iron ore (magnetite) concentrate project at Cape Lambert and aims to ship its first ore by mid-2013. The Project comprises a proven JORC compliant 1.9bt iron ore resource and exploration licences covering 369 square kilometres. The Project would consist of a beneficiation plant (A\$1b), 300MW power plant, a port for exporting concentrate (A\$1b) and other related infrastructure. A feasibility study and ongoing environmental and social studies are being conducted by consultancy companies GHD and GRD Minproc on behalf of MCC. GHD is currently preparing a draft Public Environmental Review document. The company commenced native title negotiations with the Ngarluma Aboriginal people in March 2010.

Expenditure: \$3.7b.

Employment: Construction: 3000; Operation: 800

## Pilbara - Rapid Growth Project 6

#### BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore announced on 29 January 2010 early expenditure of US\$1.73 billion (BHP Billiton share) for Rapid Growth Project 6 which is expected to increase installed capacity at the company's Western Australian Iron Ore operations to 240Mtpa during calendar year 2013. The funding will allow early procurement of long lead time items and detailed engineering to continue the expansion of the inner harbour at Port Hedland, progress rail track dual tracking work and expand the Jimblebar mining operation. The approval for the balance of the RGP6 capital will be considered in the future.

Expenditure: \$2.144b.

## Pilbara - West Pilbara Iron Ore Project

#### API MANAGEMENT PTY LTD

The Australian Premium Iron Joint Venture is proposing to develop the West Pilbara Iron Ore Project. Stage 1 of the project is based on the production of 30Mtpa of direct shipping iron ore from its Red Hill and Mt Stuart mine sites located 35-80km south west of Pannawonica. The ore will be exported via a new heavy haul railway to a new multi-user port facility at Anketell. Subject to the successful completion of feasibility and environmental studies, and receipt of government regulatory approvals, the company anticipates that the first shipment will occur in mid-2013.

Expenditure: \$4b.

Employment: Construction: 2500; Operation: 500

## Port Wallcott - Cape Lambert Expansion

#### RIO TINTO LIMITED

Robe River is proposing to expand Cape Lambert Port B to supplement the Port's existing capacity by up to 100Mtpa. The company has identified an area of approximately 150 hectares to cater for new ship loading facilities to the west of the existing Cape Lambert Wharf A. Wharf B with access jetty will be approximately 2700 metres in length from the conveyor junction on land to the end of the wharf. It is proposed that two ship loaders will be constructed, along with wharf conveyors, to service four ship loading berths. The Port B development includes: - ore handling facilities (incorporating rail tracks, car dumpers, conveyors, stackers, stockpiles, reclaimers and screenhouses) - supporting operational infrastructure (including offices, warehouses and workshops) - marine facilities incorporating jetty, wharf, shiploaders and dredging.

Expenditure: \$3b.

Employment: Construction: 300; Operation: 300

## OIL & GAS DEVELOPMENTS

## Carnarvon Basin - Pluto LNG Project Expansion

#### WOODSIDE ENERGY

Woodside's vision for the Pluto LNG Park is an expansion with up to five LNG trains and a pipeline gas plant. In November 2009, Woodside awarded Front-End Engineering Design contracts for Pluto Train 2 and Train 3. These studies are expected to be completed in the second half of 2010. A final investment decision for Pluto expansion trains remains contingent on identification of economically viable gas resources either through exploration volumes and/or other resource owners.

## Macedon (Carnarvon Offshore Basin) - Gas Field

#### BHP BILLITON PETROLEUM (AUSTRALIA) PTY LIMITED

The Macedon gas field, about 90km west of Onslow, was discovered in 1992 during drilling of the West Muiron-3 well and is estimated to contain a gas resource of up to 600bcf. BHP Billiton Petroleum (Australia) Pty Ltd and Apache Energy Limited are currently progressing the necessary approvals for a domestic gas project for Western Australia. The development will involve a number of sub-sea gas wells connected to the gas field, offshore and onshore wet gas pipelines, an onshore gas processing plant

15km southwest of Onslow, and a sales gas pipeline connected to the Dampier-to-Bunbury Natural Gas Pipeline. Daily production is expected to be on the order of 200TJ. Construction is expected to start in late 2010, and gas production to commence in early 2013.

Expenditure: \$1b.

Employment: Construction: 300

## Pilbara - Wheatstone LNG Development

#### CHEVRON AUSTRALIA PTY LTD

Chevron is investigating the feasibility of an LNG project based on its Wheatstone and lago gas fields, to be located at Ashburton North, near Onslow. The project will also process gas from sub-economic third party fields in the Carnarvon Basin. Chevron entered FEED (Front End Engineering Design) in July 2009 with a Final Investment Decision planned for mid 2011. Gas to market is scheduled for 2015/16. The project will initially have two LNG trains with a 10Mtpa capacity, expandable to five, and a 250 million cubic feet per day domestic gas plant.

Expenditure: \$23b.

Employment: Construction: 5000; Operation: 400

## SALT

## Exmouth Gulf - Yannarie Solar Salt Project

#### PTT ASIA PACIFIC MINING PTY LTD

PTT Asia Pacific Mining P/L is proposing to develop a 4Mtpa salt operation in the east coast of Exmouth Gulf. It has exploration licences over the area and has applied for a mining lease. The company is looking at options to progress the project.

Expenditure: \$200m.

