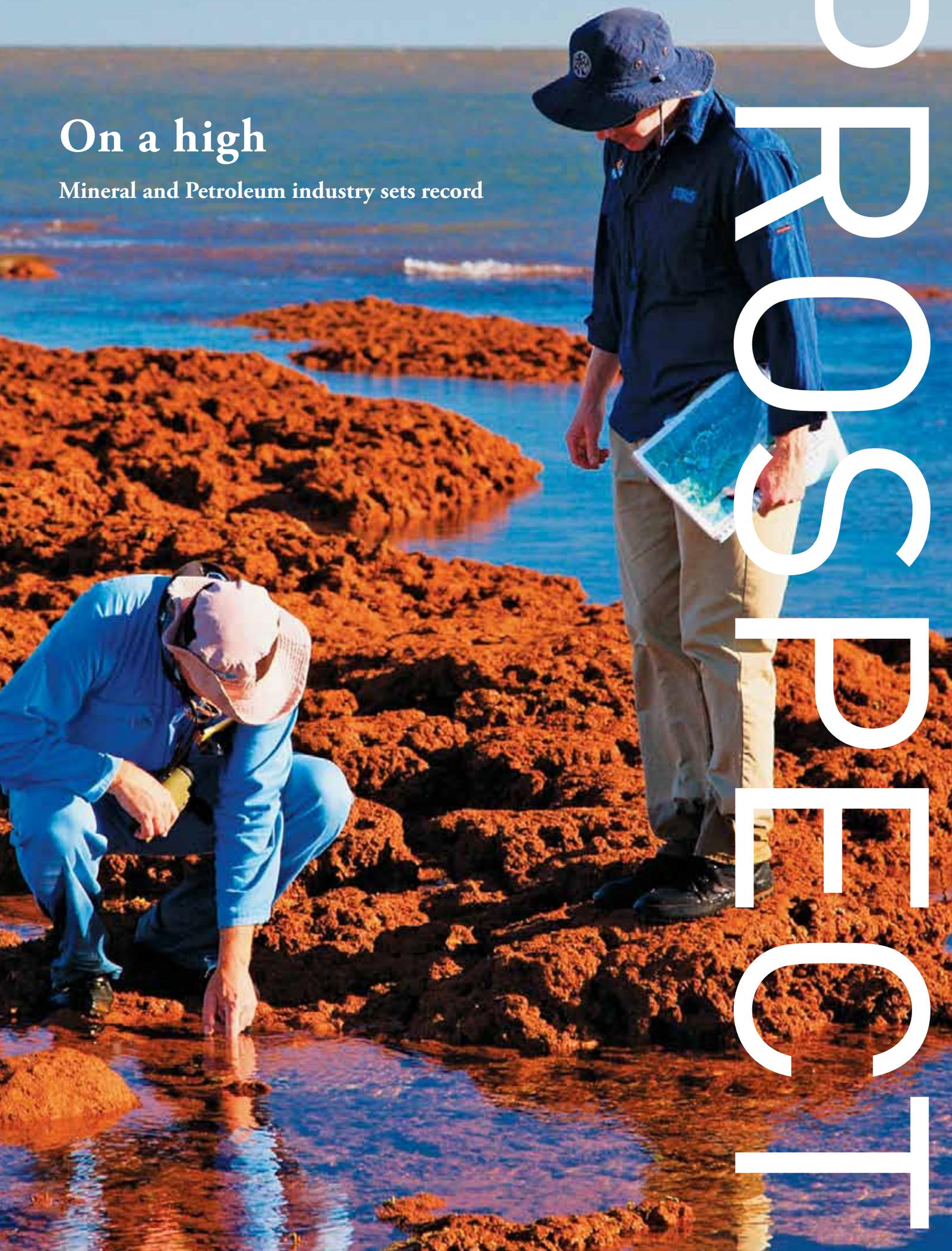


On a high

Mineral and Petroleum industry sets record

PROSPECT





Throughout 2011, Western Australia's resources sector has continued its role as the backbone of the State and national economies. This year the State's resource sales reach a record A\$100billion for the first time.

This marked a major milestone for the State's resources sector, as it rebounded following the global financial crisis. It is a cycle set to continue in 2012, with many new and expanding resources projects underway.

Growth within the resources sector is vital to the State's commitment for a high level of service delivery on targeted infrastructure development such as hospitals, transport infrastructure and future investment in energy and water.

In September, the State Government approved a historic State Development Agreement with Chevron Australia Pty Ltd for the Wheatstone liquefied natural gas (LNG) project (see story page 8).

Located near the Pilbara town of Onslow, the project is expected to create 6,500 jobs at peak construction and deliver an estimated A\$17billion to Australian businesses and services during the life of the project.

Wheatstone, along with other committed LNG projects and the North West Shelf, will produce a combined 45 million tonnes per annum of LNG within the next few years, which will account for 25 per cent of current world production levels. The project will help position Western Australia as the world's second-biggest supplier of LNG.

This year Western Australia was reaffirmed as a global resources hotspot, as the State topped RESOURCESTOCKS magazine's 2011 World Risk Survey Australian and Canadian ratings, and achieved equal third in the world as a top investment destination (story page 4).

The State's reputation as a top investment destination was further enhanced through the success of CHOGM and the Commonwealth Business Forum held in Perth in October (see stories pages 5-7). The Forum attracted more than 1200 political and business leaders, with Western Australia's resources sector well represented.

Following the successes of 2011, Western Australia is well positioned to continue to grow as a leading world resources economy in 2012.

Colin Barnett
PREMIER OF WESTERN AUSTRALIA & MINISTER FOR STATE DEVELOPMENT

Norman Moore
MINISTER FOR MINES AND PETROLEUM

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Cover photo: Environmental scientists monitor the State of Onslow's coastal tidal zone as part of the Wheatstone LNG project.



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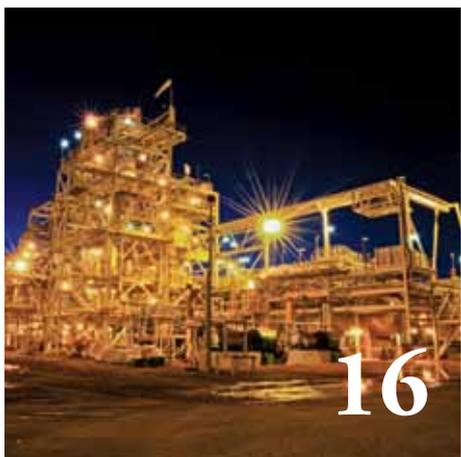
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North Rankin A platform, North West Shelf Venture, Western Australia.

New chapter in WA oil production

Western Australia currently produces almost ninety per cent of Australia's oil output, but significant new discoveries are needed if current levels are to be maintained.

In 2010-11, the State's production of crude oil and condensate, a very light crude oil that condenses from natural gas in normal atmospheric conditions, was worth A\$12.4 billion. Production for that year totalled 87.6 million barrels (mbl) of crude oil and 43.3 mbl of condensate.

The industry was estimated to have employed more than 7,000 people, it accounted for more than 12 per cent by value of Western Australia's total mineral output and about 10 per cent of the State's export earnings.

Currently, Western Australia's petroleum sector includes more than 70 operating oil and gas fields onshore and offshore, with crude oil produced from about 40 of these and condensate from more than a dozen gas fields.

Almost all of Western Australia's crude oil and condensate is currently produced in the offshore Carnarvon Basin, adjoining the State's Pilbara coast. In 2010, this totalled 85 mbl of oil and 46 mbl of condensate.

Operators include Woodside, BHP Billiton, Vermillion, Chevron, Apache, Santos and ENI, but most of the fields are joint ventures with a wider range of global and local companies engaged.

Most Carnarvon Basin oil is shipped from nine floating production storage and offloading vessels, a floating

storage platform and similar facilities on offshore islands.

However, the Carnarvon Basin production also includes the Chevron-operated Barrow Island oilfield, Australia's largest onshore oilfield, which since 1967 has produced more than 300 mbl.

More than 95 per cent of the State's condensate production is from gas fields operated by Woodside Energy as part of the North West Shelf Venture, which feeds gas to liquefied natural gas (LNG), and natural gas production facilities on the Burrup Peninsula, near Karratha.

Much smaller quantities of oil and condensate are produced from offshore and onshore fields north of Perth, in the Perth Basin and fields in the onshore Canning Basin in the Kimberley region.



© Woodside

Most oil and condensate is exported to refineries in Asia or sold on the spot market but oil from Perth Basin fields and condensate from Pilbara natural gas plants is processed at the BP Refinery at Kwinana south of Perth.

While last year's production figures are consistent with average annual levels for the past decade (82 mbl oil and 40 mbl condensate), many Carnarvon Basin oilfields are reaching the end of their economic life, and resources beneath Barrow Island are increasingly difficult to extract.

Department of Mines and Petroleum Executive Director, Petroleum Bill Tinapple said Western Australia needs new discoveries to maintain its crude oil output.

"There has not been a major oil field find announced in the past ten years, and there's not much that's coming on stream," he said.

More than A\$2.4 billion was spent on petroleum exploration in Western Australia during each of the past two financial years, accounting for more 73 per cent of the Australian total.

However, Mr Tinapple said most of this effort is aimed at developing gas resources for LNG projects under construction in the Carnarvon Basin including Pluto, Gorgon and Wheatstone, and others under consideration in the Browse Basin including Browse, Prelude and Icythus.

He said Western Australia's self sufficiency in oil production is falling.

"In recent years, it has fallen from 55 per cent to 42 per cent in the past five years and could be as low as 30 per cent by 2015," he said.

"Even an increase in condensate production from new LNG projects won't offset this, although new gas fields in the Browse Basin are likely to become major sources of condensate."

Some significant announcements during 2011 may indicate that future prospects for Western Australian oil production are improving.

In May 2011, Woodside Energy Ltd announced a discovery in the Exmouth Sub-basin of the Carnarvon Basin, which it said suggested the Laverda oil field, which it holds in a joint venture with Mitsui E&P, has the potential to contain a recoverable volume in excess of 100 million barrels of oil.

The partners have recently secured exploration permits for two additional areas in the Exmouth Sub-basin.

Further north, Buru Energy, a Perth-based oil junior, and Japanese industrial giant Mitsubishi are undertaking a joint exploration program in the vast, under-explored, onshore Canning Superbasin.

In October 2011, Buru announced a good flow of oil from its Ungani-1 well.

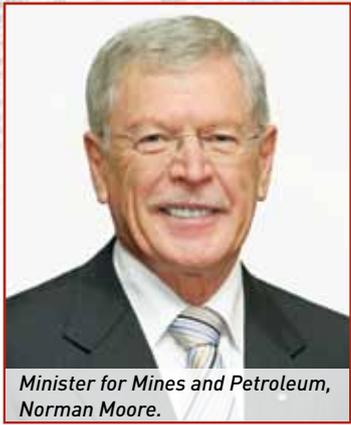
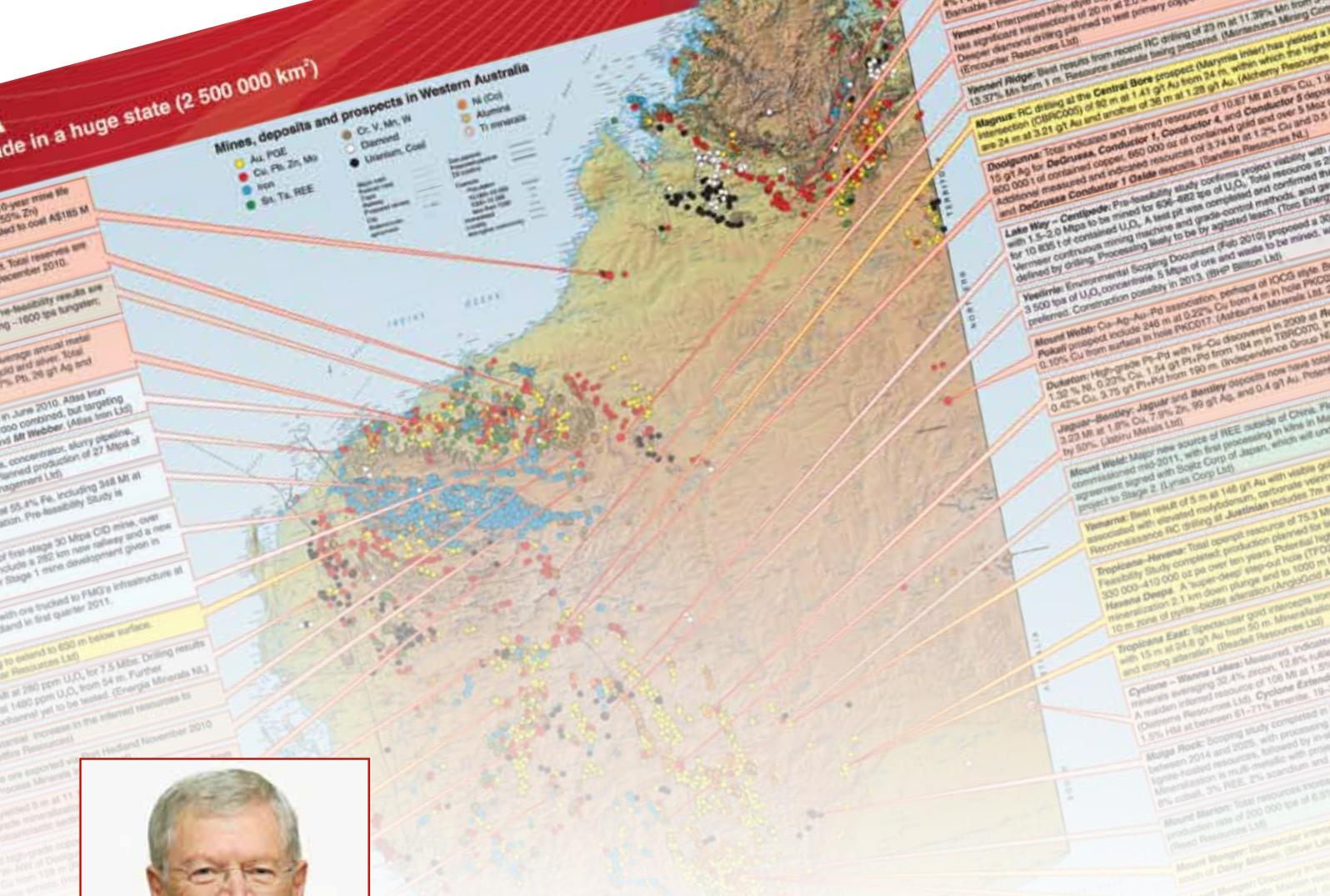
Executive Director Eric Streitberg claimed it was the first significant oil discovery in the Superbasin since the 1980s, and the first significant oil discovery onshore in Western Australia since 2001.

The company has commenced drilling a second hole, which will enable it to more accurately estimate the size of the Ungani oil field resource.

