



MINERAL RESOURCES TASMANIA

DEPARTMENT *of* INFRASTRUCTURE, ENERGY *and* RESOURCES

***A Division of the Department of
Infrastructure, Energy and Resources***

Annual Review 2005/2006

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Mineral Resources Tasmania

Mineral Resources Tasmania (MRT) is a Division of the Department of Infrastructure, Energy and Resources. The primary role of MRT is to ensure that Tasmania's mineral resources and infrastructure development are fostered and managed in a sustainable way now, and for future generations, in accordance with current government policy, partnership agreements, and the goals of Tasmania *Together*.

This role includes ensuring that there is a fair and sustainable return to the community when mineral or petroleum resources are developed, and includes the provision of information to local government and land management groups for geohazards and construction materials.

— Mission —

- To contribute to the economic development of Tasmania by providing the necessary information and services to foster responsible land management, and mineral resource and infrastructure development, for the benefit of the Tasmanian community.

— Objectives —

- Benefit the Tasmanian community by an effective and co-ordinated government approach to mineral resources, infrastructure development and land management.
- Maximise the opportunities for community growth by providing timely and relevant information integrated with other government systems.
- Optimise the operational performance of MRT by developing the organisational structure to support the whole-of-government business processes.

— Activities —

Activities within the Division include:

- Collection, integration, interpretation, publication and presentation of geoscientific information.
- Collection, integration, interpretation, publication and presentation of information promoting Tasmania's mineral resource potential and land stability issues.
- Issue of legal titles to mining tenements, collation and recording of statistics relating to mining production, collection of fees and rentals, management of royalty regimes, and recording of mining tenements.
- Regulation of mineral and petroleum exploration in Tasmania, including offshore waters administered by the State, and the promotion of vacant areas available for onshore and offshore exploration.
- Environmental appraisal, monitoring and management of mining heritage and land access issues.
- Setting and monitoring of standards for both the performance of exploration activities and the technical reporting of exploration records and case histories.

— Major issues and initiatives for 2006/2007 —

- Continue updating data for the Tasmanian Information on Geoscience and Exploration Resources (TIGER) system.
- Undertake strategic new data acquisition projects and revise the 3D geoscientific model so as to continue to attract mineral exploration.
- Undertake a series of promotional activities to encourage mineral exploration in Tasmania, including the promotion of the 3-D model of geological structure and major mineralising pathways of Tasmania.
- Produce landslip hazard assessment maps using modern post-Thredbo methodology for land use planning.
- Continue rehabilitation of abandoned mining sites in Tasmania.

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Mineral Resources Tasmania

— Divisional overview, 2005/2006

World demand for minerals and metals and the continued strong prices being received have allowed the mining and exploration industry in Tasmania to benefit and continue to grow during 2005/2006. The outlook for 2006/2007 is also positive, with the expectation that recent commodity price increases will remain, at least in the medium term.

According to Australian Bureau of Statistics (ABS) data, expenditure on mineral exploration for the 2005/2006 year was \$22.6 million, up 172% from the previous year. Tasmania's share of Australian exploration expenditure increased from 0.81% to 1.82% over the same period.

The increase in expenditure is related to a number of factors, including the acceptance by the mineral exploration community of the attractiveness of Tasmania as an investment destination and the stimulus provided by the three-dimensional geological model of Tasmania, including the integrated exploration database and associated prospectivity analysis (the 3-D Model).

The strength of recovery of the sector is demonstrated by the fact that current expenditure levels have exceeded the 20-year, non-indexed, average of \$11.35 million for the first time since 1988/1989.

Growth in mineral exploration activity is essential for the future development of the mineral sector and the economic well-being of Tasmania. The mineral extraction and processing sector is Tasmania's largest single export industry, accounting for around 36 per cent of total exports.

Mineral Resources Tasmania, by providing information on areas of high mineral resource potential in Tasmania, encourages private sector exploration which will lead to new operations coming on stream as the economic life of existing operations declines. By ensuring an adequate return from our mineral resources, all Tasmanians can share the benefits of our mineral wealth.

This increase in activity has increased the work load for MRT staff, who, as always, have accepted the challenge and responded to stakeholder requests and requirements with high-quality, professional advice and services.

As in previous years I extend my sincere thanks to all MRT staff for their efforts and outputs during the past year which resulted in MRT achieving all of its required outcomes. Without their dedication and team work, servicing of one of the three main economic supports of the Tasmanian economy could not occur.

In an annual review such as this I believe that it is important to remind ourselves of what MRT is and its current role. MRT is a Division of the Department of Infrastructure, Energy and Resources (DIER). It is the State's 'corporate entity' for geoscientific data, information and knowledge, and consists of a multi-tasking group of people with a wide range of specialist experience.

The current role of MRT is to ensure that Tasmania's mineral resources and infrastructure development are managed in a sustainable way now, and for future

generations, in accordance with current government policy, Partnership Agreements and the goals of Tasmania *Together*.

The main challenges facing MRT over the next three to five years are the changing world attitude to the minerals industry and changing environmental and infrastructure development requirements, and the need to change our work focus to meet them.

In a global sense, part of MRT is Tasmania's 'Geological Survey Organisation' (GSO). The role of a GSO is to provide knowledge as a basis for national development, not only for mining and land use decision making but also for the health and well-being of the community. GSOs need to interpret their geoscientific data to derive information and knowledge that is able to be understood and used by society in general.

Geology underpins our total life cycle. Soil (agriculture, forestry) is derived from rocks. Rocks contain ore bodies, store water (groundwater) and move due to earth processes (land and mud slides, earthquakes, tsunamis, volcanic activity). Geoscientific data and research is the basis of understanding these processes. MRT must convert such data into a knowledge base for use by a very wide range of end-users.

GSOs are seen as the 'purveyors of knowledge', not only for the minerals industry but also for 'urban (social) geology', that is, the provision of geoscientific information needed to bridge the gap between government, industry, other stakeholders and the community. GSOs are also seen to be providers of relevant information and monitoring in all the stages of the mine life cycle, from exploration through operations to closure and rehabilitation.

MRT's future is to build on its past achievements so as to allow continuing growth of the financial and physical development within Tasmania while acquiring, maintaining, interpreting, and distributing data, information and knowledge to allow new challenges to be addressed.

MRT therefore contributes to the net wealth of all Tasmanians by:

- ❑ Providing appropriate geoscientific input to land use planning and management to maintain the quality of life of all Tasmanians.
- ❑ Opening avenues to encourage investors to consider Tasmania as an investment target.
- ❑ Ensuring that the existing geoscientific information necessary to plan and assess infrastructure projects and investment is readily accessible.
- ❑ Ensuring a fair return to Tasmanians for the use of the State's mineral resources.

It does this through:

- ❑ Interpreting geoscientific data to produce information and knowledge which will allow all end-users to

understand and fully appreciate the need for such data, information and knowledge.

- ❑ Maintaining a data management system (TIGER) for MRT staff to maintain and upgrade geoscientific and tenement related datasets.
- ❑ Integrating the datasets held by MRT with other whole-of-government datasets and making them accessible through MRT and other government departments.
- ❑ Ensuring that users can easily determine the existence of the datasets.
- ❑ Making the integrated datasets rapidly accessible in the formats required by users at the user's preferred location.
- ❑ Keeping the MRT component of the integrated datasets current.
- ❑ Ensuring a client focus by providing contact details for further information.

Due to the constantly changing issues and challenges, governments require a critical mass of earth scientists and support staff so as address changing conditions. This is the contribution that MRT makes to the community in Tasmania.

The year in review

Allegiance Mining NL has announced that it plans to mine the Avebury deposit at a rate of 900 000 tonnes per annum, starting in 2007. The company has completed an agreement with Jinchuan Nickel Group, China's largest and the world's fourth largest nickel producer, for the sale of approximately 70 000 tonnes of nickel in concentrate, currently worth over \$A1.8 billion. Allegiance has announced an increase in resources to 12.81 million tonnes of 1.0% nickel at a cut-off grade of 0.4% and reserves of 4.4 million tonnes of 1.16% nickel at a cut-off grade of 0.85%.

Australian Bulk Minerals is continuing a feasibility study into extending the life of the Savage River mine by extending the North Pit.

There is potential for resumption of mining at two sites on King Island. King Island Scheelite Limited expected to complete a full feasibility study into resuming scheelite mining at Grassy by the end of June 2006. Tasmanian Titanium Pty Ltd plans to resume heavy mineral sand mining at Naracoopa.

Bluestone Tin Limited closed the Renison mine on 3 October 2005 but has announced that it is now proceeding with an assessment study into re-opening the mine in conjunction with commencing mining of the Mount Bischoff deposit at Waratah. The company is also advancing a study into recovering the substantial tin resource in the Renison Bell tailings dam through a tin fuming plant.

Bass Metals Limited has identified resources of zinc, copper, lead, silver and gold at the Que River mine and intends to commence open-cut mining there by the end of calendar year 2006.

Zinifex Limited has announced that it will spend an additional \$19 million in a three-year exploration and

development project to extend the life of the Rosebery mine beyond 2021 following recent success in locating extensions to the ore body. There are also active exploration programs underway at the Mount Lyell and Henty mines.

The Beaconsfield mine closed following a rock collapse on 25 April 2006, but the Administrator of Allstate Explorations NL has announced that Workplace Standards Tasmania has issued a revised Section 39 notice that will allow the mine to be divided into sections for progressive examination to determine if they are safe to re-open, with a possibility that mining could resume in late 2006.

Van Dieman Mines plc plans to commence alluvial tin and sapphire mining at the Endurance and Scotia deposits in northeast Tasmania by the end of 2006.

Maydena Sands Pty Ltd has been actively seeking markets for the production of high quality silica flours from Pine Hill, to the west of Maydena. Plans are well advanced for a quarrying operation with a dedicated treatment plant on the proposed mining lease.

The Thylacine gas discovery and the Yolla gasfield, both in Tasmanian administered waters, are nearing production phase. The gas from both these fields will be piped to Victoria. Installation of the Thylacine platform, and development drilling including a deviated exploration well, began in late 2005. Four marine seismic surveys were undertaken in offshore Tasmanian waters in 2005/2006.

MRT initiatives

The major initiatives and issues affecting MRT in 2005/2006 included:

- ❑ Enhancing the provision of geoscientific data through the Tasmanian Information on Geoscience and Exploration Resources (TIGER) system.
- ❑ Undertaking a series of promotional activities to encourage mineral exploration in Tasmania, which was at a low level at the beginning of the year.
- ❑ Undertaking a gap analysis of the three-dimensional geoscientific model of Tasmania and developing new data-gathering initiatives which have been accepted by government.
- ❑ Completion of the extension to the Mornington core library.
- ❑ Provision of an appropriate level of resources for environmental monitoring of exploration and mining tenements, and for inspection of mines and quarries.

The major issues and initiatives for 2006/2007 are to:

- ❑ Commence work on the northeast/northwest Tasmania geoscientific data initiative through collection of airborne geophysical data over northeast Tasmania and upgrading of the geology of central northern Tasmania. This will enhance the information available in the three-dimensional model over areas in northeast and northwest Tasmania.
- ❑ Continue updating data for the Tasmanian Information on Geoscience and Exploration Resources (TIGER) system.

- ❑ Undertake a series of promotional activities to encourage mineral exploration in Tasmania, including the promotion of the three-dimensional model of geological structure and major mineralising pathways of Tasmania.
- ❑ Undertake promotional activities to encourage the growth in offshore petroleum exploration, including an aeromagnetic survey in the Otway Basin and other initiatives.
- ❑ Produce land stability maps of urban areas in Tasmania, in line with the guidelines developed following the Thredbo disaster.
- ❑ Continue rehabilitation of abandoned mining sites in Tasmania.

Promotion of mineral and petroleum potential

The Tasmanian Government provided \$85,000 in 2005/2006 to actively market mineral exploration opportunities in Tasmania. Activities undertaken included the holding of a display at the world's leading exploration forum, the Annual Meeting of the Prospectors and Developers Association of Canada (PDAC) and visiting leading international mining companies in Toronto and Vancouver, both as part of an Australian team and as a separate Tasmanian group. The latter also visited companies in London. A presentation was made to the Mining Journal 20:20 Investor Series Australia forum in March.

Information was provided on digital data available on the MRT web site to a senior executive of major Canadian mining company Falconbridge. This was used to highlight Tasmania as setting the standard for web delivery of information at a well attended lunchtime address at the World Mines Ministries Forum held before the PDAC meeting in Toronto.

Several meetings were also held with companies on a one-on-one basis with DIER personnel. Displays were presented at the PDAC meeting, at the Mining 2005 meeting in Brisbane and at the international NewGen Gold Conference in Perth, both in November 2005. Presentations were made at the *Mining 2005* meeting and the Fifth Annual AJM Minerals Exploration and Investment Conference in Hobart in November.

Promotional missions and functions were conducted in Perth, Sydney, Brisbane, Melbourne and Adelaide by officials from DIER. During these visits, new information resulting from the 3-D model, the Western Tasmanian Regional Minerals Program (WTRMP), the Geoscience Australia–MRT granites and mineralisation project, and the improved client access to MRT information using the TIGER system, were all well received. In particular, there was continued strong support for the 3-D model as a world-first detailed analysis of an entire jurisdiction.

In the oil and gas sector seven exploration permits were granted covering most of the eight offshore petroleum areas released for bidding in 2004/2005. These areas, in the Sorell and Otway basins off the west coast and in the Bass Basin to the north of Tasmania, were actively promoted at the Australian Petroleum Production and Exploration

Association conference held in Perth in April 2005. This brings the number of current exploration permits in Tasmanian waters to a record fourteen.

The boom in petroleum exploration and development offshore is a welcome adjunct to the growth in mineral exploration and investment onshore. A further five offshore petroleum areas were released for bidding in 2006/2007 and promoted at the Australian Petroleum Production and Exploration Association conference in May 2006. The areas were all nominated by industry and a further five exploration permits are likely to be issued. Production licences were issued over the Yolla gas field in Bass Strait and the Thylacine gas field in the Otway Basin west of King Island, and both developments are nearing production.

Collection, integration, interpretation, publication and presentation of data

Verification, upgrading and loading of information into the TIGER system continued. The TIGER system has a single geoscience data model with user interfaces for geohazards, geophysics, drilling, mineral deposits, samples and geochemistry. Once loaded the information is made available to clients using the MRT web site. Other information available includes mineral tenements and documents held by MRT, and groundwater and general information for MRT and DIER clients.

Downloads from the MRT web site continued at a high level, with a total of 5620 gigabytes downloaded during the year with a peak of 2047 gigabytes downloaded in April 2006. In addition to data being accessed from the MRT web site, 207 data packages were distributed on CD to clients.

The collection and presentation of information on Tasmania's mineral wealth and geoscientific nature continues. Twelve 1:25 000 scale map tiles (Stanhope, Roys, St Pauls Dome, Robbins, Pokana, Wings, Solitary, Strathgordon, McPartlan, St Marys, Ironhouse and Cape Grim) were prepared for digital capture during the year. There was again some limited field checking, but primary geoscientific data acquisition was again essentially suspended for the year. A field project to update the geology of areas of Mount Read Volcanics and adjacent rocks in southwest Tasmania, in conjunction with Monash University, was conducted during the summer and compilation of data was well advanced by end of June 2006.

Data capture/output was completed for twelve 1:25 000 scale map tiles (New Norfolk, Tomahawk, Lyme Regis, Tam O'Shanter, Keraudren East/West, Cuvier East/West, Bird East/West, Robbins, Ansons Bay, Waterhouse, Eddystone and The Gardens). The geological data for eight existing map areas in northwest Tasmania was significantly upgraded for use as a base for landslide hazard investigations.

A bulletin summarising the geology and mineral deposits of Tasmania was published during the year. This is to be used mainly for promotional and educational purposes and is based to a large extent on the advances in knowledge provided by the 3-D geological model.

A contribution was made to a map of Australia's offshore mineral resources showing past and current exploration licences. This map is being compiled by the CSIRO and Geoscience Australia in conjunction with State and Northern Territory mineral resource divisions.

A new edition of a booklet on the gemstone minerals of Tasmania was published during the year. Promotional displays were held at the Zeehan Mineral Fair in November 2005 and at *Gemboree 2006*, a national mineralogical and gem convention held in Hobart in April 2006.

Land instability is a significant hazard in Tasmania, with many homes having been destroyed over the years and significant damage caused to infrastructure. By studying and understanding the landslide hazard it is often possible to minimise or avoid the effects of land instability. MRT is actively addressing this hazard in three main areas; hazard mapping, databases and monitoring.

A regional landslide hazard assessment of the Launceston area has now been completed. This project is in partnership with local councils and with funding assistance from the Australian Government through the Natural Disaster Mitigation Programme. The resultant hazard classification maps are assisting councils to make informed decisions on planning and development issues, especially given the pressure to develop marginal lands around our cities.

The information has also been supplied to other stakeholders, including the geotechnical community and the State Emergency Services' Emergency GIS project. The landslide team is currently undertaking studies so as to be able to produce hazard maps of the North West Coast.

The TIGER landslide database forms a critical data foundation for the landslide project. Currently there are over 1500 records from throughout Tasmania and as resources become available the information will become available live on the internet.

For many years MRT has monitored a number of active landslips that have affected roads, railways and subdivisions. Work has continued on assembling historical information on movement history and damage, and placing this into the landslide database and GIS. This knowledge is being passed on to councils and consultants on request.

As from 1 July 2006 all groundwater activities will be the responsibility of the Water Division of the Department of Primary Industries and Water. During 2005/2006 MRT continued refining the groundwater database in order to facilitate entry of new drillers groundwater borehole reports, with the aim of eventually providing more information via the internet than is available at present.

General information on groundwater resources, pollution and quality was provided to other agencies, companies and members of the public, in response to enquiries. Consultants investigating pollution problems at a number of sites in Tasmania were supplied with information relating to groundwater in the areas concerned.

The program of accurate monitoring of groundwater levels across Tasmania continued, using data loggers set in approximately thirty boreholes to provide real-time information on groundwater levels. Field sampling and

check monitoring quality assurance was carried out at approximately six-month intervals at each monitoring location. A progress report on the MRT statewide groundwater monitoring network was published.

Work on the compilation of a series of twenty-one 1:100 000 scale groundwater maps, designed to provide information to land use planners in an easily understood format, and eight digital 1:250 000 scale groundwater prospectivity maps continued in 2005/2006. Following a peer review, these maps were modified and these modifications are currently being incorporated in the maps. Following completion the maps will be presented and distributed to municipal councils, as part of the partnership process, and to other stakeholders.

MRT, in partnership with the Department of Primary Industries and Water, actively contributed towards the management of several dryland salinity projects financed under the National Action Plan. MRT also contributed to the *Groundwater Management Strategic Overview and Directions (2006–2010)* document.

Setting and monitoring of standards for exploration activities

MRT is responsible for ensuring that all exploration activity in Tasmania achieves the highest environmental standards and complies with the *Mineral Resources Development Act 1995* and the requirements of other legislation which protects, for example, threatened species and cultural heritage.

The fourth edition of the *Mineral Exploration Code of Practice* outlines the current requirements, the approvals process, and the controls and monitoring procedures that MRT has in place. The Code will be reviewed in the near future to maintain consistency with the *Tasmanian Reserve Management Code of Practice*.

During the year 86 exploration work programs were submitted to MRT compared to 72 in the previous year. Of these programs 74 were approved, 38 of which were in reserves derived from the Regional Forest Agreement (RFA) and required assessment by the Mineral Exploration Working Group (compared to 30 in the previous year). The rapid increase of exploration work approval has required MRT to employ a new environmental field officer to this area of operation to ensure that approvals meet all the legislative requirements in a timely manner.

To comply with the RFA, MRT has developed a system to spatially record exploration activity and attributes that chart the process of approval of individual work programs. All work programs, whether on Crown land, State Forest or private property, are entered on this system to give a complete record of all the environmental information relating to exploration.

Development of the first stage of the upgraded system has been completed and provides an integrated textual and spatial environment to ensure that independent compliance auditing of the exploration work approval system is adhered to and that derived statistics reflect the requirements of the RFA and the recommendations of the Resource Planning and Development Commission.

Mining Leases

The *Mineral Resources Development Act 1995* provides for the State to grant titles for the extraction of minerals from mines and quarries. Titles are issued for larger scale operations with appropriate rehabilitation bonds and conditions. Shorter terms are preferred for small-scale remote operations to provide for regular environmental review.

At the end of 2005/2006 there were 642 mining leases in force of which 604 were granted and 38 are still in the application stage.

A total of 38 new leases and 77 lease renewals were applied for during 2005/2006. This took the overall total of applications and renewals currently being processed to 268.

The bond assessment methodology was reviewed in conjunction with the Department of Tourism, Arts and the Environment, the Tasmanian Minerals Council and Extractive Industries Tasmania.

Lease applications were received for the potential redevelopment of the Mount Bischoff mine near Waratah by Bluestone Mines Tasmania, and for the reopening of the King Island Scheelite mine at Grassy. Environmental assessment of the latter proposal is being carried out by the Department of Tourism, Arts and the Environment and the King Island Council.

Town planning is an important constraint on the development of extractive operations. Submissions, representations and appeals have been made to the Central Coast, Kentish and Circular Head councils, concerning planning schemes or development applications.

Rehabilitation of Mining Lands Trust Fund

Funding to rehabilitate abandoned mines flows from an agreement between government and the mining and quarrying industries whereby a proportion of the royalty increase introduced in 1995 was to be allocated for rehabilitation.

In 2005/2006 work was undertaken to revegetate abandoned alluvial tin mines at Balfour. A public safety program, mainly installing shaft covers, was carried out at Lefroy. Quarry rehabilitation, including grading, drainage control and seeding, was carried out at Punched Terror near Deloraine. Drainage improvements were carried out at the former Oonah mine at Zeehan to separate water from contaminated mine workings.

In late 2005 a paper on the rehabilitation works undertaken by MRT was presented at the Minerals Council of

Australia's International Sustainable Development Conference in Alice Springs.

Royalty assessment

MRT is responsible for the collection of mineral royalties from Crown land tenements. Royalty is not a tax but a payment to the community for the purchase of non-renewable resources from the State.

The Tasmanian royalty regime operates under two systems depending on the type of resource recovered. Companies producing a metallic mineral or coal pay under a two-tiered system, where royalty is paid on the net sales and profit from a mine. Royalty on the recovery of non-metallic minerals on Crown leases is set on a per cubic metre or per tonne basis.

MRT conducts a royalty audit program to ensure tenement holders are paying in accordance with the legislation. The audit program concentrates on the metallic mines which pay royalty based on net sales and profits.

Mineral royalties totalling \$24 million were collected during the 2005/2006 financial year, which is a 30% increase over revenue for the previous year. Royalty revenues have climbed markedly over the past four years due to the continued strengthening of commodity prices, which has resulted in increased profitability of the mining operations in Tasmania. Strong demand for commodities from China and India is expected to continue in the near future which will provide the basis for continued high commodity prices.

Special initiative — Core Library

Construction of the core library extension was completed during the year. New core received is now being stored in the extension.

ARC Centre of Excellence in Ore Deposit Research (CODES)

Funding is provided for support of CODES at the University of Tasmania, in conjunction with the Australian Government and industry. The allocation is used to part-fund honours scholarships, thus helping increase the knowledge of Tasmanian geology, particularly in the important fields of economic geology and mineralisation. The MRT Library receives a copy of each thesis, which is available for reference use.

Dr A V (Tony) Brown

Director, Mineral Resources Tasmania and State Chief Geologist

Financial Performance

The 2005/2006 consolidated fund appropriation to Mineral Resources Tasmania was \$6.400 million. This funding consisted of:

- \$3.990 million for salaries for 55.33 full-time-equivalent staff, plus temporary staff;
- \$1.992 million for operating expenditure including rent; and
- \$0.418 million for the Restoration of Degraded Mineral Lands (\$350,000) and a grant for the Tasmanian Government Mining Scholarships at the University of Tasmania CODES-SRC unit (\$68,000).

In 2005/2006, MRT's operating budget remained fairly static with additional non-salary funding of \$27,000 and a State Service Wage Agreement contribution of \$126,000.

Funds of \$454,000 were also carried forward to complete the core store reconfiguration.

Commonwealth funds of \$144,000 were received to continue the landslide mapping program under the Natural Disaster Mitigation Programme.

Outputs — Application of funds, 2005/2006

Tasmanian government agencies are funded on an outputs basis. The outputs represent the goods and services delivered by MRT, and the cost of delivering those services. The government purchases these goods and services to meet policy objectives. The total output figure does not equal the consolidated fund appropriation available to the division due to the fact that overheads associated with head office and carry forward funds are loaded into outputs.