Employment: Construction: 100; Operation: 75

## TIMBER

## Mirambeena Timber Processing Precinct - Engineered Strand Lumber

#### LIGNOR LTD

Lignor is proposing to develop an Engineered Strand Lumber ESLÂ®/ Engineered Strand Board ESBÂ® plant located at Mirambeena, about 15km north west of Albany. The Commercial Plant will be preceded by the construction of a Demonstration Plant. This Plant will produce a range of products for certification to the Australian Building Code and overseas equivalents to allow firm off-take contracts to be in place for the revised Commercial Plant at Mirambeena.

Both the Demonstration Plant and the Commercial Plant to follow will source most of the timber from the extensive eucalypt plantations growing in the Albany region and will use technology developed in conjunction with the German engineering companies Siempelkamp or Dieffenbacher. Lignor is finalising its design of the Demonstration Plant and anticipates construction to commence 2010/2011, with product coming into the market by end 2011. Following successful results from the Demonstration Plant, construction of the Commercial Plant is expected to commence by the end of the first quarter of 2013.

Expenditure: \$276m.

Employment: Construction: 350; Operation: 125

## URANIUM

## Yeelirrie - Yeelirrie Uranium Project

#### BHP BILLITON YEELIRRIE DEVELOPMENT COMPANY PTY LTD

BHP Billiton proposes to develop the Yeelirrie Uranium Project in the North-eastern Goldfields. The proposal entails open cut mining of shallow deposits of uranium ore, treatment in a plant to be established at the site, and development of associated infrastructure. The project would produce up to 3500 tonnes per year uranium oxide (as  $U_3O_8$ ) over 30 years. The formal environmental impact assessment process was initiated in 2009 with a view to commencement of construction in late 2011 and mining in 2014.

Employment: Construction: 700; Operation: 300

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## Significant resource projects in Western Australia

Western Australia continues to lead the way as Australia's premier resources investment destination. There are currently more than A\$150 billion worth of projects either committed or under consideration for the State during the next few years. These will create more than 45,000 construction jobs and 10,500 permanent jobs.

All conversions from foreign currencies were calculated at the latest available rate.

	Project Value (estimated A\$m)	Employment Construction	Employment Permanent
<b>Alumina</b>			
BHP Billiton Worsley Alumina - Refinery Expansion	2500	1500	200
<b>Sub Total</b>	<b>2500</b>	<b>1500</b>	<b>200</b>
<b>Iron and Steel</b>			
Asia Iron - Extension Hill Magnetite Mine	2000	1000	350
Australian Premium Iron Joint Venture - Iron Ore Mine	4000	2500	500
BHP Billiton Iron Ore Rapid Growth Project 4	1800	-	-
BHP Billiton Iron Ore Rapid Growth Project 5	4800	3500	-
BHP Billiton Iron Ore Rapid Growth Project 6	2144	-	-
Cape Lambert Port B Expansion	3000	300	300
CITIC Pacific - Cape Preston Mine and Processing Projects	5200	4000	500
Crosslands Resources - Jack Hills Stage 2 Hematite Mine	2000	450	350
Fortescue Metals Group - Mine, Rail and Port Project	-	-	1600
Grange Resources - Southdown Magnetite Mine	1700	2000	600
Hamersley Iron Pty Limited - Brockman 4	2000	1500	-
Hamersley Iron Pty Limited - Western Turner Syncline	200	200	150
Hancock Prospecting - Iron Ore Mine - Roy Hill	7000	1500	750
Karara Iron Ore Project	1975	1500	500
MCC Cape Lambert Iron Ore Project	3700	3000	800
Robe River Mining Co Pty Ltd - Mesa A	1000	-	220
Sinosteel Midwest Corporation - Weld Range Hematite Mine	1000	1000	500
<b>Sub Total</b>	<b>43519</b>	<b>22450</b>	<b>7120</b>
<b>Nickel/Cobalt</b>			
Ravensthorpe Nickel Operation	150	200	600
<b>Sub Total</b>	<b>150</b>	<b>200</b>	<b>600</b>
<b>Oil, Gas and Condensate</b>			
Apache - Devil Creek Project	800	200	20
Apache - Van Gogh Oil	700	-	80
BHP - Macedon	1000	300	-
BHP Billiton - Pyrenees Oil Project	2000	-	-
Browse LNG Precinct	30000	6000	400
Chevron - Wheatstone LNG	23000	5000	400
Gorgon Joint Venture Gas Processing Project	43000	3500	300
North Rankin Redevelopment	5000	-	-
Woodside - Pluto LNG Plant	12000	4000	300
Woodside Energy - Cossack Wanaea Lambert Hermes [CWLH] Redevelopment Project	1800	-	-
<b>Sub Total</b>	<b>119300</b>	<b>19000</b>	<b>1500</b>
<b>Other</b>			
AngloGold Ashanti/Independence Group - Tropicana Gold Project	700	700	400
BHP Billiton - Yeelirrie Uranium	-	700	300
Burrup Nitrates ammonium nitrate	600	600	65
Griffin Energy - Bluewaters III and IV Coal Fired Power Stations	800	600	50
Hamersley Iron 7 Mile Power Station	700	-	-
Oakajeet Port, Rail and Industrial Estate	4000	2000	300
Ord East Kimberley Expansion Project	415	218	-
Perdaman Chemicals & Fertilisers - Collie - Coal-to-Urea Plant	3500	1500	200
PTT Asia Pacific - Yannarie Salt Project	200	100	75
<b>Sub Total</b>	<b>10915</b>	<b>6418</b>	<b>1390</b>
<b>TOTAL</b>	<b>176384</b>	<b>49568</b>	<b>10810</b>