Mr Tinapple said the Canning Basin might also have potential for oil production from shale.

In September 2011, US energy giant ConocoPhillips and local explorer New Standard Energy announced an agreement, which will see more than A\$100 million spent on exploring potential shale resources over a 45,000 km² area.

Rising energy prices, and a growing global focus on energy security, may be opening a new chapter for Western Australia's oil production. ■



Minister for Mines and Petroleum, Norman Moore.

Our resources sector rated top investment destination

Western Australia has been reaffirmed as a global resources hotspot by a leading survey, rating the State as a top investment destination in the nation and positioning it as equal third in the world.

RESOURCESTOCKS magazine's 2011 World Risk Survey rated Western Australia at 10.4, to share first place with South Australia and Nova Scotia in the Australian States and Canadian Provinces survey.

Western Australia's rating was up from last year's second-place rating of 15.9.

Mines and Petroleum Minister Norman Moore said the rating was extremely significant for the State's international reputation as an attractive destination in which to invest.

"In 2008, WA had the lowest rating, but the following year the State climbed to sixth spot, before hitting second place last year behind South Australia, now we are equal first," Mr Moore said.

"WA's strong resources sector is the backbone of the nation and it is supported by a progressive Government that encourages new investment."

"A lot of work has been done to promote exploration and improve the approvals systems and technology support for online services for the resources sector, which is all reflected by WA's improved rating.

"It is very pleasing to see that since this State Government came to power in 2008, WA has continued to become an increasingly popular mining and petroleum investment destination."

New South Wales' survey rating was 10.6 and the Northern Territory was at 11, while Queensland (14.2) was deemed the riskiest investment destination in Australia.

More than 1,000 resource sector professionals were surveyed, ranking jurisdictions according to perceived risks in areas such as financial, social and sovereign risk; land access and claims; green and red tape; infrastructure; civil unrest; natural disasters; and labour relations. ■

Partnering for global growth

The Department of State Development led the State Government's involvement in the recent Commonwealth Business Forum (CBF) as part of the Commonwealth Heads of Government Meeting (CHOGM).

The Commonwealth Business Forum was held from 25-27 October at the Burswood Convention Centre and attracted more than 1000 delegates from 54 countries, including 16 Heads of Government.

The State and Federal Governments and the Commonwealth Business Council hosted the forum.

Delegates heard from a range of global business leaders, including Stern School of Business Professor of Economics Nouriel Roubini; 2004 Nobel Prize winner in Economics Professor Edward Prescott; Access Bank Nigeria Chief Executive Officer Aigboje Aig-Imoukhuede; and Rio Tinto Chief Executive Officer Tom Albanese.

As a result of the forum, delegates agreed the majority of the Commonwealth – including developed as well as developing countries – are better placed than many to weather current economic turbulence.

They identified that many Commonwealth countries are investment destinations of choice and have high governance and business standards.

They urged CHOGM to focus on increased opportunities for vocational education and skills development; improved access to finance for business growth; the development of infrastructure to support industry; more support for small and medium enterprises; introduction of business friendly tax policies; and the implementation of strategies that tackle corruption and strengthen corporate governance.



Prime Minister Of Trinidad and Tobago, Kamla Persad-Bissessar with the Premier Colin Barnett.

A number of practical initiatives were launched at the Forum:

- The **Commonwealth Mining Network** will link the private sector to the needs of developing governments to assist in the sustainable management of their mining sectors.
- The Australian Chamber of Commerce and the Western Australian Chamber of Commerce and Industry agreed to establish a program with the Bank of Industry Nigeria and partners from the Pacific Region, India, and Africa to work with companies and governments to use their supply chains and other **measures to support the small to medium enterprise sector**.
- A memorandum of understanding was signed between the Commonwealth Business Council and the China Council for the promotion of international trade to forge greater cooperation that will work towards the establishment of the **Commonwealth-China Business Network**.

The State Government had a highly visible presence at the CBF through the State's new investment sub brand *Think Big*, which was on display at the expo stand at the event. Publications available at the stand included 22 fact sheets, including *Western Australia Big on...*

- *Mining and exploration*
- *Oil and gas*
- *Downstream processing*
- *Industrial lands*
- *Building and construction.*

A new investment web presence was developed www.dsd.wa.gov.au/thinkbig which features four, two-minute videos on mining and exploration, oil and gas, agribusiness and an investment message from the Premier. For copies of the videos or fact sheets contact the Trade and Invest Hotline +61 8 9222 0491 or email thinkbig@dsd.wa.gov.au ■



Premier Colin Barnett greets Nigerian President Goodluck Jonathan and dignitaries.

Western Australia

Investment in Western Australia's resources sector was central stage at the Commonwealth Business Forum, which ran for three days in late October prior to the Commonwealth Heads of Government Meeting (CHOGM).

More than 1200 political and business leaders attended, including Prime Minister Julia Gillard, Premier Colin Barnett and senior state and federal government ministers.

Western Australia's resources industry was well represented at the event, with principal sponsors including Fortescue Metals Group, BP, Woodside, Rio Tinto, Perdaman Chemicals and Fertilisers, BHP Billiton and AngloGold Ashanti.

The Premier, who spoke at the Forum, said Western Australia was a leading

global resources economy that was entering a phase of strong and sustained economic development during the next decade, one that would see iron ore production double and liquefied natural gas (LNG) capacity treble, along with growth in many other mineral exports.

"Western Australia is on the verge of a new change in economic development that promises to transform the state's economy," the Premier said.

"In the Mid West, we are opening a new iron ore province and in the state's north, we are developing new ports and

infrastructure to support the expansion of our iron ore and gas industries.

"There are more than A\$135 billion of significant resource projects either committed or under consideration in the Pilbara, A\$10 billion in the Mid West – mostly iron ore – and an A\$30 billion LNG project in the Kimberley."

In 2010-11, Western Australia produced 46 per cent of Australia's export earnings totalling more than A\$100 billion in exports, which were mostly mineral and petroleum resources.

Western Australian companies produced more than a fifth of the world's iron ore (21%) in 2010, and close to one tenth (9%) of the world's LNG.



Minister for Mines and Petroleum Norman Moore (centre) with staff at the Think BIG booth during the Commonwealth Business Forum.

thinking BIG

Australia is poised to become one of the world leading LNG exporters through projects such as the Chevron – led Gorgon Joint Venture Gas Processing Project – Australia’s largest development project, valued at A\$43 billion – and the A\$29 billion Wheatstone Project, both of which are in Western Australia.

Mr Barnett said Western Australia, as an investment-driven state, accounted for 31 per cent of Australian new capital expenditure in 2010-11.

“Western Australia is in the early phases of a sustained expansion built on new resource projects and industries,” he said.

“This will result in the permanent transformation of our economic landscape as new regions are opened to development and new infrastructure is built to support development.

“This growth and development will be supported by new and deepening relationships with our traditional trading partners to the north and emerging partners to the west, based not only on resources trade but also investment flows, services, technology, the exchange of people, and maturing social and cultural links.”

The Premier said the state’s orientation, its future and its key developing relationships were located to the north and the west.

“As this new phase of expansion builds momentum, we will again develop and strengthen ties with our economic partners and will look not only to our traditional partners to the north, but also west to the Indian Ocean Rim, and to Africa.

“Exports will be the cornerstone of these new relationships, but they will be broader, with inward and outward investment, mining technologies and services playing an increasingly important role,” he said. ■



Aerial view of Onslow. All Images courtesy of Chevron.

Onslow opens up

Slap, bang in the middle of the Wheatstone liquefied natural gas project is the tiny hamlet of Onslow, which will be transformed by the presence of the A\$29 billion project.

The project will connect gas fields off the Pilbara coast to a processing plant at Ashburton North, a new industrial area, 12 kilometres from Onslow.

With a “neighbour” that big, Onslow (population about 700) is bracing for some dramatic change.

At its peak, the construction workforce is expected to reach 3500, with a further potential 3000 indirect jobs and billions of dollars to be injected through locally bought goods and services. It would also create hundreds of permanent jobs.

Onslow’s population is expected to treble within five years, also aided by the development of BHP Billiton’s

A\$1.6 billion Macedon domestic gas project, also located at Ashburton North.

“We’re working on a population of 2200, which is a massive jump — 214 per cent in fact,” Department of State Development General Manager of Social Infrastructure Projects, Steve Ryan said.

Putting it into perspective, that’s like Perth’s 1.5 million population increasing to 3.2 million in a few years.

The local community has been expecting such an eventuality over the past 10 years. Many locals are ready to embrace the benefits that the project will bring to Onslow but are concerned that the history of the town and lifestyle they have enjoyed will be lost.

However, the Department of State Development, as lead agency, has worked with the Shire of Ashburton,

Chevron, LandCorp and Dampier Port Authority to ensure the important features and overall character of the town will be preserved

The department oversees the project in two main areas: the development of the Ashburton North Strategic Industrial Area and the social infrastructure and critical services projects needed for Onslow, in partnership with the proponents, the Shire and other key agencies across government.

A State Development Agreement was signed on September 9, 2011, which outlines the services required by Onslow, as a direct result of the impact of the Wheatstone project. It also sets out the financial contribution to be provided for these projects.

More than A\$200m million will be spent on social infrastructure and critical services infrastructure.



The social infrastructure budget is \$76 million, with Chevron contributing the bulk and the State Government \$10 million. This will include:

- Expansion of school and childcare facilities.
- Emergency services expansion.
- Four Mile Creek picnic area and playground.
- Onslow Aquatic and Recreational Centre (squash courts and youth centre).
- Old Onslow Town conservation and tourism development.
- Town Master Plan and improvements.
- Community Development Fund (this operates for 10 years from the end of construction).
- Airport upgrade.

Upgrades to critical services infrastructure will also be funded by Chevron, which will see the company contribute \$120.93 million towards projects including:

- Wastewater management – upgrade to existing waste water treatment plant and associated infrastructure.
- Health services upgrade – including dental health clinic.
- Onslow Ring Road (new road into town).

In addition Chevron will also make a substantial contribution towards water and power infrastructure for the town.

“We’ve been working with everyone for the past 12 months on getting in place the necessary framework for ensuring the changes will be well managed to have immediate effects and long-term benefits for the town,” said Mr Ryan.

Shire CEO Jeff Breen said because of Wheatstone, the town’s future had been secured and he is looking beyond the initial development to what the future may hold.

“The challenge for our town is to ensure that it’s positioned to thrive well beyond the 30-year timeframe envisaged for the offshore gas projects,” he said.

“We need to be proactive in shaping the future we want.”

“The level of investment is considerable and puts Onslow in one of the most enviable positions nationally.”

It’s likely the first project to begin will be an upgrade of Onslow Airport, with the runway to be extended from 1600 metres to at least 2000 metres. Closely following will be upgrades to water and power and the release of additional housing lots within Onslow.

The Shire’s Chief of Western Operations, Onslow-based Amanda O’Halloran, said the airport would allow the project to go forward at pace.

“It will get people and things moving quickly,” she said.

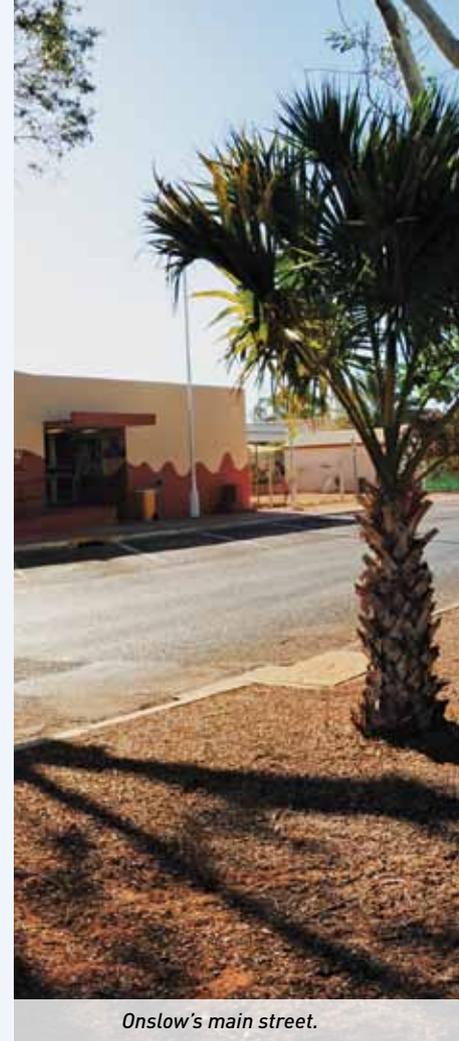
Ms O’Halloran has been with the Shire for the past six years and has seen interest in the town ebb and flow via several previous projects.

“We’ve already applied to the Department of Transport for extra passenger services, and are hoping construction will begin by the end of January 2012,” she said.

Continued p.10



Artist impression of the Ashburton North Industrial Area.



Onslow's main street.

From p.9

The town's second priority is land development, which is being done in conjunction with LandCorp, with an initial release of 400 residential lots and room for an operational village for Chevron. This will take 12 months, with water and power infrastructure to follow.

"We already have a lot of plans in place," Ms O'Halloran said.

"We know what's required, so we're not being caught out. It's now a matter of getting the necessary approvals and that just takes time."

The Department of State Development will establish the working groups for both the social infrastructure and critical services infrastructure components and develop Project Implementation Plans for each project.

"It's tremendously satisfying to see how much this can do for the town, which in turn will help provide an enormous benefit to the rest of the State and the country," Mr Ryan said.

'Down the road', 12 kilometres away at Ashburton North, the project's scope is taking on another dimension. This is where the multi-user industrial precinct will be located - where the liquefied natural gas (LNG) will arrive for processing and shipping overseas.

The challenges are different, but no less challenging. Christopher Cottam, the Department's General Manager of Strategic Infrastructure Projects, described the role as one of "finessing" the competing requirements of all parties.

There are a myriad of considerations to be factored into planning for what is potentially an 8,000 hectare site. While the department is not responsible for them individually, it needs to retain an overview.

"We are working across safety issues, heritage, port construction, roads, power and land development, just to name a few things," Mr Cottam said.

"Understandably, everyone involved is only interested in their own area, so we have to show vision and encourage everyone to look beyond their own interests. By doing that, we get more efficient and better outcomes."

What sets Wheatstone apart from other projects is its sheer scale.

Onshore, the site will need to be raised by eight metres to build a raised pad for LNG, condensate and natural gas processing and storage facilities, power generation, and a water supply and waste water disposal system. Port construction will include a shipping channel and a turning basin, a product-loading facility and a materials offloading facility.

"This is simply a mega project," Mr Cottam said.