MRT has four outputs as follows:

| | \$'000 |
|---|--------------|
| 1. Minerals exploration and land management | 3,176 |
| 2. Tenement management of the exploration and minerals industry | 2,738 |
| 3. Centre for Ore Deposits Research | 68 |
| 4. Rehabilitation of Degraded Mineral Lands | 450 |
| Total | 6,432 |

Descriptions of Outputs and Outcomes, 2005/2006

1. Minerals exploration and land management

This output covers:

- the provision of geoscientific data and resource information on Tasmania's metallic, industrial and hydrocarbon mineral endowment;
- promotion of mineral potential for the stimulation of exploration for metallic and industrial minerals and hydrocarbons; and
- geoscientific database development, maintenance, output and marketing, including the production of digital geoscientific maps and associated databases.

This outcome achieved its goal of dynamic minerals exploration and land management for Tasmania and offshore waters.

2. Tenement management of the exploration and minerals industry

This output provides for:

- the provision of geoscientific information essential for the effective and sustainable management of land and mineral resources;
- provision of advice to all levels of government and the public on land management issues;
- administration of mining legislation, including the issue of legal titles for mineral tenements;
- collation and recording of statistics relating to mining production and exploration; and
- the demand and monitoring of the collection of fees, rentals and royalties.

This outcome achieved its goal of effective and efficient tenement management of the exploration and minerals industry.

Revenue from fees and charges

Mineral Resources Tasmania collects royalties and rents and fees from mineral lands. These revenues are forwarded directly to consolidated revenue and are not available to MRT, except for offshore petroleum revenues which are utilised to administer the *Petroleum (Submerged Lands) Act 1967*.

Mineral royalties totalling \$24 million were collected during the 2005/2006 financial year which was a significant increase from the \$18.5 million collected in the previous year. The increase was the result of the continued increases in commodity prices, particularly copper and zinc, coupled with favourable operating conditions at the mines producing those commodities, improving profitability. The Tasmanian royalty regime is structured so that companies pay a greater royalty in profitable times.

The operations of individual mines are detailed later in this review.

Mineral Resources Tasmania also collects rents and fees from mineral lands, which are forwarded directly to consolidated revenue. Rents and fees from mineral lands raised \$0.941 million in 2005/2006, which was above budget expectation.

| | Target 05/06 | Actual 05/06 | Target 06/07 |
|--|-----------------|-----------------|-----------------|
| Royalties (\$,000) | 18,000 | 23,988 | 33,000 |
| Rents and Fees (\$,000) | 721 | 941 | 721 |
| Rents and Fees — Petroleum (net of administration) (\$,000) | 137 | 233 | 137 |
| Sales of Maps and Publications (\$,000) | 14 | 17.7 | 14 |

Royalty assessment

MRT is responsible for the collection of mineral royalties from Crown Land tenements. Royalty is not a tax but a payment to the community for the purchase of non-renewable resources from the State.

MRT conducts a royalty audit program to ensure tenement holders are paying in accordance with the legislation. The audit program mainly concentrates on the metallic mines which pay royalty based on net sales and profits. Metallic mines pay the vast majority of royalty revenue.

The Tasmanian royalty regime operates under two systems depending on the type of resource recovered. Companies producing a metallic mineral or coal pay under a two-tiered regime where royalty is paid on the net sales and the profit from a mine. Royalty on the recovery of non-metallic minerals on Crown leases is set on a per cubic metre or per tonne basis.

The two-tiered metallic and coal royalty consists of an ad valorem percentage payable on net sales, and a formula-based percentage of profits. This system requires mining companies to pay a fixed percentage of sales in royalty for ore extracted, and allows the community to benefit further in good times when a company is making a profit.

Following negotiations with the mining industry, new royalty rates were approved in August 1997, with the regime taking effect from 1 July 1997. Non-metallic rates increased from \$1.00 per cubic metre to \$1.20 per cubic metre, while it was agreed that metallic mineral and coal royalties would be increased incrementally over a number of years to the current full level.

The ad valorem rate for net sales is 1.6%. The profit component of the royalty regime is calculated via an exponential formula which increases the percentage of profit royalty paid as the mine's profit increases.

A royalty cap of 5% of net sales has been set so that high-cost, short-life mines are not discriminated against.

Mining companies that expand into downstream processing to produce a near pure specific metal can apply to the Treasurer to receive a 20% rebate on royalties payable. Companies that produce gold doré can apply to claim a 10% rebate on royalties.

The Treasurer has the discretion to increase the gold doré rebate to 20% depending on criteria such as the magnitude of investment undertaken and the benefit to the Tasmanian economy from the investments.

2005/2006 Performance Indicators

Growth in mineral exploration activity is essential for future development of the mineral sector and for the economic well being of Tasmania. Exploration activity is underpinned by updating and providing high quality geoscientific data relating to Tasmania's mineral resources. The activities of MRT are directed at the capture, storage and promotion of such information, with the increased availability of this information being measured and correlated with exploration investment. Enhancement of geohazard information is also of high importance to stakeholders of MRT, as is the effective administration of MRT's regulatory framework.

Achievement against internal targets

| <i>Action</i> | <i>Target</i> | <i>Result</i> |
|--|---|---|
| Provide new data in areas with inadequate geoscientific coverage. | <ol style="list-style-type: none"> 1. Collection of at least 200 km² of primary digital geoscientific coverage per year. 2. Production of digital geoscientific coverage of ten 1:25 000 scale map equivalents per year. | <ol style="list-style-type: none"> 1. No primary digital geoscientific coverage collected; resources utilised on continuing development of the TIGER system. 2. Twelve new 1:25 000 scale maps produced and eight 1:25 000 scale maps were upgraded. |
| Research and promotion of exploration of Tasmanian petroleum basins. | Promote one offshore area per year. | Five offshore areas released and promoted at the APPEA and AAPG conferences. |
| Promote the geoscientific and mineral endowment aspects of Tasmania at various shows, industry conferences, press conferences, open days and other events. | Successful and timely presentation of promotional material at appropriate venues. | Direct promotional visits were made to companies in Canada and Australia. Conferences attended included PDAC in Canada, Mining 2005, Mining Journal 20:20 Investor Series Australia, NewGen Gold Conference, and the 5th Annual AJM Minerals Exploration and Investment Conference. |
| Prioritise and organise rehabilitation works on abandoned mining lands in compliance with the operation of the Abandoned Mining Lands Rehabilitation Trust Fund. | One major program to be completed each year. | Programs at former mine sites at Balfour, Zeehan, Storys Creek and Deloraine were completed. Maintenance work continued in a number of areas. |
| Monitor environmental performance on exploration and mining tenements. | Field inspections as required. | Regular field inspections conducted. Development of compliance auditing system continued. |
| Digital geoscientific coverage of Tasmania's geohazards. | Completion of one map per year. | A package of five maps covering the Launceston area was completed. |
| Digital geoscientific coverage of Tasmania's groundwater resources. | Completion of one map per year. | Compilation of twenty-one 1:100 000 scale groundwater maps and modification of eight 1:250 000 scale groundwater prospectivity maps continued. |

Achievement against external targets

| <i>Target</i> | <i>2005/2006 result</i> | <i>2004/2005</i> |
|--|---|------------------------|
| Increase exploration expenditure and maintain level at 2% of total Australian exploration expenditure. | Official ABS figures showed that exploration expenditure increased to \$22.6 million in 2005/2006, with Tasmania's share of Australian expenditure increasing to 1.82%. | 0.81% |
| Increase level of exploration expenditure to a minimum of \$30 million per financial year. | | \$8.3 million |
| Obtain an increase in the area held under Exploration Licence. | Area held under All Minerals and Non-metallic Exploration Licences increased to 13 936 km ² . A further 40 731 km ² is held for onshore oil and geothermal exploration. | 11 819 km ² |
| Obtain an increase in the number of Exploration Licences granted. | The number of Exploration Licences held increased to 243. | 240 |
| Obtain an increase in the percentage of Strategic Prospectivity Zones (SPZ) held under tenements. | The percentage of land in SPZ areas held under tenements increased to 10 261.2 km ² . | 9775 km ² |

Mineral Resources Tasmania — Legislation and Committees

Legislation administered

- Mineral Resources Development Act 1995
- Mining (Strategic Prospectivity Zones) Act 1993
- Petroleum (Submerged Lands) Act 1982
- Beauty Point Landslip Act 1970
- Lawrence Vale Landslip Act 1961
- Rosetta Landslip Act 1992

Statutory bodies with MRT representation

- Nomenclature Board

Non-statutory bodies with MRT representation

- Ministerial Council for Mineral and Petroleum Resources (MCMPR) and associated Standing Committee of Officials, Task Forces and Working Groups
- ABS Mining Statistics User Advisory Group
- Australian Society of Exploration Geophysicists Data Standards Committee
- Chief Government Geologists Committee
- Government Geoscience Information Policy Advisory Committee and associated Working Groups
- CODES Centre of Excellence in Ore Deposits Advisory Board
- CODES Centre of Excellence in Ore Deposits Science Planning Committee
- DPIW Application Assessment Panel
- Crown Land Assessment Working Group
- Groundwater Coordination Committee
- Inter-Departmental Oceans Policy Working Group
- Land Information Coordination Committee (LICC)
- LICC Sub-committee — The LIST Management Advisory Group
- Mineral Exploration Working Group
- Mining Heritage Committee
- National Groundwater Committee
- Rehabilitation of Mining Lands Trust Fund Committee
- Tasmanian Statistical Advisory Committee

Mineral Resources Tasmania — Review of Branch activities, 2005/2006

During 2005/2006 Mineral Resources Tasmania consisted of five branches: Metallic Minerals and Geochemistry; Industrial Minerals and Land Management; Information Systems and Geophysics; Data Management; and Royalty, Finance and Administration.

Because of the integrated nature of the branches, outputs provided under the banner of the Tasmanian Geological Survey are contributed to by staff of all branches.

Metallic Minerals and Geochemistry

During 2005/2006, the Metallic Minerals and Geochemistry Branch continued to develop databases for delivery on the world-wide web and to verify and update existing databases.

A vacant geologist's position was filled and the position of core library supervisor upgraded.

Geoscientific data generation

A project on systematically verifying the more than 4500 entries in the Tasmanian mineral deposits database commenced. At year's end 50% of entries had been verified and a significant number of new deposits had been added to the database.

Twelve 1:25 000 scale map tiles (Stanhope, Roys, St Pauls Dome, Robbins, Pokana, Wings, Solitary, Strathgordon, McPartlan, St Marys, Ironhouse and Cape Grim) were prepared for digital capture during the year. There was again some limited field checking in some areas, but primary geoscientific data acquisition was again essentially suspended for the year.

A small field project was undertaken in southwest Tasmania in conjunction with Monash University. As a result significant changes will be required to six 1:25 000 scale digital geology sheets. At year's end compilations were well advanced and feed back from the collaborating scientist was awaited.

The first draft of an updated mineral catalogue of Tasmania was completed and a new edition of a booklet on Tasmania's gemstone minerals was published.

Reports on the geochemistry of Cambrian volcanic rocks from the Thomas Creek area, south of Macquarie Harbour, on the recompilation of digital geology of the Mount Read Volcanics, and on the mineral deposits of the Balfour–Temma area were completed during the year and a report on the geology of the Castra–Kindred area was under review.

A summary report on the geology and mineral deposits of Tasmania, to be used mainly for promotional purposes and drawing on the 3-D geological model, was published during the year.

A project was initiated on the mineral endowment and potential of the Arthur Lineament and a draft of the first report on the Savage River iron deposit was completed during the year.

Database development

A significant part of the work of the branch for the year involved the continued contribution to testing of database structures for the TIGER System and verification and capture of data for incorporation in the new system.

Most historical rock sample catalogue data has been migrated to the TIGER platform.

Information on some properties of 9000 rock samples in the MRT collection and chemical data on 40,000 samples are stored in Excel spreadsheets pending development of a bulk loading facility and changes to the database structure.

Changes to the samples, geochemistry and observations modules were completed, but after testing it was determined that further development was required and final development has been outsourced.

Business rules were completed for the drilling database and a change request developed.

Core library

The extension to the core library was completed during the year.

The significant level of usage of the core library continued, with 86 visits during the year to inspect drill core, a 32% increase on the previous year.

A total of 13.1 km of core was added to the library collection during the year.

An OH&S assessment of the core library was conducted and a few needed improvements implemented.

Staff were trained in correct handling procedures for asbestos-bearing core.

Mineral exploration and other promotional activities

Papers overviewing the state of mineral exploration and development in Tasmania were presented to the *Mining 2005* meeting in Brisbane, at the Fifth Annual AJM Minerals Exploration and Investment Conference in Hobart in November, and to the Mining Journal 20:20 Investor Series Australia forum in London in March.

A promotional display was held at the Annual Meeting of the Prospectors and Developers Association of Canada (PDAC) in Toronto in March 2006 in conjunction with visits to major international mining companies as part of a 'Team Australia' promotion.

Displays were also presented at the *Mining 2005* meeting in Brisbane in October, at the international *NewGen Gold Conference* in Perth in November, and the Association of Mineral Exploration Conferences in Perth in June.

Branch members participated in promotional visits to companies in Brisbane and Perth during the year. The general attitude to the mineral exploration and development environment in Tasmania was very positive and there is clearly a heightened awareness of the mineral potential of the State. This is reflected by ten companies wholly or significantly based on Tasmanian mineral tenements floating during the last three years.

Articles, promotional material and information on mineral prospectivity and exploration activities in Tasmania were prepared for various specialist mining journals. Regular two-monthly summaries of exploration activities in Tasmania were provided as part of global reviews for the international Society of Economic Geologists newsletter.

In addition, the petrologist conducted displays and publication sales for the second Zeehan Mineral Fair held in October 2005 while a major display, including sale of publications, was held at the national *Gemboree 2006*, attended by over 5000 people, at the Hobart showgrounds in April. MRT received feedback that Tasmania was much more supportive of the fossicking community than some interstate jurisdictions.

Ninety-four enquiries, mostly on gem, mineral and geological matters, were answered by the petrologist during the year.

Petrology

The petrologist supervises the petrological and lapidary laboratories, which service internal and external clients, as well as managing or supporting several projects and databases, and being involved with projects and general exploration administration.

The lapidary and petrology laboratories provided a total of \$41,163 worth of analyses and services to both DIER (\$18,845) and external clients (\$22,318). Most of this external work cannot be otherwise conducted within Tasmania.

The lapidary laboratories prepared 196 standard thin sections and 114 other sections, making a total throughput of 310 samples. Most of these were done on an as-needed basis by a field assistant; this work was valued at \$10,030.

The technical officer for petrological services processed 298 samples by X-ray diffraction, including 164 quantitative dust analyses, and conducted 60 soil and sizing tests and 103 optical asbestos identifications, for a total of 461 samples processed, valued at \$31,133. About half of his time was spent preparing samples for, and operating, the XRF unit for the Geochemistry Section.

A total of 397 external (contract) samples were received for investigation, mostly by X-ray diffraction analysis. These samples included 288 for occupational health clients, 14 soils, 8 construction materials, 19 industrial samples and 64 general rocks and other samples. This external work came from a wide range of external sources, including the Transport and Workplace Safety branches of DIER, Police

Tasmania, Hydro Tasmania, DPIW and other Government departments, the University of Tasmania (staff and students), various mining, mineral processing and mineral exploration companies, environmental and occupational health consultants, the general public and miscellaneous businesses.

Samples studied included geological materials (construction materials, mineral concentrates, ore samples, rocks, soils, sands, and clays), and anthropogenic materials (including forensic samples, concretes, asbestos sheeting, industrial materials, dusts, acid drainage, etc.). Forensic studies continued with work for Police Tasmania.

The petrologist, as official radiation safety officer, has overseen some radiation storage, X-ray equipment safety inspections and other safety issues. Laboratory safety audits are underway.

Considerable time was taken in an overhaul and realignment of the XRD unit. Two digital cameras were also serviced and maintained.

Geochemical laboratory

During 2005/2006 the laboratory was staffed by a senior chemist and a technical officer. A geologist/geochemist and another technical officer provided part time assistance.

Although our sample preparation technician does most of the water analyses, the laboratory is undermanned due to the absence of a 'specialist' chemist/technician in instrumental/wet chemistry. Absence or leave of any personnel severely limits the ability of the laboratory to supply anything other than provisional results.

The laboratory generates the chemical/geochemical data necessary to maintain MRT's databases. A total of 208 samples, consisting of 102 water samples, 63 rocks and 43 minerals or products, were submitted for 4299 individual determinations during the year.

A total of 379 samples were assayed for 10,843 individual determinations. The analysed samples comprised 140 waters, 196 rocks and 43 minerals or products.

Smooth running of the upgraded sample and dust extraction unit continued during the year as a result of careful operation and good maintenance by the operator.

The improved sample boxes used to store crushed and ground samples on pallets has proven to be ideal. Prepared sample packets are now able to be progressively stored while also retaining ease of accessibility.

Careful operation and maintenance has kept the XRF unit and AA instruments operating in a stable condition throughout the year.

The Leco Induction Furnace continues to function after the capacitors and resistors were replaced in 2004. However obtaining the essential components (CO₂ and S) necessary to complete major element analyses relies on effective Leco operation. The Leco is an instrument in excess of 25 years old and sourcing replacement parts for components that have failed is becoming increasingly difficult.

An updated Leco Induction Furnace would enable carbon/sulphur values to be determined more reliably. It would also increase the efficiency and accuracy of analyses

which supply the essential data required to maintain the MRT data bases.

Other activities

- ❑ A branch member led a project to make new Mineral Resources Regulations during the year. These regulations were made on 28 June.
- ❑ Four staff members are on safety committees.
- ❑ A new safety system of communication for staff members engaged in field work was developed and implemented.
- ❑ A branch member is on a committee to prepare authority tables for the National Geodata Model, a working group established under the Government Geologists Information Policy Advisory Committee.
- ❑ Site visits were made to various exploration project sites and mines during the year as a part of reviewing industry progress.
- ❑ Mineral exploration report and exploration performance assessments were carried out as needed, as was preparation of promotional leaflets for Exploration Release Areas. Particular attention was placed on monitoring performance on exploration licences.
- ❑ Many requests for information on geology, mineral resources, minerals and related matters were received and dealt with promptly.
- ❑ Meetings of the Tasmanian Statistical Advisory Committee were attended during the year.
- ❑ A senior geologist attended a two-week brownfields exploration course at the Centre of Excellence in Ore Deposits.
- ❑ The geologist/geochemist attended a five-day workshop on atomic absorption spectrophotometry.
- ❑ A senior geologist successfully completed a remote area first aid course.
- ❑ A senior geologist attended the OZRI GIS conference on the Gold Coast.
- ❑ Various branch members completed courses on giving and receiving feedback, conflict management, communication skills, OH & S matters and selection skills.

Industrial Minerals and Land Management

This branch is responsible for the investigation and promotion of industrial minerals, including coal and hydrocarbons; the management of mineral tenements, land access issues and environmental control of exploration activity; and the protection of mining heritage. It is also responsible for providing information for the management of groundwater resources and geohazards, especially land stability.

Strategic Prospectivity Zones

Strategic Prospectivity Zones (SPZ) cover 25 200 km² or 37% of Tasmania. The areas in each SPZ occupied by mining tenements at the end of June 2006 are shown below.

| SPZ | Metallic | | Non-metallic | |
|----------------|-------------------------|--------------|-------------------------|--------------|
| | Area (km ²) | Occupied (%) | Area (km ²) | Occupied (%) |
| Adamsfield | 69.7 | 94.6 | 3.0 | 4.1 |
| Arthur | 665.8 | 60.1 | 345.0 | 31.4 |
| Balfour | 482.8 | 12.3 | 299.4 | 7.7 |
| Beaconsfield | 20.0 | 100.0 | 0.0 | 0.0 |
| Cape Sorell | 438.7 | 31.7 | 0.0 | 0.0 |
| Mount Read | 2809.1 | 39.2 | 224.0 | 3.1 |
| North East | 3231.6 | 33.1 | 542.3 | 5.5 |
| Zeehan/Waratah | 883.1 | 48.1 | 246.7 | 13.5 |
| | (8600.8) | | (1660.4) | |

In comparison to last year's occupancy for metallic minerals, the Mount Read SPZ has decreased slightly from 41.45% to 39.2%, the North East SPZ has decreased from 35.40% to 33.1%, and the Zeehan/Waratah SPZ has increased from 41.55% to 48.1%.



Petroleum exploration and production

Fourteen offshore permits and two onshore permits are currently held for oil and gas exploration, two production licences are held over the Yolla and Thylacine fields, and a retention lease is held over a small acreage adjacent to the Yolla field. No hydrocarbons are produced in Tasmania or offshore waters, but gas production from the Yolla field is expected to commence in the third quarter of 2006, and from the Thylacine field later in the year.

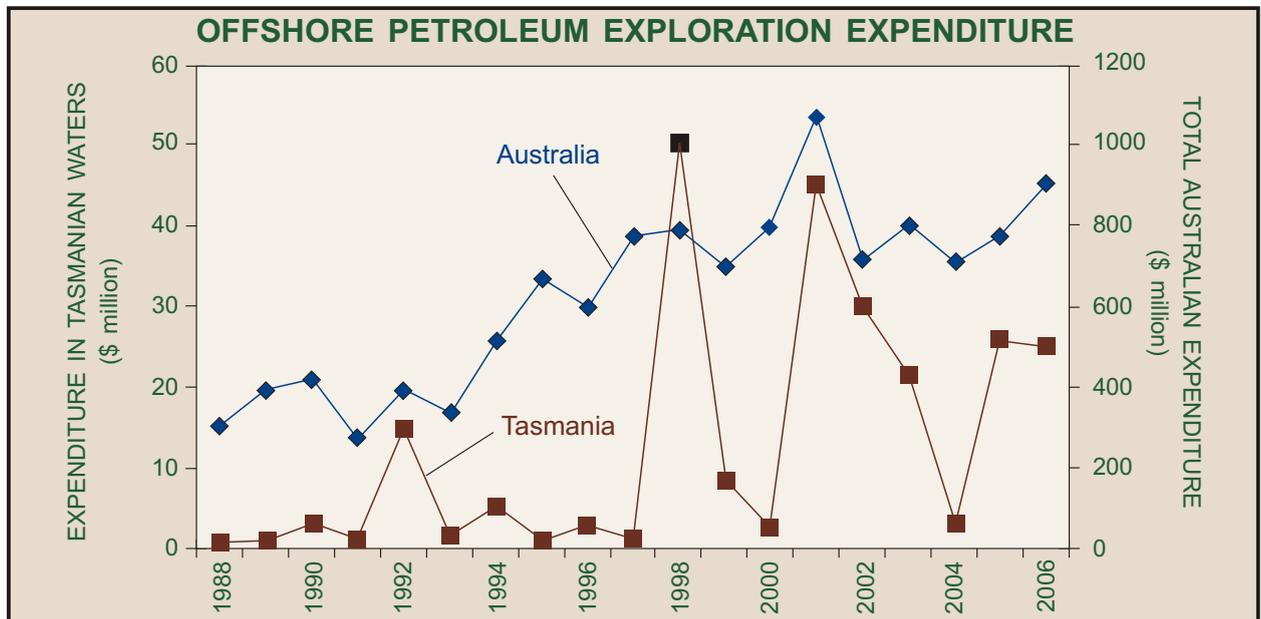
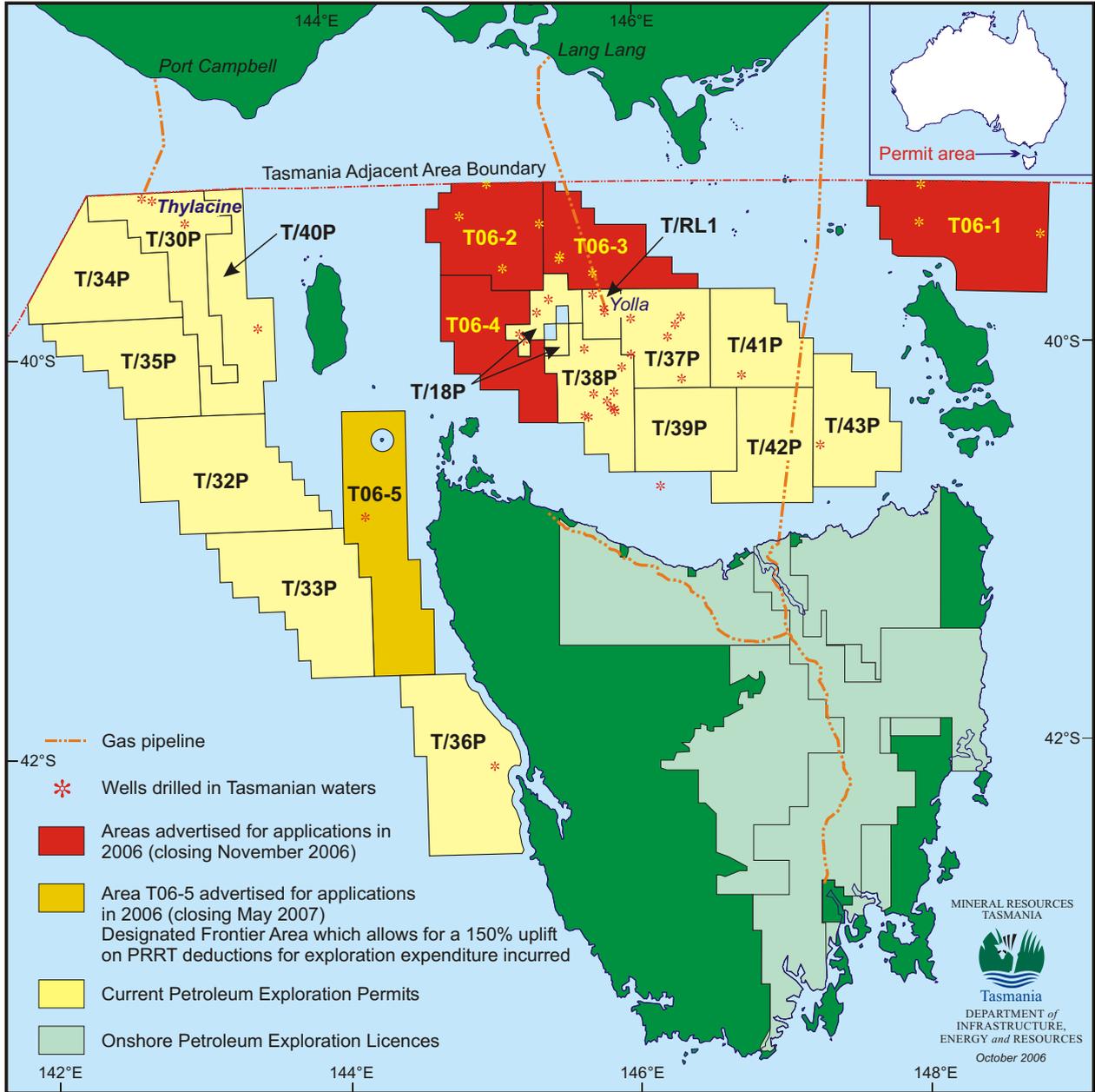
The production licence over the Yolla gas-condensate field in the Bass Basin is held by a consortium headed by Origin Energy Resources Limited and AWE Petroleum Limited. The BassGas project to develop the Yolla field involved construction of a production platform, two development wells and an undersea pipeline to a processing plant onshore Victoria near Lang Lang. The infrastructure was substantially completed by late 2004, but production of gas has been delayed by technical and safety issues. Once commissioning is completed in 2006, this project is expected to supply around 10 per cent of Victoria's natural gas needs for 15 years.

