

Thinking big

New commitments show confidence in resources industry

PROSPECT



Sowing the seeds for development

The past few months have seen two significant milestones reached in the State Government's quest to provide for the future of our resources industry.

The first was the Government signing a Development Agreement with Oakajee Port and Rail for the A\$4 billion Mid West infrastructure project, and the second was the introduction of the A\$80 million Exploration Incentive Scheme (EIS).

Both represent the unwavering faith the Government has in the mining and petroleum industry and that it will emerge from the current economic climate with renewed strength.

They provide the essential framework for successful development of this State's valuable resources and allow industry to do the rest without encumbrance.

In the case of Oakajee, the Government's faith has already been rewarded, with Environmental Protection Authority approval allowing the Gindalbie iron ore project to progress.

This new development will create about 2000 jobs and will use the Oakajee facilities when they come into operation some time around 2013-14.

The results of the EIS will be clear to see for many years to come as new discoveries are made possible by the economic incentives and improved geophysical information it provides to industry.

New exploration activity, particularly in greenfield and frontier areas, is essential for the sustainability of the resources industry.

Without it, we wouldn't have valuable developments such as the Tropicana gold mine, the Boddington gold mine expansion or Galaxy Resources' Mt Caitlin lithium and tantalum mines ready to take the place of those projects nearing completion.

Colin Barnett
PREMIER OF WESTERN AUSTRALIA & MINISTER FOR STATE DEVELOPMENT

Norman Moore
MINISTER FOR MINES AND PETROLEUM

Prospect

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Cover photo: UK-based company CAPE has established a Western Australian presence on the back of Woodside's Pluto project.

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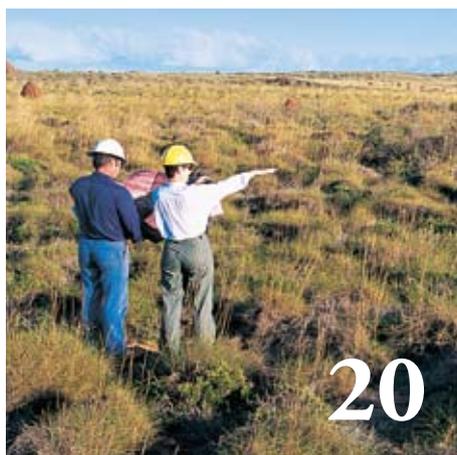
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OAKAJEE

progress boosts Mid West prospects

Plans for a deepwater port and heavy industrial estate as the focus of a major new Western Australian mineral province have received a significant boost.

The Oakajee Port and Rail State Development Agreement was signed on March 20, providing for a A\$4 billion port and railway development at Oakajee, 25 kilometres north of Geraldton in the State's Mid West region.

The agreement appoints Oakajee Port and Rail (OPR), the infrastructure provider for the project, on an exclusive basis.

Western Australian Premier Colin Barnett said the agreement was a vital step towards achieving the State Government's objective of establishing a major new export port and industrial precinct.

"Oakajee, as a catalyst for major new resources processing and export industry development, has the potential to be the single most important project in Western Australia's economic development over the next 50 years," Mr Barnett said.

"The location, while near a major regional centre, is well away from residential areas and has significant capacity for future expansion.

"The project also provides an unprecedented opportunity for Australian governments and Australian, Chinese and Japanese investors to jointly develop major industrial infrastructure.

"If feasibility is established and funding secured, construction could begin in 2010-11, with export shipments starting in 2013-14."

Mr Barnett said the State Government, with Federal Government support, would fund and own common-use port infrastructure at Oakajee, estimated to cost A\$678 million.

"This will help ensure that everyone has fair and equal access to the Port and that we control trade and the development of our natural resources," he said.

He said the Federal Government's 2009 Budget allocation to Oakajee, of A\$339 million over the next four years, underlined the national significance of the project.

OPR Chief Executive Chris Eves said the company was focusing on an initial project start up handling capacity for the project of 35 million tones per annum (Mtpa).

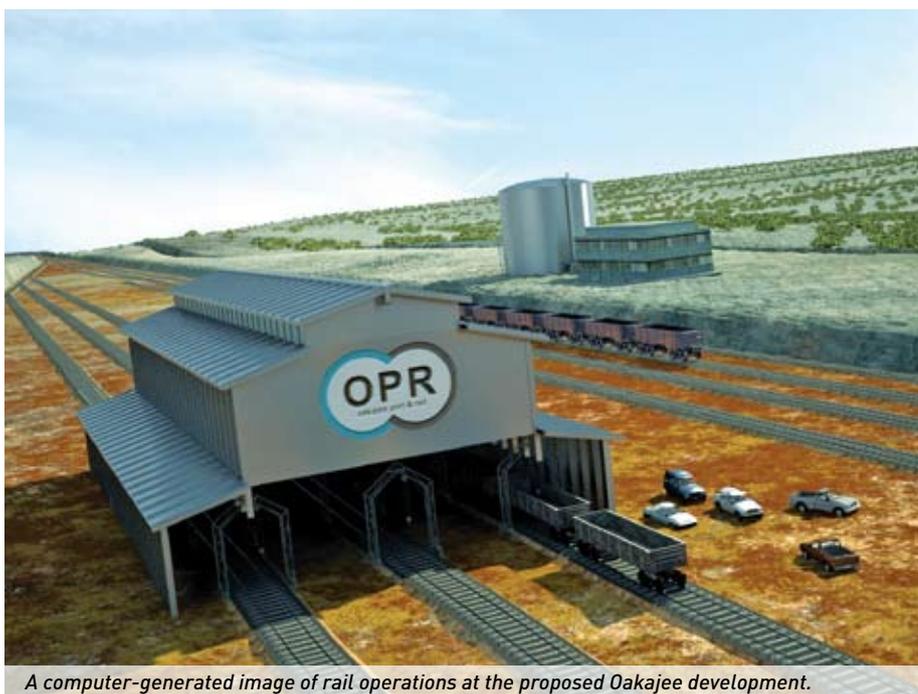
He said the new agreement triggered negotiations on access arrangements with customers, as well as involvement from international suppliers and investors.

"Now that the State Development Agreement has been signed, we are commencing negotiations with all miners for infrastructure access on a fair and equitable basis," Mr Eves said.

"We are also proceeding with the project bankable feasibility study, which will see more than A\$100 million spent on further studies and planning.

"Our port and railway will have capacity for staged and coordinated expansion as required, and will be open to access by multiple users under regimes that will be overseen by the State Government's Economic Regulation Authority.

"We anticipate further expansion as additional minerals production comes on line, with a railway that is scalable to 100Mtpa."



A computer-generated image of rail operations at the proposed Oakajee development.



Gindalbie Metals has been granted environmental approval for its Mt Karara project, which will be serviced by Oakajee.



The Oakajee development will be capable of handling 35 million tonnes of material per annum.

Mr Eves said OPR was committed to delivering maximum regional benefits from the project, including employment that would peak at about 2000 jobs during construction and up to 400 jobs once the port and railway were operational.

“There will be flow-on effects to boost other local industries in areas such as construction, materials, transport, retail and recreation,” he said.

“The population increase generated by this project will also attract greater government and private investment in amenities and services such as schools, housing and healthcare.”

The agreement has also been welcomed by the Geraldton Iron Ore Alliance, an organisation formed by seven Mid West iron ore mining companies to promote the development of a viable and successful iron ore sector in the region.

Chief Executive Rob Jeffries said the alliance saw the achievement as a very important milestone.

“We congratulate OPR and are delighted with the Premier’s personal interest and commitment, which has helped the project and the Mid West iron ore industry move forward,” Mr Jeffries said.

“From our point of view, ensuring communications and co-ordination between the Government, OPR and the alliance members is a priority.

“Infrastructure delivery and mine development need to proceed in the same timeframe.”

Mr Jeffries said the signs were good so far, with both the Government and

the project proponents organising meetings with the alliance to help make this happen.

The Mid West region, which covers 470,000 km² or almost a fifth of Western Australia, has vast and relatively underdeveloped mineral potential.

Current production includes iron ore, gold, nickel, copper and other base metals, mineral sands and rare earths, and talc, with identified energy resources including oil, gas and coal, and uranium deposits.

Mining and petroleum production in the region during 2007-2008 was valued at A\$2.25 billion.

Murchison Metals and Mitsubishi Development jointly own both OPR and Crosslands Resources, which is developing an iron ore mine at Jack Hills, about 380km north-east of Oakajee.

Crosslands plans to develop Jack Hills, which currently exports 1.5 Mtpa of ore through Geraldton Port, as a large volume user of the new port.

To date, the company has drilled a JORC compliant resource of 96 million tonnes of direct shipping ore and 991 million tonnes of beneficiated feed ore.

In late April, the Oakajee project’s prospects received a further boost, with the Western Australian Environmental Protection Authority granting conditional approval for another Mid West mine, the A\$1.8 billion Mt Karara Iron Ore Project.

The mine, a joint venture between Gindalbie Metals and Chinese steel producer Ansteel, is located about 225km east of Geraldton and has a

confirmed magnetite resource of more than 1.8 billion tonnes.

Gindalbie says production could begin, with exports initially through Geraldton Port, in 2010. The project would generate direct and indirect employment of 600 new jobs in the Mid West, as well as more than 1500 jobs during its construction phase. ■

The Oakajee Port and Rail State Development Agreement

- The agreement between the Western Australian Government and Oakajee Port and Rail (OPR), Murchison Metals, Crosslands Resources and Mitsubishi Development appoints OPR on an exclusive basis as the infrastructure provider for the port and provides for an open-access rail line servicing northern Mid West iron ore mines.
- The State Government, with Commonwealth Government support, will fund construction of, and own, the common-use infrastructure, which includes the breakwater, navigational aids, channel and turning basin and port-related services.
- State Government funding will be recovered over time through user charges to be levied on a commercial basis.

NEW INCENTIVE

to explore Western Australia's resources

An A\$80 million State Government initiative will help stimulate mineral and petroleum exploration in Western Australia's under-explored areas.

Launched in April by the Minister for Mines and Petroleum Norman Moore and Minister for Regional Development Brendan Grylls, the Exploration Incentive Scheme (EIS) will be implemented over five years.

It will be coordinated by the Geological Survey of Western Australia, a division of the Department of Mines and Petroleum.

EIS Coordinator Margaret Ellis said the initiative aimed to gather an increased amount of geoscientific information in Western Australia, particularly at depth.

"One of the key ways to help increase resource exploration expenditure by companies is the provision by Government of new, high quality geoscience information in under-explored areas," she said.

"The EIS will comprise six different programs, including improving the online exploration application process, promoting strategic development with industry, and undertaking a series of surveys to gather more information on the State's geology.

"A co-funded drilling program between government and industry will also be implemented each year and provide support for direct drilling costs incurred by successful applicants drilling in under-explored areas."

Applications for the 2009-10 drilling program closed in May with companies and research organisations given the opportunity to apply for co-funding of up to 50 per cent or A\$150,000 per project.

The program preferentially funds projects that promote new mineral

and energy targets, and innovative exploration concepts and technologies.

"It will encourage industry to drill in areas that have mineral, petroleum or geothermal potential and will ultimately help to identify new opportunities," Ms Ellis said.

Providing an integrated online system for customised geoscience maps and reports, as well as building sustainable working relationships with indigenous communities, will also be part of the EIS.

Minister Moore said the scheme would ensure the long-term sustainability of Western Australia's resources industry.

"The current economic downturn has seen a decline in global commodity prices and reduced exploration activity in the last six months," he said.

"Although WA still leads national expenditure, with mineral exploration worth A\$343 million and petroleum exploration worth A\$799 million for the last quarter, the Government is committed to identifying new opportunities and ensuring the future prosperity of our resources sector."