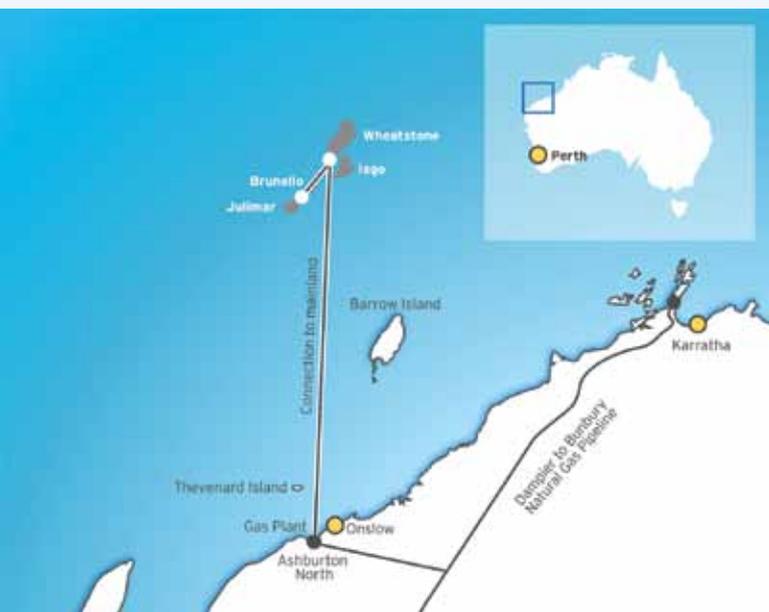
"For example, just to work out road access, there were three agencies involved, and it's similar with the port development, where there were another three agencies - local, State and Federal. All have different ideas about how things should work, so we have to sit above that to steer it in the right direction."

The "steering" will be ongoing until at least the time of the projected first gas, sometime in 2016. During that period, the department will work towards ensuring the Ashburton North Strategic Industrial Area is project-ready for any future proponents.

The project will see a marked increase in on-ground activity by early 2012 and should be "full steam" by mid-2012.



Offshore geo-technical drilling rig off Onslow and map of the area.



Wheatstone to deliver extra domestic gas

With gas increasingly becoming an important domestic energy source, the addition of Wheatstone comes at an important phase of Western Australia's expansion.

Wheatstone will supplement the two other main gas projects in WA: the North West Shelf and Gorgon.

The North West Shelf Venture (NWSV), located on the Burrup Peninsula, began supplying domestic gas in 1984 and currently supplies about 70 per cent of the state's needs.

The Gorgon Project, located on Barrow Island in Western Australia, includes a domestic gas plant capable of producing 300 terajoules of domestic gas per day, increasing the state's supply by about 30 per cent. Domestic gas from the Gorgon Project is scheduled to come on stream in 2015.

Wheatstone, discovered in August 2004, is one of Australia's largest resource projects. Gas will be processed at an onshore facility located at Ashburton North, 12km west of Onslow in Western Australia's Pilbara region. The foundation project will include two LNG trains with a combined capacity of 8.9 million tonnes per year and a domestic gas plant capable of producing 15 per cent of this design capacity. Production from Train 1 is set to start in 2016.

Partners in the project are: Chevron 80%, Apache Julimar Pty Ltd 13%, KUFPEC Australia 7%. ■

WA-China gas partnership celebrates success

Participants in the 2011 Australia China LNG Training Program, the Management Imperative, recently celebrated the completion of their course and the overall success of the program at a prestigious graduation dinner held in Perth.

The Australian Centre for Natural Gas Management (ACNGM), a joint venture between Curtin University and the University of Western Australia, runs the highly successful executive training program.

Participants come from China's leading natural gas companies, including Shenzhen Gas Corporation, CNOOC, Sinopec, Shenzhen Energy Group and Guangdong Dapeng LNG.

Each cohort undertakes a three-month MBA style short course specialising in natural gas, allowing each participant to immerse themselves in the Australian business culture and the local natural gas market.

The training program was developed in collaboration with the Australia-China Natural Gas Technology Partnership Fund, established in 2002 as part of an historic agreement for Australia to supply liquefied natural gas (LNG) to China for 25 years.

The Fund is a joint initiative of North West Shelf Australia LNG (on behalf of the North West Shelf Venture), the Commonwealth Department of Resources Energy and Tourism and the Department of State Development.

It provides opportunities for training, research and technology transfer between China and Australia in the natural gas and LNG industry.

This year's cohort praised the success of the training program, with previous participants having gained promotions following completion of the course.

"I'm working on another LNG project and very busy, but the three months' training really helps me in my English, I have more confidence than before," Sinopec's Zhang Qingyun said.

Fellow participant Li Aiyu recently moved to Brisbane after completing the course to start a job with Australia Pacific LNG (APLNG).

"In returning to China, many of the participants gain immediate job promotions, which is the underlying purpose of the program," ACNGM Program Manager Kathryn Murray said.

"The program creates opportunities for professional development, expanding horizons and also institution building related to the natural gas industry."

"The program continues to run exceedingly well, as evident from the formal and anecdotal feedback taken from the participants and presenters.

"A large element in achieving this has been the crucial support provided by the Fund representatives, who essentially act as partners in the program.

"The ACNGM team look forward to working cohesively with the Fund in 2012."

Executive Director Strategic Projects Joe Ostojich is the Department of State Development's representative on the Fund's working group, which meets regularly with China's National Development Reform Commission on the Fund's work.

Mr Ostojich spoke at the graduation dinner held in early November.

"The Fund supports activities aimed at establishing genuine, long-term partnerships within the energy sector," he said.

"The aim is to create positive economic and environmental outcomes, increase knowledge and skills, particularly in the LNG industry, and enhance the relationship between Australia and China.

"Of the 129 LNG managers who have completed executive training from 2005-2011, almost 20 per cent have been promoted since their return to China.

"This bodes well for the Australian-Chinese relationship given the knowledge, understanding and friendships - both personal and professional - that this future generation of LNG managers in China gain from their time in Perth."

For more information on the Australia China LNG Training Program, visit www.business.curtin.edu.au/acngm and for information on the Australia-China Natural Gas Technology Partnership Fund, visit www.gasfund.com.au ■



Participants in the Australia China LNG Training Program take time out at Kings Park.



New Native Title Agreement sets standards

A historically-significant agreement between the Western Australian Government, the Goolarabooloo Jabirr Jabirr native title claimant group and Woodside has set a new standard for native title agreements in Australia.

The agreement, executed in June 2011, secures access to land near James Price Point, north of Broome, for the establishment of a liquefied natural gas (LNG) precinct.

The 3,458 hectare precinct will accommodate two or more operators processing natural gas from the offshore Browse Basin and exporting LNG.

It will accommodate production of up to 50 million tonnes per annum of LNG, with Woodside as the foundation proponent working towards commencing production by 2017.

Western Australian Premier and Minister for State Development Colin Barnett said all Western Australians would benefit from the development of the natural gas resources in the Browse Basin, and the investment, employment and business opportunities, generated by the construction and operation of the multi-billion dollar LNG facilities.

“For the Traditional Owners and their descendants, and for Indigenous communities across the Dampier Peninsula and the entire Kimberley region, the agreement will ensure an unprecedented level of economic independence,” he said.

In a first for a Native Title Agreement, as well as specifying benefits for the Traditional Owners, the Goolarabooloo Jabirr Jabirr, the Agreement includes significant benefits for Aboriginal people of the Dampier Peninsula and the wider Kimberley region.

In total, these are estimated to be worth more than A\$1.5 billion over the 30-year life of the project, and will be expanded when additional proponents take up land in the precinct.

Importantly too, the package has a strong emphasis on creating opportunities for economic independence for Aboriginal people including through participation in precinct operations.

The Agreement includes State funding of A\$256 million over 30 years towards housing, education, economic development, promotion and protection of cultural heritage and a Kimberley enhancement scheme, which will invest in Indigenous social programs.

Other benefits include land parcels, Indigenous land reform on the Dampier Peninsula, the creation and joint management of conservation areas, employment and business contracting opportunities.

The Agreement specifies that the precinct site will only be used for LNG processing and that it will be the only such site in the Kimberley.

The Agreement, which was negotiated over almost four years, as part of a process that engaged Indigenous representatives from across the Kimberley in selecting a preferred precinct site, was endorsed by a majority vote of the Traditional Owners after a four-day meeting.

Wayne Bergman who, as the Director of the Kimberley Land Council, led negotiations on behalf of the Traditional Owners, said their decision was a landmark exercise in democratic decision making.

“Traditional Owners have struck a balance between protecting our environmental and cultural values and harnessing an opportunity for genuine participation in the modern economy,” he said.

Jabirr Jabirr Traditional Owner Anthony Watson said the agreement was testament to the determination of the Goolarabooloo Jabirr Jabirr claim group.

“We’ve delivered an agreement that exceeds the legal standard,” he said.

“We’ve negotiated not only for hundreds of ongoing jobs but for direct and meaningful engagement in precinct management.

“We believe the deal we signed today will help our mob have a better chance to be standing on our own feet and not relying on government in the future.”

In its announcement, Woodside said the agreement had the potential to enact meaningful and positive change to the economic and social circumstances of Indigenous people in the Kimberley.

Woodside’s commitments include the implementation of ongoing education, training and employment initiatives, Indigenous job targets, support for Indigenous businesses, cultural initiatives and payments upon project milestones being met, including a final investment decision.

Since the Agreement was signed, Woodside has begun more detailed geotechnical investigations of the precinct site as part of its Front End Engineering and Design for a project that could create up to 6,000 jobs onshore and 2,000 jobs offshore during construction, and generate up to A\$50 billion in GDP for the Australian economy.

Woodside’s Vice President Broome Operations Nigel Grazia said that more than 50 Indigenous people from the Kimberley already engaged in full-time employment or undergoing traineeships, are among approximately 200 people in the region and employed at the site supporting the proposed Browse LNG Development. ■



Unconventional gas regulation: working with industry

An independent review of Western Australia's emerging onshore gas industry has determined that current Department of Mines and Petroleum (DMP) processes are adequate to ensure the management of risk, including activities such as hydraulic fracturing 'fracking'.

The report found that the current regulatory framework was adequate to ensure the management of risk across the environment, workforce safety and resource management, due to 'rigorous assessment by highly skilled and dedicated staff'.

Compiled by Dr Tina Hunter, from Bond University, the report provides an independent assessment of the existing regulatory framework governing the onshore gas industry in Western Australia, under the Petroleum and Geothermal Energy Resources Act 1967 (WA).

On 31 October 2011, the department released Hunter's independent report and a departmental response on the 'Regulation of Shale, Coal Seam and Tight Gas Activities in Western Australia'.

The department's Executive Director of Environment Dr Phil Gorey said the report also outlined areas of improvement in legal enforceability.

"The report recommended strengthening of legislation through a number of enhancements to regulations. Along with improved transparency through the public release of approved Environment Management Plans (EMPs), regulatory processes and compliance measures," Dr Gorey said.

"While regulation amendments are being finalised, we are encouraging companies to publicly disclose their EMP, including all chemicals used in hydraulic fracturing."

The department has also undertaken other recent initiatives to ensure the state's regulatory framework meets global best practice, while being supported by appropriate and transparent processes, standards and guidelines.

These initiatives include seeking advice from the Environmental Protection Authority and establishing an interagency working group with the Departments of Water, Environment and Conservation, Health, Agriculture and Food and Office of the Environmental Protection Authority.

"DMP has reviewed this advice and is implementing a comprehensive reform package to strengthen our regulatory framework," Dr Gorey said.

"The DMP reform package will propose legislative amendments to strengthen enforcement provisions for regulators, mandate full disclosure of chemicals and public release of approved EMPs."

Unconventional gas has attracted an increased level of interest in Western Australia. It is a process where rock formations undergo hydraulic stimulation, also known as 'fracking', to release gas and enable recovery.

The department is preparing new environment management regulations, which are expected to be released for stakeholder input by the end of 2011. The new resource management regulations are expected to be released for stakeholder input by mid 2012. Both regulations are anticipated to be in place in 2012.

DMP will also be conducting regional community information sessions in early 2012.

The DMP response to the report and the Dr Tina Hunter report are available from www.dmp.wa.gov.au/12872.aspx. ■

World-leading technology in Western Australia

You'd never know it, but there's a fleet of iron ore road trains trundling between Geraldton and Cue, heralding a new era of heavy road transport.

The road trains are running on Liquefied Natural Gas (LNG) – the only place in Australia this is happening.

The vehicles have been on the road since November 2010, with technology developed by the Perth-based Orbital Corporation.

Hidden in part-suburban, part-industrial Balcatta, Orbital is revolutionising the use of alternative fuels in heavy-haul commercial vehicles, building on another success earlier in the year – the launch of its Liquid LPG technology on Ford's latest "EcoLPI" passenger vehicles.

While it once made engines, these days the company describes itself as a "portal to an extensive engine, fuel and transport related knowledge-base".

Nick Coplin, the company's Business Development Manager, says Orbital's focus is on breaking down complex energy-related problems and producing economical solutions. It does this through its Balcatta testing facilities, which are among the most advanced in the world.

"The core to Orbital's innovation has been the facility we operate here in Perth, from where we have not only developed many of our own products, but enabled customers the world over in fields as diverse as real-time electronics control to minimisation of their CO₂ footprint", says Nick.

"In developing solutions we try to use off-the-shelf components, but integrate them after thorough testing, to produce unique solutions to fuel-related problems," he said.

"We provide the 'smarts'. We evaluate new technology to make sure it won't 'fall over'. If it makes sense to, we can go on to supply systems – as we do with the Ford EcoLPI, which is supplied through our business in Sydney."

"Our aim is to consult and then develop solutions. It's about enabling products to be better, enabling our customers to make the right technical choices."

In the case of the road trains, these are "big boys" ... Kenworth trucks fitted with the previous generation Caterpillar 15L 550hp engine, pulling 147tonnes in a triple-trailer configuration.

The LNG has provided a significant reduction in fuel costs and carbon dioxide (CO₂) emissions compared with all-diesel trucks.

"While fuel cost savings is important, reliability is also a key requirement," said Tryon Utley, Orbital's vehicle group project engineer.

"Having a vehicle off the road is a big cost, as it's lost production," Orbital will use the results of its trial to expand its technical services to other areas in the resource sector, which eventually may include mine haul (dump) trucks and trains.

"Australia is a small market, but it's a good testing ground for the world market," said Nick. "Orbital plans to support local industry with world-class solutions". ■



Orbital staff performing routine maintenance on a Kenworth's LNG tanks.



Computer testing emissions on a LNG/diesel engine.



Stacker Reclaimer hard at work in front of new ore crusher at Ravensthorpe.

Ravensthorpe revitalised

Even though it's one of the smaller regional areas in Western Australia, the Shire of Ravensthorpe is experiencing a gradual expansion after some recent setbacks.

Covering 13,533 sq kilometres in the south of the State, the Shire and its main town of the same name, are being revitalised by several resources projects.

In many ways, Ravensthorpe, now primarily a small wheat and sheep town, is returning to its roots, having started life with mining, as a copper and gold mining centre (see separate story).