Woodside Energy Limited, on behalf of the Otway Gas consortium, was granted a production licence in July 2004 for the development of the Thylacine gas field, discovered in 2001 in the Otway Basin northwest of King Island. The Thylacine platform and undersea pipeline were installed in late 2005, and drilling from the platform began with Thylacine South-1, a deviated exploration well that successfully proved a southern extension to the Thylacine field. The sequential drilling of four development wells then commenced, and more than half of this program had been completed by 30 June. Thylacine gas will be piped to a processing plant near Port Campbell in Victoria, which is expected to be operational in October 2006. Production is expected to commence late in 2006 to supply the growing southeast Australian gas market.

Four seismic surveys were carried out in offshore Tasmania waters in 2005/2006. A 3D seismic survey was completed over the Trefoil gas field in late 2005. This field was discovered west of the Yolla field in 2004 by a joint venture headed by Origin Energy Resources Limited. Benaris Petroleum NV carried out a 2D and 3D survey over their permit T/39P in the Bass Basin in December 2005. Woodside Energy Ltd undertook a large 3D survey over their two permits in the Otway Basin west of King Island in April–May 2006. Adverse weather hindered this survey, but it was deemed completed with 87.1% acquisition. In June 2006, Santos Limited completed a major, 2184 km 2D seismic survey over three of their offshore permits west and south of King Island.

Two new offshore exploration permits were granted in the Bass Basin during 2005/2006, both to Bass Strait Oil Company Ltd. This brings the total number of offshore exploration permits to a record fourteen. Total Tasmanian offshore petroleum exploration expenditure for 2005/2006 was approximately \$25 million. The total offshore

TASMANIAN OFFSHORE ACREAGE AND ONSHORE PETROLEUM EXPLORATION LICENCES



petroleum exploration expenditure for Australia for the year ended 30 June 2006 was \$906.1 million.

Five exploration areas were released in May 2006 for competitive work program bidding, with closing dates in November 2006 and May 2007. One of these areas, T06-5 (Sorell Basin), is a Designated Frontier Area, allowing an immediate uplift of 150% on Petroleum Resource Rent Tax deductions for exploration expenditure incurred in the area. MRT staff have been actively involved in promotion of the offshore release areas, most importantly at major industry conferences. Staff attended the APPEA conference on the Gold Coast in May 2006 to promote the offshore acreage.

Cataloguing of sample collections related to offshore petroleum exploration continued during the year. Fifty-two reports received during the year were indexed. Most open-file exploration reports can now be viewed and downloaded from the MRT web site.

Onshore, two Special Exploration Licences are held for petroleum exploration, one by Great South Land Minerals Limited and the other by Primeline Petroleum Corporation. A 2D seismic survey was begun by Great South Land Minerals Ltd in May 2006. OME Resources Australia Pty Ltd holds a Special Exploration Licence for coal bed methane.

Tasmanian Natural Gas Pipeline

Alinta DTH Pty Ltd acquired the Tasmanian Natural Gas Pipeline (TNGP) from Duke Energy International in April 2004. The TNGP transports natural gas from Longford in Victoria to Bell Bay, Hobart and Port Latta via approximately 740 km of onshore and offshore pipeline. The gas is sourced from the Gippsland Basin in Bass Strait and made available, via the TNGP, to industrial and domestic markets in Tasmania.

The TNGP project expands the gas market in southeast Australia. A total of ten permanent staff based in Tasmania are employed to operate the pipeline.

Industrial minerals

Tasmania Magnesite NL holds retention licences over the large, high-grade magnesite deposits at Arthur River and Lyons River in western Tasmania, and is actively seeking a buyer for the licences.

Mineral Holdings Australia Ltd continues to seek a joint venture partner for the development of dolomite and limestone resources in northwest Tasmania. The company wishes to develop an export industry based on chemical, industrial and agricultural carbonate products.

The proposal to develop heavy minerals beach sands at Naracoopa, on King Island, by Tasmanian Titanium Pty Ltd, has received all necessary approvals from the King Island Council and the Tasmanian Government. Construction of the processing plant has not eventuated as planned although the company is still confident that it will develop the deposit in the near future.

There has been active exploration for silica flour throughout the past year. Nolan and Sumitomo Pty Ltd have explored in the Blackwater area south of the Arthur River as have Index Minerals. Maydena Sands Pty Ltd

holds a retention licence over the Maydena/Pine Hill silica flour deposit. Detailed planning for a mining operation continues, with design work for a plant underway.

Environmental management

The number of exploration work programs submitted for approval has increased again from the record levels of 2004/2005. This increase has resulted in additional resources being allocated to MRT to ensure that the approvals process meets the environmental and compliance requirements of the Regional Forest Agreement and is both thorough and timely.

Compliance auditing

In 1998/1999 MRT developed a GIS-based system to record and monitor the approval process for exploration programs. A clause in the Regional Forest Agreement (RFA) states that MRT must audit compliance with the *Mineral Exploration Code of Practice*. Following the development of TIGER the decision was taken in 2003/2004 to convert the auditing system to the new corporate database structure to ensure that MRT was meeting the requirements of the RFA. Functional requirements were completed in late 2004 and the in-house redevelopment was recently completed, with the system currently undergoing testing.

The new system (TEAMS II) allows the detailed recording of all exploration activities across Tasmania's many types of land tenure. The life of the activity is tracked from proposal through approval, works completed and rehabilitation. The following tables of statistics are produced as a standard report from the system with no intervention or editing. As the new system accurately records exploration details and land tenure, it is not possible to directly compare this years statistics with those in the annual report for 2004/2005.

Eighty-six work programs were submitted to MRT during the year compared with 72 in 2004/2005. Of those received, 68 were approved (four were withdrawn, six have since been approved and eight are still pending). Thirty-five work programs were within CAR Reserves and required comment from the Mineral Exploration Working Group. Members of the Mineral Exploration Working Group attended a number of on-site field inspections during the reporting period.

Table 1 summarises the types of activities approved, within a broad division of Tasmania's land tenure system.

Table 1: Activities approved

| Activity | Car Reserve System | High Quality Wilderness | State Forest | Crown Land | Private Property | HEC Land |
|------------------|--------------------|-------------------------|--------------|------------|------------------|----------|
| Drill site | 61 | 31 | 75 | 85 | 20 | 11 |
| Helipad site | 4 | 4 | 1 | 0 | 0 | 0 |
| Bulk sample site | 7 | 4 | 1 | 0 | 0 | 0 |
| Camp site | 3 | 3 | 0 | 0 | 0 | 0 |
| Costean (km) | 0 | 0 | 1.84 | 0 | 0 | 0 |
| Grid (km) | 96.15 | 80.39 | 22.20 | 7.98 | 11.36 | 1.11 |
| Track (km) | 6.46 | 4.39 | 2.30 | 1.06 | 0.00 | 0.45 |

A total of 7.10 hectares of on-ground disturbance was recorded through the year. Table 2 shows the breakdown of the disturbance for the different land tenures and activity types.

Table 2: Area of disturbance

| Activity (ha) | Car Reserve System | High Quality Wilderness | State Forest | Crown Land | Private Property | HEC Land |
|------------------|--------------------|-------------------------|--------------|------------|------------------|----------|
| Drill site | 0.34 | 0.17 | 0.38 | 0.41 | 0.09 | 0.04 |
| Track | 2.62 | 1.59 | 1.40 | 0.53 | 0.00 | 0.22 |
| Costean | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 0.00 |
| Helipad site | 0.12 | 0.16 | 0.04 | 0.00 | 0.00 | 0.00 |
| Bulk sample site | 0.07 | 0.04 | 0.10 | 0.00 | 0.00 | 0.00 |
| Camp site | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

Note: High Quality Wilderness is an overlay on top of Car Reserve System and State Forest so is not added in to the total area of disturbance to avoid double counting.

Of the 7.10 hectares of disturbance, 1.58 hectares were rehabilitated during the year, with the remainder to be rehabilitated through the life of the licence. It is a licence condition that all earth-moving disturbance will be rehabilitated on or before the expiry of the licence and prior to the return of the environmental bond.

In Table 3 the area that has been rehabilitated is shown for each activity and land tenure category. A percentage of the area rehabilitated against the disturbances (Table 2) is also shown. Approximately 22% of the area disturbed in the reporting period, for all land categories, has been rehabilitated.

Table 3: Area rehabilitated

| Activity (ha) | Car Reserve System | High Quality Wilderness | State Forest | Crown Land | Private Property | HEC Land |
|------------------|--------------------|-------------------------|--------------|------------|------------------|----------|
| Drill site | 0.08 | 0.07 | 0.02 | 0.18 | 0.06 | 0.01 |
| Track | 0.91 | 0.91 | 0.00 | 0.00 | 0.00 | 0.00 |
| Costean | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 |
| Bulk sample site | 0.07 | 0.04 | 0.10 | 0.00 | 0.00 | 0.00 |

Note: High Quality Wilderness is an overlay on top of Car Reserve System and State Forest so is not added in to the total area of disturbance to avoid double counting.

A total of 139.42 line kilometres of gridding was undertaken during the year, with the division between land tenures presented in Table 4 (High Quality Wilderness overlies other Land Tenures).

Table 4: Distribution of gridding (line kilometres)

| Car Reserve System | High Quality Wilderness | State Forest | Crown Land | Private Property | HEC Land |
|--------------------|-------------------------|--------------|------------|------------------|----------|
| 96.15 | 80.39 | 22.20 | 8.60 | 11.36 | 1.11 |

Note: High Quality Wilderness is an overlay on top of Car Reserve System and State Forest so is not added in to the total area of disturbance to avoid double counting.

Table 5 presents the running totals for the last four years of the area disturbed and area rehabilitated.

Table 5: Disturbance and rehabilitation over three years

| Year | Car Reserve System | State Forest | Crown Land | Private Property | HEC Land | Total |
|--------------------|--------------------|--------------|------------|------------------|----------|-------|
| Disturbance (ha) | | | | | | |
| 2002/2003 | 0.95 | 1.57 | 0.30 | 0.02 | 0.07 | 2.90 |
| 2003/2004 | 2.87 | 1.44 | 0.12 | 0.50 | 0.01 | 4.94 |
| 2004/2005 | 3.80 | 1.84 | 2.21 | 0.20 | 0.17 | 8.22 |
| 2005/2006 | 3.16 | 2.65 | 0.94 | 0.09 | 0.27 | 7.10 |
| Rehabilitated (ha) | | | | | | |
| 2002/2003 | 0.95 | 1.57 | 0.30 | 0.02 | 0.07 | 2.90 |
| 2003/2004 | 2.87 | 1.07 | 0.12 | 0.50 | 0.01 | 4.56 |
| 2004/2005 | 3.32 | 0.49 | 1.31 | 0.20 | 0.09 | 5.41 |
| 2005/2006 | 1.06 | 0.27 | 0.18 | 0.06 | 0.01 | 1.58 |

Approximately 62% of overall disturbance has been rehabilitated. Disturbances are no longer counted as such if:

- no further rehabilitation work is required of the explorer;
- the area is taken up as a Mining Lease.

As High Quality Wilderness is an overlying layer on the above land tenures it is presented separately (Table 6).

Table 6: Disturbance and rehabilitation, High Quality Wilderness areas

| Year | Disturbance (ha) | Rehabilitated (ha) | Percentage of overall disturbance rehabilitated |
|-----------|------------------|--------------------|---|
| 2002/2003 | 0 | 0 | 100 |
| 2003/2004 | 1.85 | 1.85 | 100 |
| 2004/2005 | 2.22 | 2.22 | 100 |
| 2005/2006 | 1.97 | 1.02 | 52 |

Codes of Practice

The fourth edition of the *Mineral Exploration Code of Practice* is a code under the *Mineral Resources Development Act 1995*. This code is due for review as specified in the Resource Planning and Development Commission Inquiry into areas to be reserved under the Tasmania–Commonwealth Regional Forest Agreement. The review is under way but the increase in exploration activity and the lack of project funding has delayed the preparation of the fifth edition of the *Mineral Exploration Code of Practice*. It is planned to be ready for public comment in 2007.

The second edition of the *Quarry Code of Practice* is a code under the *Mineral Resources Development Act 1995* and is due to be reviewed in the coming year.

Mines inspection

Mines

Mines have continued to prosper from increased mineral demand, and several new operations were under consideration. The main exception is tin, where prices have not remained buoyant and Bluestone Tin Limited closed the Renison Bell mine early in the period, although the company continues to investigate reopening the operation.

Australian Bulk Minerals has commenced rehabilitation of the Savage River mine site for the planned closure in 2007,

although the company is actively pursuing future redevelopment of North Pit to extend the life of the mine. This will entail a large-scale open cut requiring significant capital to finance development.

Allegiance Mining NL has commenced plant construction and work on related infrastructure at its nickel mine at Avebury near Zeehan.

Copper Mines of Tasmania Pty Ltd has constructed a lift of the Princess Creek tailings dam for continuing its operations at Mt Lyell. The company is also investigating small-scale historic outlying operations such as Crown Lyell.

The Beaconsfield Mine Joint Venture mine continued to suffer from seismic activity, culminating in a major rock burst on Anzac Day. Tragically this resulted in a fatal accident. A dramatic operation to rescue two trapped miners was successfully completed following the accident. The mine was closed thereafter and its future is the subject of safety investigations.

Intec Hellyer Metals Pty Ltd and King Island Scheelite Limited were granted approval to carry out tailings dam investigations while feasibility studies were being carried out for tailings re-treatment and mine re-opening respectively. The permit application for King Island Scheelite is before Council for determination. Comment was made on the environmental management plans related to the permit application.

Town planning

A submission was made to Central Coast Council to ensure that its planning scheme reflected the Regional Forest Agreement with respect to access for potential mineral development. An appeal was lodged against a decision of the Circular Head Council concerning a residential permit near the Circular Head Dolomite mining lease. A mining lease application near Breadalbane was suspended while planning approval was considered in a rural residential zone in the Northern Midlands Municipality.

Rehabilitation

Preparations continue for the Mt Lyell rehabilitation program. Trials to treat surface waters which are emitted from the historic mining areas were carried out to test design parameters for a copper cementation plant. The Department of Tourism, Arts and the Environment (DTAE) is leading this program, which includes Commonwealth funding for its budget.

The Savage River Remediation Program continued. Carbonate treatment of acid drainage was continued to facilitate design of treatment plants. Drainage by-pass works have commenced to divert emissions from North Dump. Rehabilitation works on B Dump were largely completed. This dump has been capped with alkaline rock and drainage diversions have been completed. This is a cooperative program between DTAE and Australian Bulk Minerals.

HRL Limited carried out rehabilitation works at the former Merrywood coal mine following the removal of the washery equipment to the company's other operations in New South Wales. Foundations of the former washing

plant from earlier operations were preserved. A minor revegetation program followed.

Revegetation was carried out by Spectrum Resources Australia Pty Ltd on the disused tailings dam at the Anchor mine near Lottah.

Leasing

The *Quarry Code of Practice* is due for review and initial meetings have been held. The code is advisory under the *Land Use Planning and Approvals Act 1993* (LUPAA) and the *Environmental Management and Pollution Control Act 1994* (EMPCA) and is approved for guidance under the *Mineral Resources Development Act 1995* (MRDA).

Environmental Impact Information (EII) forms are issued to assist applicants for small-scale mining leases to compile a working plan and for MRT to assess the applications. Redrafting the forms was completed.

Under the MRDA mining leases are subject to security deposits (or bonds) to provide for rehabilitation of the mine site. GHD Pty Ltd was commissioned to review the method of calculating bonds to more accurately reflect potential liabilities which may devolve to the State in the event of default by lessees. A workshop was conducted to discuss the draft with industry, which was represented by the Tasmanian Minerals Council, Cement Concrete and Aggregates Australia, and some smaller scale operators.

Publications

The Ministerial Council on Mining and Petroleum Resources, together with the Mineral Council of Australia, have commenced updating the *Best Practice Environmental Management in Mining* series of publications and to include recent practices in community consultation. MRT has been involved in the *Mine Rehabilitation Handbook*. Other handbooks nearing completion include *Mine Closure and Completion*, *Stewardship*, and *Community Engagement*.

Urban Geology and Groundwater Section

This section provided geoscientific information for the management of groundwater resources, waste disposal sites, and geohazards, especially land stability. By ensuring relevant geoscientific data are available to the public and private sectors, better land-use decisions can be made.

Groundwater

General information on groundwater resources, pollution and quality was provided to other agencies, companies and members of the public, in response to enquiries. Consultants investigating pollution problems at a number of sites in Tasmania were supplied with information relating to groundwater in the areas concerned.

Work steadily continued on entering a backlog of historic and contemporary data into the groundwater database. Parts of the database can be viewed by the public on the internet.

The program of accurate monitoring of groundwater levels across Tasmania continued, using data loggers set in

approximately thirty boreholes to provide real-time information on groundwater levels. Field sampling and check monitoring quality assurance was carried out at approximately six month intervals at each monitoring location. The results of the monitoring were published as MRT reports downloadable from the agency's web site.

Work on the compilation of a series of twenty-one 1:100 000 scale groundwater maps, designed to provide information to land use planners in an easily understood format, continued in 2005/2006. The maps have been reviewed and are in the final stages of cartography. They will be distributed to municipal councils in the next financial year as part of the partnership process.

MRT, in partnership with the Department of Primary Industries and Water, actively contributed towards the management of several dryland salinity projects financed under the National Action Plan.

The groundwater function within MRT ceased at the end of this reporting period. Some of the activities described above have been transferred to the Department of Primary Industries and Water.

Land instability

Land instability is a significant hazard in Tasmania, with many homes having been destroyed over the years and significant damage caused to infrastructure. By studying and understanding the landslide hazard it is often possible to minimise or avoid the effects of land instability. MRT is actively addressing this hazard in three main areas; hazard mapping, databases and monitoring. A regional landslide hazard assessment of the Launceston area has been completed. This project is in partnership with local councils and with funding assistance from the Australian Government and Tasmania State Government Natural Disaster Mitigation Programme. The maps produced are assisting councils to make informed decisions on planning and development issues, especially given the pressure to develop marginal lands around our cities. One of the key findings of the Launceston study is the recognition of significant areas of susceptible land within the urban area of Launceston. The information has been supplied to stakeholders, including the geotechnical community and the State Emergency Services' Emergency GIS project.

The landslide team are currently mapping the North West Coast area between Devonport and Boat Harbour Beach. This area is renowned for the high incidence of landslides, particularly close to the coast where there is increasing pressure for urban development.

The TIGER landslide database forms a critical data foundation for the landslide project. Currently there are over 1500 records from throughout Tasmania. MRT is working collaboratively with Geoscience Australia to make this information available live on the internet in 2006/2007.

MRT continues to coordinate the ongoing monitoring of the Taroona landslide in Hobart with key stakeholders. Regular inclinometer surveys provide information for management of the landslide area and surrounds.

In addition to the three main activities outlined above, general information was provided to various stakeholders including comments on planning schemes and significant developments.

Registry Section

The Registry Section maintains a number of mining tenement registers in hard copy and electronic format. The section provides advice to officers within MRT, inquirers from other agencies, the mining industry, the legal profession and the general public on a wide range of matters associated with mining tenements and legislation.

The processing of applications for mining tenements and issue of tenement documentation continues to provide the majority of work for the section's officers.

Close liaison is maintained with professional geological officers of MRT, particularly in relation to maintenance of the TASXPLORE database, monitoring of exploration expenditure, circulation of company reports, and preparation and circulation of the *TasXplorer* news sheet.

The section liaises with a number of other agencies in regard to tenement applications and provides information to field staff who monitor on-ground activity on mining tenements.

Requesting and collation of production and expenditure statistics is an important activity carried out by the section. These statistics provide the basic data for collection of royalties and assessment of exploration levels.

Twenty-two Exploration Release Areas (ERA), covering 20 166 km², were offered to potential explorers by way of the *TasXplorer* news sheet, which is circulated widely within the Australian mining community. The news sheet is sent to 220 clients of MRT by facsimile (66) and post (154), and is also available on the MRT web site. Applications were received for areas within twelve advertised ERA's resulting in nine exploration licence applications covering 348 km² of ground.

Officers of the section play a key role in maintenance of the TASXPLORE and REGIS modules within the TIGER database management system.

Mining Legislation

The *Mineral Resources Development Act 1995*, which came into force on 1 July 1996, is the principal legislation relating to management and regulation of mining tenements in Tasmania.

Mineral Resources Tasmania provides information through *Service Tasmania* outlets and forms approved under the *Mineral Resources Development Act 1995* are available via MRT's web page or on disc.

The *Mineral Resources Regulations 2006*, replacing the *Mineral Resources Regulations 1996*, came into force on 28 June 2006.

Mining Tribunal

Under the *Mineral Resources Development Act 1995*, a Mining Tribunal, consisting of a magistrate, has jurisdiction to hear a wide range of mining disputes.

The Act places an obligation on the Director of Mines to attempt to resolve disputes before there is a formal hearing before the tribunal. In effect this usually consists of informal mediation, arranged by the Registrar of Mines, between the parties.

Experience to date suggests that the dispute resolution process required by the Act adequately covers most situations that would otherwise require formal determination.

Tribunal claims lodged with Mineral Resources Tasmania during the year, were:

74258 *Tarkine National Coalition Inc. v Goldamere Pty Ltd*
— ELA 19/2005, *Savage River*

Objection lodged in regard to conservation values. Objection withdrawn after meeting of the parties.

74259 *ZZ Exploration Pty Ltd v Minister for Economic Development, Energy and Resources*
— EL 20/2002 & 30/2002, *Zeehan*

Appeal against revocation of licences. Referred to Mining Tribunal for determination. Appeal successful and licences reinstated.