The EIS is funded by the State Government's Royalties for Regions initiative.

It was launched at the official opening of the State Government's Kalgoorlie Regional Complex, which services the Goldfields mining sector.

For further information regarding the EIS, please visit www.dmp.wa.gov.au/eis ■



The Exploration Incentive Scheme is providing A\$80 million to boost mineral and petroleum exploration levels in Western Australia.

READY FOR THE

During its short lifespan, Western Australia's Department of Mines and Petroleum has been tasked with overseeing some major changes to the State's resources industry.

From overhauling the approvals process for new projects, to administering the A\$80 million Exploration Incentive Scheme, and fine-tuning the regulatory regime for the introduction of uranium mining, the department's staff have had no time to rest since the January inception.

These changes have come about amid, and to some extent because of, a global economic climate that has been on a downward slide for most of the year.

As the new Director General of the department, Richard Sellers is aware significant challenges lay ahead.

Nonetheless, he believes the State is well placed to emerge stronger and well placed from the current financial gloom.

Mr Sellers took over from acting Director General Tim Griffin, the Director of the Geological Survey of Western Australia, and is returning to his home State after a decade in the Northern Territory.

In his most recent position as the Territory's Executive Director of Minerals and Energy, Mr Sellers filled a similar role to his new Western Australian post.

He was responsible for overseeing the regulation and development of the mining and petroleum industries,

including working across government agencies to achieve beneficial outcomes, and representing the Territory on standing committees for several national working groups.

Mr Sellers said the position within the Department of Regional Development, Primary Industry, Fisheries and Resources prepared him well for meeting many of the Western Australian Government's priorities.

He and his previous department had worked on overhauling the Territory's approvals process during the past four years.

"We had similar legislation and similar processes (to Western Australia) and we got to the stage where we were getting a lot of accolades from the mining industry in the Territory – it was a place where they wanted to go and do business," he said.

"Clearly the basis exists in Western Australia to work on improving similar areas.

"I expect the people in the department have a similar desire to see industry going well as I enjoyed with the staff in the department in the Northern Territory.

"We all want to see projects go forward with appropriate environmental and safety outcomes."

The Northern Territory and South Australia are the only two Australian jurisdictions in which uranium is currently mined and Mr Sellers had



Richard Sellers has returned from the Northern Territory to fill the Director General position at the Department of Mines and Petroleum.

extensive involvement in the regulation of the Territory's Ranger mine and the uranium exploration boom of the past few years.

It is experience he can expect to draw on as Western Australia moves to become the third Australian uranium producer, after the State Government lifted the ban on uranium mining in November last year.

CHALLENGE

"I worked with uranium all the time I was there and the companies that are active in Western Australia, now that the policy has changed, are in the main the same companies that I worked with in the Territory," Mr Sellers said.

He said Western Australia could focus on uranium because it was among only a handful of commodities that were bucking the trend of falling prices.

"Gold and phosphate, just to name a couple of others, are also holding their own," he said.

Mr Sellers believes these and other positive trends have created a level of optimism for Western Australia that may be lacking in other areas.

This opinion has also been borne out from past experience, particularly from living in Kambalda when the nickel price crashed in the 1990s before rallying through the best part of this decade.

"You can see some stirrings of change in there already," he said of the current economic climate.

"I am not talking about ignoring the current hard times but of trying to prevent the bottom of the cycle being as low as it might be otherwise, and if we can do that then it will set us up well for the future."

In terms of setting priorities for the new department, Mr Sellers is not being presumptuous.

"I am impressed with the range of initiatives that are already being

developed, they are similar to the responses we were working on in the Territory," he said.

"It would be unfair not to get a fulsome understanding of the department prior to implementing any potential fine tuning.

"What I intend to do is to work closely with the Minister, industry and the corporate who have been guiding the department for the last six months, to make sure I get a clear understanding of the initiatives that are being put in place and use that understanding to set the strategic direction."

One initiative sure to feature prominently in those discussions is the A\$80 million Exploration Incentive Scheme, which was unveiled in April this year.

The five-year Royalties for Regions-funded program hopes to provide a significant boost to exploration activity in the petroleum and mining industry, particularly in greenfield and frontier areas.

Its components include a co-funded drilling program that will allow companies and research groups drilling in greenfield areas to apply for subsidies of up to A\$150,000 per project.

It will also provide a wealth of new geophysical datasets to industry through the Geological Survey.

Mr Sellers said the scheme was a very positive step forward.

"You really need to have exploration now to have projects in any sort of timelines

in which they are going to be able to take advantage of the next cycle," he said.

"It has proven very successful in South Australia with their Program for Accelerated Exploration and in the Northern Territory with its Bringing Discoveries Forward scheme.

"In Western Australia there is not only the money to make it work, but also the assets that will get industry excited and wanting to get out there and explore."

Mr Sellers has also held a number of senior positions for the fisheries departments in Western Australia and the Northern Territory.

He has worked in various parts of Western Australia and has also spent time working in East Timor and Indonesia.

The move back to his home State has been a personal, as well as professional, one.

"I'm particularly pleased to be coming back to Western Australia," he said.

"I grew up here and on a family note I've got two young girls, the eldest just starting Year 11, and I'm pleased that they will be able to finish their schooling here and to make the most of all the opportunities that come from living in Perth.

"There's no doubt that the Territory has been very good to me, I had a good 10 years there and I am looking forward to putting in the same effort and doing the best I can for Western Australia." ■



Bigger at Boddington

The nearly completed Boddington gold mine expansion will be bigger than the famed Super Pit in Kalgoorlie.

Move over Super Pit, there's another giant on the horizon.

Construction of the massive US\$2.7 billion gold mine at Boddington, 130km south-east of Perth, is all-but complete and owner Newmont Mining Corporation is finalising the transition into operations.

Boddington is the company's flagship operation and, when in full production, will be Australia's largest gold producer.

About one million ounces of gold will be produced annually for the first five years of the operation, averaging 850,000 ounces per year over the anticipated 20-year life of the mine.

It will also produce 200,000 to 220,000 tonnes of copper concentrate a year.

General Manager Operations Jim Beyer said Boddington, in Western Australia's South West region, was an exciting project for the company.

"The original Boddington Gold Mine operated from 1987 to 2001 when it went into a period of care and maintenance," Mr Beyer said.

"Innovations in technology and a strong gold price, as well as the opportunity to offset costs with copper sales, made it economically viable to reopen the operation to mine the hard rock at the base of the open pits.

"Construction of the expansion project began in 2006."

The Boddington mine will generate major economic benefits for the State.

"We anticipate a permanent operational workforce of about 650 people, as well as indirect employment opportunities for about 1100 people in the local Peel region," Mr Beyer said.

The project team has adopted a buy local-hire local policy and has implemented incentives for people to live within 50km of the town of Boddington.

The management and community relations team has been working closely with the State Government and the community for the past three years, in an effort to minimise the impact of the anticipated increase in population.

The Boddington expansion project was designed on the same environmental footprint planning as the original mine.

Minimising the amount of clearing to accommodate expanded mine infrastructure was a key priority during the feasibility study for the project.

The expanded mine is located within Western Australia's unique jarrah forest.

It has a secure water supply mainly from dewatering operations to access ore deeper from within existing open pits.

The forest is also the critical habitat for two endangered black cockatoo species – Carnaby's Cockatoo and Baudin's Cockatoo – as well as a threatened sub-species, the Forest Red Tailed Black Cockatoo.

"Newmont BGM is collaborating with Murdoch University, Birds Australia, the WA Museum and the Department of Conservation on a two-year study of the habitat of the cockatoos in the hope of slowing the decline in their populations," Mr Beyer said.



“Our group is also working to identify the potential effects of mining on the habitat of these iconic birds, and to achieve positive conservation outcomes through habitat restoration and enhancement.”

A Community Partnership Agreement with the traditional owners of the area commits the operation to promoting business, employment, education and training opportunities for the Ngaala Karla Booja people. ■



The threatened Forest Red-tailed Black Cockatoo.



Dancers perform at a smoking ceremony to celebrate the Community Partnership Agreement between the Ngaala Karla Booja people and the Boddington mine.

TROPICANA

proves it pays to take a second look

As the old adage goes, seek and ye shall find.

In the case of the Tropicana Gold Project, about 330km north-east of Kalgoorlie, it was not nearly as simple as this, with significant perseverance also being required.

Tropicana is now considered the best gold discovery in Western Australia for 10 years and is nearing the completion of its pre-feasibility study.

Work by a previous explorer revealed low-order gold anomalies over a 60km strike length, then further exploration for nickel immediately to the south-east revealed elevated background gold values and a series of gold anomalies over a strike length of 100km.

These anomalies were not followed up and the tenure was surrendered in 1999.

Enter Independence Group, which re-evaluated the earlier results and pegged the ground after recognising the gold potential of the area.

The company then formed a joint venture with AngloGold Ashanti Australia in early 2002.

Exploration commenced immediately, with several phases of Rotary Air Blast drilling and aircore drilling returning interesting, but not spectacular, results.

The logistical challenges of the remote area of the mine then led to a planned systematic Reverse Circulation (RC) drilling program being abandoned because of logistical challenges.

A much smaller and more expensive diamond drill program was instead employed.

At that point, although the results were tantalising, they were not indicative of an economic discovery, and it was not until August 2005 that a small, last gasp follow up diamond drilling program hit what is now the Tropicana deposit.

Drilling programs were progressively ramped up with more than 200km of RC and diamond drilling completed between early 2007 and mid 2008 – a time, according to AngloGold Ashanti, when finding rigs and geologists was more difficult than finding gold nuggets.

The discovery, in a geological setting in Western Australia not previously known to host gold, presented an opportunity that was quickly recognised by the joint venture partners, who acquired a dominant 13,000 square km land package in the largely untenured belt.

Reports of a new gold province stimulated investor interest and a further pegging rush extended as far as Esperance, 500km to the south.

Today, AngloGold Ashanti Australia (70 per cent and manager) and Independence Group (30 per cent) are close to completing a pre-feasibility study.

The scope of the study has focused on open cut mining of the Tropicana and nearby Havana deposits and a 3.3 to 7 million tonnes per annum treatment plant, which would produce between 350,000 to 400,000 ounces per annum.

The Tropicana and Havana deposits host a total resource of five million ounces.

Havana, like other cocktail-named deposits such as Rusty Nail and Kamikaze, was discovered after Tropicana.

Tropicana Project Manager Duncan Gibbs said once the pre-feasibility study was completed in the June quarter, the joint venture partners would decide whether or not to carry out a feasibility study, which would take about a year.

“We are hopeful of a positive outcome,” he said.

“Tropicana represents an important growth project for AngloGold Ashanti and Independence Group, and if the mine goes ahead it will be a significant employer in the Eastern Goldfields.

“If the feasibility study shows that development of a gold mine at Tropicana is economically viable, and if it receives regulatory approvals within a normal timeframe, construction will be likely to start during the second quarter in 2010.”

Mr Gibbs said the remoteness of the site meant little was known about the region’s environment.

“We made a decision early in the exploration work to carry out comprehensive and extensive flora and fauna, and heritage surveys,” he said.

“This means our ongoing exploration programs, and the proposed project, have been designed to minimise the impact on the environment.

“We are also finalising the environmental impact assessment documents for the project and we anticipate that these will be released for public review mid-year.” ■



A geological technician examines drill samples at the Tropicana Gold Project north-east of Kalgoorlie.

GOLD DEMAND SOARS AT PERTH MINT IN MIDST OF ECONOMIC TURMOIL

At Western Australia's Perth Mint, investors wait anxiously in line to purchase gold.

Sales and Marketing Director Ron Currie described the scene.