Despite the emphasis on farming and tourism, the "Ravy" area, as locals call it, remains one of the most diversified mineralised areas of the State, holding sound deposits of gold, copper, nickel, tantalum, lithium, and silver.

Some of the main projects underway include the reopened nickel mine, Mt Cattlin lithium project and Philips River project, with The Department of State Development closely involved in all three, helping to ensure projects are

completed quickly and with the best outcomes.

The project which has created most interest is First Quantum Resources' nickel mine.

The company purchased the nickel plant, located 550 kilometres southeast of Perth, from BHP in February last year for \$A336 million and spent \$A200 million on modifications.

By early November the company had completed its first month of the final stage of commissioning, which began earlier in 2011, with first ore fed into the redesigned crushing plants in June.

Product from the beneficiation plant has already been successfully handled by a newly-installed dewatering plant, producing a reject product which can be readily conveyed and trucked.

The atmospheric leach plant was commissioned in September, while the pressure acid leach trains were brought online the following month.

Both will be progressively ramped up to achieve commercial operations before the end of December but the atmospheric leach plant has already achieved average rates of more than 90 per cent, while the PAL trains have operated at rates of up to 70 per cent of their design.

The company estimates an average annual output of 28,000 tonnes of nickel concentrate over an expected life of mine of more than 30 years, with ore feed initially coming from the Halleys, Hale-Bopp and Shoemaker-Levy ore bodies.

Locally, the staff employed at Ravensthorpe will build towards 500 by next year, from the current 300 permanent staff on site.

"Across town", Galaxy Resources' Mt Cattlin lithium project gathers pace, providing jobs for 200 people during construction, and 500 once complete.

The district was first settled in 1868 after pioneer John Dunn became interested in the area after being marooned there while sealing off the coast.

Traces of gold and copper were first found in the Ravensthorpe area in 1892.

However, it wasn't until 1898 that John Dunn's brother, James, made known his discovery of "payable" gold near Annabel Creek. Subsequent publicity sparked a goldrush, which led to the Phillips River Goldfield being declared in September 1900. That year the town of Ravensthorpe was officially named, after the English homeplace of the then bishop of South and Western Australia, Bishop Short.

Within a few years Ravensthorpe was a bustling gold and copper producing area, supporting a population of about 3000, four hotels, a brewery, newspaper and several stores.

During the early part of the century, the mineral field had 11 producing copper mines in four distinct areas – Ravensthorpe, Mount McMahon, Mount Desmond and Kundip.

From 1900 to 1918 they yielded about 8000 tonnes of copper from ores and concentrates that were mainly smelted on site and exported via the port of Hopetoun. However, production waned, and by 1919 the smelter and mines had closed and most prospectors had moved away. Some mines continued to operate, depending on the price of copper, until the 1970s.



MHP nickel (Mixed hydroxide Intermediate Product) coming off production line into the bagging plant on the first day product was achieved on 4 October.

With a projected value of \$A190 million, the project was commissioned in September 2010.

The mine and the mineral plant will produce about 137,000tpa of spodumene concentrate (grading six per cent lithium oxide) at full production for 18 years.

The company commenced exporting its product to China in the first quarter of 2011. In China, Galaxy will produce 17,000tpa of battery-grade lithium carbonate. Most of this will make its way into the growing markets of China and Japan.

Preparation of a mining proposal for the Stage 2 mining area, including a community consultation programme, has commenced and is anticipated to be complete by the end of 2011. The Department of Mines and Petroleum and Galaxy Resources are currently finalising the Closure Plan that will include a reforestation plan on one third of the land owned by the company.

The third project, is the flagship operation for Phillips River Mining (PRM).

Located 20 kilometers southeast of Ravensthorpe, the \$A145 million Phillips River project includes two mining areas. Trilogy is a large polymetallic deposit with copper, gold, silver, lead, zinc, metals and Kundip is primarily gold and copper.

The project will provide employment, with a construction workforce of 80 and a permanent workforce of 250 (80 at Trilogy and 170 at Kundip).

A 1Mtpa processing facility to be established at Trilogy will generate about \$A1billion in revenue over an operating life of 10 years. Having completed the Definitive Feasibility Study earlier this year, PRM are currently targeting development in 2012 and production for 2013.

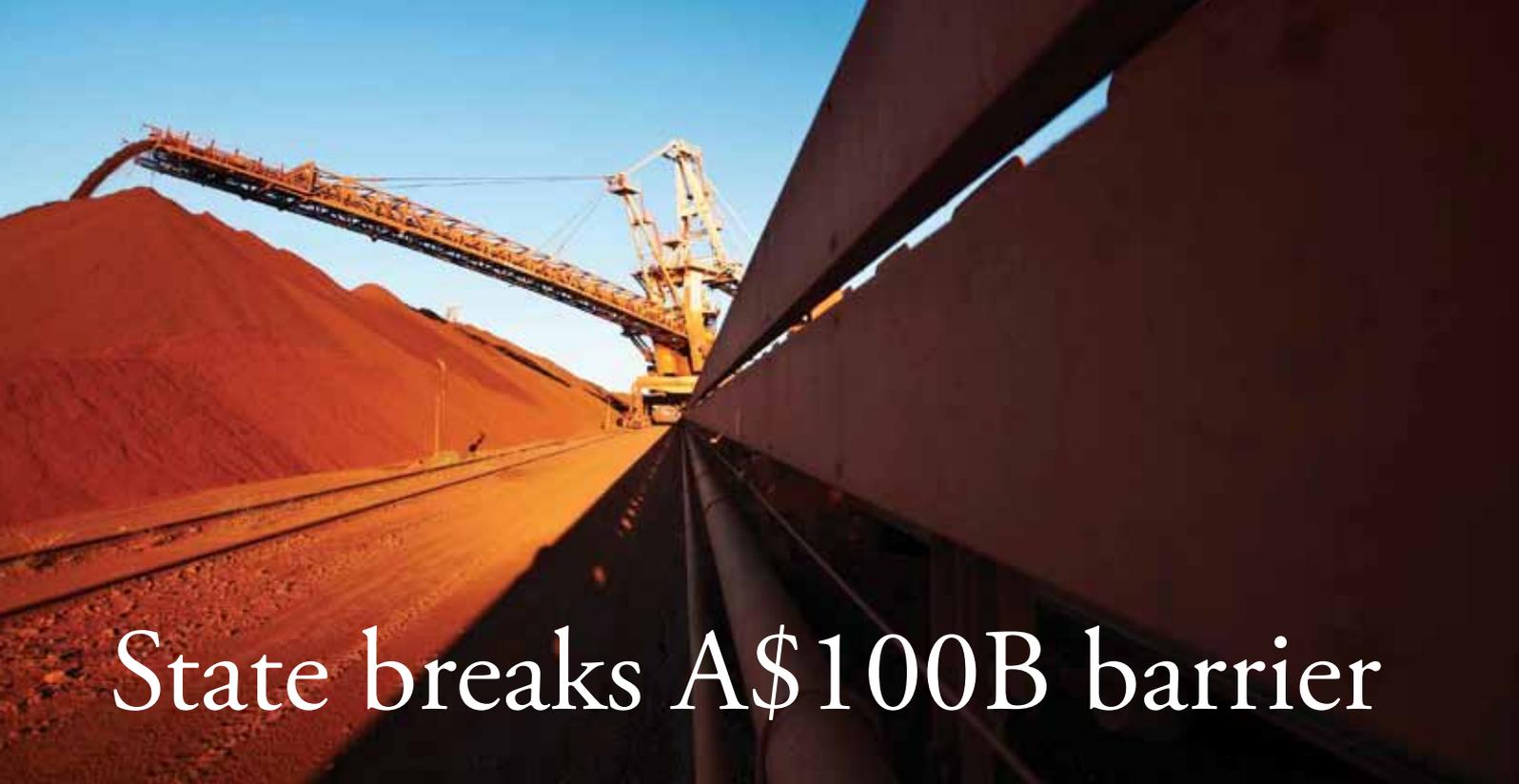
With all this activity taking place, the effects on the local community are being felt. First and foremost are the numbers of local jobs that are created and the flow-on effects from that.

Shire of Ravensthorpe Chief Executive Officer Pascoe Durtrovich said the community was starting to see some positive signs but was adopting a wait-and-see approach. Some of the caution was in part due to the current world financial situation.

"The overall picture certainly seems encouraging, with one supermarket chain pushing ahead with its mothballed store, and there's been a new road built into the park," he said.

"The nickel mine already has 330 people working here and the Galaxy project employs 106 local people.

"However, we won't see the real benefits until the nickel mine has been up and running for a while." ■



State breaks A\$100B barrier

In yet another unprecedented year for resources growth, the value of Western Australia's mineral and petroleum industry reached a record high of A\$101.2 billion in 2010-11.

This represents an increase of 39 per cent over the previous record year, and is the first time resource sales have exceeded A\$100 billion.

This is particularly significant, considering the 12 per cent appreciation of the Australian dollar against the US dollar during 2010-11.

Assisted by exceptionally high commodity prices and strong overseas demand for the State's resources, the record was delivered against a backdrop of extensive flooding, created by a longer-than-normal wet season.

As to be expected, due to huge demand from China, by far the most outstanding resource in dollar terms in 2010-11 came from the iron ore sector and, coupled with petroleum and gold, accounted for 88 per cent, or A\$88.7 billion of all mineral and petroleum sales.

Western Australia stands out in the global iron ore industry and has continued its record-breaking run in 2010-11 to notch yet another record averaging a 35 per cent increase in value each year over the past five years.

With its close proximity to Asia and vast iron ore reserves, Western Australian producers are well placed to remain a significant element in the national economy for years to come.

The strong Australian dollar, which was trading near post-float highs in 2011, averaged US99 cents for the year.

High commodity prices helped to compensate for the strengthening Australian dollar and played an important role in raising the value of Western Australian mineral and petroleum sales in 2010-11.

The table below shows average commodity price movements between 2009-10 and 2010-11 in both US and Australian dollar terms:

Commodity	US\$	A\$
Iron Ore	Up 76%	Up 58%
Tin	Up 63%	Up 45%
Nickel	Up 24%	Up 10%
Copper	Up 30%	Up 16%
Zinc	Up 8%	Down 3%
Crude Oil	Up 25%	Up 12%
Alumina	Up 21%	Up 8%
Gold	Up 26%	Up 12%
Lead	Up 14%	Up 2%
Cobalt	Down 5%	Down 15%

In 2010-11, Western Australia accounted for a record 46 per cent of Australia's merchandise exports, which were worth A\$244.6 billion. Queensland followed with 20 per cent, New South Wales 15 per cent and Victoria contributed about eight per cent.

Mining and petroleum dominated Western Australia's merchandise exports, accounting for 95 per cent

of the total in 2010-11. China remained the State's largest market, taking 42 per cent.

Commodity exports are forecast to increase during the next five years as a number of significant iron ore and liquefied natural gas (LNG) projects come on stream across the State.

The magnitude of the State's mining developments is demonstrated in Australian Bureau of Statistics figures for 2010-11. This data shows that Western Australia's share of national mining capital expenditure rose 29 per cent to A\$28.3 billion and accounted for 60 per cent of the total (A\$47.2 billion). During the past five years, private new capital expenditure by the industry has grown on average by 21 per cent.

Western Australia attracted the bulk of mineral and petroleum exploration expenditure in Australia drawing in 54 and 72 per cent respectively in 2010-11.

As highlighted by record sales in 2010-11, the State's mineral and petroleum industry remains globally competitive and is in a very strong position given the continued uncertain global economic outlook.

This follows a decade of rapid expansion where the value of resource sales has increased on average by 14 per cent each year. Supported by a substantial pipeline of resource investment activity, the industry is well placed to take advantage of rapid industrialisation in Asia and the resultant strong demand for commodities. ■

Highlights in 2010-11

Iron ore is the State's largest sector, accounting for a record A\$57.3 billion in 2010-11, an increase of 62 per cent on last year. This also represents 57 per cent of total sales in 2010-11. Australian dollar prices for all grades of iron ore from Western Australian producers increased by an average of 67 per cent over the year. Adverse weather conditions early in 2011 affected shipments of iron ore and overall were only three per cent higher than the previous year, reaching 396 million tonnes.

Petroleum, which includes crude oil, condensate, LNG, natural gas, LPG butane and propane, is Western Australia's second largest resource sector after iron ore, accounting for A\$23.2 billion, or 23 per cent of total sales in 2010-11. This represents a 24 per cent increase in overall value compared to the previous year.

LNG was the second most valuable commodity in the State in 2010-11. Output increased by eight per cent to 17 million tonnes and the value of LNG sales rose by 25 per cent to A\$8.7 billion. LNG production is forecast to grow in the period ahead due to increased demand from Asia and supply from new projects, including Woodside Energy's Pluto LNG project, which is expected to commence production in March 2012.

The value of **crude oil** sales from Western Australia rose by 32 per cent to A\$8.4 billion in 2010-11, making crude oil the third most valuable commodity. International events pushed up the Tapis crude oil price by 29 per cent to average US\$101 a barrel in 2010-11. This reflects disruptions to oil supply in Libya, political unrest in the Middle East and North Africa, and an increase in Japan's oil-fired electricity generation following the March 2011 earthquakes and tsunami.

Crude output increased by 18 per cent to 87.6 million barrels, reflecting the ramp-up in production during the period from the Pyrenees and Van Gogh fields.

The value of **condensate** increased by 14 per cent to reach almost A\$4 billion. However, output fell by seven per cent to 43.3 million barrels.

Gold ranked fourth in terms of overall value and reached A\$8.2 billion, representing eight per cent of all sales in 2010-11. This reflects gold's role as a 'safe haven' investment, given concerns about the world economy. The price of gold was up by 26 per cent in US dollar terms, with gold producers responding to the higher prices, increasing output by 12 per cent to 5.9 million ounces.

Nickel, in fifth place, contributed A\$4.6 billion, or five per cent to the total value of the State's resources in 2010-11. A 24 per cent increase in the US dollar nickel price resulted in the value of nickel sales rising by 13 per cent. Nickel production was up by four per cent to 187 thousand tonnes.

Alumina claimed sixth place in 2010-11, with output down marginally by three per cent to 12.3 million tonnes. Strengthening of the Australian dollar offset the 21 per cent rise in the US dollar price for alumina, with the value of alumina sales increasing by four per cent to reach almost A\$4 billion.

Base metals were up in terms of overall value by nine per cent to A\$1.6 billion in 2010-11.

Copper dominated base metals in terms of value, however, output remained almost static at 148 thousand tonnes in 2010-11. US dollar copper prices were up by 30 per cent compared to 2009-10, which resulted in the value of copper sales rising by 13 per cent to A\$1.3 billion.

Lead production rose by 55 per cent to 40 thousand tonnes in 2010-11 and sales followed with a rise of 53 per cent to A\$94 million.

Sales values of **zinc** were down by 24 per cent to A\$159 million and volumes were down by 20 per cent to 70 thousand tonnes in 2010-11.