74260 *Van Dieman Mines Pty Ltd v Blue Heaven (Tas) Pty Ltd*
— 14M/2004, *South Mount Cameron*

Request for determination of compensation. Agreement reached after interchange of documents.

74261 *Tarkine National Coalition Inc. and Rob Fairlie v Mineral Holdings Australia Pty Ltd*
— ELA 14/2005, *Arthur River*

Objection lodged in regard to conservation values and effects on walking tours. Application refused prior to mediation.

74262 *Tarkine National Coalition Inc. and Tiger Trails Ecotours v Symorgh Investments Pty Ltd*
— ELA 21/2005, *Mount Lindsay*

Objection lodged in regard to conservation values and effects on walking tours. Mediation conducted by Registrar. TNC objection withdrawn. Referred to Mining Tribunal. Tiger Trails found to not have standing, objection dismissed.

74263 *John Wilson & others v Applied Geophysical Research Pty Ltd* — ELA 23/2005, *Lorinna*

Objection lodged in regard to conservation values. Licence application withdrawn.

74266 *Tasmanian Conservation Trust, C Wilson & West Coast Aboriginal Corporation v Sunrise Exploration Pty Ltd*
— ELA 22/2005, *Strahan*

Objection lodged in regard to conservation, tourism and aboriginal heritage issues. Mediation conducted by Registrar. Objections withdrawn by TCT and C. Wilson. Referred to Mining Tribunal. Objection by West Coast Aboriginal Corporation dismissed on failure of organisation to appear.

74267 *Tarkine National Coalition Inc. and Tasmanian Aboriginal Land and Sea Council v Jaguar Minerals Ltd*
— ELA 27/2005, *Temma*

Objection lodged in regard to conservation and aboriginal heritage values. Objections withdrawn after mediation conducted by Registrar.

74277 *Tarkine National Coalition Inc. v Manasia Pty Ltd*
— ELA 31/2005, *Stephens Rivulet*

Objection lodged in regard to conservation values. Objection withdrawn after mediation conducted by Registrar.

74278 *Tarkine National Coalition Inc. and Tarkine Wilderness Pty Ltd v Bass Metals Limited and Geoinformatics Exploration Pty Ltd* — ELA 36/2005, *Paradise River*

Objection lodged in regard to conservation values. Mediation conducted by Registrar. Resolution expected.

74279 *Tarkine National Coalition Inc. v Manasia Pty Ltd*
— ELA 34/2005, *Serpentine Ridge*

Objection lodged in regard to conservation values. Objection withdrawn after mediation conducted by Registrar.

74281 *R K and R H McDermott v Tasmanian Tin Pty Ltd*
— 21M/2003, *Granville Harbour*

Appeal against caveat. Objection withdrawn.

74285 *M L and R D Graham v G J Cresswells Transport Pty Ltd*
— 1814P/M, *Deloraine*

Objection lodged by land owner. Referred to Mining Tribunal. Adjourned *Sine Die*.

74286 *P C Sims v TasGold Limited* — RLA 4/2005, *Lea River*

Objection lodged in regard to conservation and aboriginal values. Objection withdrawn after mediation conducted by Registrar.

74287 *Tasmanian Conservation Trust v Mineral Holdings Pty Ltd* — ELA 4/2006, *Savage River*

Objection lodged in regard to conservation values. Mediation to be conducted by Registrar.

74288 *D Yorkston & others v Dove River Pty Ltd*
— ELA 14/2006, *Dove River*

Objection lodged in regard to effects of exploration on private land. Referred to Mining Tribunal. Decision in regard to standing of objectors to be issued.

74289 *Cala Resources Pty Ltd v Minister for Economic Development, Energy and Resources*
— EL 2/2003, 3/2003, 4/2003, 5/2003, 6/2003, 7/2003, 8/2003, 9/2003, 13/2003 & 14/2003, *North East Tasmania*

Appeal against revocation. Conciliation conference held without successful outcome. Listed for Trial.

74290 *Tarkine National Coalition Inc. v Bass Metals Limited and Geoinformatics Exploration Pty Ltd*
— ELA 16/2006, *The Pinnacles*

Objection lodged in regard to conservation values. Mediation conducted by Registrar. Resolution expected.

74291 *Tarkine National Coalition Inc. v Manasia Holdings Pty Ltd* — ELA 9/2006, *Whyte River*

Objection lodged in regard to conservation values. Mediation conducted by Registrar. Resolution expected.

74292 *Tarkine National Coalition Inc. v Jaguar Minerals Ltd*
— ELA 18/2006, *Wilson River*

Objection lodged in regard to conservation values. Mediation conducted by Registrar. Resolution expected.

74294 *B & P Irvin v Manasia Holdings Pty Ltd*
— ELA 10/2006, *Beauty Point*

Objection lodged by landowners. Mediation to be conducted by Registrar.

Lease Applications, 2005/2006

Total number of all types of exploration rights held as at 30 June 2006

| <i>Mining Tenement</i> | <i>Number</i> | <i>Area</i> |
|---|---------------|------------------------|
| Exploration Licences — | | |
| Category 1 (Metallic minerals) | 158 | 9 315 km ² |
| Category 2 (Fuel minerals) | 2 | 145 km ² |
| Category 3 (Construction minerals) | 26 | 1 089 km ² |
| Category 4 (Oil — onshore) | 2 | 28 371 km ² |
| Category 5(a) (Industrial minerals) | 37 | 2 564 km ² |
| Category 5(b) & (c) (Gemstones) | 17 | 823 km ² |
| Category 6 (Geothermal) | 1 | 12 360 km ² |
| Retention Licences — | | |
| Category 1 (Metallic minerals) | 22 | 103 km ² |
| Category 2 (Fuel minerals) | 5 | 170 km ² |
| Category 3 (Construction minerals) | 20 | 107 km ² |
| Category 5 (Industrial minerals) | 20 | 104 km ² |
| Category 5(b) & (c) (Gemstones) | 9 | 55 km ² |
| Prospectors Licences issued | 143 | Not applicable |
| Permits to explore for petroleum under the Commonwealth <i>Petroleum (Submerged Lands) Act 1967</i> | 14 | 719 Blocks |
| Retention Licence under the CPSLA 1967 | 1 | 5 Blocks |
| Pipeline licences held under the CPSLA 1967 | 3 | |
| Pipeline licences held under the Tasmanian <i>Petroleum (Submerged Lands) Act 1982</i> | 1 | |
| Production licences held under the Tasmanian <i>Petroleum (Submerged Lands) Act 1982</i> | 2 | 4 blocks |

(Note: Exploration licences and retention licences may include more than one category)

Leases applied for in 2005/2006

| <i>Product</i> | <i>Number</i> | <i>Area (ha)</i> |
|------------------|---------------|------------------|
| All minerals | 2 | 146 |
| Dolomite | 1 | 5 |
| Easement | 4 | 200 |
| Gold | 1 | 37 |
| Gravel | 6 | 223 |
| Lime sand | 1 | 7 |
| Limestone | 3 | 512 |
| Sand | 2 | 30 |
| Sand and gravel | 2 | 92 |
| Sand and stone | 3 | 339 |
| Shale | 1 | 3 |
| Stone | 8 | 57 |
| Stone and gravel | 2 | 19 |
| Tin | 1 | 381 |
| Wolfram | 1 | 544 |
| Total | 38 | 2 595 |

Leases granted in 2005/2006

| <i>Product</i> | <i>Number</i> | <i>Area (ha)</i> |
|-----------------|---------------|------------------|
| All minerals | 2 | 1 335 |
| Gold | 1 | 37 |
| Gravel | 6 | 21 |
| Sand | 1 | 4 |
| Sand and gravel | 1 | 2 |
| Sand and stone | 1 | 25 |
| Sandstone | 1 | 2 |
| Stone | 4 | 90 |
| Total | 17 | 1 516 |

Total number of leases in force at 30 June 2006

| <i>Principal product</i> | <i>Number</i> | <i>Area (ha)</i> |
|----------------------------|---------------|------------------|
| All minerals | 31 | 19 732 |
| All minerals and stone | 5 | 5 680 |
| Clay | 5 | 87 |
| Coal | 2 | 6 289 |
| Coal and stone | 1 | 175 |
| Copper | 1 | 5 |
| Dolerite | 1 | 40 |
| Dolomite | 4 | 243 |
| Easement | 18 | 480 |
| Gold | 14 | 996 |
| Granite | 4 | 50 |
| Gravel | 174 | 3 107 |
| Gravel and clay | 2 | 34 |
| Lime sand | 5 | 226 |
| Limestone | 13 | 1 768 |
| Magnesite | 2 | 1 167 |
| Magnesite, silica and talc | 1 | 29 |
| Magnetite | 1 | 605 |
| Nickel | 1 | 400 |
| Ochre | 1 | 15 |
| Peat | 1 | 9 |
| Quartzite | 1 | 191 |
| Sand | 48 | 1 941 |
| Sand and gravel | 25 | 1 470 |
| Sand and stone | 12 | 659 |
| Sandstone | 5 | 34 |
| Shale | 4 | 38 |
| Silica | 2 | 145 |
| Silica sand | 1 | 20 |
| Silica, sand and stone | 1 | 50 |
| Slate | 3 | 165 |
| Specimens | 14 | 90 |
| Stone | 219 | 4 950 |
| Stone and gravel | 23 | 452 |
| Tin | 9 | 708 |
| Wolfram | 1 | 544 |
| Total | 655 | 52 594 |

Information Systems and Geophysics

The main activities of the branch in the 2005/2006 year were:

- ❑ Ongoing maintenance and development of the TIGER (Tasmanian Information on Geoscience and Exploration Resources) System;
- ❑ Maintenance and development of RIMS;
- ❑ Continuing a Business Process Review of MRT's activities; and
- ❑ IT training of MRT staff.

The branch also provided geophysical services and advice to MRT and our clients, and computer and network support for MRT.

The branch is structured to reflect the functions needed to achieve the outcomes required by MRT and provides Project, Operational and Geophysical services. Two staff members resigned during the year. At 30 June there were four permanent systems support staff in the Operations Section, deployed within the functional areas of PC and Network Operations or Database and TIGER System Support. Two permanent staff members supported the Road Information Management System (RIMS) but are scheduled to be relocated to the RIMS Management Team work area. The Branch Manager is also responsible for geophysical activities.

In view of the reduced human resources available within the branch, Deloitte Growth Solutions Pty Ltd was requested to undertake a review of the development and implementation procedures used for IT projects by the branch and to recommend revised strategies for future development and implementation. These strategies are to be implemented progressively over the next 12 months.

Major branch achievements during the year included:

- ❑ upgrading several TIGER modules;
- ❑ implementing a module to allow non-MRT references to be added to information held in the TIGER system;
- ❑ introducing MapInfo as a second GIS environment;
- ❑ updating the MRT Records Management System;
- ❑ building an increased information skills-base for MRT staff;
- ❑ an increase in the level of use of the MRT web site;
- ❑ transferring a number of RIMS reports to Oracle Discoverer;
- ❑ supporting the RIMS Phase 3 development; and
- ❑ completing functional requirements and design documents for a spatial interface for TEAMS II.

Data capture

Capture of metadata summarising technical documents relating to exploration continued throughout the year, with 155 new summaries entered and 253 summaries updated. In addition to Internet searching of the summaries of open-file technical documents held by MRT, all open-file

documents relating to onshore or offshore exploration and open-file MRT publications can be viewed or downloaded in full over the Internet.

All mineral exploration reports submitted to MRT are required to be in the national standard format for digital reporting and compliance with the report format at initial lodgement was in excess of 97 per cent. Consultation with and assistance to stakeholders to ensure close compliance with the data formats detailed in the national guidelines has continued and contributed to the high level of conformance with the guidelines. Because of the extended time before GDA94 topographic base maps will be available for all of Tasmania, all incoming reports are checked to ensure that the geodetic datum used is clearly specified.

MRT web site users have experienced some difficulty in downloading very large documents since the facility became available, as documents having more than 600 MB of PDF files were available only as single page files. Following consultation with users, scanned files have been joined and large documents can now be downloaded either as individual pages or as a series of joined PDF files with a maximum size of 630 MB per joined file. A second phase of compression using Adobe Acrobat has allowed a number of the joined documents to be further reduced in file size.

TIGER System

Following completion of Project TIGER on 30 June 2003 the TIGER System, which provides a single storage environment for MRT's corporate data, is supported entirely from MRT resources. As mentioned above, the review by Deloitte Growth Solutions Pty Ltd recommended revised strategies for the development and implementation of IT projects by the branch. These strategies have been accepted by the MRT management team and are being implemented progressively.

Using the TIGER system MRT staff enter, maintain and search corporate data relating to all aspects of MRT's activities including tenements, exploration reports, MRT publications, groundwater, drilling, geohazards, samples and observations, mineral deposits and geophysics from a number of browser-based thin client applications accessed via the MRT Intranet. The MRT web site enables access to this corporate data and associated metadata from anywhere in the world with Internet access. Data are delivered to clients through the MRT web site using customised textual and spatial searches and a number of basic data sets are also available for download. A total of 5620 GB was downloaded from the MRT web site this year compared to 1730 GB last year.

Data migration into the TIGER System has continued throughout the year. Development of the Microsoft Excel bulk loader for loading and editing sample and geochemical data for the TIGER system has been suspended until revision of the data model to better reflect MRT business processes is complete. Work has continued on developing both the spatial and textual interfaces to the

TEAMS II application, for use in monitoring environmental performance during mineral exploration, and all but the final testing and data migration is complete.

MRT geochemical data are being delivered using a standard schema and web feature server implemented as part of the national SEEGrid Demonstrator project. The present delivery server has no support available. The Government Geoscience Information Policy Advisory Committee has recognised this and will be defining what is required to move to a production service. The committee will then seek approval and funding through the Chief Government Geologists Committee to progress this matter.

IT summary

In accordance with government guidelines, MRT replaces desktop PCs every three years and transfers the original PCs to the Schools Program. New PCs are purchased with the current Microsoft enterprise operating system and as a consequence the progressive introduction of Windows XP is continuing.

There are four network PC servers, three of which run Windows 2000. The main PC network server is running Netware 6.1 with approximately 136 gigabytes of on-line storage. Windows 2000 servers provide anti-virus, email, intranet and image delivery services to MRT staff. Files on the corporate Unix systems are accessed from PCs using Samba software. Automatic gathering of software inventories from desktop PCs and licence metering are part of the IT infrastructure capability.

Two Unix systems provide corporate information technology services to MRT staff. In addition there are Unix servers dedicated to development and testing for the TIGER System, for the MRT intranet, and for Samba. A further two Unix servers host the MRT web site. The MRT web site is located in the Rosny Park building to simplify maintenance and up-loading of data to the web site servers and has a 10 Mbit/sec connection to the Internet.

Extensive one-on-one and group training has been provided to users in the use of the thin client applications in the TIGER System, in the use of the Exposure map viewer client, in use of the MRT web site, and in use of the Bibliographic Reference Information System that is common across all TIGER modules. All relevant staff have also been trained in the use of the new External References module in the TIGER system.

The development and maintenance environments for both RIMS and the TIGER System are currently co-located within MRT and this has produced overall benefits for DIER. With the implementation of the recommendations of the Deloitte review the benefits of locating the RIMS developers with MRT have been significantly reduced. After consultation between the RIMS Management Team and MRT it has been decided that the RIMS developers will be located within the RIMS Management Team environment from early next year. Although RIMS Phase 3 was developed by contractors under the direction of the RIMS Management Team, the RIMS developers based at MRT have been involved in ongoing testing and integration of existing code and a large number of

completed requests for changes with the software developed by the contractors.

The MRT web site continued to be well used with an average monthly download volume of 468 GB and a peak monthly download volume of 2047 GB. The MRT web site provides a high-speed access point for clients to access the open-file data held in the MRT corporate information management system. Oracle spatial replication is used between MRT's internal and web servers. The web site offers Web Map Service/Web Feature Service for a restricted number of data sets and MRT has made geochemical data available as part of the SEEGrid Demonstrator Project. Larger datasets stored on the file system are now automatically replicated on a daily basis as they become open file. In excess of four terabytes of network attached storage is used to accommodate these large data volumes.

Geophysics

The MRT web site has indexes of open file geophysical data including gravity base stations, airborne geophysical surveys for which digital data are held, and gravity stations. Where applicable the basic digital data can also be downloaded and new open file data has been added to the web site as it is received. Survey control point information can easily be retrieved from The LIST after carrying out a map-based search on the MRT web site.

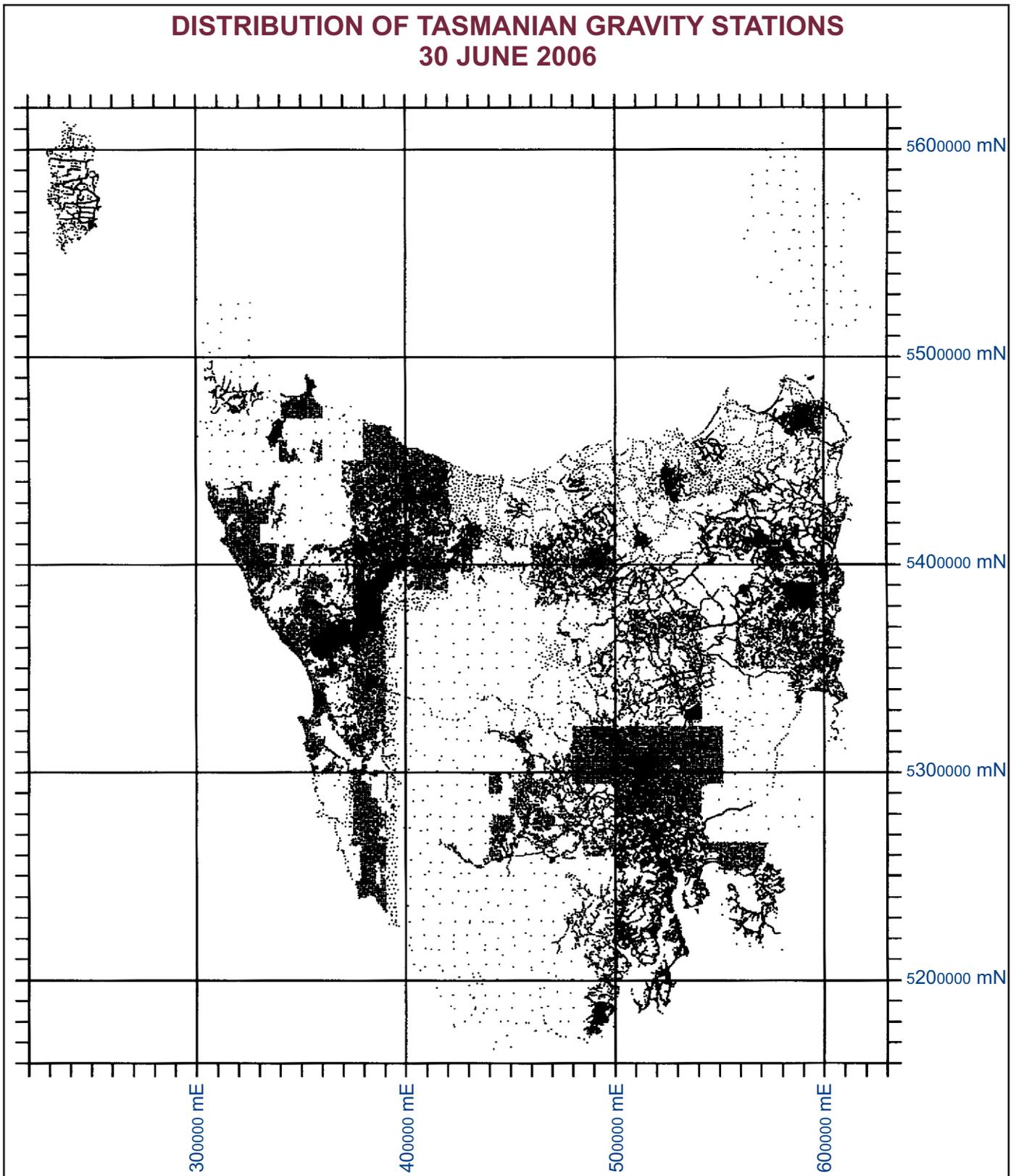
During the year 3348 closed file gravity readings were added to the state database. The distribution of gravity stations as at June 30 2006 is shown on the accompanying map. Significant gaps remain in the coverage. Areas in northeast Tasmania will be targeted as part of the geophysical component of a project announced during the 2006 Tasmanian State election campaign. The other geophysical component of the project is the acquisition of aeromagnetic, radiometric and digital terrain data over northeast Tasmania and the Furneaux Group.

The branch has participated extensively in both the production of promotional materials and in promotional activities. Preparation has continued for conversion of geophysical data from AGD66 to GDA94 as part of the forthcoming MRT GDA94 project.

Business Process Analysis Project

A project to document and refine MRT's business processes to take advantage of the new corporate information management system (TIGER) and to reduce the risks associated with dependence on individuals continued during the first six months of the year. Major deliverables included documentation of revised business processes that support MRT's core business, documentation of the processes used to carry out this project, and training and templates for MRT staff to maintain documentation of business processes for MRT operational and project-based work.

An initial review showed that many activities throughout MRT are related to mineral tenements. This year activities have extended beyond the tenement area with a review of guidelines and processes for provision of information to the



public and the development of standards and procedures for MRT publications.

Test and implementation plans for the TEAMS II application were developed for use following delivery of the application. Functional requirements and specifications

for a related system, the Mining Lease Inspection System (MLIS), were prepared. Implementation of the MLIS will require changes to Registry processes, lease compliance processes and systems, and to the *Mineral Resources Development Act*.

Data Management

The role of the Data Management Branch includes:

- ❑ geoscientific data management;
- ❑ tenement management services;
- ❑ management of the Geographic Information System (GIS);
- ❑ management of the Computer-Aided Drafting (CAD) system; and
- ❑ provision of support drafting services.

During 2005/2006 the capture of 1:25 000 scale digital geological data continued. This work resulted in the completion of twelve new map areas and the significant upgrade of eight existing map areas in northwest Tasmania for use in the production of landslide hazard maps.

- ❑ twelve completed and or upgraded 1:25 000 scale digital geological maps in northwestern Tasmania (Bird [East and West], Burnie, Calder, Cuvier [East and West], Devonport, Latrobe, Kerauden [East and West], Kindred, Robbins, Stowport, Ulverstone, Wynyard);
- ❑ eight completed 1:25 000 scale digital geological maps in eastern Tasmania (Ansons Bay, Eddystone, Lyme Regis, New Norfolk, Tam O'Shanter, The Gardens, Tomahawk, Waterhouse).

Work on the 'seamless' coverage of 1:25 000 scale digital geology of Tasmania continues, with maintenance being carried out on a regular basis. Maintenance of the 1:250 000 scale digital geology of Tasmania was also carried out on a regular basis.

Work on the compilation of a series of twenty-one 1:100 000 scale groundwater maps, designed to provide information to land use planners in an easily understood format, continued in 2005/2006. Following a peer review, these maps, were substantially modified and these modifications are currently being incorporated in the maps. Following completion, the maps will be presented and distributed to municipal councils, as part of the partnership process, and to other stakeholders.

In association with the 1:100 000 scale Municipal Planning Series maps, eight draft digital 1:250 000 scale maps,

produced in 2003/2004 and showing groundwater prospectivity for Tasmania, were also reviewed. The modifications to these maps have been commenced.

A series of landslide hazard classification maps covering the Launceston urban areas was produced. These maps depict the themes of geology, landslides and geomorphology, potential debris flow hazards, potential rockfall hazards and potential deep-seated landslide hazards.

Following on from 2004/2005, the Branch, together with other staff of MRT, continued to be involved with the assessment of areas of Crown land for the Crown Land Assessment and Classification Project (CLAC). Crown land in the remaining ten municipal areas has been assessed to determine availability under the MRDA and land stability. A total of 381 man hours has been spent on this project to date.

CAD continues to be used as a support tool for many projects, with 43 maps and plans and 161 tenement maps and diagrams being produced throughout the year.

Tenement administration work included:

- ❑ fifty-seven new exploration applications processed and entered into the Agency's tenement information system;
- ❑ seventeen Exploration Tender Area plans produced and entered into the Agency's tenement information system;
- ❑ thirty-nine new mining leases processed and entered into the Agency's tenement information system; and
- ❑ data on seventy-four proposed 'on ground' work programs for exploration licences were entered into the Agency's information system for monitoring this type of exploration activity.

A total of 1423 hardcopy output products of digital geology/tenement data were produced on demand using the Agency's inkjet plotters and 207 data sets of digital geological data were produced for clients.