"They line up in our shop, people off the street who only want to buy half an ounce or an ounce," he said.

"You can see them getting antsy in the queues as the price is changing while they're waiting."

Mr Currie said he could not remember such volatility in gold prices.

In September 2007, the Perth Mint monthly spot price for gold was US\$743 an ounce, by March 2008 it broke the US\$1000 mark at US\$1027 and since January 2009 it has fluctuated above US\$920 an ounce.

"The price of gold used to change US\$3 over night," Mr Currie said.

"Now it can change US\$20 or US\$30 overnight and nobody thinks much of it.

"It's an incredibly volatile market.

"What we think is happening, what we're being told, is people are looking for some kind of hedge against investments going down in value.

"They just want to make sure that they're not losing money."

Mr Currie said the Perth Mint's production had increased 300 per cent since last September and the Mint was selling about A\$10 million worth of gold coins a week.

The surge in gold demand started last September when the Mint sold 32,613 ounces of gold coins, up from 10,323 the month before. The peak was in October 2008 with 62,077 ounces and in April this year the Mint sold 45,014 ounces.

About 80 per cent of the Perth Mint's gold products, mainly coins, are sold overseas.

The gold kangaroo ounce coin is the most popular and is priced just above the metal price, with no tax on it. ■

Department of Mines and Petroleum sets the standard

The Department of Mines and Petroleum's Perth and Kalgoorlie-based Petroleum and Environment Divisions have achieved a prestigious level of certification from the International Standards Organisation.

The two divisions were awarded the AS/NZS ISO 9001:2008 standard after being audited from December 2008 to February 2009.

The certification recognises the department's management of petroleum tenure and resources, environmental approvals and strategic business policy development, and its quality management system.

Department of Mines and Petroleum Director of Petroleum and Environment, Bill Tinapple, said each division was required to demonstrate it met statutory and regulatory requirements, and followed set procedures to ensure consistency in customer services.

"The divisions also needed to prove they allowed for the continual improvement of their management systems," Mr Tinapple said.

"These systems are very important in improving approvals times and allowing the processing of more applications."

The certification is valid for three years and will expire in 2012, with the Petroleum and Environment Divisions to be audited annually until that time.

AS/NZS ISO 9001:2008 is a joint Australian and New Zealand standard that replaced the AS/NZS 9001:2000 standard in December 2008.

It was prepared by a technical committee of peak industry and government bodies, including Engineers Australia, the Commonwealth Department of Transport and Regional Services and the Royal Australian Chemical Institute.

"Western Australia is recognised as one of the world's leading petroleum-producing regions, and environmental

management is a central concern of all resources industry activity that takes place in the State," Mr Tinapple said.

"This standard confirms Western Australia has a highly specialised and competent regulator overseeing the resources industry in the form of the Department of Mines and Petroleum." ■



NEW OPPORTUNITIES for Western Australia's coal future

Plans have been announced for a A\$3.5 billion urea plant in Collie that will help coal mining in Western Australia reach new heights.

Western Australian-based Perdaman Chemicals and Fertilisers, a division of Perdaman Industries, says the plant will utilise environmentally friendly, world-leading gasification technology to produce urea for local and international use.

The process will significantly reduce greenhouse gas emissions by extracting carbon dioxide and using it to produce the urea, which is used in fertilisers.

Perdaman Industries Chairman and Managing Director Vikas Rambal said construction for the plant was due to commence in the third quarter of 2010.

"The plant has the capacity to produce two million tonnes of urea per annum, and while looking at the opportunity to supply local markets, the majority will be exported for global use," he said.

"This means the plant will generate in excess of A\$850 million per annum in exporting earnings for Western Australia following the first shipment scheduled for 2013.

"There is a strong demand for urea globally with India importing six million tonnes last year and an expected nine million in 2013.

"There is an abundance of coal in Australia and using the resource for urea is significantly less carbon-intensive than using it for power or producing urea in India."

Perdaman Industries established the project after encouraging results from pilot scale gasification trials of Collie coal.

The trials, conducted by the Cooperative Research Centre for Coal in Sustainable Development, were funded by the Department of Mines and Petroleum's Coal Futures Group (CFG).

CFG is involved in examining a number of clean coal technologies and alternatives in order to contribute to the long-term viability of the industry.

Mr Rambal said Perdaman's operation would be Australia's first urea exporting project and was expected to generate about 1500 jobs during the project's three-year construction phase, with about 200 permanent jobs once plant operations started.

"This is an exciting development for Collie as we will be sourcing our coal requirements from Griffin's local operations," he said.

"We are also looking forward to consulting with the local community to ensure that they have a real understanding of the project as we work through the approvals process in the lead up to the construction phase.

"We believe that our project is exactly the type of initiative that the Government is keen to encourage, as coal gasification represents lower emission use of coal that is 'sequester ready' for when carbon capture and storage becomes available on a commercial scale."

Mr Rambal said he believed Western Australia, along with Perdaman Industries, was in an excellent position to help solve the worldwide shortage of fertiliser while adding value to Australia's existing coal resources.

CFG Project Manager Dominique Van Gent said the project was a valuable investment for the State's coal industry. ■



An artist's impression of Perdaman's urea plant. The plant will draw on world-leading gasification technology. Photo courtesy of Perdaman and Last Pixel.



Coal gasification research facilities. Photo courtesy of CSIRO.



CAPE

builds on Australian base with Pluto LNG project

Securing a A\$61.4 million contract in March this year for Woodside's Pluto liquefied natural gas project was the culmination of a strategic expansion by UK-based company CAPE into Australia almost 18 months ago.

Under the contract, which started immediately after being awarded, CAPE is supplying a range of access services for the project in the north-west of Western Australia.

CAPE will bring the experience of having worked on 70 per cent of export LNG projects around the world in the past decade.

When it began casting an eye around the world for the next stage of its expansion, CAPE saw Australia as an obvious target

due to its strong growth and potential in the oil and gas sector, coupled with the established strength of the mineral sector.

The Department of State Development's Investment Attraction Division became involved in encouraging the company to invest in Western Australia.

The subsequent acquisition of the Western Australian company PCH Group dictated Perth would be the company's Australian headquarters.

CAPE Executive Director for Australia Steve Murdoch said the PCH acquisition fitted perfectly with the company's deliberate strategy to set its sights on major operations such as Pluto.

"With a view to establish an Australian base, CAPE stuck with its tried and proven model of getting operations and employees closer to the domestic clients that it planned work with," he said.

"The first step was to identify a suitable company.

"PCH had a lot of equipment in Asia and the Middle East that could be utilised immediately to assist our operations and expansions into those areas."

At the time, CAPE had also acquired another Western Australian company, Total Corrosion Control (TCC), as well as the Eastern States-based Concept.

DSD Investment Attraction Manager Karen Hayes said the company's decision to invest in Perth provided a number of benefits to the State.



CAPE directly employs 1250 full-time workers and 400 contractors in Australia.

“Western Australians will directly benefit from the capture and retention of local talent, but the company’s presence will also provide a boost to local industry, the creation of a new industry-based training centre and the introduction of new technology,” she said.

Through the combined capabilities of PCH, TCC and Concept, CAPE had the ability to establish a footprint and roll out the company’s Australian model.

“CAPE has a strong reputation within the international petroleum and gas sector as being a safe company with the core values of being reliable, intelligent and innovative,” Mr Murdoch said.

“We don’t believe there is any other dominant provider of the same size and

scale that can give that same reliability, which is the key difference.

“The three acquired companies had in some way been involved in all steps of the North West Shelf, so CAPE was looking to increase that presence in its own right with the Woodside project as the main goal.”

With Western Australia established as the headquarters, four regions were established around Australia - South West, North West, North East and South East, with business units scattered through each.

In Western Australia, these are located in Kwinana, Malaga and Karratha and the company also operates on major industry sites across the State where

it has co-located with clients such as BHP Billiton, Alcoa and BP.

While securing major projects such as Pluto is a key strategy, CAPE is also committed to developing its ongoing maintenance side of operations, which already has a big client base.

Servicing major players such as BHP Billiton, Alcoa, Fortescue Metals Group, BP and Woodside, Mr Murdoch said the objective was to maintain the ongoing work that directly supported the retention and attraction of local employees.

CAPE now directly employs 1250 full-time employees and 400 contractors working on multiple projects around Australia. ■

CARBON CAPTURE

catching on in Western Australia

Carbon capture and storage (CCS) has become a hot topic in Western Australia as the Commonwealth Government encourages nationwide adoption of the technology as part of its low emission energy drive.

Western Australia is a foundation member of the Global Carbon Capture and Storage Institute launched by Australian Prime Minister Kevin Rudd in Canberra in April this year.

The Commonwealth Government has also released acreage in the Vlaming Sub-basin off Perth as part of a nationwide call for expressions of interest in sites suitable for CCS.

The new institute was established by the Commonwealth Government to accelerate the development and spread of CCS technology and information globally.

Its principal focus is to establish 20 industrial scale CCS projects worldwide by 2020.

The Department of Mines and Petroleum's General Manager of Strategic Policy Ian Briggs and Project Manager Dominique van Gent provided Western Australian input during the formation of the institute.

Mr Briggs said it made sense for the State to be represented on the new body, which has annual funding of A\$100 million and contains 85 bodies, as foundation members and collaborating participants.

"This institute brings together industry and government members from across

Australia and the world and allows Western Australia to offer input and also gain insight from other participants," he said.

Mr van Gent said that while the State's coal industry was small in comparison to its other significant resources sectors, there were plans to expand it on cleaner and greener lines.

"The investigations into using CCS for the Gorgon liquefied natural gas project also point to the possible widespread adoption of carbon capture and storage technology in other resources operations," he said.

Mr van Gent said Australia needed to keep all its options open regarding climate change mitigation, especially the abatement of greenhouse gas emissions.

Speaking at the institute launch, Mr Rudd said it was another important step in the Commonwealth Government's response to climate change.

"The Global Carbon Capture and Storage Institute is a major initiative to drive global cooperation to deploy technologies that can play a very important part in our transition to the low carbon economy of the future," Mr Rudd said.

He said the institute recognised the 'cold hard reality' that coal would be the major global source of power generation for many years to come.

He pointed to 2008 IEA World Energy Outlook figures that forecast the share

of electricity generation sourced from coal would rise from 41 per cent to 44 per cent by 2030.

"This is a reality we have to deal with," Mr Rudd said.

More members are expected to sign up to the institute by July 1 this year, when it will become an individual legal entity.

Ten offshore areas around Australia were opened up to expressions of interest from industry in the March release of acreage for CCS exploration.

The Vlaming Sub-basin is in the central part of the Perth Basin, between 6km and 75km offshore from Perth.

It encompasses the two areas of VLAM-01 and VLAM-02, which are north and south of Rottnest Island respectively.

The release follows last year's passage of the Offshore Petroleum and Greenhouse Gas Storage Act 2006, which provides for a system of access and property rights for the geological storage of gas in offshore waters under Commonwealth jurisdiction.

Commonwealth Minister for Resources and Energy Martin Ferguson said it was the world's first commercial release of offshore areas for greenhouse gas storage.

He said it formed an important part of the Government's commitment to reducing Australia's carbon emissions, while maintaining economic growth.

"Advancing storage technology and capacity is vital to the future of



Photo reproduced with the permission of Chevron Australia.

The Gorgon Joint Venture liquefied natural gas project will employ carbon capture and storage beneath Barrow Island to control greenhouse gas emissions.

Australia's coal industry and to coal's future as part of the world's transition to cleaner energy pathways," Mr Ferguson said.

"It is also important for the oil and gas industry and our energy-intensive industries.