Domestic **natural gas** sales fell by five per cent to 8.9 billion cubic metres in 2010-11, while the value of sales rose slightly by three per cent to A\$1.4 billion. **LPG butane** and **propane** output fell by five per cent and the sales value increased to A\$774 million, which is a 20 per cent increase on the previous year.

The total value of **mineral sands** sales was down by 33 per cent to A\$468 million in 2010-11. The reduction in the value of sales was mainly due to cutbacks in output by the leading producer. This resulted in falls in value for rutile (54 per cent), leucoxene (51 per cent), synthetic rutile (35 per cent), zircon (30 per cent) and ilmenite (23 per cent). Output tonnage also fell in similar amounts with the exception of zircon, which fell only 15 per cent.

In 2010-11, the value of **salt** sales fell by 12 per cent to A\$367 million, largely due to a strong Australian dollar. Volumes increased by 12 per cent to 12.2 million tonnes.

Coal production rose by eight per cent to 7.2 million tonnes in 2010-11, with sales revenue falling by two per cent to reach A\$319 million.

Diamond sales volumes fell sharply in 2010-11, decreasing by 38 per cent to 10.1 million carats. Declining grades in the Argyle mine, together with a heavy wet season, were responsible for reduced production.

Output for **cobalt**, as a by-product of nickel mining, fell by 15 per cent in 2010-11. A five per cent fall in the average US dollar price of cobalt in 2010-11 contributed to a 24 per cent fall in the value of sales, which reached A\$145 million.

Western Australia's mineral and petroleum resources in order of value for 2010-11. ■

Commodity	A\$ billion
Iron Ore	\$57.3
Crude Oil and Condensate	\$12.4
LNG	\$8.7
Gold	\$8.2
Nickel	\$4.6
Alumina	\$4.0
Others	\$6.0
Total	\$101.2

Source: Department of Mines and Petroleum



Petroleum and geothermal energy safety

© Woodside

Following the recent passing of the Petroleum and Geothermal Energy Safety Levies Bill in State Parliament, the Department of Mines and Petroleum has commenced the drafting of regulations.

It is anticipated that the legislation will be implemented by 1 January, 2012.

The levies will enhance the role of the department's Resources Safety Division as a leading-practice safety regulator.

"While the petroleum industry considers it already operates to a high level of safety, petroleum accidents have high consequences, including the potential to cause multiple fatalities or injuries, significant economic impacts through loss of supply, and environmental damage," Executive Director Resources Safety Malcolm Russell said.

Mr Russell said even when significant incidents did not result in fatalities, they could still have the potential to cause serious economic impacts.

"The objectives in developing cost-recovery principles for petroleum and geothermal energy safety are to ensure, to the greatest possible extent, a fair and equitable distribution of the cost of administering onshore petroleum and geothermal energy safety regulation, with minimal administrative burdens for industry and the regulator," he said.

During development of the levies, the department examined many cost-recovery methods and consulted with the Australian Petroleum Production and Exploration Association Ltd (APPEA), the Australian Pipeline Industry Association (APIA), as well as union and petroleum industry representatives on a Ministerial Advisory Panel for Best Practice Safety Regulation. The levies were modified as a direct result of this consultation.

The approach selected was based on cost-recovery levies used for offshore petroleum by the National Offshore Petroleum Safety Authority (NOPSA), which are already accepted by industry.

This follows industry requests to maintain alignment between State and Commonwealth legislation.

Levies

- There are two safety levies:
 - **The Safety Management System Levy** applies to a Safety Management System in force, and is charged for regulatory services rendered in relation to listed occupational safety and health laws under the *Petroleum and Geothermal Energy Resources Act 1967*.

- **The Safety Case Levy** applies to a Safety Case in force, and is charged for regulatory services rendered in relation to listed occupational safety and health laws under the *Petroleum Pipelines Act 1969*.

Legislation restricts the use of the levies to the costs and expenses accrued for the administration of listed safety laws in the State petroleum legislation and the administration of the levies act.

It is expected that the levies will be charged quarterly, from the date the Safety Case or Safety Management System is in force, until the department is notified by the operator/licensee that the operation has ceased.

More information is available, email reform@dmp.wa.gov.au ■

Classification Table:

The levy applies to a Safety Case or Safety Management System in force, and is charged for regulatory services rendered in relation to listed occupational safety and health laws under the Petroleum and Geothermal Energy Resources Act 1967 or the Petroleum Pipelines Act 1969.

CEO determinations will be based on the following factors:

- The level of risk associated with the operation;
- The type and complexity of the operation;
- The level at which the operation is operating;
- The number and type of inspections required for the operation within a calendar year;
- Any other factor considered relevant to the determination.

Class Rating	Safety Management System (SMS) or Safety Case (SC) in force for an operation that the CEO determines is:	Unit Value
A	Extremely complex	21
B	Highly complex	15
C	Complex	10
D	Moderately complex	6
E	Low complexity	3
F	Minimal complexity	1



Official opening of new classrooms at Kimberley TAFE Wyndham Campus earlier this year.



Wyndham residential rehabilitation facility



Swimming pool landscaping in progress at Wyndham.

Resolution: rating mining projects

A resolution is in sight for long-standing differences between resources operations and local governments over the contribution resources projects should make to the communities in which they operate.

The Western Australian Government has adopted a new policy on local government rating, developed jointly with organisations representing the resources and the local government sectors.

Across more than 110 regional and outer metropolitan local government areas, there are more than 1,000 operating mines and oil and gas fields, and other related processing and refining facilities.

In addition, mining tenements, permits and licences cover vast areas of the State, with many held for exploration that may not ever return income to the holder.

Local governments rely on income raised through annual rates based on the value of residential, commercial and industrial property, to help fund the infrastructure, facilities and services they provide for residents and business.

Currently, resources projects contribute to local government income through a variety of rating methods and other arrangements.

These include rating the unimproved value of land covered by mining tenements, rating against a gross rental value (GRV) of buildings, or facilities on those leases, based on their

capital value, or payment of an agreed contribution in lieu of rates.

Additionally, local governments have the capacity to charge differential rates for different activities and industries.

Some arrangements reflect a time when mine workers lived in existing towns, or when resources companies built and managed mining towns.

Now, with many mines operating on a fly-in-fly-out basis, workforces may be accommodated temporarily on site and not subject to residential rates.

While some existing arrangements are satisfactory to both parties, for others, there are concerns on both sides about the consistency, fairness and certainty of the arrangements.

The Policy for the application of Gross Rental Valuation (GRV) in the rating of land by local government for mining, petroleum and resource interests, seeks to address these concerns.

The policy was agreed by a group chaired by the Chamber of Minerals and Energy and including the Western Australian Local Government Association, the Association for Mining and Exploration Companies and the Departments of State Development and Local Government.

It provides local governments with certainty about future income, and resource companies with a clear expectation of their rate obligations. Under the policy, local governments will be able to apply GRV to improvements

such as administration, recreation and accommodation facilities, and maintenance workshops within 100 metres of these facilities, on all land within tenements under the State's mining and petroleum laws.

GRV could also apply to improvements on land that was not within a tenement, but was primarily used for resource-related activities such as processing or refining.

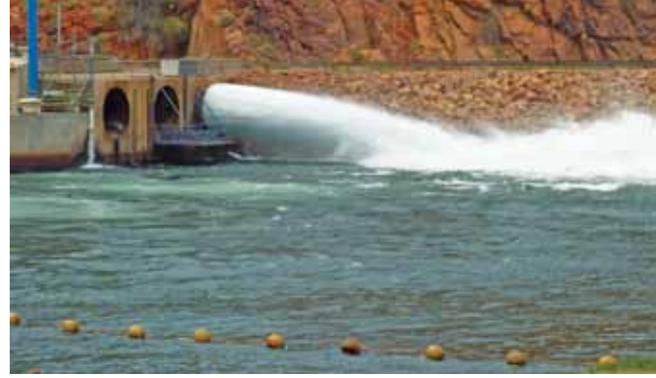
The new policy will be trialled for three years from 1 July 2012, during which the following arrangements will apply:

- The policy will apply for all new mining, petroleum and resource interests.
- The policy will not affect existing arrangements between local government and proponents unless both parties agree to adopt the policy.
- Projects that operate under existing State Agreements and are currently exempt from rates may apply the policy as part of their respective Agreement Variation processes with the Department of State Development during the trial period.

When the trial period is over, the Government will review the policy and prepare recommendations in consultation with stakeholders. ■



Lake Argyle. Images courtesy of Landcorp.



Irrigating more than 29,200 hectares of land.

Ord expansion delivers first agricultural land

The recent release by the Western Australian Government of large areas of irrigable land in the state's East Kimberley region has put the region on track as a world-class agricultural precinct.

The Western Australian Government's Ord-East Kimberley Expansion Project reached the major milestone in November with the decision to release more than 15,200 hectares of irrigable agricultural land near Kununurra.

The irrigation expansion project forms part of an A\$415 million partnership between the State and Federal Governments to encourage the development of agricultural enterprise and new community and social infrastructure, which will see Kununurra emerge as a major regional hub.

Premier and Minister for State Development Colin Barnett said the highly-anticipated land release would help create stronger, more vibrant and sustainable regional communities in the East Kimberley.

"Significant investment and hard work from both the State and Federal Governments and a range of stakeholders has now borne fruit, further cementing the Ord River irrigation area's reputation as a world-class agricultural precinct," he said.

"This release of land in the Goomig Farm Area, Knox Plain and Ord West Bank more than doubles the size of the existing irrigation area and provides

opportunities for short, medium and long-term agricultural land development for a variety of crops."

The existing Ord River Irrigation Area comprises 14,000 hectares, hosting a variety of crops including cotton, rice, chia, sorghum, pumpkins, melons, mangoes and sandalwood.

Lake Argyle supplies water to the Ord River Irrigation Area and holds 10,763GL of water at full supply level.

Minister for Regional Development and Lands Brendon Grylls said the area was already attracting significant interest and the land release would help draw private sector investment into the growing region.

"The multiple land release will draw both national and international attention from purchasers looking to benefit from the Ord's reliable water supply, productive soils and ideal growing climate," Mr Grylls said.

The Ord-East Kimberley Expansion Project has been made possible through the Ord Final Agreement, a Native Title agreement between the State Government and the Miriung and Gajerrong people.

The project engages the Miriung Gajerrong traditional owners in meaningful business partnerships and employment opportunities.

Mr Grylls acknowledged the contribution of the Miriung Gajerrong people, whose signing of the Ord Final Agreement and ongoing commitment to the project made the land release a reality.

The State Government is seeking Expressions of Interest for the irrigable agricultural land across three areas:

- Goomig Farm: about 7,400 hectares of developed irrigable land, with lots ranging from 60 to 839 hectares. Irrigation infrastructure will be completed in 2011, with roads and drainage to be constructed in 2012 to 2013.
- Two additional areas which have potential for medium to long-term development:
 1. Knox Plain: about 6,000 hectares of land to the east of the Goomig Farm Area.
 2. Ord West Bank: about 1,700 hectares of land on the west bank of the Ord River.

Expressions of Interest for the Knox Plain and Ord West Bank land and Requests for Proposal for the Goomig Farm Area close in February 2012. Land release documents and information is available from www.landcorp.com.au/ordlandrelease. ■

GeoMap.WA technology receives excellence award

A state-of-the-art computer application that improves public access to Western Australia's geological data has received a State Award for Excellence.

The GeoMap.WA application, built on geographic information system (GIS) technology, allows users to visualise, interrogate and integrate geological and landscape maps and images, such as satellite and aerial photographs, and associated text information.

The application won the 'Spatially Enabling Government' category, presented to the Department of Mines and Petroleum's Geological Survey of Western Australia (GSWA), at the 2011 Western Australian Spatial Excellence Awards.

Geological Survey Executive Director Rick Rogerson said the innovative desktop application signified a changed approach to the distribution of regional geoscientific information.

"For more than 100 years, GSWA has been gathering and disseminating important regional geoscientific data. This leading-edge technology now makes it more accessible for everyone," Mr Rogerson said.

"This free visualisation tool enables exploration geologists, prospectors and the community to create a customised view of geoscientific and other government information on their computer anywhere.

"GeoMap.WA provides the ability to view data in a way that does not require specialised skills or costly computer systems, which will be of significant assistance to small exploration companies and individual prospectors."

GeoMap.WA, together with DMP's extensive publically available data collections, allows integration with other government data such as roads.

The new software also includes a significantly updated user interface, database linking, GPS tracking and plotting features. The GPS function allows live location and tracking against a background map or image.

With its potential for use across a wide range of public sector agency activities, GeoMap.WA is expected to foster creative collaboration between agencies. Discussions are underway with other government agencies including LandCorp, Western Australia Land Information System (WALIS) and the Department of Agriculture.

In a further accolade to GSWA, another entry in the awards 'Redefining the GSWA Map Production Process' was a finalist in the same category.

This process was recognised for its innovation in moving to a single technology platform for data capture, compilation and output of 1:100 000 and 1:250 000 geological series maps, while maintaining the same high quality output as previous processes.

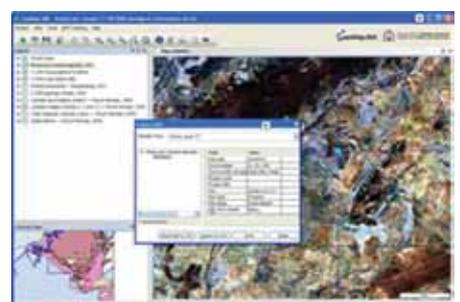
The new process takes advantage of significant improvements to ArcGIS9.3 tool functionalities, such as cartographic representation and feature-linked annotation, to produce high quality 1:100 000 geological maps.

It also now has GIS capabilities to allow the querying of geological mining and topographical information.

GeoMap.WA can be downloaded free from www.dmp.wa.gov.au/datacentre. ■



GeoMap.WA team members Thodi Andersson, Ibrahim El-Fayoumi, Ben Falletti and Joe Hogen-Esch.



On the lookout for illegal mining

The Department of Mines and Petroleum's Mineral Titles Investigation and Enforcement Branch (IEB) is undertaking a state-wide campaign to encourage reporting of suspected illegal mining activity.

Initially the focus of the campaign will be on Western Australia's Goldfields region, but will also take in other regional areas.

Branch General Manager Kevin Mancini said the primary offences were allegations of illegal mining under the Mining Act 1978, where people have undertaken prospecting, or other mining activities, on another person's tenement.

"By definition under the Act, prospecting is mining, and the focus of the campaign is to get the message out to prospectors. They are the ones out there witnessing the activity and we want them to report it more effectively," Mr Mancini said.

Part of the campaign will see advertisements placed in regional newspapers and posters in regional police stations, Shire and Mining Registrar offices, encouraging people to report illegal or suspected illegal activity.

There have been a number of claims by the Amalgamated Prospectors and Leaseholders Association (APLA) that illegal mining and prospecting is rife – particularly in the Goldfields.