Royalty, Finance and Administration

This branch provides the corporate support function for Mineral Resources Tasmania, and is responsible to ensure:

- ❑ that effective royalty and fee collection systems and assessment programs are in place so that revenues are properly managed and accounted for to the satisfaction of the Auditor-General;
- ❑ the timely provision of financial, accounting and administrative advice to the division in conjunction with departmental corporate services;
- ❑ the production of publications relating to the interpretation and recording of Tasmania's geoscientific

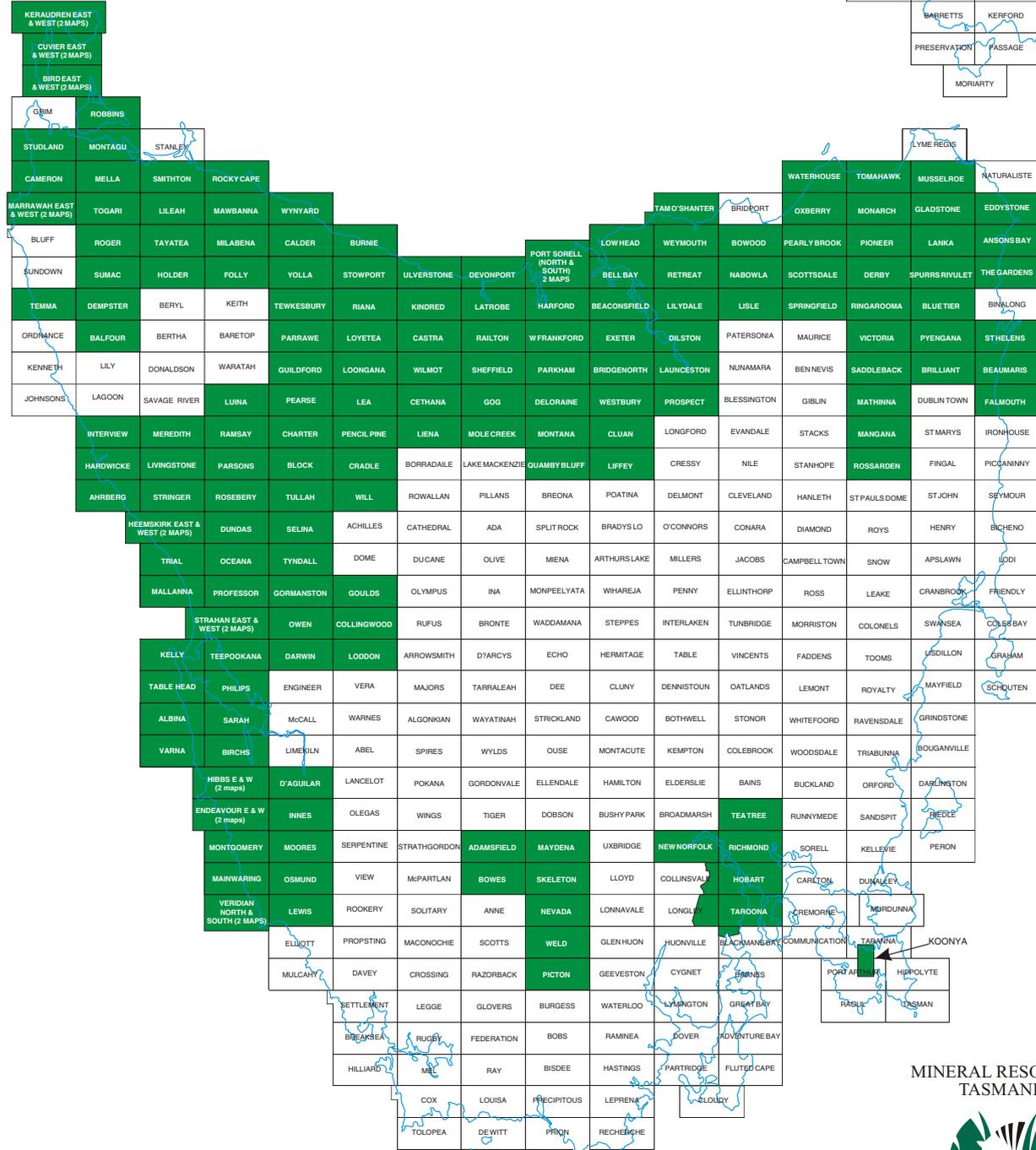
nature, geohazards and mineral wealth, in both electronic and hard copy form. These publications include geological reports, promotional documents, newsletters, materials for displays, Exploration Release Area flyers, and other reports and leaflets as required;

- ❑ the proper maintenance of the static content of the MRT web site;
- ❑ that all corporate information is kept in an orderly manner and is readily retrievable;
- ❑ that the MRT information and access services collection is maintained and adequate resources are provided to

1:25 000 SCALE DIGITAL GEOLOGICAL MAP PROGRAM As at 30 June 2006

| | |
|-----------|-------------|
| WICKHAM | |
| NEW YEAR | EGG LAGOON |
| REEMRA | SALTWATER |
| LOORANA | SEAELEPHANT |
| CURRIE | NARACOOPA |
| FEARSHAPE | GRASSY |
| STOKES | |

| | | |
|--------------|-------------|-----------|
| SISTER | | |
| PALANA | ARTHURS | |
| TANNER | WINGAROO | |
| EMITA | MEMANA | PATRICIUS |
| WYBALENA | LEVENTHORPE | SELLIARS |
| REEF | WHITEMARK | LOGAN |
| CHAPPELL | LOCOTA | FISHER |
| BADGER | ANDERSON | DUNCHEON |
| BARNETTS | KERFORD | THIRSTY |
| PRESERVATION | PASSAGE | |
| MORIARTY | | |



Map complete



undertake the development and delivery of information services to MRT staff, the mineral industry and members of the public; and

- a high level of executive support to the Director of Mineral Resources Tasmania.

Publications

Major publications produced during the year included:

- The Mineral Resources Tasmania *Annual Review* for the year 2004/2005.
- *The geology and mineral deposits of Tasmania*, by D. B. Seymour, G. R. Green and C. R. Calver (Geological Survey Bulletin 72).
- *Occurrences of Gemstone Minerals in Tasmania*, by R. S. Bottrill and W. L. Matthews.

The *Fossicking Areas in Tasmania* book was reprinted.

Twenty-one flyers promoting Exploration Release Areas were produced. A considerable amount of promotional and display material was produced as required.

The following reports were issued in the *Tasmanian Geological Record* series during the year:

- 2004/05 — *Nature and origins of copper and tin-tungsten deposits in the Balfour–Temma area, northwest Tasmania*, by R. S. Bottrill and J. Taheri.
- 2005/04 — *The Tasmanian Landslide Hazard Map Series: Methodology*, by C. Mazengarb.
- 2005/05 — *Additional map compilation and review of existing maps in western Tasmania*, by M. Vicary
- 2005/06 — *New whole-rock geochemical analyses of the Middle Cambrian Thomas Creek intrusive complex and associated lavas of the Noddy Creek Volcanics, western Tasmania*, by R. Reid, M. P. McClenaghan and D. B. Seymour.
- 2005/07 — *Tasmanian bond system for mining and exploration tenements*.
- 2006/02 — *MRT statewide groundwater monitoring network — September 2005 monitoring round*, by A. R. Ezzy.

The following reports were issued in the Archaeological Survey Report series during the year:

- 2004/01 — *An archaeological inspection of the Silver King main shaft area at Zeehan*, by A. E. Webster.
- 2006/01 — *A site inspection of the Scamander River silver mine*, by G. J. Dickens.

Work continued on adding and upgrading entries on the DOMINFO database.

Library

The library supports the core activities of MRT by providing geoscientific information to staff, mineral exploration companies, geotechnical consultants, local authorities, researchers, students and members of the public.

The library continues to be staffed by a full-time librarian, with assistance being provided two days per week. The Workplace Standards Tasmania collection, although co-located in the Rosny Park Library, is managed separately by a permanent part-time librarian.

Technical services

The Inmagic DB/Textworks library management software was updated during the year to version 9.00.

Work continued on cataloguing journal titles not previously entered onto the library management software and journal holdings information was updated.

Collection

Work continued on removing irrelevant or outdated journals from the collection. Compactus holdings are being clearly labelled as part of this process to improve access to the collection.

All journal subscriptions were renewed. Twenty books and reports were purchased during the year.

Other

Library processes and procedures were documented to fit in with the business process methodology

External publications released during 2005/2006

- BOTTRILL, R. S. 2005. From chromite to crocoite: chromium mineralogy and geochemistry at Dundas, western Tasmania. *Abstracts SGGMP Symposium, Port Macquarie* 29–32.
- BOTTRILL, R. S. 2005. Mineral collecting code of practice. *International Micromounters Journal* 14(4):2–3.
- BOTTRILL, R. S. 2006. Mineral collecting in Tasmania, and Government interactions. *Abstracts 29th Annual Joint Mineralogical Societies Seminar. Broken Hill, NSW* 5–7.
- GREEN, G. R. 2005. *Tasmania: building momentum*. Mining 2005 conference, Brisbane, 26-28 October 2005.
- GREEN, G. R. 2005. *Exploration and development opportunities in Tasmania*. AJM Tasmanian Mineral Exploration and Investment Conference. Hobart, 7-8 November 2005.
- GREEN, G. R. 2006. *Mineral exploration and development in Tasmania: World class province in renaissance*. Mining Journal 20:20 Investor Series, London, 10 March 2006.

Mineral Sector Overview

The general continuation of buoyant metal prices throughout the 2005/2006 year was reflected by the continued development in the Tasmanian mining and mineral exploration sectors, continued strong performances by most operating mines, and accelerated growth in the level of mineral exploration. The highlights were a 57% increase in the value of metallic mineral production from operating mines and an 18.6% increase in value from mineral processing operations. Of particular importance to the future of the industry is that a significant number of new projects advanced towards production during the year.

Producing mines

A notable exception to the high commodity prices was tin, with a decline from about \$US7,200 per tonne at the beginning of the year to a low of around US\$6,000 in November 2005, forcing a suspension of operations at the Renison Bell mine on 3 October 2005. Bluestone Tin Limited announced that it would maintain the mine on care and maintenance and was developing a strategy of reopening the mine in conjunction with commencing production at Mount Bischoff when the tin price improved, and continuing studies into treating Renison tailings. The tin price improved and peaked at \$US9,700 in mid May before oscillating around \$US8,000 at year end. Bluestone had announced that the tin price would need to stabilise above \$A10,000 before operations could recommence and a price above that level from late January provides hope that operations could resume in the medium term.

The tragic accident on Anzac Day forced the Beaconsfield Gold mine to cease mining pending a review of the cause of the collapse and assurance that the mine could operate safely in future. As a consequence gold production fell 34% for the year. Gold production also declined at the Henty mine. Copper, gold and silver production from the Mt Lyell mine all rose significantly. Iron ore pellet production at Port Latta rose nearly 8% and studies to extend the life of the Savage River mine continue.

The increase in the zinc price was largely responsible for a 156% increase in the profit of the Rosebery mine to \$115.9 million in 2005/2006, despite output being affected by low ore grades early in the year. In-mine exploration was successful, with a further 1.9 million tonnes added to the resource during the year partly offset by a 0.7 million tonne mining depletion. Zinifex announced that it would spend an additional \$19 million on exploration and development of the mine over a three-year period.

New developments

Allegiance Mining NL has obtained all necessary permits to commence mining the Avebury nickel deposit. The company has decided to produce nickel concentrate on site and a plant is being designed to produce 7500 to 8500 tonnes of concentrate per annum from a mill throughput of 900 000 tonnes.

Van Dieman Mines plc has announced that it intends to commence alluvial tin and gemstone mining later this year

at the Scotia deposit near Gladstone in northeast Tasmania and has an off-take agreement for tin concentrate and marketing partners for sapphire produced. A gemstone market has been identified for the spinel by-product.

Intec Limited has formed a joint venture with Polymetals Pty Ltd to produce bulk zinc-lead-silver concentrate by re-grinding and flotation of tailings from the Hellyer mine, with operations expected to commence in the latter half of calendar 2006. Intec has announced that this is the first part of an envisaged three-stage project. The second stage is production of a zinc oxide intermediate product and the third is hydrometallurgical co-treatment of the tailings with other waste material to produce high purity zinc cathode and other products containing gold, lead, silver and copper.

King Island Scheelite Limited completed a Development Proposal and Environmental Impact Plan and supplement for re-establishing a scheelite mining operation at Grassy and planned to complete a feasibility study by the end of September 2006.

Mineral exploration

The Australian Bureau of Statistics (ABS) reported 172% growth in Tasmanian mineral exploration expenditure to \$22.6 million for the year, compared with \$8.3 million in 2004/2005. Tasmania's share of Australian expenditure increased from 0.81% to 1.82% during the year. Expenditure growth was marked for both new deposits, up 177% to \$9.7 million and existing deposits, up 167% to \$12.8 million. Tasmania experienced the strongest growth in expenditure of any Australian jurisdiction in both raw and trend terms over the year. MRT data indicated an increase in total expenditure of 19%, from \$25.8 million in 2004/2005 to \$30.6 million in 2005/2006. Mining lease expenditure was static at \$18.27 million compared with \$18.14 million in the previous year. The major increase was in exploration licence expenditure up 63% to \$12.05 million. The significant increase in investment in the search for new deposits is welcome and enhances the prospect of new mineral discoveries.

Exploration licence applications, excluding those refused or withdrawn, have been static in recent years at 39 in 2004/2005 and 37 in 2005/2006. This reflects a tightening of available land for exploration given the large number of current licences and applications (205 as at 8 September 2006).

There was continued significant progress in the nickel exploration being conducted by Allegiance Mining NL, the company announcing new global upgraded resource figures for the Avebury deposit in March of 12.81 million tonnes of 1.03% nickel at a cut off of 0.4% Ni. Allegiance has also reported an indicated resource of 83 000 tonnes of 0.7% Ni and 0.6% Cu and an inferred resource of 12 000 tonnes of 1.2% Ni and 3.3% Cu in the North Cuni-Genets Winze area, 18 kilometres east of Avebury.

Bass Metals Limited has defined a combined indicated and inferred resource of 370 000 tonnes of 1.7% Cu, 4.2% Zn,

1.4% Pb, 64 g/t Ag and 0.3 g/t Au in the Que River 'S' lens, 3.5 km southwest of Hellyer, and has recently reported a number of intersections of copper-rich mineralisation outside the resource envelope. Bass has also announced several significant extensions at the Mount Charter gold-silver-base metals prospect further south with separate intersections of 20 metres of 2.0 g/t Au, 47 g/t Ag, 2.9% Zn and 0.8% Pb and 59 metres of 1.3 g/t Au, 31 g/t Ag, 1.9% Zn and 0.9% Pb to 96 metres in one hole and 28 metres of 1.2 g/t Au, 41 g/t Ag, 2.0% Zn and 2.0% Pb and 9 metres of 1.3 g/t Au, 32 g/t Ag, 1.9% Zn and 0.6% Pb to 49 metres in a second hole. At year's end four more holes were to be drilled prior to calculation of a resource.

Stellar Resources Limited has intersected 22.25 metres of 1.23% copper from 64 metres, within 95 metres of 0.46% copper to the end of hole at 152.8 metres at the Alpine Prospect, ten kilometres south of Corinna. The mineralisation occurs in mixed brecciated and layered rocks and consists of chalcopyrite associated with pyrite, magnetite and hematite.

Jaguar Minerals Limited has announced three separate intersections of zinc-lead-silver mineralisation in a drill hole at the Wilson River Prospect, southwest of Mount Bischoff, with the best being three metres of 5.2% zinc, 0.7% lead and 21 g/t silver. The holes targeted part of a three kilometre zone of anomalous zinc-lead soil geochemistry along the contact of ultramafic rocks and granite.

King Island Scheelite Limited has announced a resource of 13.4 million tonnes of 0.64% WO₃ in the Dolphin orebody, of which 13.2 million tonnes at 0.64% is indicated and 0.2 million tonnes at 0.35% is inferred. The resources have been calculated at a cut-off grade of 0.25% and to a RL of 308 metres below sea level. The company considers that 70 to 80% of the resource will be mineable by open cut with a strip ratio of 6.5 to 1.

Bluestone Tin NL has mining reserve estimates of 742 000 tonnes of 1.23% tin at Mount Bischoff as part of a resource of 1.9 million tonnes of 0.96% Sn. Bluestone has also reported several intersections of copper mineralisation associated with tin in the Federal Fault and North Bassett sections of the Renison Bell mine.

TasGold Limited has announced an intersection of 2.4 metres of 162 g/t Ag, 9.81% Zn, 5.11% Pb, 0.40 g/t Au and 0.12% Cu from 22.6 metres downhole at the Wart Hill prospect in southwest Tasmania.

The revival of gold exploration continued in widespread areas of Tasmania and drilling programs were carried out by Newcrest Limited south of Queenstown and at Red

Hills; TasGold Limited at Golconda, Moina and Elliott Bay; by the Beaconsfield Gold Mine Joint Venture near Beaconsfield; by Zelos Resources NL south of Queenstown; and by Lefroy Resources Limited at Lefroy.

Lefroy Resources Ltd has announced a JORC Inferred Resource for the Pinafore reef at Lefroy of 304 000 tonnes at 22.9 g/t gold, based on a reef thickness of two metres.

Zelos Resources NL has intersected low-grade gold mineralisation in two of three holes at the Davie prospect south of Queenstown. One hole intersected six metres of 0.44 g/t Au, with a best one metre of 1.05 g/t. The second hole intersected a quartz stockwork with 78 metres of 0.39 g/t Au, including 12 metres at 0.46 g/t and one metre at 1.02 g/t.

TasGold Limited has intersected gold mineralisation in the 666 Lode that parallels and lies 100 metres northeast of the Higgs deposit near Moina in northern Tasmania, with intersections of 31.9 metres of 1.2 g/t Au and 2.0 m of 14.8 g/t Au in separate holes.

The Beaconsfield Gold Mine Joint Venture partners have announced the first drill hole at Middle Arm Gorge, near Beaconsfield, has intersected 1.9 metres of quartz-ankerite-sulfide alteration. At year's end, assays had not been reported.

The unprecedented trend of new companies to conduct capital raisings to create new listed exploration companies based entirely or significantly on Tasmanian projects continued. In 2005/2006, Icon Resources Limited listed on the Australian Stock Exchange and Greatland Gold plc listed on the Alternative Investment Market of the London Stock Exchange. At year's end there were a number of other companies in the process of raising capital.

The renewed activity is partly a result of the geoscientific data gathering and promotional activities conducted by government over the last few years, including Project TIGER and the Western Tasmanian Regional Minerals Program, and a number of significant projects can be attributed to this activity. The three-dimensional geological model and prospectivity analysis of Tasmania is a world's first synthesis of such a large region involving a cooperative approach between government and industry to assist with targeting subsurface mineral deposits. It has attracted significant interest and has materially helped small companies identify areas to explore. The forthcoming TasExplore Project is expected to provide further incentives for explorers, as products are released progressively through the life of the project.

Value of the Tasmanian Mineral Industry

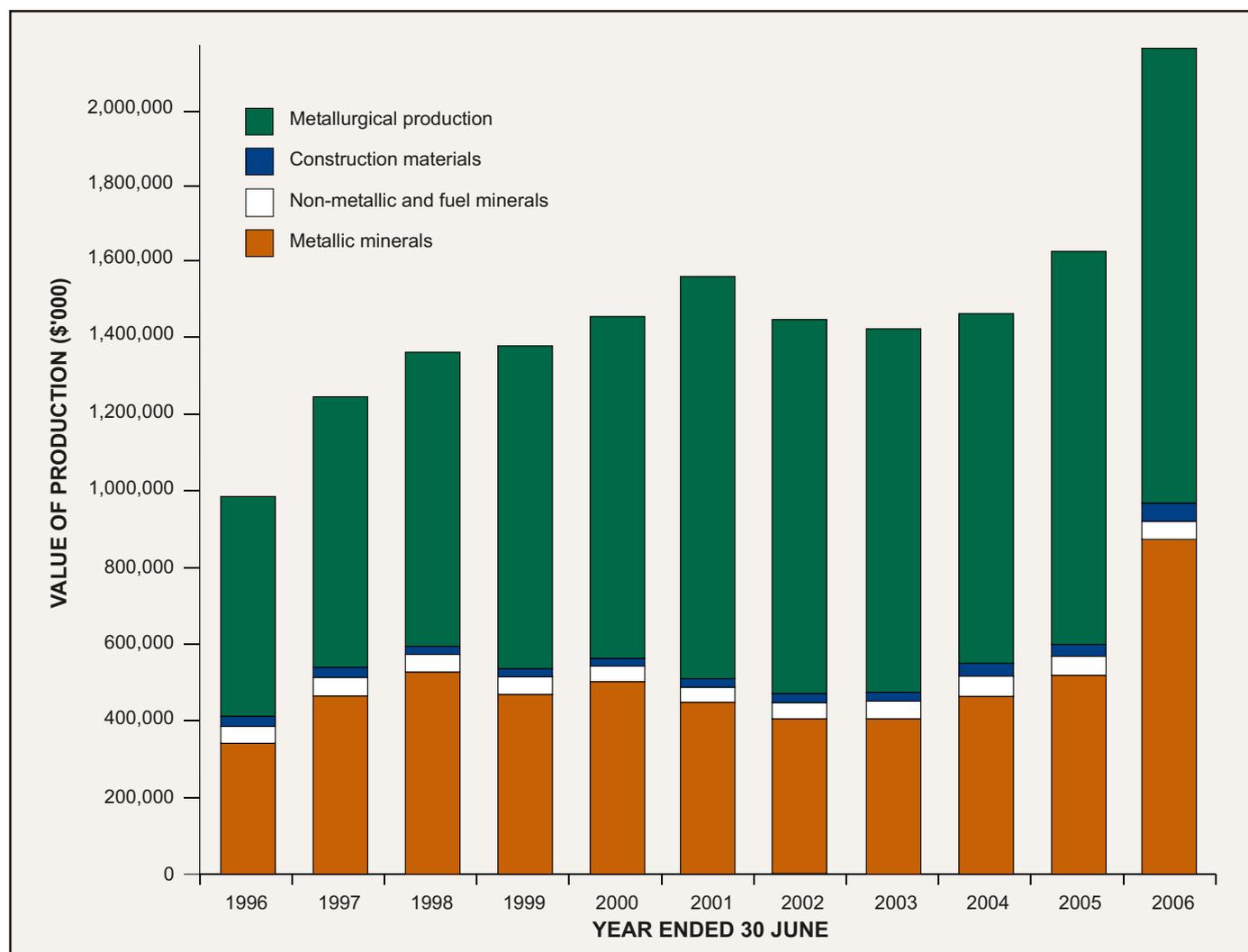
| <i>Year ended</i> <i>Commodity</i> | <i>Unit</i> | <i>30 June 2005</i> ² <i>Total Quantity</i> | <i>30 June 2006</i> <i>Total Quantity</i> |
|---|-------------------|---|--|
| Metallic Minerals | | | |
| Copper (assayed) | (tonne) | 29 867 | 32 788 |
| Gold (assayed) | (kilogram) | 9 547 | 6 968 |
| Iron ore pellets | (tonne) | 2 018 542 | 2 132 232 |
| Iron (in magnetite) | (tonne) | 69 625 | 65 373 |
| Lead (assayed) | (tonne) | 32 426 | 37 126 |
| Scheelite | (tonne) | 44 | 13 |
| Silver (assayed) | (kilogram) | 93 642 | 92 542 |
| Tin | (tonne) | 708 | 937 |
| Zinc (assayed) | (tonne) | 89 075 | 87 029 |
| Value of Metallic Minerals | | \$559 949 902 | \$881 850 874 |
| Non-metallic, Industrial and Fuel Minerals | | | |
| Clay – | | | |
| Cement | (tonne) | 11 591 | nil |
| Brick | (tonne) | 35 961 | 25 257 |
| Other | (tonne) | 450 | nil |
| Kaolin | (tonne) | 13 926 | 12 090 |
| Dolomite | (tonne) | 11 370 | 6 463 |
| Limestone – | | | |
| Agricultural | (tonne) | 149 099 | 117 624 |
| Cement | (tonne) | 1 511 761 | 1 809 537 |
| Chemical and metallurgical | (tonne) | 49 604 | 56 532 |
| Other | (tonne) | 2 808 | 2 077 |
| Silica (glass and other) | (tonne) | 152 967 | 183 944 |
| Sulphuric acid | (mono tonne) | 408 538 | 394 053 |
| Coal (run of mine) | (tonne) | 577 922 | 708 825 |
| Coal (washed) | (tonne) | 380 572 | 432 116 |
| Peat | (m ³) | 1 | 2.75 |
| Gemstones | (kg) | - | - |
| Value of Non-metallic, Industrial and Fuel Minerals | | \$53 285 009 | \$49 917 068 |
| Construction Materials | | | |
| Building stone – | | | |
| Freestone | (tonne) | 154 | 701 |
| Other | (tonne) | 8 807 | 12 883 |
| Sandstone | (tonne) | 131 | 275 |
| Crushed and broken stone – | | | |
| Basalt | (tonne) | 1 010 614 | 1 154 328 |
| Dolerite | (tonne) | 1 436 113 | 1 325 039 |
| Limestone | (tonne) | 79 052 | 57 006 |
| Sandstone | (tonne) | 932 | 38 |
| Other | (tonne) | 148 770 | 198 320 |
| Gravel (aggregate) | (tonne) | 45 243 | 40 211 |
| Sand | (tonne) | 581 878 | 566 048 |
| Other road materials | (tonne) | 2 442 956 | 2 106 666 |
| Value of Construction Materials | | \$43 737 348 | \$45 005 242 |
| Total value with Australian metal prices | | \$656 972 259 | \$976 773 184 |
| Value added production from Tasmanian and other ores | | | |
| Aluminium) | | | |
| Cadmium) | | | |
| Cement) | | | |
| Ferromanganese) | | \$1 012 242 530 | \$1 200 740 875 |
| Silicomanganese) | | | |
| Sinter) | | | |
| Superphosphate) | | | |
| Zinc) | | | |
| Total value of mining and metallurgical production | | \$1 669 214 789 | \$2 177 514 059 |
| Reported average number of employees ¹ | | 4402 | 4143 |