"Projects such as Gorgon LNG in Western Australia have enormous potential to create jobs, exports and long-term economic growth at a time when we need it most, but CCS technology is crucial to its success."

The 10 gas storage areas were identified as having the best potential for CCS in terms of geological stability and satisfying current industry needs.

A spokesperson for the Commonwealth Department of Resources, Energy and Tourism said there had been previous interest from industry in the Vlaming Sub-basin for CCS purposes.

"It's one of a number of areas that the Western Australian Government expressed some interest in, and, after a bit of background work done by Geoscience Australia, it was their recommendation that we put these areas in," the spokesperson said.

"These are the appropriate areas for release now. We envisage there will be other areas for release in the future, and prior to every acreage release we would go out to the relevant stakeholders.

"We want to make Australia storage ready and this provides the opportunity

for people to start looking at storage on a commercial basis."

The spokesperson said the CCS acreage release emulated the Commonwealth's release of offshore acreage for petroleum exploration.

The regulations that underpin the Commonwealth's new CCS legislation are expected to be finalised by the third quarter of this year.

Bidding for the new acreage will close either two months after that occurs or six months from the issue of the acreage.

Applicants are required to submit a variety of information based on its suggested program of works.

More information on the new institute and acreage release is available at www.ret.gov.au ■

WHAT IS CARBON CAPTURE AND STORAGE?

Carbon capture and storage (CCS) technology is expected to play a large role in climate control actions in Australia and overseas.

It involves the capture, transport and long-term geological storage of carbon dioxide resulting from burning fossil fuels during industrial and energy-related processes, predominantly natural gas and coal-fired power generation.

This storage takes place in geological reservoirs up to 3km underground and prevents carbon dioxide entering the atmosphere.

In Western Australia, CCS is being investigated as a possible means of eliminating emissions from present and future coal mining operations in the Collie and Perth Basins, and the proposed Gorgon liquefied natural gas project.

GALAXY

aims to offer Ravensthorpe lifeline

A planned lithium and tantalum mine near Ravensthorpe could offer new employment opportunities for displaced mining workers in the region.

Galaxy Resources says construction of its Mt Cattlin mine will begin in September this year.

It is expected that the mine, about two kilometres north of Ravensthorpe, will employ up to 100 people during construction and about 75 people when operational.

This is significantly less than the estimated 1800 workers stood down as a result of the shutdown of BHP Billiton's Ravensthorpe Nickel project earlier this year.

However, Galaxy Managing Director Iggy Tan's preference for a local workforce will nonetheless offer hope to the local community and for the future of the Great Southern region's resources industry.

The company is aiming for production to commence in the third quarter of 2010, at a cost of A\$68 million, with a mine life of 15 years.

The project would see the production of about 150,000 tonnes of lithium concentrate, also known as spodumene, for export each year through Esperance Port.

"While the Mt Cattlin project is still in the planning stages, we're confident that our current efforts to finalise contracts with customers and finalise our funding will pay off and allow us to proceed with the project," Mr Tan said.

Galaxy is an emerging industrial minerals company listed on the Australian Stock Exchange.

The Perth-based company has exploration interests throughout Western Australia, but is currently focussing its efforts on the Mt Cattlin project.

It has completed a definitive feasibility study (DFS) and works approval and mining proposals have already been submitted to the Department of Mines and Petroleum.

Galaxy has already undertaken environmental, heritage and technical studies on the site and has been advised by the Environmental Protection Authority that it does not require any formal environmental assessment.

"The mine will bring A\$60 million to the region and we're trying our hardest to get funding," Mr Tan said.

"We've had a lot of positive interest from Korea, Japan and China and we're optimistic.

"We're working with different levels of government to see if they can help us out with infrastructure, such as power and water connections.

"Demand for lithium carbonate is expected to triple by 2020 driven by lithium ion batteries, which are used in electronics, toys, power tools, and potentially electric cars and mass energy storage systems."

The mine will extract and process one million tons of pegmatite ore, which will be crushed, concentrated through heavy media separation and shipped to China from Esperance.

Mr Tan said unlike lead, lithium was non-toxic, did not produce dust, and posed no risk to the community.

Lithium is used in the pharmaceuticals industry as an anti-depressant.

While the lithium industry expects a slowdown this year as a result of the global financial downturn, Galaxy has timed its project to come online after an expected market recovery from 2010.

The main drivers forecast for the mine's growth over the next decade are the battery sector and aluminium-lithium alloy production.

Galaxy also recently completed a pre-feasibility study (PFS) on the viability of a value-adding downstream strategy to process the Mt Cattlin spodumene into battery grade lithium carbonate.

Mr Tan said by moving further down the lithium battery supply chain, the company would be able to significantly enhance the value of its mine.

"Our DFS completed in December had already indicated that the spodumene concentrate stage of the Mt Cattlin lithium-tantalum project was economically viable," Mr Tan said.

"Now, the results of the lithium carbonate PFS have confirmed that there is significant value in taking the project further by building a lithium chemical plant and processing the concentrate ourselves.

"By producing our own lithium carbonate, we are able to gain greater control over the quality and pricing of the end product."



An artist's impression of Galaxy Resources' lithium and tantalum mine near Ravensthorpe.

The lithium carbonate PFS results indicated the economics of the project could be improved by locating the chemical plant closer to the end markets where there is a cheaper source of acid, soda ash, electricity and consumable costs.

Galaxy has commenced the next stage of the study by investigating several sites in China which provide closer proximity to end markets.

It expects that establishing a facility in China will require lower capital and operating costs, resulting in a more robust project.

"Our plan is to secure off-take partners and project funding within the next six months with an aim to commission and start up the mine and minerals plant by the third quarter of 2010," Mr Tan said.

The deposit near Ravensthorpe could become the world's second-largest hard rock mine for the mineral.

Galaxy intends to be the fourth largest lithium carbonate producer in the world, the lowest cost producer in China and a strategic supplier to Asian markets.

Mr Tan said the company intended to establish Australian product quality and packaging consistency, establishing itself as a premium supplier of battery grade lithium carbonate. ■

LITHIUM - PART OF A GREENER FUTURE

Lithium minerals are primarily used in the glass and ceramics industries.

The addition of lithium in glass manufacturing increases the melting rate, which increases production throughput and lowers the melting temperature, thereby providing energy cost savings.

Lithium is also used in pharmaceuticals, catalyst and other lithium compounds, welding electrodes, nucleonics, luminescent paints, varnishes and dyes, and aluminium production.

More importantly, the product is becoming a key requirement for the production of lithium-ion batteries in the rapidly expanding international hybrid and electric vehicle market.

The spodumene processed at Mt Cattlin will be shipped to Galaxy Resources' chemical facility in China and converted to lithium carbonate, a feed material in the manufacturing of cathodes and electrolytes used in batteries.

In turn, these batteries will power the hybrid and electric vehicles of the future.

The combination of unprecedented market for these vehicles since 2004 and a low global supply has led to record lithium carbonate prices, offering a strong outlook for the Mt Cattlin project.



Developing a sustainable resources future



WESTERN AUSTRALIA Petroleum Opportunities to Explore

BIDS INVITED FOR ACREAGE

(Bids close 26 November 2009)

In early June 2009 acreage release CD packages will be available from Western Australia's Department of Mines and Petroleum. The package can also be downloaded from:

[www.dmp.wa.gov.au/
acreage_release](http://www.dmp.wa.gov.au/acreage_release)

The acreage release package contains information about the release areas, land access, available data listings and how to make a valid application for an exploration permit.

Canning Basin

There are two release areas in the essentially Paleozoic Canning Basin. The release areas are on the Broome Platform. The sizes of the release blocks are 968 km² and 2,020 km².

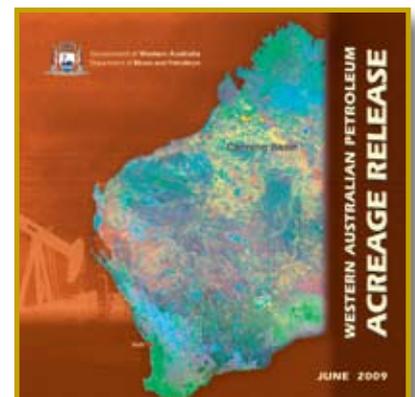
Across the world there are more than 130 giant and super-giant oil and gas fields with Paleozoic sources and reservoirs that are similar to those in the Canning Basin. The Canning Basin may be the least explored of the known Paleozoic basins with proven petroleum systems. Current production is limited but proves the existence of petroleum systems.

Petroleum systems in the Broome Platform and surroundings can be subdivided into the sub-salt and supra-salt plays based on widespread salt seals in the Silurian to Ordovician Carribuddy Group. Possible supra-salt targets include Permian and Devonian sandstones. The sub-salt play is characterised

by the Carribuddy Group regional seal overlying Ordovician reservoirs, which in turn overlie an excellent source rock in the Goldwyer Formation.

FURTHER INFORMATION

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WA'S RESILIENT RESOURCES

industry breaks \$70 billion mark

The Western Australian resources sector has demonstrated its resilience with an increased 35 per cent sales value in 2008 to an impressive A\$71.8 billion.

Figures compiled by the Department of Mines and Petroleum in March have offered reassurance at a time when a significant number of financial markets are experiencing a downward trend.

Mines and Petroleum Minister Norman Moore said it was encouraging to see WA's resources industry was so strong in the lead-up to the global economic crisis.

He said this would go some way to insulating the State against the worst effects of the situation.

The figures show that mineral and petroleum exports now represent 89 per cent of the State's total merchandise exports.

The increase of A\$18.5 billion was due to increased output and strong international demand and commodity prices throughout last year.

"The State's petroleum and iron ore sectors performed particularly well and made up 75 per cent (A\$53.6 billion) of the sales total," Mr Moore said.

Department of Mines and Petroleum acting General Manager of Policy and Coordination, Richard Borozdin, said iron ore was the State's biggest earner in 2008 and accounted for more than 44 per cent of the overall value of mining and petroleum sales.

"At A\$31.3 billion, its contribution was a massive 93 per cent increase from 2007," he said.

"The amount of iron ore sold broke records, rising 15 per cent to reach 303 million tonnes.

"The petroleum sector also performed strongly, and achieved a 33 per cent sales increase in 2008 to reach a value of A\$22.3 billion."

WA's booming petroleum sector now accounts for 71 per cent of Australia's gas production and 66 per cent of the nation's oil and condensate production.

"These figures highlight the importance of WA's resources sector to both the State and national economies," Mr Moore said.

"The remarkable 2008 performance was the result of continued demand from WA's major trading partners, in particular China and Japan."

China is WA's largest trading partner and was responsible for A\$22.5 billion worth of exports in 2008.

Japan is the second largest, accounting for a total of A\$20.4 billion worth of exports in the same year.

"This strong overseas demand and high commodity prices in the first half of 2008 assisted in counteracting the effect of slowing demand and falling commodity prices in the second half of the year," Mr Moore said.

The value of liquefied natural gas sales also demonstrated promise with an increase of 61 per cent. This was influenced by high oil prices throughout the year.

Alumina was another commodity that increased its sales value.

The rise of 4 per cent, although small, resulted in a record-breaking A\$4.9 billion value for the industry.

Though there were positive trends throughout 2008, some commodities inevitably suffered due to the unsteady economic climate.

Nickel was one of the hardest hit and fell by 40 per cent to A\$4.2 billion.

The sales volume of zinc increased by a modest 3 per cent, however the fall in the US dollar price of zinc resulted in a sales value decrease of 24 per cent to A\$522 million.

Other commodities that suffered declining sales values included base metals (7 per cent) and lead (46 per cent).

The full impact of the global economic crisis on the State's resources industry will be more evident when 2009 figures are available.