"However, IEB has received very few reports of illegal activity in the Goldfields and most of the reports received lacked detailed information. So, our aim is to improve the quality of reports received, so we can take appropriate action, and prosecute if necessary," Mr Mancini said.

The branch will be visiting regional Mining Registrar offices, local police stations and shire offices to promote the reporting of suspected illegal activity. The visits will further strengthen the department's relationships with local government and police.

The primary role of IEB is to conduct investigations into alleged breaches of the Mining Act 1978, and other legislation administered by the department, including the preparation and progress of prosecutions in the Magistrates Court.

The branch also provides assistance to various environmental compliance areas of the department, where it is suspected that conditions on tenements issued by the department have been breached. This assistance ranges from providing guidance on the application of the legislation to the conduct of investigations into breaches of tenement conditions.

"The general nature of tenement condition breaches relates to excessive clearing of land and pollution issues," Mr Mancini said.

The Perth-based unit, originally created in 2004, spends a considerable amount of time in regional Western Australia, responding to complaints and conducting investigations across the state.

"IEB has excellent technical support including GPS technology that enables specific tenements and locations to be pinpointed with considerable accuracy when in the field," Mr Mancini said.

Besides APLA, the branch works with other key stakeholders, including the Pastoralists and Graziers Association, Regional Police and Local Government, DMP's regional Mining Registrars, and the WA Police Gold Stealing and Detection Unit.

The branch has also committed a significant amount of time in liaising with individual pastoralists who own and operate livestock 'stations' which can be in excess of one million acres.

"This relates to promoting and facilitating a harmonious relationship between the mining/prospecting industry and the pastoral industry," Mr Mancini said.

"While the vastness of Western Australia and remoteness of many of the locations provides significant investigative challenges, the work is unique and is both interesting and rewarding."

People are encouraged to report suspected illegal mining activity to the Investigation and Enforcement Branch. Reports can be emailed to ieb@dmp.wa.gov.au or telephone (08) 9222 3701.

Penalties for unauthorised mining include fines of up to A\$100,000 per offence, and if it continues A\$10,000 every day or part day. ■

How to report illegal mining

If you are looking to report suspected illegal mining activities, the following information will aid the department's investigations:

What

- Details of the suspected unlawful activity that you are reporting.
- Photographs of the activity (if you have any).

Where

- Precise location of the activity (e.g. GPS coordinates or a detailed description of the location).
- Specific tenement numbers if known.

When

- Time and date the activity occurred (or a time and date range during which the activity occurred).

Who

- Details of any persons sighted and their names and contact details if known.
- Details of any vehicles sighted including vehicle number plates.

You

- Your name and contact details (for investigative staff to contact you if necessary).

Reports can be emailed to: ieb@dmp.wa.gov.au or telephone the Department of Mines and Petroleum on (08) 9222 3701.



Kevin Mancini and Peter Roelofs from the DMP Investigations and Enforcement branch on location at Marble Bar.



Karratha roadshow participants generating ideas for the mental health workshop.

Mines safety roadshow puts mental health in focus

The issue of mental health in the mining industry was the focus of this year's Mines Safety Roadshow, hosted by the Department of Mines and Petroleum's Resources Safety Division.

Mines Safety Director Simon Ridge said that most resource companies have yet to confront the issue of mental health in any meaningful way.

"It is critical to safety and should be an essential component in companies' OHS policies and practices, including induction and training programs," Mr Ridge said.

The 2011 Roadshow featured a workshop by presenters from the Australasian Centre for Rural and Remote Mental Health.

The centre's Chief Executive Officer Dr Jennifer Bowers said understanding mental health and wellbeing in the industry was embryonic at best.

"It is vital that the importance of mental health is recognised, given the growth in the workforce and the economic importance of the mining and resources sector," Dr Bowers said.

She said it was important for companies to tackle mental health in a pro-active and preventative way.

"That way, the companies end up with an integrated mental health strategy that links to all of their existing policies and practices, including OHS, HR and induction," she said.

Figures provided by the centre show that there are potentially significant returns to be gained by companies who invest in preventative strategies.

"By raising awareness of mental health in a proactive way, not only should there be improved safety and health outcomes, but there will also be productivity benefits," Dr Bowers said.

"When mental health is integrated into OHS systems, risk factors are recognised and reduced, as is the stigma associated with mental health issues. Employees feel more valued, can work more effectively and, therefore, focus on doing the job safely.

"Not only will the company have a system in place to retain its skilled and experienced workforce but it would have started to change attitudes and organisational culture to improve safety."

The program also raised awareness of issues that affect workplace safety and health culture, and provided a forum to discuss how these might be addressed at the workplace and in the boardroom. ■



\$6 million in exploration grants awarded

Three prospectors are among 52 applicants awarded A\$6 million from The State Government's Co-funded Exploration Drilling Program.

Minister for Mines and Petroleum Norman Moore said the program provides incentives to drill in underexplored areas, which is the key to the continued economic prosperity for the State's resources industry.

"It is pleasing to see oil and gas projects among the successful applications," Minister Moore said.

"Gold was the commodity that featured predominantly, with 27 of the 52 projects listing gold as the main target, or as one of the commodities sought.

"Gold was followed by copper in 11 projects, nickel in six, uranium and petroleum in five projects each. Other commodities being explored include platinum group elements, zinc, lead, diamonds and manganese."

The Co-funded Drilling Program is the flagship program of the State Government's five-year \$80 million Exploration Incentive Scheme, funded by Royalties for Regions.

The program provides co-funding of up to 50 per cent of direct drilling costs, with caps of \$150,000 for a multi-hole project, \$200,000 for a single deep hole and \$30,000 for a prospector's project. Payment is made to successful applicants after the completion of their drilling program, with the program scrutinised by an independent probity audit.

The information adds to the geological knowledge of the State and reduces the risk for subsequent explorers.

Information acquired by the companies is published on the DMP website, after a short confidentiality period. ■

Six programs stimulate employment opportunities

The Western Australian Government announced the Co-funded Drilling Program in April 2009 to stimulate innovative exploration drilling in underexplored areas of the State. The program is administered by the Department of Mines and Petroleum (DMP).

The EIS is a State Government initiative that aims to encourage exploration in Western Australia for the long-term sustainability of the State's resources sector.

New mineral and energy discoveries in these areas will also significantly increase knowledge of the State's geology and resources, and help increase employment opportunities.

The DMP has worked alongside the Department of Local Government and Regional Development to develop and approve the initiative's six programs.

Program 1 (\$1.5 million) – Exploration and Environmental Coordination. Improving online mineral and petroleum tenement application processes.

Program 2 (\$26.9 million) – Innovative Drilling. Supporting innovative drilling in greenfield areas.

Program 3 (\$32.5 million) – Geophysical and Geochemical Surveys. Providing new data through airborne geophysics, seismic, gravity and geochemical surveys.

Program 4 (\$13.8 million) – 3D Geological Mapping.

Developing a system that allows all geoscience databases to be accessed seamlessly online.

Program 5 (\$2.3 million) – Promoting Strategic Research with Industry.

Supporting the rapid transfer of new geoscience concepts, skills and technologies into the minerals exploration industry.

Program 6 (\$3 million) – Sustainable Relations With Indigenous Communities.

Providing initiatives designed to assist indigenous and environmental approvals for exploration production.

EIS Co-funded Exploration Drilling Round 4, 2011

There are two funding rounds each year. The next round will be announced in February 2012, for drilling projects between July 2012 and June 2013.

	Applicants Name	Drilling Project Title	Target Commodities
1	Afmeco Mining And Exploration	Ord Basin Project	U
2	Antipa Minerals Ltd	Citadel Project- Magnum North Prospect	Au, Cu, Ag
3	Ashburton Minerals Ltd	Mt Webb Project	Cu, Au
4	Australia Minerals & Mining Group Ltd	Pingaring	Fe
5	Beadell Resources Ltd	Hercules Rc Drilling	Au
6	Buru Energy Limited	Hope-1 Exploration Well	Hydrocarbons (Oil/gas)
7	Buru Energy Limited	Woolnough-1 Exploration Well	Hydrocarbons (Oil/Gas)
8	Camel Lake Pty Ltd	Lake Balicup Drilling Project	Lignite, kaolinite, ceramic & structural clay
9	Chrysalis Resources Limited	West Angelas Cid	Fe (Channel Iron Deposit)
10	David Broomfield	Horseshoe Lights East	Cu, Au
11	David Reed	West Kalgoorlie Project	Au
12	Dolphin Resources Pty Ltd	Frederick Project	Ag, Au, Pb, Zn
13	Echo Resources Limited	Septimus Prospect	Au
14	Emu Nickel NL	Windy Knob	Au
15	Encounter Resources Ltd	Yeneena Project	Cu, Pb, Zn
16	Enterprise Metals Limited	Yalgoo Uranium Project	U
17	Enterprise Metals Limited	Wooleen Lake Project	U, Base metals, Au
18	Gold Road Resources Limited	Wild Night Hill	Au, Cu
19	Grosvenor Gold Pty Ltd	Cashmans Em Targets	Au, Cu
20	Grosvenor Gold Pty Ltd	Fortnum Gravity Target	Au
21	HD Mining & Investment Pty Ltd	Kununurra Uranium Project	U
22	J. and J. McIntyre	Webb Diamonds	Diamonds
23	La Mancha Resources Australia	Mary Fault	Au
24	Latin Gold Limited	Narracoota	Ni, Au
25	Macarthur Minerals Limited	Lake Giles - Dso "Magnetic"	DSO "Magnetite" - Fe
26	Magnetic Resources NL	Jubuk	Fe
27	Matsa Resources Limited	Big Red - Dunnsville Project (Brd)	Au
28	Meteoric Resources NL	Webb Diamonds	Diamonds
29	New Standard Onshore Pty Ltd	Teichert Well	Gas
33	New Standard Onshore Pty Ltd	Crostella #1 Well	Gas
31	Northern Star Resources Ltd	Mt Olympus	Cu, Au
32	Officer Petroleum Pty Ltd	Western Officer Basin	Conventional and unconventional oil and gas
33	Orrex Resources Limited	Golden Mile South "Deepes"	Au
34	Potash West NL	Dandaragan Trough Potash Project	Potash, phosphate
35	Quadrio Resources (Kingsgate Consolidated)	Calingiri- Dasher	Cu, Mo
36	Ramelius Resources Limited	Wattle Dam North	Au
37	Rarus Limited	Laverton Rare Earth Project	REE's
38	Richmond Mining Limited	Loongana	Ni, Au, Pt, Pd
39	Spitfire Resources	Wandanya/SWW	Mn
40	St Ives Gold Mining Company Pty Ltd	Did The Playa Shear Inhibit Or Facilitate Fluid Flow?	Au
41	Talga Gold Limited	Tambina	Au
42	Terrain Minerals Ltd	Aztec Dome	Ni
43	Traka Resources Limited	Jameson Tmr Project	Fe, V, Ti, Au, Pt, Pd
44	Traka Resources Limited	Caesar Hill	Ni, Cu
45	United Mining Resources Pty Ltd	Young River Project	U
46	Western Areas NL	Sandstone Straigraphic Drilling Program	Ni, Cu, PGE
47	White Cliff Nickel Ltd	Lake Percy	Ni
48	White Cliff Nickel Ltd	Jungle Pool Project	Cu, Pb, Zn, Ag
49	Wild Acre Metals Ltd	Quinns Mining Centre	Au
50	Stephen George Argus	Yamarna - Tobin Hill RC	Gold
51	Phillip Gerard Costello	Picnic Prospect RC Drilling	Au
52	David Woodwiss	Dunnsville	Au

AGRICULTURE

East Kimberley - Ord - Ord/East Kimberley Expansion Project

WA STATE GOVERNMENT

The State Government has committed \$220 million to increase the existing amount of irrigated land in the Kununurra region by adding 7,700 hectares at Weaber Plains. This funding will provide the construction of irrigation channels, roads and off-farm infrastructure to service the future needs of the region's growing population and sustain economic growth. The Commonwealth Government has committed \$195 million of funding for social and common use infrastructure in the East Kimberley region. Construction has commenced and the package will be fully implemented by June 2013.

Expenditure: \$415m.

Employment: Construction: 483

INFRASTRUCTURE

South West Region - 17 kilometres north east of Bunbury - Kemerton (HUILS - Heavy Use Industrial Land Strategy)

WA STATE GOVERNMENT

Kemerton Industrial Park, located 17km north of Bunbury, is the main strategic industrial area in the South West region and the nearest regional heavy industrial site to Perth. It is designed to supplement the Kwinana Industrial Area, only 90 minutes away by road. The estate comprises 7,543ha of land, including 2,019ha of industrial core, 293ha support industry area and 5,231ha buffer areas. It is accessible to the Port of Bunbury by road and planned rail link and is serviced by major road links to the metropolitan area. Under the Heavy Use Industrial Land Strategy, the Government is progressing Kemerton towards project ready status by undertaking environmental, heritage and planning approvals for the estate. Work towards progressing approvals commenced in 2009 and is anticipated to be completed in 2012/13, by which time the structure plan and zoning adjustments will also have been completed.

IRON ORE

Mid West Region - Extension Hill Hematite Mine MOUNT GIBSON IRON LIMITED

Mount Gibson Iron has developed a 3Mtpa hematite mining operation at Extension Hill, 260km south east of Geraldton. The ore is trucked to a rail head near Perenjori then railed to the port of Geraldton for export.

Expenditure: \$73m.

Employment: Construction: 150; Operation: 100

Pilbara - FMG Chichester - Iron Ore Mine, Rail and Port Development

FORTESCUE METALS GROUP LTD

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

Employment: Construction: 2500; Operation: 3200

LITHIUM

Great Southern Region - Mount Cattlin Lithium Project, Ravensthorpe

GALAXY RESOURCES LIMITED

Galaxy Resources Limited commenced commissioning of the Mt Cattlin lithium concentrate processing plant in September 2010. The mine and the mineral plant will produce app. 137,000tpa of spodumene concentrate on completion of the ramp up phase. Preparation of a mining proposal for the Stage 2 mining area including a community consultation programme has commenced and is anticipated to be complete by the end of the year. Galaxy commenced exporting its product to China in

the first quarter of 2011. In China, Galaxy will produce 17,000tpa of battery grade lithium carbonate. A large proportion of this will make its way into the growing markets of China and Japan.

Expenditure: \$75m.

Employment: Construction: 100; Operation: 75

BAUXITE

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

BHP BILLITON WORSLEY ALUMINA PTY LTD

BHP Billiton announced in May 2008 the go-ahead for the A\$2.5 billion Efficiency and Growth (E&G) expansion project at its Worsley alumina refinery. The expansion project will lift capacity of the refinery from 3.5Mtpa to 4.7Mtpa through expanded mining operations, additional refining capacity and upgraded port facilities. Construction is ongoing and first production is scheduled for Q1 2012.

Expenditure: \$3b.