1. Not all operators report full details

2. Figures for 2006 may vary from previously published results because of late or amended returns

Value of Production, 2004/2005 and 2005/2006

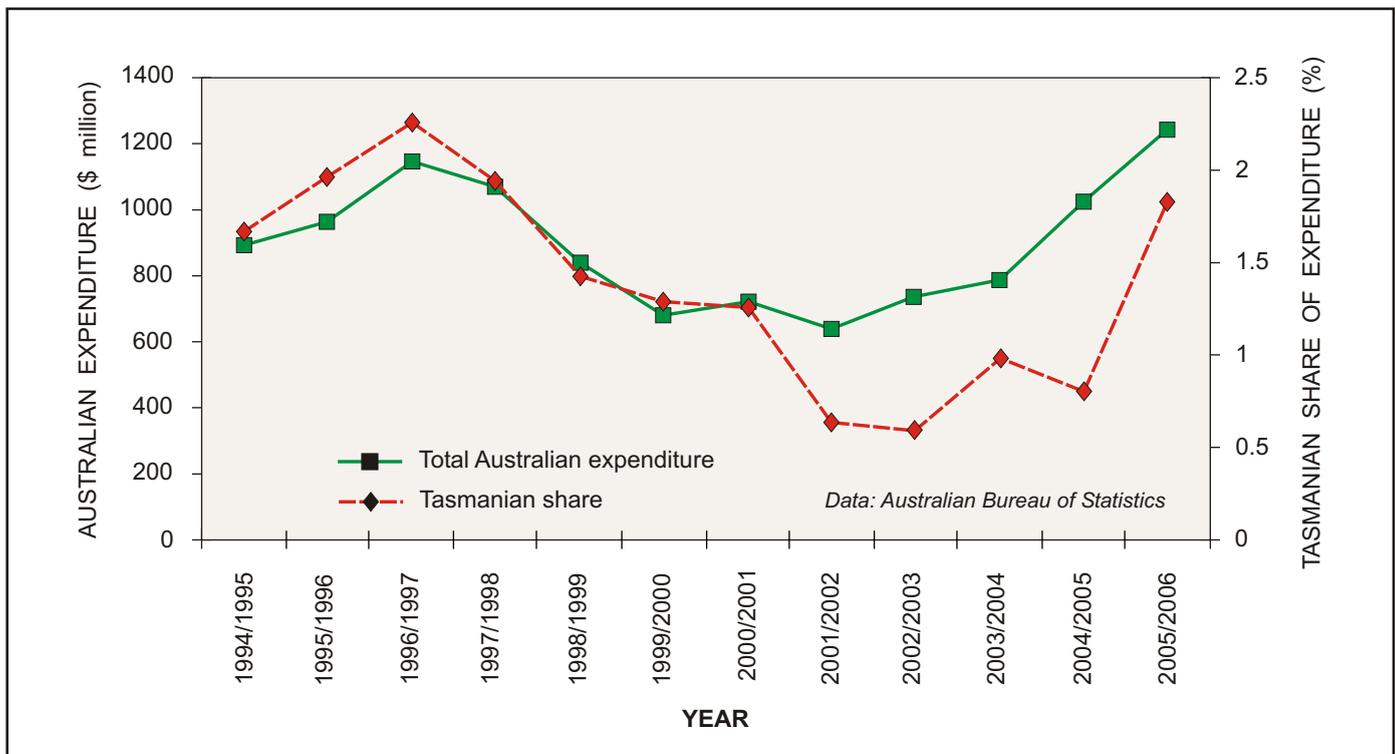
| | 2004/2005 | | 2005/2006 | | % Change |
|---|-----------|-----------|-----------|-----------|----------|
| | Tonnes | A\$'000 | Tonnes | A\$'000 | |
| Gold | 9.5 | - | 6.9 | - | -27.4 |
| Silver | 93.6 | - | 92.5 | - | -1.2 |
| Zinc | 89 075 | - | 87 029 | - | -2.3 |
| Copper | 29 867 | - | 32 788 | - | 9.8 |
| Lead | 32 426 | - | 37 126 | - | 12.6 |
| Tin | 708 | - | 937 | - | 32.3 |
| Iron ore pellets | 2 018 542 | - | 2 132 232 | - | 5.6 |
| Total metallic minerals | - | 559 950 | - | 881 850 | 57.5 |
| Non-metallic and fuel minerals | - | 53 285 | - | 49 917 | -6.3 |
| Construction materials | - | 43 737 | - | 45 005 | 2.9 |
| Value added production from Tasmanian and foreign ores | - | 1 012 242 | - | 1 200 741 | 18.6 |
| Value of mining and mineral processing production | - | 1 669 215 | - | 2 177 514 | 30.5 |



Mineral Exploration Expenditure

| Year | Australian Expenditure (\$ Million) | Tasmanian Expenditure (\$ Million) | Tasmania as % of Australian Expenditure |
|-----------|-------------------------------------|------------------------------------|---|
| 1994/1995 | 893.4 | 14.9 | 1.67 |
| 1995/1996 | 960.2 | 18.8 | 1.96 |
| 1996/1997 | 1148.6 | 26.0 | 2.26 |
| 1997/1998 | 1066.8 | 20.7 | 1.94 |
| 1998/1999 | 837.8 | 11.9 | 1.42 |
| 1999/2000 | 676.4 | 8.7 | 1.29 |
| 2000/2001 | 721.3 | 9.1 | 1.26 |
| 2001/2002 | 640.6 | 4.0 | 0.62 |
| 2002/2003 | 732.5 | 4.3 | 0.59 |
| 2003/2004 | 786.7 | 7.6 | 0.97 |
| 2004/2005 | 1028.4 | 8.3 | 0.81 |
| 2005/2006 | 1240.7 | 22.6 | 1.82 |

Source: Australian Bureau of Statistics — Actual and Expected Private Mineral Exploration, Australia.



Commodity prices and the Australian dollar

Commodity prices continued to trend upwards throughout 2005/2006 due primarily to continued high demand from India and China.

Commodity prices have traditionally been tied to the United States dollar, so as prices for commodities (priced in USD) and the exchange rates rose or fell, the commodity price in Australian dollars had remained reasonably constant. During the 2004/2005 financial year the rise in commodity prices continued to outstrip the tie and local producers saw the beginnings of unprecedented increases in AUD prices which continued strongly throughout 2005/2006.

The USD/AUD exchange rate averaged around 75 cents for the year with brief highs of 77 cents and lows of 71. Whilst the dollar remains high from the 50 cent level of 2002, it was not really a major issue for local commodity producers.

Iron ore managed a further 19% increase in price after negotiations with the steel mills following on from the massive 71.5% increase negotiated in 2004/2005 and 19% in 2003/2004. Competition for iron ore remains strong, particularly between China and Japan.

Gold continued to rise steadily throughout 2005/2006 with very large increases in April 2006, seeing the metal rise beyond AUD900 per ounce in May, which was a 25 year high. Investors have been driving the price higher rather than through physical demand for jewellery. Gold averaged

around AUD700 for the year and closed the year at AUD825 per ounce.

Zinc prices were at near historically low levels in 2003/2004. The metal commenced a steady rise in 2004/2005 but saw a very strong rise throughout 2005/2006 as stock levels declined. The metal started the financial year at AUD1,590 per tonne and closed at a pleasing AUD4,385.

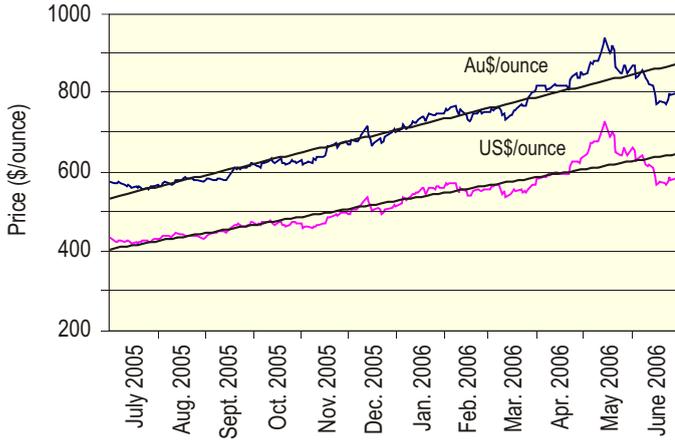
Tin generally traded lower in 2005/2006 than in 2004/2005. The metal averaged just under AUD10,000 per tonne for the year which was below the average of AUD11,300 of the previous year. The markets for tin remain fickle.

Copper was a standout performer in 2005/2006. Following modest gains in 2004/2005 the metal performed strongly in 2005/2006 to finish the year above AUD10,000 per tonne from the start at AUD4,630. Copper peaked at AUD11,300 per tonne in May 2006. Demand from China and India, coupled with low stocks, was behind the impressive rise.

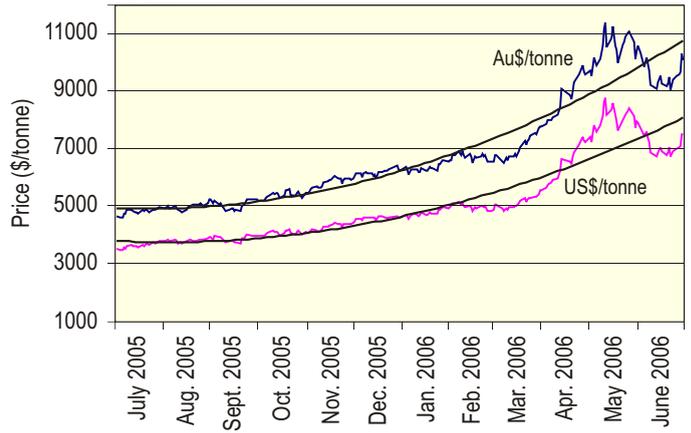
Lead started the year at AUD1,150 per tonne, rose through a high of AUD1,880 in February 2006 and finished the year at AUD1,280.

Nickel started its dramatic climb during 2005/2006, posting record highs throughout the year. The records continued after the end of the financial year with the commodity commanding above AUD42,000 per tonne in September 2006. The metal started the year at AUD19,300 per tonne and closed at near to AUD30,000 per tonne.

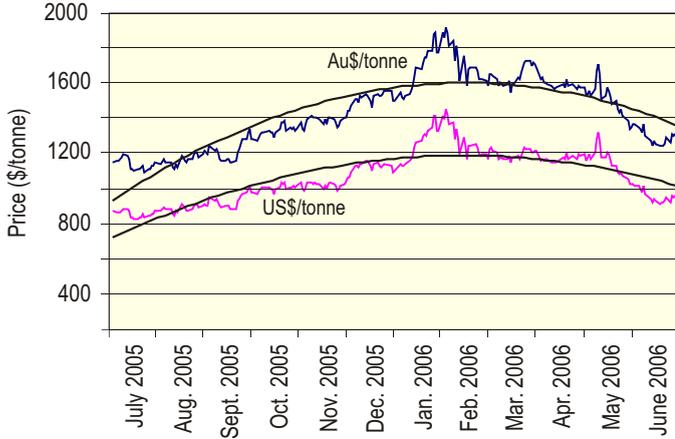
Gold



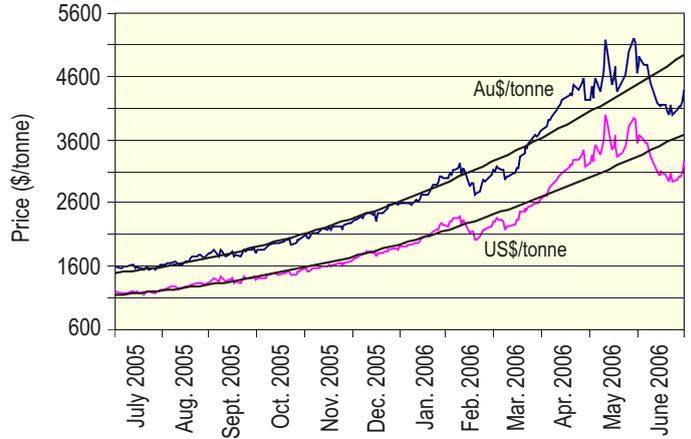
Copper



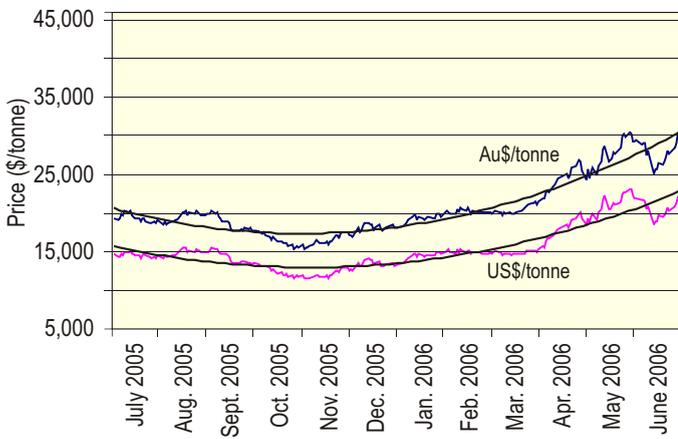
Lead



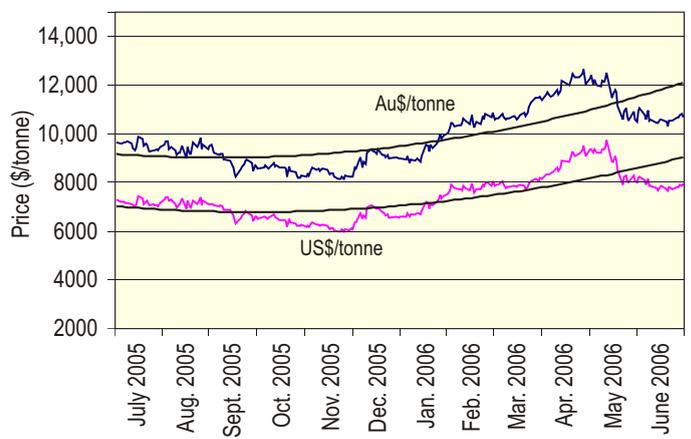
Zinc



Nickel



Tin



Australian Dollar : American Dollar



Review of Mineral Sector Operations

— Metallic Minerals

BASE METALS

Zinifex Rosebery Mine

This company operates an underground mine and concentrator at Rosebery, on Tasmania's west coast.

Mine operations

Production for the year totalled 693 010 tonnes of ore at 13.7% Zn. Of this 115 807 tonnes at 9% Zn were sourced from the upper levels, with 577 203 tonnes at 14.6% Zn being sourced from the lower levels.

Production from the lower levels totalled 566 212 tonnes and came mainly from K lens and P lens, with smaller contributions from mine ore development in V lens and Lower B lens.

Production from the upper levels totalled 126 799 tonnes with production coming from remnant mining in B South, F, G and H lenses, No. 1 Shaft Pillar (D lens) and Access I (B lens).

Mine development

Total development advance was 5392 metres which produced 162 000 tonnes of ore. Most of the capital development was required to extend the F, K, V, P and W declines to access future ore zones and provide drilling platforms for resource infill and exploration drilling. Capital development was also undertaken to complete the B-P Decline linking lower B lens with Upper P lens and providing a second means of egress from the lower mine area.

The operating development was in a number of areas including K Lens (38K and 42-47K), P lens (40-47P), V lens (33-34V), Lower B (20-23B), 16 B South, F Lens and on 12 level around the No.1 Shaft Pillar.

Mill operations

Ore treated totalled 671 661 tonnes grading 13.66% Zn, 4.81% Pb, 0.36% Cu, 147 g/t Ag and 1.8 g/t Au.

- Zinc concentrate production totalled 147 877 tonnes for the year. This was a below budget, primarily driven by the reduced feed tonnages for the period and the increased metallurgical difficulties associated with higher than predicted lead feed grades. Ongoing maintenance within the filter plant also contributed to prolonged reduced mill throughput.
- Gold production as doré was above budget, predominantly influenced by the higher than predicted silver feed grades supplied from underground and with slightly reduced gold as the mine ore sources were received from deeper locations.
- Copper concentrate assays fell below budget as focus was shifted to recovery within the circuit. Gold and silver assays within this concentrate remained high for this year.

- Lead concentrate production remained steady with slightly below planned metallurgical performances. The higher than predicted feed grades improved tonnes of concentrate produced. Silver within this concentrate remained at high levels.

Production for 2005/2006, compared to 2004/2005, was:

| | 2005/2006 | 2004/2005 |
|--------------------------|-----------|-----------|
| Rosebery ore treated (t) | 671 661 | 689 515 |
| Assaying | | |
| Zinc (%) | 13.66 | 14.56 |
| Lead (%) | 4.81 | 5.08 |
| Copper (%) | 0.36 | 0.40 |
| Silver (g/t) | 147 | 145 |
| Gold (g/t) | 1.8 | 2.13 |
| Zinc concentrate (t) | 147 877 | 154 365 |
| Zinc (%) | 56.54 | 57.30 |
| Lead concentrate (t) | 37 121 | 45 690 |
| Lead (%) | 64.81 | 64.25 |
| Silver (g/t) | 1064 | 953.89 |
| Copper concentrate (t) | 7935 | 8712 |
| Copper (%) | 20.00 | 20.61 |
| Lead (%) | 7.28 | 7.87 |
| Silver (g/t) | 4411 | 4084.7 |
| Gold (g/t) | 77.95 | 80.81 |
| Doré (kg) | 449 | 331 |
| Silver (%) | 33.20 | 30.45 |
| Gold (%) | 62.86 | 64.19 |

Resources and Reserves

The Rosebery mine lease resource inventory at the end of March 2005 showed a decrease of 0.698 million tonnes, mainly due to depletions from mining.

The measured, indicated and inferred resource at Rosebery totalled 5.942 million tonnes at 4.8% Pb, 16.3% Zn, 0.48% Cu, 189 g/t Ag, 2.7 g/t Au and 10.1% Fe.

The measured, indicated and inferred resource at South Hercules totalled 560 000 tonnes at 1.9% Pb, 3.7% Zn, 0.11% Cu, 157 g/t Ag, 3.0 g/t Au and 4.4% Fe.

The total proved and probable ore reserve at Rosebery at March 2005 was 2.329 million tonnes at 4.0% Pb, 14.3% Zn, 0.37% Cu, 140 g/t Ag, 2.1 g/t Au and 8.5% Fe.

Drilling

Diamond and reverse circulation drilling totalled 52 960 metres. This included 22 700 metres of resource drilling and 17 900 metres of deep drilling carried out underground.

The main areas targeted were the K North (now re-named W lens) area, south of P Lens and an area down plunge of V lens. No significant extensions or new mineralisation were located.

A total of 12 229 metres of surface drilling was carried out on the Mining Lease. Deep surface diamond drilling

commenced to the north of the mine at the end of April 2005. One hole was completed by the end of the financial year and recorded an 11 m zone of base metal mineralisation approximately 400 m north of the mine workings.

Exploration for along-strike extensions to the South Hercules resource commenced in March 2005 and was completed by the end of May 2005. Only minor extensions to the known mineralisation were recorded.

Capital expenditure

Capital expenditure during 2005/2006 totalled \$25.3 million. Major projects in progress are underground refrigeration, works at the Bobadil tailings dam, an upgrade of the northern upcast fan, process control upgrade and mine development.

Personnel

The company employs 179 people including four temporary and casual employees.

A improvement in referable incidents occurred. A series of programs were rolled out over the past twelve months, focussing on pre-task risk assessments, job safety environmental analysis and the wellness program.

The 'Wellness Program' was developed to engage the workforce and promote a healthier lifestyle, not through radically changing everyone's lifestyle, but by simply improving the quality of each individuals health and well being tailored to their individual needs.

Environment

A significant focus on developing representative environmental license conditions, ETP optimisation and Pieman River investigations has resulted in the lowest recorded number of environmental incidents in a one-year period. The operation reported five non-compliance events to the Tasmanian Government during the 2005/2006 year, which is a 250% reduction from 2004/2005.

The site upgraded ISO 14001 certification to the 2004 standard, and has continued to develop training and awareness programs associated with the environmental aspects and impacts of the mine.

Significant progress was made in addressing environmental legacies with the implementation of a closure plan for the Hercules mine site in collaboration with the Tasmanian Government and stakeholders. Rehabilitation work continued during 2005/2006 through the development and implementation of a revegetation plan, which involved targeted application of lime and fertiliser to promote regrowth. Stormwater upgrade preparations are underway.

The operation has prepared a site closure plan in line with new EPN conditions set by the Department of Tourism, Arts and Environment. The site closure plan has been designed as a strategic risk-based document to support current closure provisions managed by head office and to assist in the development of future Decommissioning and Rehabilitation Plans approaching mine closure.

Zinifex Rosebery Mine, with support from the Tasmanian Government, has successfully searched for and discovered a local micro-organism (the water flea *Ceriodaphnia*) that

can be used to more accurately determine the impacts of discharges from our operations to water on the west coast of Tasmania. Currently established toxicological testing methods use organisms that are not adapted to the unique West Coast conditions and therefore cannot accurately reflect actual environmental impacts.

Final stages of the toxicity investigations are envisaged to initiate the development of appropriate Water Quality Objectives for the Pieman River in the form of a mixing zone in liaison with government. A mixing zone criteria provides opportunities to measure potential impacts on the receiving environment and provides a realistic measurement of water quality.

Biological monitoring completed on the site's discharge points receiving environments showed an improving picture. Monitoring indicated that there were:

- No significant impacts on the Pieman River ecology from the discharge of the main tailings dam.
- The Stitt River continues to reap the benefits of a joint venture with the West Coast Council to operate the rehabilitated tailings dam as a sewage treatment facility. Studies showed sustained aquatic invertebrate life in the river.
- The Ring River continues to experience impacts due to historical mining operations in the region.

Rectification works have been completed along the western embankment of the Bobadil tailings dam. A buttress wall was constructed to meet compliance requirements and to ensure that potential stability issues were controlled to support the optimum life of dam.

Community relations

Zinifex Rosebery Mine is a member of the Rosebery Development Association and has provided cash and in-kind support for a number of its projects to improve the townscape and amenities. More than 40 Rosebery and West Coast community, sporting and cultural groups have received support through the mine's comprehensive sponsorship program.

Rosebery Mine demonstrated its commitment to community consultation through the development of the Hercules Closure Plan. This involved consultation with stakeholder groups, including the local community. Other consultation processes have been established through the construction of a new ventilation fan and the 'Project Horizons' exploration-drilling project.

A quarterly newsletter *Zinifex Exchange* is distributed to the local community to keep them informed on new projects and issues on site.

Further improvements to the use of the rehabilitated 2 and 5 dams as town sewage treatment ponds have been investigated to improve water quality from the dams as well as to provide a cheaper and sustainable town sewage treatment system.

Zinifex Rosebery Mine, in conjunction with the West Coast Council, has developed a Community Management Plan to enhance community relationships through funding and facilitation of community-based projects.

Intec Ltd

Intec owns the treatment plant and tailings dam at the Hellyer mine site.