The complete statistics are available at www.dmp.wa.gov.au ■

The State's mineral and petroleum commodities in order of value for 2008 were:

Commodity	Value (billions)
Iron Ore	\$31.30
Crude Oil and Condensate	\$13.25
LNG	\$7.18
Alumina	\$4.90
Gold	\$4.37
Nickel	\$4.19
Others	\$6.60
Total	\$71.79

\$15 MILLION injection for minerals research

The A\$15 million expansion of CSIRO's Western Australian mineral research facilities is expected to reap significant benefits for the Australian mining sector.

The new Australian Minerals Research Centre (AMRC) will enable CSIRO to work in collaboration with government, industry and other research agencies to develop improved processing techniques for the nation's A\$25 billion per annum mineral and metal exports market.

The centre, located adjacent to Curtin University's Chemistry and Resources Precinct in Perth, will be officially opened later this year.

It will provide a boost to hydrometallurgy research and utilise expertise in chemistry, engineering, mathematical modelling, metallurgy, microbiology and physics.

Hydrometallurgy involves the separation of mineral products or metals from ores by processes involving liquids, such as leaching, solvent extraction and precipitation.

The AMRC will play an important role in bringing together key areas of public and private research in this field.

Other areas of research will include metals recycling, water treatment and waste treatment.

The hydrometallurgical research focuses on alumina, base metals (particularly cobalt, copper, nickel and zinc) and gold, which are the three major groups that utilise this process.

Research for alumina production includes bauxite characterisation and digestion, impurity control, solid-liquid handling, precipitation processes, and environmental issues including emissions and residue treatment.

Mineral processing and leaching of base metals, solvent extraction, and optimising of reagents and non-cyanide processes for gold will also be investigated.

AMRC Site Manager Dr John Farrow said the expertise and activities of the more than 80 staff based at the centre were highly complementary to those of Curtin's adjacent facilities, which will house academics from the university's School of Applied Chemistry and staff from the State Government's Chemistry Centre.

The AMRC and university precinct will bring together more than 250 researchers and 500 undergraduate and postgraduate students, helping to address the critical shortage of skilled people in the minerals industry and ensuring a collaborative approach to problem solving.

"By combining this expertise and working closely with the minerals industry, we can more effectively focus hydrometallurgy research," Dr Farrow said.

"In today's tough economic climate, this means clearly focusing on mechanisms for reducing processing costs to ensure the viability of Australia's minerals industry."

He said there were various ways of achieving this goal.

"You can focus on increasing the value from existing infrastructure by improving throughput and extraction efficiencies," he said.

"Alternatively, you can focus on reducing input costs, for example reducing reagent consumption or energy use."

Although there would be a strong focus within AMRC on solving the problems facing the industry today, Dr Farrow said it would also look at ways of developing new researchers to meet future needs.

A number of higher degree and vacation students are involved in research at the AMRC, where they can learn more about the complex technical challenges being addressed through research and development activities.

"Many of these students are working on industry-sponsored projects, which benefit both the student and the sponsoring company," Dr Farrow said.

"The student builds knowledge and skills during the project and the industry sponsor benefits not only from the project findings, but also from the prospect of recruiting a highly competent future employee."

As well as providing a home for CSIRO Minerals' Western Australian staff, the AMRC also hosts the Parker Cooperative Research Centre for Integrated Hydrometallurgy Solutions and research staff from Nalco Chemicals. ■



CSIRO Senior Research Scientist Dr Robbie McDonald checks a titanium autoclave prior to use.

Studies to boost nickel production

The nickel industry is one of the many beneficiaries of research being undertaken at the AMRC.

Over the past 10 years, CSIRO researchers have been working on improving processes used to extract nickel from low grade ores (nickel laterites) using High Pressure Acid Leaching (HPAL).

Current projects include a predictive model for column leaching and studies to track the nickel that escapes recovery during HPAL.

Senior Research Scientist Dr Robbie McDonald said there was great potential to use nickel laterites to help meet global nickel demand.

"A vast amount of the known nickel in the world is tied up in these materials, and in 2003 it was estimated that 72 per cent of the world's land-based nickel resources were contained in nickel laterite," he said.

Dr McDonald said the key to tapping more of these deposits lay in building the ability to process low-grade fractions economically, as a large proportion

contained nickel grades of less than one per cent.

"When we started work in this area the Parker Centre provided seed funding for us to develop a capability in high pressure acid leaching because there were three HPAL plants starting up in Western Australia to process nickel laterites," he said.

HPAL extraction at the time was in the low to mid-90 per cent mark.

"We were interested in seeing if we could increase those numbers by one or two per cent because of the value it would add to the bottom line," Dr McDonald said.

"For us, it has been about trying to understand in a fundamental way the chemistry of this system."

An early pointer to increasing yield came from the variation in salinity of the process water being used by the first three Australian plants – at Bulong, Murrin Murrin and Cawse.

"Our research showed that made a big difference to the (sulfuric) acid requirements at the refinery," Dr McDonald said.

"A bit of salt in the water can enhance nickel and cobalt recovery, or allow you to drop the amount of acid added to the system, but having a lot of salt increased the acid requirements substantially."

Research at the Parker Centre has shown that about five to 10 grams of sodium (as sodium chloride) per litre to be the optimum salt level for HPAL process water, although more may be needed when processing ores with high aluminium content.

The team has also studied the use of leaching agents other than sulfuric acid.

"Although hydrochloric acid is excellent for extraction, the hydrolysis of the iron and aluminium, and recovery of the acid, needs to be effectively managed," he said.

In the past 18 months, Parker Centre researchers have also started to focus on heap leaching processes, mainly in conjunction with clients.

"We have set up column tests and are using the data obtained to assist us in understanding how the different minerals in those ores react," Dr McDonald said. ■



A Key to export success

Twenty-one years OF OPENING DOORS TO OPPORTUNITY

The annual Western Australian Industry and Export Awards, now celebrating their 21st year, recognise companies for their innovation and success in industry and export.

Recognising excellence in engineering and technology, marketing and design, innovation and a host of other industry and exporting achievements, the Awards are coordinated by the Department of Commerce.

Thousands of businesses in the suburbs of Perth and the regions make up a vibrant industry in Western Australia.

Some are high profile and well resourced with proven track records, others have modest premises and small workforces. Many are doing business in a smart and innovative way. All are important and deserve to be recognised and rewarded for their efforts.

Closing date for entries is Wednesday 15 July 2009.

The Benefits

Experience shows that firms enjoy a real business advantage as a finalist or winner in the Awards. All finalists and winners can benefit from:

- Doors opening for emerging exporters
- Enhanced standing with clients and bank managers
- Assistance to explore potential overseas markets
- Networks and partnerships

- Businesses learning from others
- Media coverage in the West Australian newspaper and regional media
- Valuable publicity and increased industry recognition through prominent showcasing at the Gala Awards presentation evening
- Finalists receive a distinctive award certificate and winners a handsome trophy
- Finalists and winners can use the Awards logo on their stationery and marketing material
- Rewarding the efforts of management and staff at the Gala Presentation Night, even if you don't win an award
- Export Award winners automatically become finalists in the Australian Export Awards – increasing opportunities for national and international exposure

Access the department's website
www.commerce.wa.gov.au/industryexportawards
or telephone June Phillips on (08) 9263 8278
for more details.



Government of Western Australia
Department of Commerce



Australian Government
Austrade



Australian Government
Export Finance and
Insurance Corporation



RioTinto



Taking the initiative

A new division in a new department, State Initiatives is responsible for managing strategic projects for the benefit of the Western Australian economy and community.

As the acting Deputy Director General for this division of the Department of State Development (DSD), Gail McGowan is up for the challenge of driving the responsible development of Western Australia's resources.

Ms McGowan has broad professional experience that has allowed her to oversee diverse projects such as the Kimberley Liquefied Natural Gas (LNG) Project, the Ord Expansion Project and the Oakajee Industrial Estate and Port Project.

"These projects are all significant in their own right and are critical to the ongoing prosperity and success of Western Australia as a State," Ms McGowan said.

"It is these sorts of projects at the forefront of development that sustain the economy through the hard times."

State Initiatives primarily takes responsibility for Government rather than private sector-initiated projects.

Oakajee is one such example, involving extensive negotiation with senior industry and Government representatives, as well as the assessment of broader community sentiment.

"There is significant unrealised potential in the Mid West region of the State, which has a burgeoning iron ore sector and will host the Oakajee port and industrial estate," Ms McGowan said.

"Oakajee has been on the drawing board for many years and we are likely to see many exciting developments over the years ahead."

Ms McGowan stresses the importance of ensuring all resource and industrial development is undertaken responsibly.

"We have to continually remind ourselves that the decisions we make today will impact for generations to come," she said.

"It is vital to make a commitment to good planning and to consider the environmental, social and community impacts on the State."

She cites the environmental and social impact assessments currently being undertaken for the Kimberly LNG Project as an example of this.

"A lot of decisions need to be made on land use issues, impacts on people and communities, determining conservation areas and defining available resources," Ms McGowan said.

"DSD plays a significant part in these projects – not by taking over but by providing a seamless process and ensuring the projects receive the priority and attention they deserve.

"We have an opportunity to draw together the different Government agencies to make the projects happen.

"While it is a challenge to manage and define roles and responsibilities between areas and departments, our approach relies on working collaboratively with our fellow agencies."

The new division is already making its mark, with the signing of the Oakajee Port and Rail State Development Agreement and a groundbreaking agreement to underpin the development of the Kimberley LNG precinct.

"It's these sorts of successes that show what can be achieved when people work together," she said.

Ms McGowan's previous position as WorkSafe Director of Policy and Education for the Department of Consumer and Employment Protection helped prepare her for her current position.

Further experience in public policy and cross-departmental work has made her an ideal leader of an experienced team.



Gail McGowan has faced up to the challenge of managing the State Initiatives division of the Department of State Development.

"Having lived and worked across many regions of Western Australia, I know how people expect the Government to take a practical approach and this is something I try to bring to my work," Ms McGowan said.

"People generally don't care which department or level of Government does things, so long as the important things get done."

Faced with a new department and a constantly changing environment, she said she made a priority of fully utilising staff skills.

She said DSD had a focus on building capacity in this respect.

"We all need to be adaptable and flexible to handle the rollercoaster that is work," Ms McGowan said.

"We are fortunate to have some terrific staff within the agency but there has been quite a turnover due to the challenges of the last few years.

"With a strong graduate program and a focus on a 'can do' approach, the department is well positioned to move forward." ■

IRON ORE

Pilbara - Hematite Direct Shipping Ore Mine
ATLAS IRON LTD

Atlas Iron is an active explorer and developer focused on iron ore projects. The company started exporting in December 2008. With a growing number of iron ore projects and large landholdings in the Pilbara (9600km²) located close to existing infrastructure, the company is effectively defining resources and reserves capable of being mined with relatively low capital expenditure. Initial production is from its Pardoo Project, located 75km east of Port Hedland. The company has exploration programs underway across its tenement portfolio, with an exploration target of 160 to 220 million tonnes grading 57-60 per cent iron. This will underpin an expanded long-term production business.

Pilbara - Iron Ore Mine Rail and Port Development

FORTESCUE METALS GROUP LTD

FMG Chichester operates a 45Mt/a iron ore mine at Cloud Break in the Chichester Ranges of the eastern Pilbara. The mine is serviced by a multi-user railway and port facilities at Port Hedland. First exports of iron ore to China commenced in May 2008.

Employment: Operation: 1600

OIL & GAS DEVELOPMENTS

Carnarvon Offshore Basin - Vincent Oil Field
WOODSIDE ENERGY

The field is located approximately 50km northwest of Exmouth in a water depth of about 350m. Oil is produced through an eight-well subsea development and processed and stored in a Floating Production Storage and Offloading vessel. Q4 2008 was the first full quarter of production from the Vincent field. The field was averaging approximately 27,000bbl per day for the first quarter in 2009.