Employment: Construction: 1500; Operation: 200

HEAVY MINERAL SANDS

Keysbrook - Heavy Mineral Sands Mine

MATILDA ZIRCON LIMITED

Matilda Zircon proposes to develop a mineral sands mine located near the township of Keysbrook, approximately 70km south of Perth. It has ore reserves of 41Mt, containing 1.2Mt of heavy mineral concentrate. The project is expected to produce 80,000tpa of leucosene products and 12,000tpa of zircon over its eight year mine life. In October 2009, the Keysbrook project received environmental approval from the Minister for Environment. In October 2011, Matilda Zircon announced that the Shires of Murray and Serpentine-Jarrahdale approved the project subject to conditions, most of which had already been mutually agreed with the company. The shire approvals now allow Matilda Zircon to complete detailed planning and engineering to enable construction to start in 2012, with first production planned for early 2013.

Expenditure: \$40m.

Employment: Construction: 35; Operation: 30

IRON ORE

Mid West Region - Karara Iron Ore

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

The Karara Iron Ore Project is Karara Mining's cornerstone production project in the Mid West region. Construction commenced in November 2009. Karara will deliver some 10Mtpa of iron products by Q2, 2012, comprising 8Mtpa of high grade magnetite concentrate and blast furnace quality pellets and 2Mtpa of Direct Shipping Ore hematite. The Project is underpinned by a world-class JORC-Code compliant resource base comprising a 977 million tonne magnetite reserve, a 2.518 billion tonne magnetite resource, a 10.9Mt hematite reserve and a 16.2Mt hematite resource.

Expenditure: \$1.975b.

Employment: Construction: 1500; Operation: 500

Pilbara - BHPB - Inner Harbour Expansion - Port Hedland

BHP BILLITON IRON ORE PTY LTD

In March 2011, BHP Billiton announced approval of \$7.4 billion (BHP Billiton's share \$6.6 billion) of capital investment to continue production growth in the company's Western Australian iron ore operations. It will deliver an integrated operation with capacity in excess of 220 million tonnes per annum. The investment includes \$1.9 billion (BHP Billiton's share) to increase total inner harbour installed capacity to 220Mtpa with debottlenecking opportunities to 240Mtpa. The project is currently on schedule (overall project is 35 per cent complete) and on budget.

Expenditure: \$1.9b.

Pilbara - BHPB - Port Blending and Rail Yard Facilities

BHP BILLITON IRON ORE PTY LTD

In March 2011, BHP Billiton announced approval of \$7.4 billion (BHP Billiton's share \$6.6 billion) of capital investment to continue production growth in the company's Western Australian iron ore operations. It will deliver an integrated operation with capacity in excess of 220Mtpa. The investment includes \$1.4 billion (BHP Billiton's share) to optimise resource and enhance efficiency across the BHP Billiton WA iron ore operation supply chain. The project is currently on schedule (overall project is 11 per cent complete) and on budget.

Expenditure: \$1.4b.

Pilbara - Jumblebar Iron Mine Expansion

BHP BILLITON IRON ORE PTY LTD

In March 2011, BHP Billiton announced approval of \$7.4 billion (BHP Billiton's share \$6.6 billion) of capital investment to continue production growth in the company's Western Australian iron ore operations. It will deliver an integrated operation with capacity in excess of 220 million tonnes per annum. The investment includes \$3.3 billion (BHP Billiton's share) to increase installed mining and processing capacity at Jumblebar mine to 35Mtpa with incremental debottlenecking opportunities to 55Mtpa. The project is currently on schedule (overall project is 15 per cent complete) and on budget.

Expenditure: \$3.3b.

Pilbara - Solomon - Pilbara - Solomon Hub Stage 1

FORTESCUE METALS GROUP LTD

Fortescue is progressing with approvals for its proposed 60Mtpa iron ore mine at Solomon and supporting infrastructure. The Solomon Hub is planned to initially involve at least two mining areas, two processing plants and a 130 kilometre rail link to Fortescue's existing Christmas Creek to Port Hedland rail line. The proposed mining areas and rail corridor for the Solomon Hub are within Unallocated Crown Land and active pastoral leases and approximately 70 kilometres north of Tom Price in the Hamersley Ranges. Subject to Government approvals and final sign off by the Fortescue Board, a two year construction period will begin in 2011 with first production planned for mid 2012.

Expenditure: \$4b.

Employment: Construction: 1000; Operation: 3000

Yilgarn - Koolyanobbing Iron Ore Upgrade

CLIFFS ASIA PACIFIC IRON ORE PTY LTD

In September 2010, Cliffs approved an upgrade of its Koolyanobbing iron ore operations from 8.5Mtpa to around 11Mtpa. Koolyanobbing is located 50km north east of Southern Cross and also includes the Mt Jackson and Windarling mines. The improvements consist of enhancements to the existing Kalgoorlie-Esperance rail infrastructure, an increase in rolling stock and upgrades to various other existing operational constraints. These improvements are well underway and are expected to be fully implemented in the second half of 2012. The development of the Mt Jackson J1 deposit, which contains 30Mt of iron ore reserves, is due to be completed by the end of 2011 and is expected to contribute to the increased production at Koolyanobbing.

Expenditure: \$320m.

IRON ORE PROCESSING

Pilbara - Cape Preston - Sino Iron

CITIC PACIFIC

CITIC Pacific Mining is constructing the Sino Iron project at Cape Preston, 100 kilometres south west of Karratha. The magnetite iron ore project will include a concentrator, 6Mtpa pellet plant, 25km slurry pipeline, combined cycle 450MW power station, new port and trans-shipment facilities, and a 51GL desalination plant. At full production up to 27.6 million tonnes of magnetite concentrate and

high grade pellets will be exported each year. First shipment of concentrate is expected in the first half of 2012.

Expenditure: \$5.2b.

Employment: Construction: 4000; Operation: 500

NICKEL

Ravensthorpe - Ravensthorpe Nickel Operation FIRST QUANTUM MINERALS AUSTRALIA NICKEL PTY LTD

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

Expenditure: \$190m.

Employment: Construction: 200; Operation: 500

OIL & GAS DEVELOPMENTS

Carnarvon Basin - Pluto LNG Project WOODSIDE ENERGY

Approved for development in July 2007, the project will process gas from the Pluto and Xena gas fields, located about 190km north-west of Karratha in Western Australia, into LNG and condensate. The Pluto and Xena gas fields are estimated to contain 4.8 trillion cubic feet (Tcf) of dry gas reserves and an additional 0.25Tcf of contingent resources. The initial phase of the Pluto LNG Project comprises five subsea wells on the Pluto gas field connected to an offshore processing platform in 85m of water. Gas will be piped about 180km to the onshore plant in a 36-inch pipeline. Onshore facilities at the Pluto LNG Park include a single LNG processing train with forecast production capacity of 4.3 million tonnes a year, in addition to storage facilities and an export jetty. First LNG cargo is estimated for March 2012.

Expenditure: \$14.9b.

Employment: Construction: 5000; Operation: 300

Carnarvon Offshore Basin - Barrow Island - Gorgon Project GORGON JOINT VENTURE

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

Expenditure: \$43b.

Employment: Construction: 5500; Operation: 300

Carnarvon Offshore Basin - Cossack/Wanaea - Cossack/Wanaea Redevelopment WOODSIDE ENERGY

In December 2008, the Cossack Wanaea Lambert and Hermes oil venture participants (CWLH joint venture) approved funding of the A\$1.8 billion CWLH Redevelopment Project to support ongoing safe and reliable production from the Cossack, Wanaea, Lambert and Hermes fields beyond 2020. The project scope of work includes the purchase and conversion of the Okha floating storage and offloading (FSO)

facility into an FPSO facility to replace the Cossack Pioneer FPSO in 2011, and the replacement of associated subsea infrastructure.

Expenditure: \$1.8b.

Carnarvon Offshore Basin - North Rankin - North Rankin Redevelopment WOODSIDE ENERGY

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

Expenditure: \$5b.

Pilbara - Devil Creek Development Project APACHE ENERGY LIMITED

The Apache Northwest and Santos Offshore Devil Creek Development Project is a green field gas project comprising: an unmanned offshore gas production platform over the Reindeer gas field 80km northwest of Dampier; offshore and onshore gas pipelines; an onshore gas processing plant and a sales gas export pipeline connected to the Dampier to Bunbury Natural Gas Pipeline (DBNGP). The onshore facility is near Devil Creek, 65km south west of Karratha. The project can provide up to 200 terajoules per day natural gas and 80kl to 160kl per day of gas condensate to the domestic market. Construction is substantially complete and commissioning activities are underway. First gas is due to be delivered to the State's domestic gas market in Q4 2011.

Expenditure: \$800m.

Employment: Construction: 200; Operation: 20

RARE EARTHS

Mt Weld - Rare Earths Mine LYNAS CORPORATION LTD

The Mt Weld deposit is located about 35km south of Laverton and contains an estimated resource of 17.4Mt at 8.1% grade for 1.41Mt rare earth oxides (REO). The development includes an open pit mine and a concentration plant, located 1.5km from the open pit mine. The first feed of ore into the 33,000tpa concentration plant occurred in May 2011 and the plant was officially opened in August 2011. The concentrate will be bagged and containerised on site, and trucked to the Port of Fremantle for export. It will be shipped to a \$300 million processing plant in Malaysia, which will have an initial production capacity of 11,000tpa REO scheduled to commence by the end of 2011 subject to Malaysian government approvals. Phase 2 will involve the expansion of the Mt Weld concentration plant to produce around 66,000tpa of concentrate, which will be required to meet the Malaysian processing plant's expanded production of 22,000tpa REO. Lynas expects all construction works associated with the planned phase 2 production expansion in both Western Australia and Malaysia to be largely completed in 2012 and production output to ramp up to the targeted 22,000tpa of REO in 2013.

Expenditure: \$135m.

Employment: Construction: 145; Operation: 90

SILICON METAL

Kemerton - Silicon Metal Plant Expansion SIMCOA OPERATIONS PTY LTD

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

Expenditure: \$100m.

Employment: Construction: 120; Operation: 40

VANADIUM

Windimurra - Windimurra Vanadium Project ATLANTIC LIMITED

The construction of Atlantic's Windimurra vanadium project is largely complete and process commissioning is well underway. Earlier in the year, Atlantic announced a 30% increase in the JORC-compliant Ore Reserve estimate for its Windimurra vanadium project to 128 million tonnes. This prompted an upward revision to the potential mine life of Windimurra to 28 years. Windimurra's vanadium output forecast was also lifted by 11% to 6,300 tonnes of contained vanadium per annum.

Expenditure: \$500m.

Employment: Construction: 350; Operation: 120

Projects Under Consideration

AMMONIA/UREA

Shotts Industrial Park - Collie Coal to Urea PERDAMAN CHEMICALS AND FERTILISERS PTY LTD

Perdaman Chemical and Fertilisers Pty Ltd is developing a \$3.5 billion coal to urea plant at the new (to be developed) Shotts Industrial Park, near Collie. The plant will use proven coal gasification and fertiliser production technologies. Around 2.7Mtpa of coal will be used to produce approximately 2Mtpa of urea, primarily for export. The urea will be transported to Bunbury Port by rail. The company has recently received environmental approval from the WA Minister for Environment in accordance with the Environmental Protection Act. A 20-year off take agreement has been signed with Incitec Pivot. Construction is expected to commence in 2011 with the first shipment of urea planned for 2014.

Expenditure: \$3.5b.

Employment: Construction: 1500; Operation: 200

AMMONIUM NITRATE

Kwinana - Ammonium Nitrate Facility Expansion CSBP LIMITED

CSBP is proposing to expand its Kwinana ammonium nitrate production facility from its current capacity of 520,000tpa to 780,000tpa. The proposed expansion will involve the construction of a new nitric acid plant and ammonium nitrate plant, and an upgrade of the existing prill plant. In June 2011, CSBP announced that it had received Wesfarmers Board approval for \$45 million to fund long-lead equipment orders and continued detailed engineering work. This follows the completion of a \$15 million Front End Engineering and Design study. Final Wesfarmers Board approval for the project is expected to be sought later in 2011 and will be subject to regulatory approvals. Current project timelines indicate the expansion could be completed in the first half of 2014.

Expenditure: \$550m.

Employment: Construction: 300; Operation: 10

Pilbara - Burrup Industrial Estate Site D - Burrup Nitrates

BURRUP NITRATES PTY LTD

Burrup Nitrates Pty Ltd (BNPL), a joint venture between Burrup Holdings Ltd (BHL) of Australia and Yara International ASA of Norway, has conducted a feasibility study into the construction of a 350,000tpa Technical Ammonium Nitrate (TAN) plant to be located on the Burrup Peninsula. Ammonia feedstock will be supplied from BHL's subsidiary company Burrup Fertilisers Pty Ltd, which operates its facility directly adjacent to the proposed location for the new TAN plant. It is expected that all manufactured product will be sold into the Pilbara region. Regulatory approvals have been finalised and the company is aiming for operations to commence by Q4 2014.

Expenditure: \$600m.

Employment: Construction: 600; Operation: 65

GOLD

Kalgoorlie (330kms North East) - Tropicana Gold **ANGLOGOLD ASHANTI/INDEPENDENCE GROUP** **JOINT VENTURE**

AngloGold Ashanti, as Joint Venture Manager, has undertaken an intensive exploration and resource development program approximately 330kms north east of Kalgoorlie. Plans for the project are to develop an open-cut gold mine and nearby processing plant. So far, a resource estimate of 5million oz of gold has been identified with a mine life of at least 10 years. The feasibility study commenced in July 2009 and is ongoing. Environmental approvals were finalised in September 2010. Commonwealth environmental approval was received on 13 December 2010. The first phase of construction, 220km of road, an all weather airstrip and the accommodation village is now complete. The second phase involving plant construction will begin in early 2012. Gold production is planned for 2013.

Expenditure: \$700m.

Employment: Construction: 700; Operation: 400

HEAVY MINERAL SANDS

Happy Valley - Heavy Mineral Sands Mine **BEMAX RESOURCES LTD**

Located adjacent to the Bemax Gwindinup deposits south of Bunbury, the project will involve the mining of the Happy Valley North and South mineral sands deposits situated on private land and in State Forest. The two deposits contain over 750,000 tonnes of recoverable heavy mineral concentrate, with average production expected to be around 150,000tpa over a combined mine life of eight years. The concentrate will be trucked to Bemax's Bunbury Mineral Separation Plant for final processing. In February 2011, the EPA recommended that the Minister for Environment not approve the company's proposal to develop the Happy Valley mine. Bemax has lodged an appeal against the EPA's decision and the matter is currently with the Appeals Convenor.

Expenditure: \$35m.