Following an agreement with the Polymetals Group \$6 million has been raised to refurbish the Hellyer concentrator and for preparatory works to dredge and treat the tailings. The tailings resource is 10.9 million tonnes at 2.8% Zn, containing 305 000 tonnes of zinc. Plant throughput is planned at 1.5 million tonnes per annum. Production will commence in 2006/2007.

The chloride leach demonstration plant at Burnie has been operating successfully throughout the year. Steady-state conditions have been achieved in the process and the plant has achieved metal recovery from Hellyer tailings at up to 95% of design criteria. Satellite programs have included finished copper sulphate for sale, and the sale of four tonnes of zinc ingots. Conversion of lead-silver cement to bullion and refinement of gold recovery design are also being undertaken.

Intec also successfully treated electric arc furnace dust and Zeehan smelter slag in the demonstration plant.

Zeehan Zinc Limited

An open-cut mine is being developed in the Comstock area near Zeehan. The mine site is immediately adjacent to the Trial Harbour Road which was upgraded during the year. The road was diverted around a potential extension to the Allison's open cut, with material from the road works being used for the continued rehabilitation of the central waste rock dump.

Other developments include further construction of the gravity plant under the supervision of F.A.M.E. Foley Industry.

The company employs 22 people and has used numerous contractors.

Exploration continued with reverse circulation drilling being undertaken at Allison's Lode, Main Lode and the Oceana Prospect. Capital expenditure was reported to be \$2.2 million.

Several environmental surveys have been conducted including water quality, flora, fauna, weeds and heritage.

Resources/Reserves

The measured resource in the Main Lode (including West Lode) comprised 5000 tonnes at 4.1% Zn, 3.2% Pb, 40 g/t Ag.

Inferred resources comprised:

- Allison's Lode: 4000 tonnes @ 2.3% Zn, 0.7% Pb, 17 g/t Ag;
- Main Lode (including West Lode): 13 000 tonnes @ 4.3% Zn, 1.7% Pb, 24 g/t Ag;
- Balstrup: 4.6 million tonnes @ 5.7% Zn, 3.3% Pb, 35 g/t Ag.

The probable reserve for Allison's Lode comprised 99 000 tonnes at 5.7% Zn, 1.7% Pb, 42 g/t Ag.

COPPER

Copper Mines of Tasmania Pty Ltd

This company operates the Mt Lyell mine at Queenstown.

A total of 443 people are employed by the company and contractors, with the largest contractor, Barmingo, employing 186 people. Of these 403 people are employed in production areas, including 192 underground.

Production from the mine was 30 523 tonnes of copper, 17 530 ounces of gold and 140 403 ounces of silver, in concentrates. Waste mined totalled 22 455 tonnes.

Reserves and resources

The total measured indicated and inferred mineral resource at Prince Lyell at 31 March 2006 was estimated as 15 485 303 tonnes at 1.41% Cu containing 218 227 tonnes of copper. This is JORC compliant and reflects the lower Prince Lyell grade control drilling program and 1% cut-off grade.

Inferred resources have been recalculated at 0.75% cut off grade as follows:

- Prince Lyell: 5.976 million tonnes @ 1.35% Cu;
- Western Tharsis: 11.766 million tonnes @ 1.26% Cu;
- King Lyell copper clays: 1.200 million tonnes @ 1.4% Cu;
- Crown 3 pillar: 605 000 tonnes @ 1.4% Cu;
- Total: 19.547 million tonnes @ 1.3% Cu.

The Prince Lyell estimated ore reserve at 31 March 2006 was:

- Surface stocks: 58 468 tonnes @ 1.19% Cu;
- Proved: 10 613 985 tonnes @ 1.26% Cu;
- Probable: 3 574 912 tonnes @ 1.27% Cu;
- Total: 14 247 365 tonnes @ 1.27% Cu containing 180 468 tonnes of copper.

Rehabilitation/environmental and pollution control initiatives

Major progress was achieved during the year with a raise of the Princess Creek tailings storage embankment. The dams decant design allows improved control over discharge water quality. Dual, controllable decant structures allow the release of the cleanest water from the decant pond and reservoir, and provide for total closure of the discharge during high turbidity events. This will see an improvement in downstream water quality in Princess Creek.

The turbidity management plan was revised at the mine. This includes improved awareness and understanding of turbidity issues by site personnel, installation of electronic turbidity probes in the mine water discharge stream and improved maintenance of sediment retention infrastructure.

CMT has continued its programs of revegetation of the site, with ongoing protection and encouragement of natural revegetation and seeding of areas disturbed by tailings dam construction work, exploration drill sites, disused tracks, drainage diversion earthworks and waste rock dump

capping. Weed control programs have removed all infestations of invasive environmental weeds, with ongoing follow up successfully containing weed regrowth.

CMT engages with the community through active involvement on a number of environmental committees and community groups, both on the West Coast and on a statewide basis. Assistance with revegetation trials by the King River Action Group and contributions to a new mobile equipment wash down unit for the West Coast Weed and Fire Group, together with environmental information sessions for tourist operators and school groups, were highlights for the year. CMT has assisted the Department of Tourism, Arts and the Environment with continuing projects for remediation of acid drainage from pre-CMT mining operations at Mt Lyell.

Capital expenditure

Total capital expenditure for the year was \$4.859 million. This included a filter press for \$1.8 million and surface drilling and exploration on five targets for \$1 million.

Other projects included:

- A pressure filter;
- Use of a mobile crusher on contract to increase the plant throughput;
- Site security;
- Power factor correction project;
- A weighbridge for the filter shed;
- Float cleaner circuit replacement;
- Malco screen upgrade and replacement;
- An entrance gate for the site; and
- Return air development on 1465 Level.

Gold

Beaconsfield Mine Joint Venture

Production at the Beaconsfield gold mine was suspended after a seismically induced rock fall on 25 April 2006. Investigations into the cause of the rock fall, the resulting fatality and implications for future safe operation of the mine were ongoing as at 30 June 2006.

At the end of June 89 people were employed of whom eight were in technical services, 46 in mining, 25 in processing, eight in administration and two in occupational health and safety. In addition, contractors were engaged for some mining and maintenance services and security.

Production

A total of 2550 kg of gold and 319 kg of silver was produced from 200 930 tonnes of ore milled. A total of 66 834 tonnes of waste was mined during the year of which 60 428 tonnes was utilised as backfill underground, with the remainder hoisted to the surface and disposed of in the Boral quarry on Cabbage Tree Hill.

Resource

The JORC compliant resources at 31 March 2006 were as follows:

| | |
|--------------------|---|
| Measured Resource | 255 000 tonnes @ 20.4 g/t Au (167 000 ounces contained gold) |
| Indicated Resource | 568 000 tonnes @ 13.6 g/t Au (249 000 ounces contained gold) |
| Inferred Resource | 58 000 tonnes @ 14.7 g/t Au (27 000 ounces contained gold) |
| Total Resource | 881 000 tonnes @ 15.6 g/t Au (443 000 ounces contained gold) |

The Mineral Resource reported has not been depleted to account for production from 1 to 25 April 2006, or the effects of the seismic event.

Exploration

Diamond-drill hole B52/B52A over a length of 652.5 metres was drilled to investigate the potential of 'Tasmania Reef style' mineralisation at Middle Arm Gorge, two kilometres south of the Beaconsfield mine. The hole intersected two zones of interest, a quartz ankerite reef over 1.9 metres from 155.1 metres, and a significant shear zone with mineralised wall rocks over 4.8 metres from 587.95 metres containing 4.39 g/t Au. The results are considered significant because the structure has the same characteristics as the Tasmania Reef at its very western end. Further drilling is proposed to commence in mid-August 2006.

Major projects

The major project during the course of the year was the undertaking of a major life of mine continuation feasibility study focussing on elevating the resources at depth (the F21 Zone) to reserve status. This project was put on hold following the Anzac Day events.

Capital expenditure

Capital expenditure for the year totalled \$4.745 million. Major items of capital included the installation of a real-time seismic monitoring array, commissioning of a fourth underground haulage truck, the installation of a new secondary crusher at the processing plant, and the development of a built-for-purpose charge-up unit. The remaining capital expenditure was of a sustaining nature such as decline development.

Rehabilitation/environment

A development application for the construction of a new tailings storage facility was prepared and submitted to the West Tamar Council in February 2006. It is proposed to construct an HDPE lined facility to augment the existing facility which would be closed over a 12 to 18 month period with the deposition of clean flotation tailings. The development is currently held in abeyance pending a resumption of production.

The Department of Tourism, Arts and the Environment served a new EPN 7166/1 on Allstate Explorations on 31 May 2006.

Barrick (Henty) Limited

Henty gold mine

This company operates a gold mine 25 kilometres north of Queenstown on the West Coast. A total of 161 people, including 55 casual employees and contractors, are employed at the mine. Barrick Gold Corporation took over former mine owner Placer Gold during the financial year. Resources will not be published until the formalities are complete.

Production

Ore mined during the year totalled 307 781 tonnes to produce 3794 kg of doré containing 2427 kg of gold and 1219 kg of silver. Waste mined totalled 91 008 tonnes.

Environmental initiatives

During 2005 Henty's calculated greenhouse gas emissions rose although electricity consumption only increased by less than 3% (the calculated emissions from the generation of that electricity by HEC rose by 430%). Although diesel consumption actually decreased from 2004 (1.016 ML) to 2005 (0.986 ML), the calculated emissions increased.

A number of initiatives were undertaken during the year to minimise electricity consumption. The underground compressors were switched back to reduced capacity, and the pitch of the blades was modified in the main underground fan in order to reduce its energy consumption while maintaining appropriate levels of ventilation underground.

The annual biomonitoring survey of the Henty River upstream and downstream of the mine continued to confirm that the operation is having no impact on stream fauna. This was the thirteenth year that the mine has carried out this survey, which is a good indicator of the mine's performance with respect to managing pollutant levels in discharge water.

Capital expenditure was \$1.291 million with the major item being \$148,000 for replacement of the tailings pipeline.

Major projects completed or in progress

Henty has conducted a major exploration effort in 2005 and 2006. Activities in 2005 were aimed primarily at finding new resources away from the known zones at Henty. In 2006 similar activities have continued, together with a concerted effort to convert existing resources into reserves. A total of 18 399 metres was drilled on the property in 2005, with another 10 000 metres expected to be drilled on the property in 2006.

Tailings line replacement

Work is almost complete on a major effort to replace a significant portion of the main tailings line. In 2004 it was identified that the portion of the tailings line that covers the distance from the mill across the Henty River was slowly deteriorating, and the decision was made to construct an improved replacement for that portion of the tails line. Work commenced in early 2006 with replacement of the original line with an upgraded, more durable product and with re-routing of the tails line to a safer path.

LRSF upgrade

In 2006 a further lift was constructed on the leach residue storage facility to provide another 2½ years of storage capacity. There remains potential to perform yet another lift in order to extend the facility's life even further.

Iron ore

Australian Bulk Minerals (Savage River mine)

ABM continued mining iron ore at Savage River and producing pellets at Port Latta. A total of 413 people were employed in the operation, including 147 contractors. Of these 157 employees worked in the mine, 89 in the mill and 131 at Port Latta.

Although the operation is scheduled to cease mining in 2007, investigations into potential continued development of the operation by deepening North Pit have been actively pursued. Ore resources have not been published to date.

Production

Ore mined totalled 2 373 458 m³ with a further 4 451 027 m³ of waste mined. A total of 6 824 485 m³ was mined.

Concentrator production was 5 242 967 tonnes of ore crushed and 5 154 796 tonnes of ore milled (wet), with 2 155 739 tonnes of concentrate produced for pumping via the pipeline to Port Latta.

Production at Port Latta totalled 2 164 480 tonnes of pellets and 58 343 tonnes of concentrate, with 15 064 tonnes of pellets being stockpiled.

Sales for the year totalled 2 192 463 tonnes of pellets, 15 551 tonnes of concentrate and 73 845 tonnes of chips.

Environment and rehabilitation activities

Contract weed management continued within the former Savage River township on behalf of SRRP. This contract was extended for one year and is now due for completion or renewal in September 2006.

In situ classification and segregation of waste rock from pits has continued. Waste from North Pit went to Broderick Dump and waste from South Centre Pit went to the North Centre Pit Dump. Final placements of waste rock and cover material were being placed on North Centre Pit Dump during mid 2006.

Remediation at Port Latta has continued, with ABM funding a 'Coastcare' program from Rocky Cape to East Stanley. Federally funded works were carried out on the expanded areas during the year.

Dust deposition at Cowrie Point and Crayfish Creek is measured by high volume air sampling with selective PM¹⁰ inlets. The annual averages were 36.68 µg/m³ at Cowrie Point and 22.52 µg/m³ at Crayfish Creek. The higher annual average for Cowrie Point was influenced by extensive road and earthworks for the Cowrie Point sewage installation.

Water quality in the Savage River resulting from ABM's operations met imposed environmental guidelines.

Capital expenditure

Capital expenditure for the year was approximately \$24 million. Major items included seven CAT 785B trucks and other earth moving equipment

On 28 February 2005 Stemcor Pellets purchased the Savage River assets from Ivanhoe Mines. No changes have been made to the current mine plan, which takes production through to May 2009. Pre-feasibility studies to extend mine life continue.

Tasmania Mines NL

Tasmania Mines NL operates an open-cut mine and processing plant at Kara, 30 kilometres southwest of Burnie, producing magnetite and scheelite. Seventeen people are employed in management and operations, with up to twenty contractors also being employed.

Production

A total of 143 996 tonnes of ore was mined, with 127 746 tonnes of ore being processed to produce 65 373 tonnes (68–69% Fe) of dense media magnetite and thirteen tonnes (at 55.7% WO₃) of scheelite. Waste overburden removed totalled 226 567 tonnes.

Reserves and resources

Ore reserves are to be updated following analysis of exploration and in-fill drilling recently conducted. A new ore reserve calculation is to be made following further drilling at the north end of the Kara No. 1 open cut where there is high confidence of significantly adding to mine reserves by further infill drilling.

Proved Ore Reserves at Kara No. 1 comprise:

- Fresh scheelite and magnetite-bearing ore – 41 900 tonnes >30% Fe, 0.55% WO₃;
- Fresh magnetite-bearing ore – 413 500 tonnes >30% Fe;
- Total fresh magnetite-bearing ore – 455 400 >30% Fe.

Probable Ore Reserves comprise:

- Fresh scheelite and magnetite-bearing ore – 12 750 tonnes >30% Fe, 0.55% WO₃;
- Fresh magnetite-bearing ore – 546 450 tonnes >30% Fe;
- Total fresh magnetite-bearing ore – 559 200 tonnes >30% Fe;
- Oxidised magnetite-bearing ore – 560 000 tonnes >30% Fe.

Eastern Ridge

Early drilling for scheelite indicated resources at a number of locations, most significantly Kara North, Location 5 and Eastern Ridge, which have not been quoted while mine production was based on magnetite. Re-interpretation of old data, quoted reserves and drilling results is planned to permit re-evaluation of magnetite and scheelite resources. Material which can currently be categorised as a reserve is the scheelite open cut defined in 1989. The Probable Ore Reserve, as at December 2005, of oxidised scheelite and

magnetite-bearing ore comprised 43 350 tonnes >30% Fe, 0.45% WO₃.

Major projects

The main tailings storage dam level has been raised by one metre and preparation of adjacent storage capacity is in progress. The processing plant throughput capacity has been raised and the process made more efficient by the addition of increased milling capacity.

A significant magnetite/high-grade scheelite deposit with underground mining potential, known as Location 5, was drilled during 2006 to define the extent of the resource. The program has been completed and confirms and adds to the previously defined resource. An updated resource and reserve statement will be issued for the deposit during the calendar year.

Kara No. 1 extension in-fill drilling commenced during 2006 to bring inferred resources to reserve status between old drill sections north of the current open cut. The orebody extension is confirmed but the existing drill section separation is too great for accurate reserve estimation.

Capital expenditure

Major capital expenditure comprised \$400,000 for an additional ball mill and screen.

New developments

The Eastern Ridge open cut has resumed production, principally for the production of scheelite, following cessation of activity in 1989/1990. All preparation and civil works were previously in place.

An open cut on a northern extension of the Kara No. 1 orebody was planned by Golder Associates in 1982 with scheelite as the principal ore. Planning and confirmation of the previously quoted resources and reserves is currently in progress. Bulk sampling for metallurgical testing and additional drilling to raise geological and geotechnical confidence is planned. The pit is planned to recover both magnetite and high-grade scheelite ore with a revised resource and reserve estimation to be completed in the current calendar year.

Rehabilitation

All waste rock storage is now directed to a single waste rock dump at the south end of the Kara No. 1 pit, ensuring ongoing rehabilitation of the pit and minimising the site impact of waste overburden and rock storage. Bench profiling and drainage to maintain dump stability is managed through the site contractor on an ongoing basis.

Nickel

Allegiance Metals Pty Ltd

This company continues to develop its nickel mine at Avebury near Zeehan. A Definitive Feasibility Study for the Avebury Project was completed in December 2005.

Six thousand tonnes of low-grade ore was mined for Allegiance by MG Mining, from the start of the North Avebury orebody. This ore was crushed to 9 mm on site

and trucked to the Hellyer processing plant. Minor modifications were completed at Hellyer to allow a grinding trial of this ore which was conducted in February 2006. Results from this trial indicated a lower power requirement than originally anticipated. Flotation tests demonstrated that saleable grade concentrates could be achieved from this low-grade ore at acceptable recoveries. These factors led to a review of the overall Avebury Project, and resulted in the increase in mine and mill capacity to 900 000 tpa. An application was made to the Department of Tourism, Arts and the Environment to increase the project throughput rate to 900 000 tpa.

An off-take agreement for nickel concentrates was signed with the Jinchuan Nickel Group of China, and \$51 million was raised for development of the Avebury Project. Power was reticulated to the mine site, and final works were completed on the upgrade of the Trial Harbour Road, providing good access.

Resource and reserves

An ore resource was published in August 2005 indicating eight million tonnes at 1.09% Ni, containing 87 000 tonnes of nickel.

The mining reserve was determined at 4.4 million tonnes at 1.16% Ni, containing 51 000 tonnes of nickel.

Further resource drilling continued at Viking and along strike at North Avebury. This resulted in the Avebury resource being increased to 10 million tonnes at 1.14% Ni, containing 114 000 tonnes of nickel, in March 2006.

Tin

Bluestone Mines Tasmania Pty Ltd

Bluestone Mines Tasmania is a subsidiary of Bluestone Tin Limited. Bluestone purchased the Renison leases, mine, concentrator and associated infrastructure in March 2004. The company invested considerable effort and resources into refurbishing the assets to bring them into production, with first tin concentrates produced in February 2005.

Underground work continued in the first quarter of the financial year with dewatering of the mine areas, and development of the Federal Deeps orebody.

Concentrator operations improved during the first quarter with increased availability of refurbished plant and commissioning of circuits, resulting in improvements in tin recovery and concentrate grades.

On 3 October 2005 Bluestone Tin Limited announced the temporary closure of the Renison Tin Project due to the drop in the tin price in September 2005 to US\$6335, an appreciation of the US:AUD exchange rate, and insufficient production rates to achieve economies of scale in the immediate future. The operations were placed under care and maintenance.

Production

Ore hoisted from underground comprised 111 773 tonnes at 1.31% Sn. Of this 29 185 tonnes of ore was won through

development in the Radio, Federal and King ore bodies and 82 588 tonnes was stoped from the Federal and King ore bodies.

The concentrator treated 123 682 tonnes of ore and a total of 908 tonnes of tin in concentrate was produced.

A total of 878 metres of waste development was completed. Waste development occurred mainly in Federal 1559 north and south sill drives, Radio 1860, and the south Renison decline. All waste mined has been used as backfill or stored underground for use as backfill.

Employees

As at 30 June a total of 14 employees were on site, including five contractors.

Environment

Monitoring programs and frequency were maintained throughout the year to ensure continuity of data for point source and ambient water quality monitoring, and to gather baseline data for continuous dewatering operations. Upon suspension of operations, cleaning of the anti-pollution dams was carried out to allow for increased settling capacity and reduce oxidation of acid-generating waste materials. Core activity focussed on development of environmental management systems and plans to include the revised EMP, a Decommissioning and Rehabilitation Plan (DRP) and closure plan. Demolition of the old crusher building commenced in June with removal of asbestos cement sheeting by a licensed contractor. The crusher removal was designed to form a DRP model for the remainder of the site. An asbestos survey was commissioned for the site as part of the DRP process.

Reserves and Resources

The identified total measured indicated and inferred mineral resource estimate at 30 June 2006 was 24 784 000 tonnes @ 0.76% Sn, containing 187 942 tonnes of tin.

Major projects

Major projects were suspended in October 2005 with the exception of the Mt Bischoff development. Thereafter all facets of Tasmanian operations, including Mt Bischoff, were reviewed to provide a clear operation plan for re-commencement of operations.

Projects in progress include decommissioning of the old crushing plant, dewatering of the north Renison (Rendeeep) areas, and Mt Bischoff capital mine pre-development.

Capital expenditure

A total of \$6.2 million was expended on capital at the Tasmanian operations. This comprised plant and equipment, Rentails feasibility testwork, Renison mine development, and Mt Bischoff pre-development.

Rentails Project

The Rentails study pre-feasibility advances and financial modelling suggest a sound project delivering an average of 5960 tpa of Sn metal over a nine-year period. The Rentails Project is based upon the re-treatment of 18.2 million tonnes, averaging 0.43% Sn, of historical tailings produced from the Renison mine over the past 40 years.

Bluestone has varied the scope of the Rentails Project to integrate the re-treatment of the historic tails with the further downstream processing of rejects of the existing Renison operations. The feasibility concept is to build the project around the following typical feedstock:

- ❑ 1.9 million tonnes per annum at 0.42% Sn of historic tailings;
- ❑ 100 000 tonnes per annum at 0.40% Sn of Renison tailings;
- ❑ 160 000 tonnes at 10% Sn of Renison Mosely gravity tails.

Bluestone intends to continue to advance Rentails towards completing a definitive feasibility study as well as continuing to refine and optimise test work and opportunities for the project. During the year testwork success was achieved in implementation of an ultra-fine gravity stage in the conceptual process flowsheet. The Rentails Project continues to advance to pilot plant test work phase simulating the flotation, ultra-fine gravity and fuming processes before completion of definitive study estimates.

Mount Bischoff

The acquisition of the Mt Bischoff project has been completed. Mt Bischoff will be integrated into the Renison Project and will provide the ore feed to enable the Renison

tin concentrator to operate at full capacity in the ensuing three to four years while additional development and production capacity from the Renison Bell mine is implemented.

The mining concept is a simple open cast operation whereby ore is stockpiled and carted to the Renison tin concentrator at a rate of approximately 200 000 to 250 000 tonnes per annum.

Mt Bischoff is currently a retention licence that is being converted back to its original status as a mining lease. The mining lease application was re-submitted in September 2006. It is anticipated that this process will be completed in the current calendar year and that mining can recommence in 2007 pending approval and community consultation processes. The draft DPEMP document for the Mt Bischoff mine was submitted to the Department of Tourism, Arts and the Environment in September 2006.

Bluestone has performed mining studies based upon mining the White, Greisen and Gossan Face zones at Mt Bischoff. These are only a sub-set of the overall mineralised system and as such it is anticipated that, in the fullness of time, considerably more economic ore can be accessed. The Mt Bischoff mine is a substantial mineralised system and excellent potential for the discovery and exploitation of more tin mineralisation exists from both open pit and underground mining.

Industrial Minerals

Limestone and dolomite

Beams Bros Pty Ltd

This company operates a limestone quarry at Flowery Gully and a dolomite quarry at Cressy. Twenty-two people are employed including office staff. Production for the year comprised:

| | |
|--|---------------|
| Metallurgical grade limestone and dolomite | 56 500 tonnes |
| Lime and limestone – | |
| drains, water treatment etc. | 9 300 tonnes |
| fine limestone and dolomite | 62 000 tonnes |
| dolomite by product | 8 000 tonnes |
| stone | 2 700 tonnes |

A total of 15 000 m³ of waste was removed from the Flowery Gully quarry with a further 10 000 m³ of waste being removed from the Cressy dolomite mine.

Rehabilitation of the dump site at Cressy continues as stages are finished, while scrap steel removal continued at Flowery Gully. More trees have been planted on the top western side of the pit at Flowery Gully. There are extensive reserves of both limestone and dolomite.

A Polo Citrus dust control system has been installed at Flowery Gully.