Expenditure: \$1b.

BAUXITE

Boddington - Alumina Refinery Expansion
BHP BILLITON WORSLEY ALUMINA PTY LTD

BHP Billiton announced in May 2008 the go-ahead for the \$2.5 billion Efficiency and Growth expansion project at its Worsley alumina refinery. The expansion project will lift capacity of the refinery from 3.5Mt/a to 4.7Mt/a through expanded mining operations, additional refining capacity and upgraded port facilities. Construction has commenced and first production is expected in the first half of 2011.

Expenditure: \$2.5b.

Employment: Construction: 1500; Operation: 200

COAL

Collie - Collie Coal Mine (Ewington I)
THE GRIFFIN COAL MINING COMPANY PTY LIMITED

Griffin Coal plans to develop its Ewington 1 coal deposit, approximately 2km east of Collie, which has estimated coal resources of 408Mt. The mine will produce approximately 3.4Mt/a of coal for private sector customers, including Griffin Energy's nearby Bluewaters 1 power station, presently under construction, and its proposed Bluewaters 2 power station. Mine start-up is scheduled for 2009-2010. The Ewington 1 coal mine will be an extension of the currently operating Ewington II mine.

Expenditure: \$20m.

DIAMONDS

Kimberley - Argyle Diamond Mine
ARGYLE DIAMOND MINES PTY LIMITED

Development of the Argyle Diamond Mine commenced in 1982 and mining commenced in the main ore body (AK1) in 1985. The mine is operational and in order to extend its life to around 2024 the company has committed to an underground expansion. Commencement of underground operations occurred in Q4 of 2008 with the first blast of the undercut having been achieved. Due to current global market conditions Argyle Diamonds has slowed down its underground development resulting in a workforce reduction. The company remains committed to the underground expansion; however it expects the slow down to delay the ramp up to full production by approximately 18 months.

Expenditure: \$1.2b.

Employment: Construction: 250; Operation: 500

ELECTRICITY

Collie - Bluewaters I and II Coal-fired Power Stations

GRIFFIN ENERGY PTY LTD

Griffin Energy is constructing the first of two 208MW coal-fired power stations at the proposed Coolangatta industrial estate, 10km northeast of Collie. Commissioning of the Bluewaters I coal-fired base load power station is expected by mid 2009. Griffin expects the second of the two power stations (Bluewaters II) to be commissioned in late 2009.

Expenditure: \$400m.

Employment: Construction: 600; Operation: 50

Karratha - 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 Ltd is constructing a new power generating facility at 7 Mile near Karratha. Robe River Mining Company Pty Ltd 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.

Expenditure: \$500m.

GOLD

Boddington - Gold Mine

BGM MANAGEMENT COMPANY PTY LTD

BGM Management Company Pty Ltd, on behalf of Newmont and AngloGold Ashanti, is developing the Boddington Gold Mine based on mining the extensive bedrock resource that underlies the mined-out oxide resource. In January 2009, Newmont Mining announced that it intends purchasing AngloGold Ashanti's 33 per cent interest in the project. Upon completion, Newmont will own 100 per cent of the project. The mine has been in the construction phase since 2006 and initial production is expected by mid 2009. Production will be about 800,000oz/a of gold and about 30,000t/a copper in concentrates over a 17-year mine life.

Expenditure: \$2b.

Employment: Construction: 1500; Operation: 650

HEAVY MINERAL SANDS

Narngulu - Processing Facility Expansion
ILUKA RESOURCES LIMITED

Iluka has commenced an upgrade of its Narngulu processing facility to treat ore from South Australia to supplement a diminishing supply from its Eneabba mining operations. Iluka will treat up to 600,000t/a of heavy mineral concentrate from its Jacinth-Ambrosia deposit in South Australia at Narngulu starting in early 2010. Up to 350,000t/a of zircon will be produced at the plant.

Expenditure: \$63m.

Employment: Construction: 100; Operation: 8

IRON ORE

Mid West Region - Extension Hill Hematite Mine
MT GIBSON IRON LTD

Mount Gibson Iron has environmental approval for a 2Mt/a hematite mining operation at Extension Hill, 330km south east of Geraldton. The ore will be trucked to a railhead near Perenjori then railed to the port of Geraldton for export. The Mount Gibson board has approved commencement of construction of the project. Subject to secondary government approvals, Mount Gibson expects to have initial shipments in Q1 2010.

Expenditure: \$73m.

Employment: Construction: 150; Operation: 100

Mid West Region - Koolanooka/Blue Hills Hematite Iron Ore Mine

SINOSTEEL MIDWEST CORPORATION LIMITED

Midwest Corporation commenced transporting iron ore fines from stockpiles at Koolanooka, about 160km south east of Geraldton, in January 2006, with the first exports shipped in February 2006. Sinosteel Midwest Corporation proposes to re-open the Koolanooka and Blue Hills hematite iron ore mines at a rate of 1-2Mt/a, with timing dependent on the timing of government approvals. The re-opening of the mines is being environmentally assessed at a Public Environmental Review level.

Expenditure: \$26m.

Employment: Construction: 40; Operation: 60

Pilbara - Rapid Growth Project 4
BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore has obtained all relevant government approvals and is currently expanding the production capacity of its Western Australian iron ore operations from 129Mt/a to 155Mt/a to operate from 2010. The increased production will be achieved through infrastructure upgrades and the creation of a Newman hub. The company is also undertaking a parallel expansion Rapid Growth Project 5.

Expenditure: \$2.597b.

Employment: Construction: 3500

Pilbara - Rapid Growth Project 5
BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore is currently in the final stages of obtaining all relevant government approvals for a further production capacity expansion of its Western Australian iron ore operations to 205Mt/a in 2011. Construction activities for the increased production, which involves mine expansions, railway duplication and additional berths at Port Hedland, have commenced. The company is in the study phases for future potential expansions.

Expenditure: \$6.74b

Pilbara - 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. The planned full production capacity of the mine is 22Mt/a. Expenditure: \$1.52b. Employment: Operation: 1500

Pilbara - Mesa A/Warramboe Iron Ore ROBE RIVER MINING CO PTY LTD

Robe River Iron Associates is developing the Mesa A mine in the western Pilbara. Production is planned to be approximately 25Mt/a. Construction commenced in January 2008. Expenditure: \$1.1b.

IRON ORE PROCESSING

Cape Preston - Sino Iron Pellet Project CITIC PACIFIC

CITIC Pacific Mining, a Chinese company, received ministerial approval on 2 May 2008 for the development of a magnetite iron ore mine and pellet plant with a capacity of 6Mt/a. A bulk sample has been completed and construction has commenced on a concentrator, pellet plant, slurry pipeline, port facilities, 240MW power station and desalination plant to be built at Cape Preston, as well as accommodation facilities. The company plans to export the first high-grade pellets to China in 2010. Expenditure: \$5.2b. Employment: Construction: 2500; Operation: 500

OIL & GAS DEVELOPMENTS

Carnarvon Offshore Basin - Pluto LNG WOODSIDE ENERGY

Woodside approved the Pluto LNG project in Q3 2007. Construction has commenced on Sites A and B on the Burrup Industrial Estate for export of LNG in Q4 2010. Expenditure: \$11.2b. Employment: Construction: 3000; Operation: 200

Carnarvon Offshore Basin - Pyrenees Development Oil Fields BHP BILLITON PETROLEUM AUSTRALIA PTY LIMITED

In July 2007, BHPB Petroleum announced approval of the Pyrenees oil development, located 45km north of Exmouth. The development comprises the Crosby, Ravensworth and Stickle oil fields, which have estimated recoverable oil reserves in the range of 80-120 million barrels. The project involves the development of 13 subsea wells connected via flowlines to a Floating Production Storage and Offloading vessel, which will be capable of producing about 96,000bbl/d of oil. First production is expected during the first half of 2010. Expenditure: \$2b.

Carnarvon Offshore Basin - Van Gogh Oil Field APACHE ENERGY LIMITED

The Van Gogh oil development, located about 50km north-west of Exmouth, will utilise a Floating Production Storage and Offloading vessel with a processing capacity of 63,000bbl/d of oil and storage capacity of 620,000 barrels. It will be linked to two subsea drill centres with 10 production wells. Development drilling and sub-sea production equipment installation is well underway, with first oil production slated for mid-2009. Additional development drilling is planned in 2009 prior to the start of production. Expenditure: \$600m.

TITANIUM DIOXIDE PIGMENT

Kwinana - Titanium Dioxide Pigment Plant Expansion

TIWEST JOINT VENTURE
The Tiwest Joint Venture partners - Tronox Incorporated subsidiary Tronox Western Australia and Exxaro Resources subsidiary Yalgoo Minerals - approved an expansion at their Titanium Dioxide Pigment Plant in Kwinana that will see production capacity increase from 110,000t/a to around 150,000t/a. Construction commenced in Q2 2009, with the additional capacity expected to come online in early 2010. Expenditure: \$100m. Employment: Construction: 150; Operation: 12

AMMONIA/UREA

Collie - Coal-to-Urea Plant PERDAMAN CHEMICALS AND FERTILISERS PTY LTD

Perdaman Chemical and Fertilisers, formally North West Chemicals and Fertilisers, plans to develop a coal-to-urea plant at the soon-to-be-developed Shotts Industrial Park near Collie. The plant will use "best in class" coal gasification and fertiliser production technologies. About 2.7Mt/a of coal will be used to produce approximately 2Mt/a of urea, primarily for export to India. The urea will be transported to Bunbury Port by rail. The company has commenced environmental approval processes and has government approval to obtain land in the Shotts Industrial Park. Supply and off-take arrangements are agreed and will be finalised by early 2010. Construction is expected to commence in Q2-Q3 2010 with the first shipment of urea occurring in Q3 2013. Expenditure: \$3.7b. Employment: Construction: 1500; Operation: 200

AMMONIUM NITRATE

Burrup Peninsula - Burrup Ammonium Nitrate Plant BURRUP NITRATES PTY LTD

Burrup Nitrates Pty Ltd, 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 an approximately 350,000t/a 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 approval has been requested with construction targeted to commence in Q4 2009 and commissioning during the first quarter 2012. Expenditure: \$600m. Employment: Construction: 600; Operation: 65

ELECTRICITY

Collie - Bluewaters III and IV Coal-fired Power Stations THE GRIFFIN COAL MINING COMPANY PTY LIMITED

Griffin Energy Pty Limited is planning to expand the Bluewaters Power Station Project with two additional 208MW coal-fired power stations to be located in the Coolongatta Industrial Estate, 4.5km north-east of Collie. Commissioning of the Bluewaters III base-load power station is expected by late 2012 and commissioning of Bluewaters IV

by late 2014. Final Investment Decision is due in Q3 2009 for Bluewaters III and Q3 2010 for Bluewaters IV. Construction phases are scheduled to commence at those times.

Expenditure: \$800m.

Employment: Construction: 600; Operation: 30

Mid West - Centauri 1 Power Project ENEABBA GAS LIMITED

Eneabba Gas Limited, via its wholly owned subsidiary Eneabba Energy Pty Ltd (EEPL), is planning to develop a 168MW Centauri 1 gas-fired turbine power station 8km east of Dongara. Generation capacity can be increased to 365MW. The project will be capable of supplying power into the South West Interconnected System network but will be focused on supplying additional volumes of energy for the developing Mid West iron ore industries. As soon as take or pay contracts for Mid West iron ore customers are confirmed construction can commence on site immediately and the plant can be operational in approximately 14 months. Besides sourcing gas from the Dampier-to-Bunbury Natural Gas Pipeline, EEPL is awaiting government approval for an expanded drilling program to prove up the capacity for underground coal gasification of the resource.