Employment: Construction: 100; Operation: 30

Shark Bay - Coburn Zircon Project **GUNSON RESOURCES LIMITED**

Gunson proposes to develop the Coburn zircon project, located south of Shark Bay and approximately 250km north of Geraldton. It contains total ore reserves of 308Mt at an average grade of 1.2% heavy minerals, all of which lie within the portion of the project area that has received government environmental approvals for mining. The project is expected to produce 40,000tpa of zircon, 90,000tpa of ilmenite, 9,000tpa of rutile and 7,000tpa of leucocoxene. At the proposed mining rate of 17.5Mtpa, the Coburn mine life is estimated to be 17.5 years which could be extended by six years if the northern area receives government approvals for mining. The Project Definitive Feasibility Study and Definitive Design Study have been completed. Gunson is continuing to

advance discussions with potential strategic funding and offtake partners.

Expenditure: \$179m.

Employment: Construction: 170; Operation: 110

INFRASTRUCTURE

Dampier Peninsula - Browse LNG Precinct **WA STATE GOVERNMENT**

The State Government is developing the Browse Liquefied Natural Gas (LNG) Precinct approximately 60km north of Broome, on the West Kimberley coast of Western Australia. By focussing development at a suitable location, the Precinct will minimise the environmental footprint of gas processing and any social impacts in the region while maximising opportunities for the local community to benefit from the development of the Browse Basin gas fields. On 30 June 2011, agreements were reached with the Goolarabooloo Jabirr Jabirr native title claimant group to secure land for the Precinct. These agreements, valued at more than \$1.5 billion over 30 years, contribute a range of benefits for Indigenous communities throughout the Kimberley region, while providing a strong governance role for the Traditional Owners of the land upon which the Precinct will be established. These benefits will be further expanded when additional LNG proponents commit to development in the Precinct. The Precinct will have the capacity to accommodate at least two LNG processing operations, with a combined capacity of up to 50Mtpa. Woodside Energy Limited, as a participant of the Browse Joint Venture, has committed to the Precinct as a potential foundation proponent. Browse Joint Venture participants are expected to make a final investment decision in mid-2012. On this basis it is anticipated LNG processing would commence in 2016-17.

Expenditure: \$30b.

Employment: Construction: 6000; Operation: 400

Oakajee - Oakajee Midwest Development **WA STATE GOVERNMENT**

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

Expenditure: \$4b.

Employment: Construction: 2000; Operation: 300

Pilbara - Ashburton North Strategic Industrial Area **WA STATE GOVERNMENT**

The State Government is developing the Ashburton North Strategic Industrial Area (ANSIA) as a hydrocarbon precinct in the Shire of Ashburton, 12km south west Onslow, to enable the development of natural gas projects and associated industries to exploit the gas reserves in the Carnarvon Basin and Exmouth Gulf. In addition to the industrial area with proponent sites and general areas, the ANSIA includes a port with common user facilities, and common user infrastructure corridors. The ANSIA estate is intended to cater for the development of hydrocarbon processing, storage and exportation, with the overall vision of creating an industrial estate that successfully and safely manages the varied land uses in the area. Three foundation proponents,

BHP Billiton, Chevron, and ExxonMobil have been allocated land within the ANSIA. Chevron made a final investment decision in September of 2011 and construction has commenced. Gas to market is scheduled for 2016. In Q3 2011, BHP Billiton commenced construction for the Macedon project, with gas production to commence in early 2013.

Pilbara - Anketell - Anketell Port and SIA **(Strategic Industrial Area)** **WA STATE GOVERNMENT**

The Anketell project includes establishment of a multi-user, multi-commodity deepwater port and associated strategic industrial area (SIA) at Anketell, located 30km east of Karratha. The port and corridor development will be a proponent-funded State owned Port managed by the Dampier Port Authority. The industrial land will fall under the jurisdiction of the Western Australian Land Authority. Three companies have expressed interest in developing facilities at Anketell: API Management Pty Ltd for its 30-40Mtpa West Pilbara Iron project, MCC Australia Sanjin Mining Pty Ltd for its 15Mtpa Cape Lambert Iron Ore project, and Fortescue Metals Group (FMG) for its 100Mtpa Central Pilbara project. Numerous other companies have expressed an interest in using the port facilities for bulk export.

IRON ORE

Great Southern Region - Southdown Magnetite Mine **GRANGE RESOURCES LTD**

The Southdown Magnetite deposit is situated 90km north east of Albany near Wellstead. The Southdown Project is a joint venture between Grange Resources Ltd (70%) and Sojitz Resources & Technology Pty Ltd (30%), SDJV. A Feasibility Study is being completed as part of the last tollgate prior to Project Approval by the Owners. On the 30 June 2011 the Minister approved the permit to increase mine production from 6.8 to 10Mtpa. Grange continues to work and collaborate with relevant government agencies to refine its mine, port and associated infrastructure approvals to coincide with the outcomes of its Definitive Feasibility Study due in the first quarter of 2012.

Expenditure: \$2.57b.

Employment: Construction: 2000; Operation: 600

Mid West Region - Extension Hill Magnetite Mine **ASIA IRON**

Asia Iron has primary environmental approval to produce up to 10Mtpa of magnetite concentrate, which will be transported by slurry pipeline to the port of Geraldton for export. The company is currently seeking secondary approvals. Asia iron is also undertaking an implementation study for the project and has appointed a project management contractor for project delivery.

Expenditure: \$2b.

Employment: Construction: 1000; Operation: 350

Mid West Region - Jack Hills Expansion **CROSSLANDS RESOURCES**

Crosslands commenced trucking 1.5Mtpa haematite from its Jack Hills operations to the port of Geraldton in December 2006. Jack Hills Stage 2 will involve an increase to 25Mtpa of haematite and beneficiation feed ore. The ore will be transported by a new railway to a new deepwater port at Oakajee. A bankable feasibility study for the project was finalised in June 2011.

Expenditure: \$2b.

Employment: Construction: 450; Operation: 350

Pilbara - Cape Lambert Iron Ore Project MCC AUSTRALIA SANJIN MINING PTY LTD

MCC Australia Sanjin Mining Pty Ltd is developing a 15Mtpa magnetite iron ore mine in the Pilbara and aims to ship its first ore in 2015 via the proposed multi-user 350Mtpa port at Anketell. The Project comprises a proven JORC compliant 1.9bt iron ore resource. The Project will consist of a beneficiation plant, power plant, desalination plant, port facilities for exporting concentrate and other related infrastructure. MCC has completed feasibility studies for the port, power supply, water supply, accommodation and general site infrastructure. The mine and processing studies are progressing. The company commenced native title negotiations with the Ngarluma Aboriginal Corporation in March 2010 and a preliminary native title agreement was signed on 17 May 2011. An environmental scoping document was approved by the EPA in August 2011.

Expenditure: \$3.7b.

Employment: Construction: 3000; Operation: 1000

Pilbara - FMG Central Pilbara Project (Solomon Stage 2 and Western Hub) FORTESCUE METALS GROUP LTD

FMG's Central Pilbara project is located in the Solomon Stage 2 area (about 70km north of Tom Price) and the Western Hub (west of Solomon) in the Pilbara. FMG reported that to date, Solomon Stage 2 has identified resources of 1.1 billion tonnes, with a target of 2 billion tonnes, comprising channel iron, bedded Brockman and detritals iron deposits. Start-up production from Solomon Stage 2 of 20Mtpa is scheduled for late 2014/early 2015, with aspirations to expand to around 200Mtpa by 2017 (100Mtpa from Solomon Stage 2 and 100Mtpa from Western Hub). The project comprises mines, a new 250km railway linking Solomon Stage 2 mines to berths and ship loading facilities in the proposed 350Mtpa multi-user port at Anketell.

Expenditure: \$7b.

Employment: Construction: 4800; Operation: 2650

Pilbara - Outer Harbour Development, Port Hedland BHP BILLITON IRON ORE PTY LTD

BHP Billiton Iron Ore (BHPBIO) has received comments from both public and regulatory agencies on its Public Environmental Review/Draft Environmental Impact Statement for the Proposed Outer Harbour Development. BHPBIO's investment in the proposed Outer Harbour Development remains subject to market conditions, the receipt of all required government approvals and BHP Billiton Board approval.

Pilbara - Roy Hill Iron Ore Mine & Infrastructure HANCOCK PROSPECTING PTY LTD

Hancock Prospecting is developing the Roy Hill iron ore project located 105km north east of Newman. This project is expected to come into production in 2014 and will produce iron ore for over 20 years after ramp-up at 55Mtpa. The project includes the development of the mine, and new railway and port facilities at Port Hedland. Environmental approval for Roy Hill mine Stage 1 was received in December 2009 and environmental approval for Stage 2 was received in March 2010. The Railway (Roy Hill Infrastructure Pty Ltd) Agreement Bill 2010 was passed by both houses of Parliament in October 2010. On 5 July 2011, pursuant to the Railway (Roy Hill Infrastructure Pty Ltd) Agreement Act 2010, Roy Hill Infrastructure Pty Ltd was granted with a Special Railway Licence to commence construction of its railway.

Expenditure: \$7b.

Employment: Construction: 1500; Operation: 750

Pilbara - West Pilbara Iron Ore Project API MANAGEMENT PTY LTD

The Australian Premium Iron Joint Venture is proposing to develop the West Pilbara Iron Ore Project. Stage 1 of the project is based on the production of 30Mtpa of direct shipping iron ore from its Red Hill and Mt Stuart mine sites located 35-80km south west of Pannawonica. The ore will be transported by a new heavy haul railway for export via the proposed multi-user 350Mtpa port at Anketell. Subject to the successful completion of feasibility and environmental studies, and receipt of government regulatory approvals, the company anticipates that the first shipment of ore will occur in late 2014/early 2015. The EPA provided its report and recommendations for the mine and rail proposal to the Minister in August 2011.

Expenditure: \$4b.

Employment: Construction: 2000; Operation: 700

OIL & GAS DEVELOPMENTS

Carnarvon Basin - Pluto Project Expansion WOODSIDE ENERGY

The Pluto LNG Park provides the opportunity to consider both equity gas development and third party gas supply at the site. The foundation project investment in support infrastructure enables a significantly lower cost and de-risked expansion opportunity. As a brownfield development Pluto expansion will require a much smaller construction workforce compared to a greenfield development. Woodside has completed front-end engineering and design (FEED) for the next two onshore trains. Discussions continue with third parties regarding the potential to process Carnarvon Basin gas through additional trains at Pluto.

Carnarvon Offshore Basin - Macedon Domestic Gas Project BHP BILLITON PETROLEUM (AUSTRALIA) PTY LIMITED

The Macedon gas field, about 90km west of Onslow, was discovered in 1992 during drilling of the West Muiron-3 well and is estimated to contain a gas resource of up to 600bcf. BHP Billiton Petroleum (Australia) Pty Ltd and Apache Energy Limited are currently progressing the necessary approvals for a domestic gas project for Western Australia. The development will involve a number of sub-sea gas wells connected to the gas field, offshore and onshore wet gas pipelines, an onshore gas processing plant 15km southwest of Onslow, and a sales gas pipeline connected to the Dampier-to-Bunbury Natural Gas Pipeline. Daily production is expected to be in the order of 200TJ. Construction has started in Q3 2011, with gas production to commence in early 2013.

Expenditure: \$1b.

Employment: Construction: 300

Pilbara - Wheatstone LNG Development CHEVRON AUSTRALIA PTY LTD

Chevron is investigating the feasibility of an LNG project based on its Wheatstone and Iago gas fields, to be located at Ashburton North, near Onslow. The project will also process gas from sub-economic third party fields in the Carnarvon Basin. Chevron entered FEED (Front End Engineering Design) in July 2009 with a Final Investment Decision expected in the second half of 2011. Gas to market is scheduled for 2016. The project will initially have two LNG trains with an 8.9Mtpa capacity, expandable to five, and a 250 million cubic feet per day domestic gas plant.

Expenditure: \$23b.

Employment: Construction: 5000; Operation: 400

TIMBER

Mirambeena Timber Processing Precinct - Engineered Strand Lumber LIGNOR LTD

Lignor proposes to develop an Engineered Strand Lumber ESMA's Engineered Strand Board ESB's plant located at Mirambeena, about 15km north west of Albany. The Commercial Plant will be preceded by the construction of a Demonstration Plant/Global R&D Centre. This Plant will produce a range of products for certification to the Australian Building Code and overseas equivalents. The Plants will source most of the timber from the extensive eucalypt plantations in the Albany region. Lignor is finalising its design of the Demonstration Plant and anticipates construction to commence by Q2 2012, with product coming into the market by Q3 2013. Following successful results from the Demonstration Plant, construction of the Commercial Plant is expected to commence by mid 2016.

Expenditure: \$273m.

Employment: Construction: 380; Operation: 125

URANIUM

Northern Goldfields - Yeelirrie - Yeelirrie Uranium

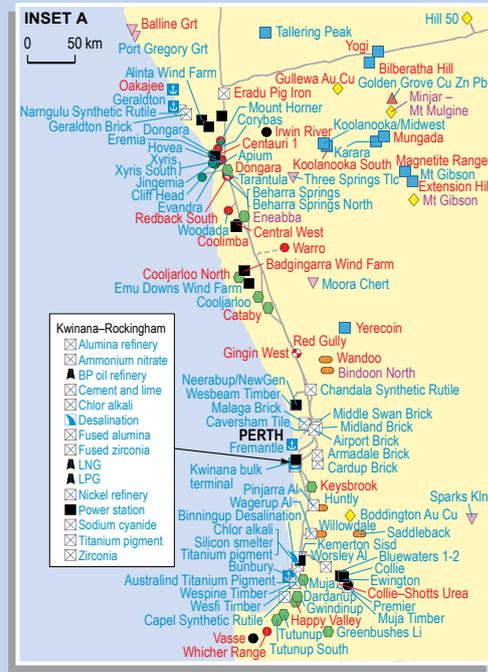
BHP BILLITON YEELIRRIE DEVELOPMENT COMPANY PTY LTD

BHP Billiton proposes to develop the Yeelirrie Uranium Project in the North-eastern Goldfields, near Wiluna. The proposal entails open cut mining of shallow deposits of uranium ore, treatment in a plant to be established at the site, and development of associated infrastructure. The project would produce up to 3,500tpa uranium oxide concentrate over about 30 years. The uranium oxide will be transported to South Australia by road for export to overseas markets. The formal environmental impact assessment process was initiated in 2009 and the project Environmental Scoping Document was approved in June 2010. The Company is reviewing the project and has deferred submission of its ERMP at this time.

Employment: Construction: 700; Operation: 300

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Major Resource Projects — December 2011



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PROJECTS OPERATING OR CURRENTLY UNDER DEVELOPMENT WITH AN ACTUAL OR ANTICIPATED VALUE OF PRODUCTION GREATER THAN \$A10 MILLION ARE SHOWN IN BLUE

PROPOSED OR POTENTIAL PROJECTS WITH A CAPITAL EXPENDITURE GREATER THAN \$A20 MILLION ARE SHOWN IN RED

PROJECTS UNDER CARE AND MAINTENANCE ARE SHOWN IN PURPLE