Expenditure: \$200m.

Employment: Construction: 100; Operation: 4

Mid West - Central West Coal and Coolimba Power Projects AVIVA CORPORATION LTD

Aviva Corporation Ltd is progressing the development of the Coolimba Power Project, a 2 x 200MW base load coal-fired power station and an associated coal mine located 20km south of Eneabba. Coolimba will be the first power station in WA to deploy leading edge emissions technology for carbon capture. Upon commissioning, the power station will constitute 8 per cent of the installed capacity in the South West Interconnected System and have an operating life of 30 years. Subject to government approvals, construction is expected to commence at the start of 2010. Expenditure: \$1b.

Employment: Construction: 600; Operation: 100

Neerabup - Bioenergy Power Station SPIRITWEST BIOENERGY PTY LTD

SpiritWest is developing a 30MW base-load power station at Neerabup, 33km north of Perth. The power station will use timber waste from pine plantations nearby, and other wood residues. Environmental approval was received in 2006, and a final investment decision is expected by Q2 2009, with construction expected to commence in Q3 2009. Commercial operation is scheduled for 2011. Expenditure: \$100m.

Employment: Construction: 250; Operation: 45

GOLD

Goldfields - 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 400km north-east of Kalgoorlie. There are plans to develop an open-cut gold mine and nearby processing plant at the project. So far, a resource estimate of 5 million ounces of gold has been identified with a mine life of 10-15 years. Mining is planned to commence in 2010 with production of up to 420,000 oz per annum. Expenditure: \$500m.

Employment: Construction: 700; Operation: 600

HEAVY MINERAL SANDS

Happy Valley - Heavy Mineral Sands Mine BEMAX CABLE SANDS PTY LTD

Located adjacent to the Bemax Gwindinup deposits, the project will involve the mining of mineral sands from two deposits (Happy Valley North and South) located on private land and in State Forest. The level of assessment for the project has been set at Environmental Review and Management Program. Environmental impact studies for the proposed mine development have been completed. Happy Valley contains a reserve of around 6Mt of ore at a heavy mineral grade of 11.3 per cent.

Expenditure: \$35m.

Employment: Construction: 100; Operation: 30

Jangardup South - Heavy Mineral Sands Mine BEMAX CABLE SANDS PTY LTD

The Jangardup South mineral 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 OLYMPIA RESOURCES LTD

Olympia proposes to develop a mineral sands mine located near the township of Keysbrook, approximately 70km south of Perth. Olympia has identified proven and probable reserves of 41Mt of ore containing 1.2Mt of zircon, ilmenite and leucoxene. The concentrate will be processed at Cable Sands' plant at Bunbury over the mine's eight year life. In late October 2007, the Environmental Protection Authority recommended approval of the project subject to Olympia meeting a number of conditions in the development and operation of the mine. The finalisation of the environmental impact assessment process is currently progressing.

Expenditure: \$18m.

Employment: Construction: 35; Operation: 30

Shark Bay - Heavy Mineral Sands Mine GUNSON RESOURCES LIMITED

Gunson proposes to develop the Coburn mineral sands project, located south of Shark Bay, which contains total ore reserves of 306Mt at an average grade of 1.2 per cent heavy minerals. All of these reserves lie within the portion of the project area that has received government environmental approvals for mining. At the proposed mining rate of 17.5Mt/a, the Coburn mine life is estimated to be 17.5 years. Three Perth based engineering companies have submitted tenders for the project. An important recommendation from the tendering process is the location of the mineral separation plant at the mine, not in China as previously proposed. A final decision on the preferred construction group is expected in June 2009. Discussions with potential investors and offtake partners in China and the Middle East are continuing.

Expenditure: \$100m.

Employment: Construction: 170; Operation: 110

Tutunup South - Heavy Mineral Sands Mine ILUKA RESOURCES LIMITED

Iluka proposes to develop the Tutunup South mineral sands mine, located approximately 15km south-east of Busselton. The project will include the construction of mine pits, solar drying dams, ore concentrator and associated mine infrastructure. The mine is expected to produce over 1.2Mt of heavy mineral concentrate over its five-to-six year life, which will be transported to Capel for further processing. Tutunup South is scheduled to

commence mining operations in Q4 2009, subject to obtaining necessary government approvals, and will replace Iluka's Wagerup mine site.

Expenditure: \$25m.

Employment: Construction: 150; Operation: 40

IRON ORE

Cape Lambert - Cape Lambert Iron Ore Project MCC MINING PTY LTD

MCC is developing a 15Mt/a iron ore (magnetite) concentrate project at Cape Lambert and aims to ship its first ore by 2013-15. The project comprises a 1.56Bt iron ore resource, covering 369km². The project would consist of a beneficiation plant, a 300MW power station, a port for exporting concentrate and other related infrastructure.

Employment: Construction: 1000; Operation: 800

Cape Preston Balmoral South - Australasian Resources

AUSTRALASIAN RESOURCES LTD

Australasian Resources, through its 100 per cent-owned subsidiary International Minerals (IM), is developing a 12Mt/a magnetite iron ore mine with associated processing and infrastructure facilities to produce concentrate and pellets for export under a shared export facilities with CITIC Pacific at Cape Preston. IM has a right to mine 1Bt of magnetite ore from Mineralogy's South Balmoral deposit over 25 years. Shougang Corporation, the fourth largest steel mill in China, has an agreement with Australasian whereby it retains the option of funding 100 per cent of the project development cost interest free to earn a 50 per cent share in IM. A bankable feasibility study for the project was completed in 2008. The project's environmental level of assessment was set as a Public Environmental Review and lodged with the EPA in September 2008. The company expects to commission the project in 2011, with first shipments in 2012.

Expenditure: \$2.7b.

Employment: Construction: 2500; Operation: 800

Great Southern - Southdown Magnetite Mine GRANGE RESOURCES LTD

The company plans to produce an initial 3.3Mt/a magnetite concentrate stepping up to 6.8Mt/a from 2012. The concentrate will be transported via a slurry pipeline to the Port of Albany for export and pelletising in Malaysia. The recent merger with Australian Bulk Minerals now brings significant magnetite mining and pelletising experience to the Southdown project

Expenditure: \$839m.

Employment: Construction: 700; Operation: 250

Mid West - Extension Hill Magnetite Mine ASIA IRON

Asia Iron has primary environmental approval to produce up to 5Mt/a 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: \$715m.

Employment: Construction: 1000; Operation: 350

Mid West - Jack Hills Hematite Mine Stage 2 CROSSLANDS RESOURCES

Murchison Metals commenced trucking 1.5Mt/a hematite from its Jack Hills operations to the Port of Geraldton in December 2006. Jack Hills Stage 2 would involve a further increase to 10-25Mt/a of hematite and beneficiated 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: \$750m.

Employment: Construction: 450; Operation: 350

Mid West - Mt Karara Magnetite Mine

GINDALBIE METALS LTD

Gindalbie Metals is developing a magnetite mining operation at Karara, 85km east of Morawa, based on a world-class 522Mt JORC reserve plus a 1853Mt JORC resource. First production is scheduled to take place in the first half of 2011 at an initial rate of 8Mt/a of magnetite concentrate. The mine life is expected to be more than 50 years. Design and engineering work is underway and orders have been placed for long lead items. On-site work is awaiting final environmental approval.

Expenditure: \$1.7b.

Employment: Construction: 1500; Operation: 500

Mid West - Mungada Hematite Mine GINDALBIE METALS LTD

Gindalbie Metals is developing a direct shipping hematite ore project at Karara, 85km east of Morawa, based on an initial 10.9Mt JORC reserve and 16.2Mt JORC resource. First production is scheduled for the second half of 2010 at a rate of 1.5Mt/a, moving to 2Mtpa. The project is currently awaiting final environmental approval.

Expenditure: \$108m.

Mid West - Weld Range Iron Ore Mine

SINOSTEEL MIDWEST CORPORATION LIMITED

Midwest Corporation proposes to develop a 15-20Mt/a iron ore mine at Weld Range 65km south-west 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 commenced an extensive drilling program in June 2006 and has completed a pre-feasibility study.

Expenditure: \$800m.

Employment: Construction: 900; Operation: 220

Pilbara - Balla Balla

AUROX RESOURCES LIMITED

Aurox Resources Limited is a Perth-based metals developer with a primary asset of the 100 per cent owned Balla Balla iron ore concentrate project. Aurox is well advanced in the development of Balla Balla with detailed engineering nearly complete and all long lead items such as crusher and mills secured. The company has in place two 15 year sales contracts for a total of 6Mt/a increasing to 10Mt/a concentrate production in year five with major Chinese steel companies. Balla Balla is based on a large homogenous magnetite ore body, which will be developed as one of the lowest cost magnetite operations in Australia. The project also has significant vanadium, titanium and phosphate potential, and is located near major ports, gas and grid power, with main highway access. The Balla Balla Feasibility Study demonstrates strong project economics with magnetite iron ore shipments to China scheduled to commence in 2011.

Pilbara - Roy Hill Iron Ore Mine

HANCOCK PROSPECTING PTY LTD

Hancock Prospecting Pty Ltd is undertaking a pre-feasibility assessment of the development of the Roy Hill iron ore deposit, possibly Australia's largest undeveloped Marra Mamba iron ore deposit. The deposit is located about 80km north of Newman. In 2007, the company invested \$38 million on a major drilling program to more closely define the iron ore resource. Further infill drilling is continuing. The development program is to move to a bankable feasibility study by end 2008 for a decision on the project by late 2009. The project includes the development of mines, a new railway or third party use of an existing railway, and port facilities at Port Hedland.

Projects Under Consideration

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 20-30Mt/a of direct shipping iron ore from a group of three mine sites located approximately 50km south-west of Pannawonica. The ore will be exported via a new railway and port facility located on the Pilbara coast. Subject to the successful completion of feasibility and environmental studies (in process), and receipt of government regulatory approvals, the company anticipates that the first shipment will occur in early 2012.

Expenditure: \$3.9b.

Employment: Construction: 1300; Operation: 700

LITHIUM

Ravensthorpe - Mt Cattlin Tantalum and Lithium Mine

GALAXY RESOURCES LIMITED

Galaxy Resources Limited is developing a 1Mt/a lithium and tantalum project with a 15 year life at Mt Cattlin, north of Ravensthorpe. Galaxy plans to commence mine development and plant construction in Q3 2009 with first production of concentrates during Q3 2010. Lithium (spodumene) and tantalum 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 are due for completion by September 2009, with the chemical plant likely to be built in China.

Expenditure: \$75m.

Employment: Construction: 100; Operation: 75

MOLYBDENUM

Pilbara - Spinifex Ridge Molybdenum/ Copper mine

MOLY MINES LIMITED

The Spinifex Ridge Project is located 50km north-east of Marble Bar in the Pilbara region of Western Australia. It is based on a resource of 469Mt at 0.06 per cent molybdenum and 0.09 per cent copper. Moly Mines has completed a definitive feasibility study which has forecast 240 pounds of molybdenum concentrate and 270 pounds of copper concentrate will be produced in the first 10 years of the operation. The project's processing plant design capacity is at 20Mt/a. The project is undergoing environmental assessment.

Expenditure: \$1.084b.

Employment: Construction: 400; Operation: 375

NICKEL

Goongarrie - Kalgoorlie Nickel Project

HERON RESOURCES LTD

This project will involve a mine and hydrometallurgical processing plant at Goongarrie (about 85km north of Kalgoorlie) producing up to 50,000t/a of nickel from laterite resources of 903Mt grading 0.74 per cent nickel and 0.05 cobalt. Heron and Vale Inco completed a pre-feasibility study in January 2009 and have commenced a six month review period to decide whether to commit to a full feasibility study by 30 July 2009. Further ore reserve estimation, mine planning and metallurgical testing will be undertaken.

Expenditure: \$1.4b.

Employment: Construction: 1000; Operation: 300

OIL & GAS DEVELOPMENTS

Carnarvon Offshore Basin - Gorgon LNG

GORGON JOINT VENTURE

In December 2007, the Gorgon Joint Venture (GJV) announced its intention to upgrade the project specifications from a 10Mt/a (2 train) to a 15Mt/a (3 train) development on Barrow Island. The project is based on gas from both the offshore Gorgon and Jansz fields. The development on Barrow Island is also to include a domestic gas plant. The GJV obtained environmental approval for a 10Mt/a development in late 2007. The GJV is currently seeking environmental approvals for the addition of a third LNG train. Once the GJV has obtained environmental approvals for the additional train and completed front-end engineering and design work for the project, it will consider a final investment decision on the project.

Expenditure: \$11b.

Employment: Construction: 3000; Operation: 600

Carnarvon Offshore Basin - Macedon Gas Field

BHP BILLITON PETROLEUM AUSTRALIA PTY LIMITED

The Macedon gas field, located about 90km west of Onslow, was discovered in 1992 during drilling of the West Muiron-3 well, with a follow-up appraisal campaign in 1994. Macedon is 71 per cent owned by BHP Billiton Petroleum and 29 per cent owned by Apache Energy, with BHP being the operator. BHP is currently investigating the Macedon field, which is estimated to contain a gas resource of up to 1.2Tcf, as the basis for a domestic gas project for Western Australia, at a site 12km south-west of Onslow. In November 2008, the company submitted both federal and state environmental referrals to the relevant agencies, and a final investment decision is expected in April 2010 with production to commence in 2012.

Expenditure: \$1b.

Employment: Construction: 300

Pilbara - Devil Creek Development Project

APACHE ENERGY LIMITED

Apache Northwest Pty Ltd and Santos Offshore Pty Ltd are investigating the development of the Devil Creek Development Project, 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 site located near Devil Creek, 65km south-west of Karratha; and a sales gas export pipeline connected to the Dampier-to-Bunbury Natural Gas Pipeline. The project is designed to provide up to 200Tj per day of dry natural gas and between 80-160kl per day of gas condensate. All gas will service the domestic market in Western Australia. Construction is scheduled to start by Q3 2009, with first gas delivered in Q3 2011, subject to receiving all the required statutory approvals.

Expenditure: \$800m.

Employment: Construction: 200; Operation: 20

Pilbara - Wheatstone LNG Development

CHEVRON AUSTRALIA PTY LTD

Chevron is investigating the feasibility of an LNG project based on the Wheatstone and Iago gas fields in the Carnarvon Basin. The project will have an initial capacity of two LNG trains, with expansion capacity for additional production trains. Chevron is aiming to enter front end engineering design

in the second half of 2009, with a final investment decision in late 2010, and gas to market scheduled for 2014/15. Chevron intends to develop an LNG project based on an estimated 4.5Tcf of gas from two Chevron-operated permits. The project is to have an initial capacity of at least one, 5 Mt/a LNG production train.

Employment: Construction: 3000

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 per cent grade for 1.18Mt rare earth oxides. The development involves an open pit mine and concentration plant at Mt Weld. The concentrate will be containerised on site then trucked to Leonora and railed to a container port for export. The ore will be shipped to a US\$214 million processing plant in Malaysia, which will have an initial production capacity of 10,500t/a, then expanding to 21,000t/a. In May 2009, Lynas and China Nonferrous Metal Mining Group (CNMC) signed a binding Heads of Agreement for CNMC to become a new majority shareholder in Lynas and to arrange provision of full funding for the project. Subject to approvals, the agreement shall enable Lynas to lift the suspension of the project and complete construction and commissioning of both plants. First production is anticipated approximately 12 months from receipt of funds.

Expenditure: \$135m.

Employment: Construction: 200; Operation: 90

SALT

Exmouth Gulf - Yannarie Solar Salt Project

STRAITS RESOURCES LTD

Straits Salt is proposing to develop the Yannarie Solar Salt, a 4 Mt/a salt operation on the east coast of Exmouth Gulf. It has exploration licences over the area and has applied for a mining lease. The proposal was assessed at the Environmental Review and Management Program level by the EPA. On 23 July 2008, EPA Report 1295 recommended against approval for the Yannarie Solar Salt proposal. Straits has appealed against the EPA's recommendation and the matter is currently under investigation by the Office of the Appeals Convenor.

Expenditure: \$200m.

Employment: Construction: 100; Operation: 75

TIMBER

Great Southern - Engineered Strand Lumber

LIGNOR LTD

Lignor Ltd is proposing the development of an Engineered Strand Lumber/Board plant at Mirambeena, near Albany. The plant will source most of its timber from the extensive eucalypt plantations growing in the Albany region and will use technology developed by the German engineering companies Siempelkamp and Dieffenbacher. Lignor has nearly completed its feasibility study. Further project development has been put on hold pending more favourable global financial market conditions.

Expenditure: \$350m.

Employment: Construction: 400; Operation: 125

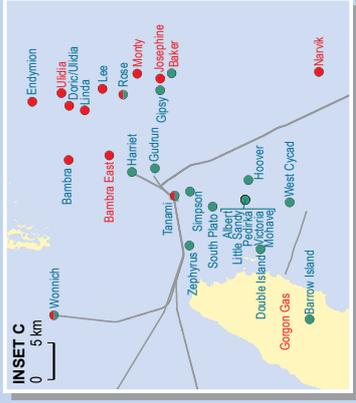
Major Resource Projects – June 2009

Northwest Shelf / Pilbara Region

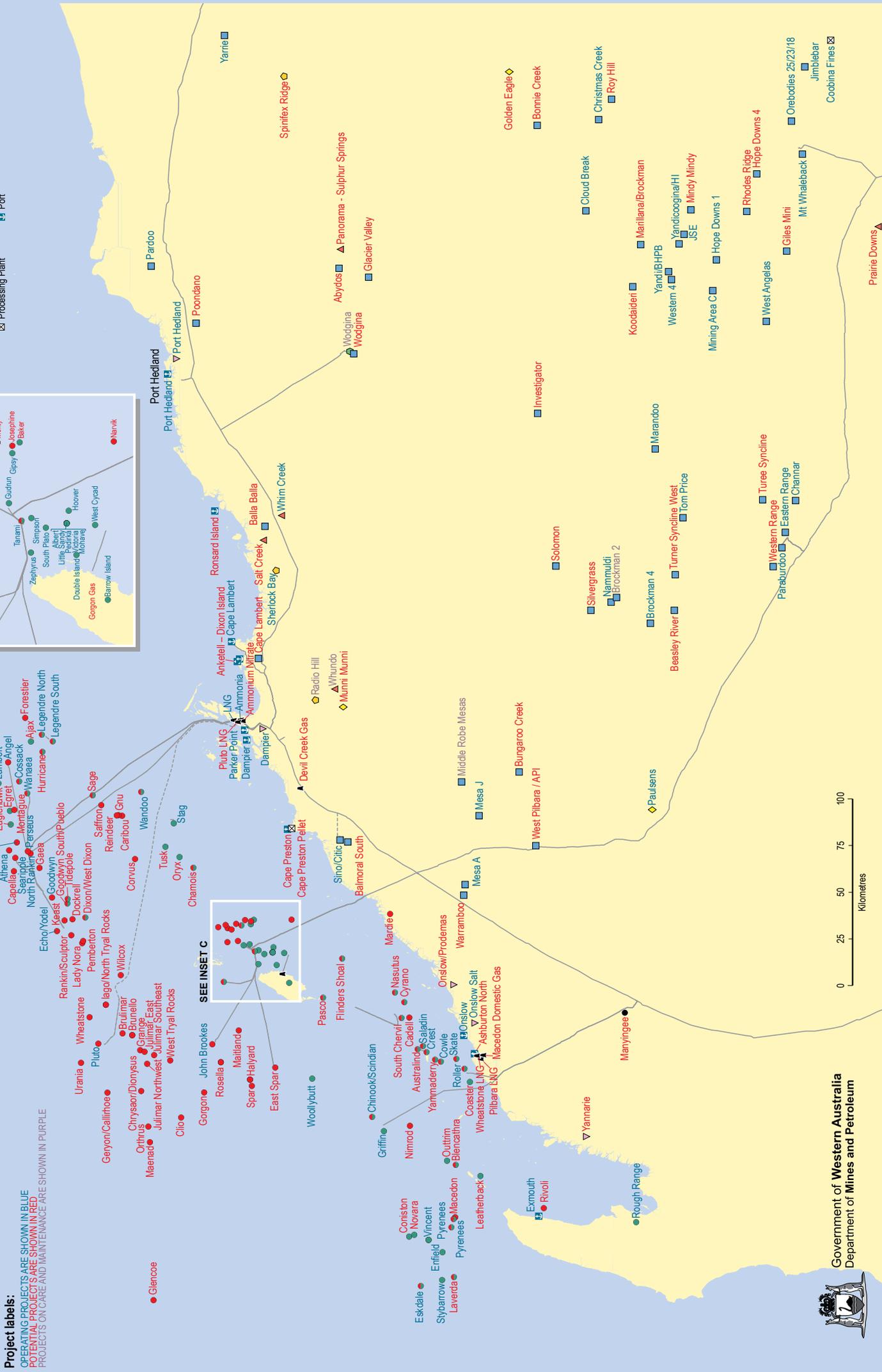
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Project labels:

OPERATING PROJECTS ARE SHOWN IN BLUE
 POTENTIAL PROJECTS ARE SHOWN IN RED
 PROJECTS ON CARE AND MAINTENANCE ARE SHOWN IN PURPLE



- MINERALS SYMBOLS**
- Precious metal
 - Steel alloy metal
 - Base metal
 - Iron
 - Energy
 - Industrial mineral
 - Processing Plant
- PETROLEUM AND PETROCHEMICAL SYMBOLS**
- Gas
 - Oil
 - Oil and gas
 - Processing plant
 - Oil/Gas pipeline
 - Proposed Oil/Gas pipeline
 - Port

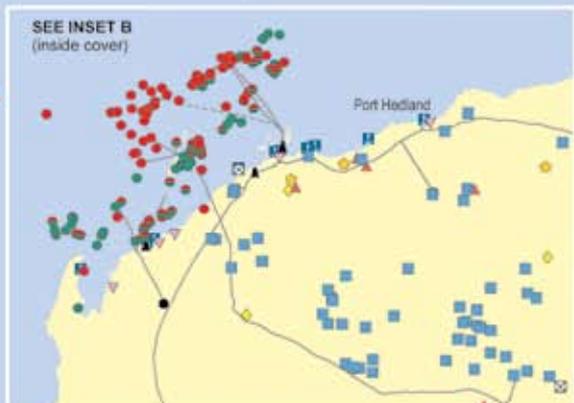


Government of Western Australia
 Department of Mines and Petroleum

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- MINERAL SYMBOLS**
- Precious mineral
 - Precious metal
 - Steel alloy metal
 - Speciality metal
 - Base metal
 - Iron
 - Alumina
 - Energy
 - Industrial mineral
 - Construction material
 - Processing Plant
- PETROLEUM AND PETROCHEMICAL SYMBOLS**
- Gas
 - Oil
 - Oil and gas
 - Processing plant
 - Oil/Gas pipeline
 - Proposed Oil/Gas pipeline
- Other Symbols:**
- Power Plant
 - Port