Circular Head Dolomite and Trading Co. Pty Ltd

This company operates a dolomite quarry near Smithton. Fourteen people are employed including contractors. Production for the year comprised:

| | |
|-------------------|--------------------|
| Screenings | 57 300 tonnes |
| Dolomite powder | 32 600 tonnes |
| Readymix concrete | 7800 cubic metres. |

Deep resources exist over the 120 hectare mining lease.

A JCB Fastrac spreader and bin have been installed and work is progressing to instal a larger screen to increase capacity. Potential markets for magnesium export are being explored.

Unimin Australia Limited

This company operates a limestone quarry and lime kiln at Mole Creek in northern Tasmania. Twenty-nine people were employed throughout the financial year, with 19 of these in the quarry and lime plant operation, one in maintenance, two in administration and seven in management and sales.

Limestone production totalled of 118 500 tonnes, with waste movement to dump totalling 123 200 tonnes. Kiln stone was a relatively even blend of high and medium quality to maximise resource life and meet product quality targets. Some trials of mixed blends were abandoned in

favour of 100% feed stock. Whole-of-life stripping ratio and reserves of high, medium and low quality are currently being reviewed in light of operating experience.

Normal procedures in line with Department of Tourism, Arts and the Environment permit conditions continued. Approval was granted and construction was commenced on a \$3.5 million upgrade to the kiln for dust elimination and control improvements to meet new DTAE emissions limits. A lease extension was granted on 10 ha of adjacent land for overburden dumping.

The kiln upgrade was the primary capital development for the year with a new truck also being added to the fleet. Work was completed on improving the access and walkways around the crusher.

The total area disturbed by operations remains approximately 47 hectares, with no land having been rehabilitated to date. A site rehabilitation and closure plan is included in the site EMP.

Silica

Cominex Pty Ltd

This company produces high purity silica flower near Corinna. Seventeen people are employed. Production for the year totalled 70 000 tonnes of silica flour and 6400 tonnes of gravel for road base, with 175 000 tonnes of overburden being stripped. Rehabilitation was carried out on Area 1 and Area 4 of the site. Joint tenement holder Sumitomo Australia Ltd have finalised approvals for a new silica processing plant at Wynyard and expect to commence construction in October 2006.

Index Mineral Processors

This company produces silica in its treatment plant at Burnie from silica sand sourced from Corinna. Thirty people were employed during the year.

The company reported a significant increase in production from 20 955 tonnes to 26 949 tonnes, comprising 6907 tonnes of fines product and 20 052 tonnes of coarse product.

The site Environmental Management Plan was prepared and submitted to the Burnie City Council.

The Index Group has continued an exploration program to firm up potential silica deposit reserves in western Tasmania.

A proposal to expand production to 60 000 tpa over five years, commencing in 2006/2007, has been developed. The documentation for an increase in the production permit was submitted in June 2006.

Index Mineral Processors successfully gained accreditation to AS/NZS ISO 9001:2000 in January 2006.

Ceramics

Austral Bricks Tasmania

This company operates a brick factory at Longford in northern Tasmania. Twenty-three people were employed, with a further eleven casual employees. Production for the year totalled 23 200 tonnes of clay bricks, blocks and pavers. Export markets continue to account for sales in

excess of 25% of total production volume despite high freight costs from Tasmania.

Adequate reserves of clay, shale and sand are available from existing pits, with a minimum of fifteen years life.

K&D Bricks & Pavers

This company continues to manufacture clay products at New Town.

Fuel Minerals

Cornwall Coal Company NL

Cornwall Coal operates coal mines at Fingal, Mt Nicholas, St Marys and Hamilton, and a coal washing plant at Fingal. The company employed 86 people in its operations, with 47 employed underground, ten in processing and twenty in coal transport and open cut operations.

Duncan Colliery

Production continued throughout the year using a combination of both pillar development and pillar extraction techniques. All underground production by the company from the Fingal Valley was concentrated at the colliery. A widehead continuous miner with onboard bolting rigs was purchased and overhauled. The unit will be used to complete the last stages of the mini-wall development prior to the introduction of this new mining system.

Blackwood No. 4

Capital was approved to commence work to gain entry to the Fenton Seam within the Blackwood complex. The box cut was completed with investigation work being carried out to install the services required to commence mining within the seam. Power has been restored with new control systems incorporated.

Blackwood No. 3 and Huntsman No. 2

Rehabilitation has been monitored throughout the year with rehabilitation progressing favourably.

Cullenswood open cut

Cullenswood produced coal throughout the year using contractors to remove overburden and stockpile coal on site prior to road transport to the Fingal washery. Cullenswood is being used to augment the supply from Duncan to satisfy customer requirements due to difficulties in placing coal from Kimbolton.

Kimbolton Coal

Very little coal was mined from this source during the year due to characteristics exhibited during handling and use.

Investigation continued to identify methods and systems able to be used to allow for successful burning of this material.

A test burn was conducted at Railton to determine the suitability of Kimbolton coal use within the cement kiln. Whilst the test was successful, the environmental aspects of the coal proved difficult to overcome, consequently Kimbolton coal will be transported to the Fingal washery for treatment and sale.

Production

Sales for the year were 433 618 tonnes.

Production of raw coal for 2005/2006 totalled 635 467 tonnes. This coal was sourced from the Duncan (526 723 tonnes), Cullenswood (107 418 tonnes) and Kimbolton (1326 tonnes) mines.

Washery throughput of raw coal totalled 651 561 tonnes to produce 415 090 tonnes of saleable coal at a washery yield of 63.71%. Coal sales totalled 433 618 tonnes.

Approximately 235 461 tonnes of reject materials were deposited at the Duncan reject dump.

Resources

The company's leases contain resources that are adequate for the foreseeable future.

Exploration

Four boreholes were commissioned at Blackwood to determine the most suitable position for the No. 4 entry to access the Fenton Seam.

Capital expenditure

A total of \$4.2 million was spent on plant and equipment. The major items were the purchase of a wide-head continuous miner and the commencement of Blackwood No. 4. The first stage of the recently approved tailings dam was commissioned.

Construction Materials

Boral ACM Tasmanian Quarries

This company employed 28 people (including two contractors), of which 23 were in operations and three were in administration. Production was approximately one million tonnes, with 34 000 tonnes of overburden being removed. The company has extensive reserves for foreseeable operations.

Rehabilitation continues in stages at South Arm, Launceston and McGraths. Weed management plans have been developed for all sites.

Crusher plants at the Launceston and Bridgewater operations were upgraded.

Brambles Industrial Services

Brambles operates four quarries near Launceston, centred at Western Junction, and the Ridgley quarry south of Burnie. Eighteen people are employed including subcontractors. Crushed materials production for the year was sourced from basalt (643 000 tonnes), dolerite (20 000 tonnes) and quartzite (10 000 tonnes), with 35 000 cubic metres of overburden being moved at basalt operations. Progressive rehabilitation was carried out in the year and operational procedures were improved to reduce dust emissions.

The company achieved certification to AS4801 and ISO 14001 during the year which now incorporates compliance to DIER specifications and Australian Standards for pavement materials and aggregates. It also incorporates OH & S and environmental compliance which is controlled by the application of standard operating procedures within the scope of the certification.

Caroline Quarries

This company reported production of 24 500 tonnes of crushed silica and 600 tonnes of sand from their Railton quarry, providing employment for four people.

During the year the quarry workings continued in a westerly direction reducing several benches. A shipping container was purchased for a parts shed and the accounting software was upgraded.

Duggans Pty Ltd

This company operates a quarry and concrete factory at Cradoc in the Huon Valley. It employs ten people in its operation. Production for the year included 62 100 tonnes of road aggregates, 27 300 tonnes of concrete products, and 10 300 tonnes of construction material. Approximately 11 000 cubic metres of ready-mixed concrete were sold.

A tree planting program was initiated. Rehabilitation was carried out on benches, sediment dams were improved, and work was carried out to reduce airborne dust and noise

levels. Recycling of precast concrete waste is being undertaken, with the material used in road works.

A new precast factory was commenced in Launceston and extensions were made to the existing factory at Cradoc. Major projects for concrete panels were the Meander dam and Risdon Prison.

Fieldwicks

Dennis Fieldwick Pty Ltd is a family-owned company which has been operating for over 25 years. Fieldwicks currently has approximately 65 full-time employees and sources aggregate, gravel and sand from several Mining Leases across the northwest and eastern regions of Tasmania. Major products were gravel materials (200 000 tonnes), sand and fill materials (12 000 tonnes) and sealing and drainage aggregates (60 000 tonnes).

Gaspersic Contracting Pty Ltd

This West Coast operator employs 21 people in contracting operations. Production for the year totalled 8100 tonnes for road works from Halls Creek, 10 000 tonnes for concrete production from Newall Creek, and 19 300 tonnes for road works at Tullah. Overburden stripped totalled 2300 cubic metres.

Gunns Forest Products

Gunns Forest Products Pty Ltd manages and operates intermittently 45 licensed quarries across Tasmania for the purpose of providing road construction and maintenance materials for a forest road network in excess of 6000 kilometres. A total of eight full time staff were employed to manage the quarrying and roading programs. New construction of gravelled forest roads in 2005/2006 totalled 240 kilometres.

Quarrying and roading work is performed by contractors. In the peak of the construction period there are approximately 70 contractors and their employees engaged in quarrying and roading work. This reduces to approximately 20 during the winter months when most activity is road maintenance. Of those contractors and their employees approximately nine full time equivalents would be engaged in quarrying work.

During the year 166 500 tonnes of material was mined and removed from licensed quarries. All licensed quarries are subject to the provisions of a management plan which includes a requirement to progressively rehabilitate and restore mined-out quarries or sections thereof.

Gunns Forest Products Pty Ltd has an annually audited and certified Environment Management System compliant with ISO 14001. In addition Gunns Forest Products Pty Ltd forestry operations and forest management system is certified compliant with the Australian Forestry Standard. This includes quarrying and roading activities.

Hanson Construction Materials Pty Ltd

This company operates a dolerite quarry at Flagstaff Gully in Hobart and a gravel quarry at Calder on the North West Coast. The company employs 13 people at the Hobart operation and two at Calder.

The Hobart quarry produced 293 000 tonnes, consisting of 180 000 tonnes of aggregates and 113 000 tonnes of road materials. The Calder quarry produced 75 000 tonnes of sand. Overburden stripping has been stockpiled for future rehabilitation work at the Hobart quarry. Calder quarry rehabilitation work will commence in November following completion of a rehabilitation plan.

Rehabilitation continues in all areas at the Hobart quarry with a focus on eliminating pampas grass with successful results. The primary crusher enclosure is underway to further reduce noise and dust emissions.

With another year with no major road developments in southern Tasmania the Hobart quarry continues to rely on aggregate and stone sales to small subdivisions, and concrete and block businesses. Calder quarry sales are also reliant on concrete production and Hanson Building Products production.

An excavator has been purchased for the Calder operation to assist in rehabilitation and production.

Ongoing studies and discussions are being undertaken with the Clarence City Council and DIER to establish the most appropriate extension application for the Hobart quarry.

HBMI Pty Ltd

This company operates a quarry at Leslie Vale south of Hobart. Direct employment at the Leslie Vale quarry and mobile plants varied from 18 to 20 people. Twelve sub-contractors were directly related to production, while indirectly there were approximately 30 subcontractors, including truck drivers, employed each day.

Production for the year totalled 640 000 tonnes of road making material and 40 000 cubic metres of concrete products. It is reported that sales were exceptional with numerous subdivisions and industrial buildings being completed.

Stripping for the next stage of quarry development has commenced, with 10 000 cubic metres of material being moved. Plans are being progressed to add a tertiary crusher to the plant. An electrical upgrade at Leslie Vale was the major item of capital expenditure.

Island Resources Pty Ltd

Four people were employed in extractive operations near Scottsdale, in northeast Tasmania, including one part time. Two were employed in administration and management. While two contractors were employed, one full time in transport and the other part time on mobile plant maintenance.

Production for the year totalled 125 600 tonnes. The major products were:

| | |
|----------------------------|---------------|
| Concrete sand | 10 000 tonnes |
| Concrete block mix | 32 000 tonnes |
| Concrete pipe blend | 4 000 tonnes |
| Retail market sand | 15 000 tonnes |
| FCR Filler sand | 9 000 tonnes |
| Foundry sand (wet & dried) | 24 000 tonnes |
| Concrete gravel | 2 000 tonnes |
| Road gravel | 19 000 tonnes |
| Stone and pebbles | 10 000 tonnes |

Waste material remains at approximately 3% of material mined. Reserves are approximately 49 million tonnes of sand and 2.8 million tonnes of road gravel. Revegetation included plantings of *Eucalyptus rodwayi* seedlings.

Major projects undertaken during the year included the installation of three large concrete storage bins in the drying plant shed extension completed last year.

Lloyds North

Six people, including contractors, were employed at a basalt quarry at Kindred and the crushing plant at Ulverstone. Production was 85 500 tonnes, comprising 60 000 tonnes of aggregates and 25 500 tonnes of road making material.

Rehabilitation is in progress on the northwest area at Kimberleys Road and bund walls have been reformed and raised at Riggs Road. All silt catchment ponds have been cleaned out and extra drainage installed on the southern boundary at Kimberleys Road.

GL Males Pty Ltd

This company operates a sand pit and washing plant at South Arm near Hobart. RNB Trading also extracts concrete sand from the site, with this sand resource expected to be depleted in 2007. Two people are employed full time and six part time. A total of 14 000 tonnes of coarse washed sand, 2500 tonnes of bedding sand, 1500 tonnes of horticultural sand and 1000 tonnes of sandy loam was produced, with 4000 tonnes of sandy soil being stripped and 500 tonnes of fine silt reclaimed to enable reuse of the tailings dam. Major works to which the products contributed were the Elwick Racecourse redevelopment, Big W shopping centre at Kingston, Ralphs Bay foreshore for Frederick Henry Bay dunes stabilisation, and the Cambridge Oval.

Norske Skog

Fourteen people were employed to produce 51 000 tonnes of road construction materials from thirteen quarry leases on State Forest and eight quarry leases on private property. Small volumes of stripping were stockpiled in the Bannisters, Jones and Newbury quarries to access road building materials.

All of the quarries have a current life expectancy of at least 10 to 15 years. Volumes from each of these quarries vary

quite significantly from year to year depending on the proximity of any new road construction and maintenance issues. These quarries all produce excellent road pavement materials. A combination of drilling, blasting and crushing is undertaken in some and, where possible, material is either won by excavators or dozers.

Norske Skog has an annual rehabilitation budget of \$30,000 to ensure that works are being carried out in an effective and efficient manner. This work includes levelling of floors, benches, planting of trees and shrubs and fertilising on areas in quarries which have no further production of gravel materials available.

In recent years Norske Skog has had an annual new road program of approximately thirty kilometres, plus significant upgrading of some existing roads and regular maintenance of our road network. As a result of an agreement between Norske and Forestry Tasmania, the future new road program will reduce to approximately fifteen kilometres per year, plus upgrades and maintenance. As a result, the demand on our quarries will reduce.

The quarries at Plenty, Wayatinah and Westfield have been tagged for Forestry Tasmania to take over leases from Norske Skog in the near future.

RNB Trading Pty Ltd

This company produces concrete and construction sand from the GL Males lease at South Arm near Hobart and from Potato Hill near George Town in northern Tasmania. Four people are employed in operations and administration. Production for the year totalled 124 000 tonnes of construction sand and 1750 tonnes of bedding sand. Work continues with development approvals for retention licences in the north and south of the State.

Stornoway Quarries Pty Ltd

The Stornoway Group operates in northern Tasmania. Industrial Sands and Silica Ltd operates a screening and drying plant at Port Sorell, Stornoway Hewitt Pty Ltd operates a sand washing plant at Beauty Point, while Stornoway Quarries Pty Ltd operates a basalt quarry and mobile crusher at Breadalbane. Production for the year comprised:

| | |
|--|----------------|
| Structural fill and pavement materials | 150 500 tonnes |
| Road material gravel | 8 000 tonnes |
| Silica | 6 500 tonnes |
| Shingle sand | 800 tonnes |

Treloar Transport Co.

This company operates from a quarry at Shackley Hill near Sheffield and from five other sites. Six people were employed in quarry production and administration. Production was 188 000 tonnes. Major products comprised:

| | |
|------------------|---------------|
| Sub base 1 and 2 | 80 000 tonnes |
| Base course | 60 000 tonnes |
| Pit run gravel | 20 000 tonnes |

Work continued on mitigating leaching of iron pyrites through the use of limestone and settling ponds. Testing procedures were established to eliminate production and sale of pyrite-contaminated gravel. Major projects included the provision of material for the Ulverstone to Penguin Bass Highway duplication. A new VSI impactor was purchased for secondary crushing.

Mineral Processing Operations

Cement Australia Holdings Pty Ltd

This company manufactures cement from limestone quarried at Railton. Market conditions remained buoyant throughout the year, providing strong demand for product in both mainland and local markets.

Production

Total production of cement clinker from the plant's kiln was 1.13 million tonnes for the year, with an all time record clinker production being achieved. This clinker was used to produce 1.25 million tonnes of cement, the majority (1.14 million tonnes) of which was shipped to Victoria and NSW via the Port of Devonport. Of the remaining production 109 065 tonnes was used for the local Tasmanian bulk and bag markets. Total dispatches from the Railton factory were 1 253 061 tonnes.

Employment

A total of 153 people are employed full time at the mine and plant, including 13 contractors.

Capital expenditure

Capital expenditure for the period totalled \$6.6 million. An upgrade of the fire main was commissioned during the period along with the upgrade of the dispatch facilities for the local bulk market. The main coal burner in the kiln was also upgraded.

Capital has been approved for an upgrade of Cement Mill 4 (\$7.5 million), a new bagging facility (\$2.2 million) and a technical information system (\$0.6 million) that can capture data from the plant control system for automatic processing.

Rehabilitation and environmental control

Rehabilitation of the Old Mine continued with a major step forward in the completion of the Old Mine Buttress. A total of 462 837 BCM of material was moved. Revegetation of the buttress and further rehabilitation of the Old Mine is scheduled for 2007. Annual weed control programs, including slashing and spraying of declared weeds, was conducted in early 2006. Monthly groundwater bore checks and water quality testing was ongoing this year.

A total of 5273 BCM of topsoil was stripped and stockpiled for future rehabilitation. Of this 350 BCM came from the East Cutback Stage 2 area whilst the remainder was removed from the mine services area to make way for the new mine workshop.

Work on the Site Water Management Plan (SWMP) continues. This plan addresses the issues surrounding management of groundwater and surface water from mining and cement manufacturing operations. Geotechnical testing of ground conditions for the

placement of drains and pipelines was completed and designs finalised.

Development

No exploration drilling was carried out in the 2005/2006 financial year. With changes in the chemistry required at the raw mill, the low-grade unit identified in the New Mine from the 2004 drilling campaign has proven to be an asset.

A total of 463 936 BCM of clay was stripped from the eastern cutback stages 1 and 2. Eastern Cutback 1 is now well into the pinnacle zone and moving towards fresher, higher quality limestone. Further expansion of the pit for the 2006/2007 financial year is planned for the southern part of East Cutback Stage 2.

Comalco Aluminium Bell Bay Ltd

Comalco operates an electro metallurgical aluminium refinery at Bell Bay. At year end 523 people were employed by the company, with a further 55 contractors. Metal production totalled 174 407 tonnes.

Capital expenditure for the year was \$20,592 million. Major items in progress were:

- Higher potline amperage project;
- New rectifier project;
- New tooling (Novelis);
- Variable sized ingot caster project;
- H regulator project;
- Water cooling tower project;
- Bath handling project;
- Automation of cell tending machines project;
- New circuit breakers for potline two;
- Rodding room project;
- Petroleum coke blending project;
- Dross handling project;
- Pims data for reduction.

This company has now been renamed Rio Tinto Aluminium (Bell Bay) Limited.

Impact Fertilisers Pty Ltd

This company manufactures superphosphate at Risdon and employs 110 people and up to 20 contractors. Production of single superphosphate was reduced from 2005 due to market conditions. Additional storage for finished product is being constructed and a ship loading dust reduction system is under construction. Stage 2 of the air hygiene program is under evaluation.

Tasmanian Electro Metallurgical Co Pty Ltd (TEMCO)

This company operates an electro-metallurgical smelter making ferro-alloys at Bell Bay. The company employs 281 people, with 243 in production and 38 in administration.

Production for the year comprised 114 715 tonnes of ferro-manganese, 103 200 tonnes of silicon-manganese and 275 000 tonnes of sinter. Sales totalled 124 291 tonnes of ferro-manganese, 98 876 tonnes of silicon-manganese and 58 600 tonnes of sinter.

Environmental controls

- ❑ Accreditation to ISO 14001 has been maintained.
- ❑ Special projects have continued to investigate fume dam mud recycling and odour emission reduction.
- ❑ A major project involved the installation of a wet turbo scrubber at the sinter plant for the reduction of sinter emissions.
- ❑ TEMCO is involved in a joint initiative with other local industry and the Department of Tourism, Arts and the Environment for the installation of an environmental monitoring station in George Town.
- ❑ Land care of the TEMCO site has maintained its importance, aiding in the reduction of fugitive dust emission and in the greening of the site.
- ❑ The rare and threatened species project with the Royal Tasmanian Botanical Gardens is ongoing. Most recently TEMCO has funded a field trial involving *Prostanthera rotundifolia* in a world heritage area of southern Tasmania.

Capital expenditure and major projects

Major projects completed or in progress include:

- | | |
|--|-------------|
| ❑ Sinter plant wet scrubber (completion) | \$2,983,000 |
| ❑ Purchase of spare lining for furnace No. 3 | \$2,676,000 |
| ❑ Spare No. 1 furnace transformer | \$1,492,000 |
| ❑ Furnace No. 5 additional day bins | \$870,000 |

- | | |
|---|-----------|
| ❑ ERU burner front upgrade (completion) | \$549,000 |
|---|-----------|

A total of \$10,757,000 of capital was spent.

Zinifex Hobart Smelter

Zinifex Hobart Smelter is an electrolytic zinc plant located on the Derwent Estuary in southern Tasmania.

Commissioned in 1917, the smelter is Tasmania's second largest exporter and one of the world's largest zinc producers.

The operation provides direct employment for 537 Zinifex personnel and 109 contractors. The Hobart refinery produced 231 871 tonnes of zinc in 2005/2006, down from 252 716 tonnes the previous year. Metal production was restricted by the planned shutdown of the larger of the plant's two fluid bed roasters for a \$24 million upgrade during March and April 2006. Production of premium-brand EZDA was reduced in response to market conditions and converted to commodity-grade zinc.

Natural gas replaced diesel and LPG as fuel in some parts of the plant, providing environmental and cost benefits. Product handling in the cast house was mechanised, removing occupational health risks associated with manually handling ingots and improving plant efficiency.

Plant capacity is approximately 252 000 tonnes of zinc, 423 000 tonnes of sulphuric acid, 1900 tonnes of copper sulphate and 315 tonnes of cadmium per annum. Approximately 110 000 tonnes of paragoethite residues are shipped to Port Pirie in South Australia for treatment each year, and 28 000 tonnes of lead sulphate leach concentrate is sold.

Certification of the safety management system to AS 4801 and integration with site management systems for Quality (ISO9001) and Environment (ISO14001) was achieved.

Following a major review of the groundwater strategy at the Hobart refinery, \$2 million was allocated for environmental programs to contain stormwater and remediate contaminated groundwater. A total of 69.5 tonnes of zinc was intercepted and recovered from four pilot contaminated groundwater recovery programs.

ANNUAL REPORT

Rehabilitation of Mining Lands Trust Fund

Mineral Resources Tasmania administers the Rehabilitation of Abandoned Mining Lands Trust Fund which is used to carry out rehabilitation of abandoned mining lands in Tasmania. The Trust was established following the proclamation of the *Mineral Resources Development Act 1995*. The State agreed with the mining and quarrying industries to use a portion of mining royalty raised by the Act for the rehabilitation of Crown land affected by historic mining disturbance. A total of approximately \$356,400 was spent during the past year, with the major program being capping shafts at Lefroy in northeast Tasmania.

Shaft Safety

- A two-year program to address safety risks posed by abandoned mine shafts on the Lefroy Goldfield commenced this year. A total of fifty-three shafts were made safe by either capping with concrete panels, fencing, or installing guard rails. Entrance to adits on the Windermere and Monarch mines was restricted with metal grating. The entrance to one adit at the nearby Bangor slate mine was also restricted with metal grating.

Expenditure totalled \$142,700.

- In the Zeehan area concrete capping of the Argent number 2 shaft was completed, the main shaft at the Spray mine was fenced and a traffic barrier was erected to help prevent rubbish dumping in the shaft. Concrete capping of a shaft at Rossarden in northeast Tasmania was also completed.

Expenditure totalled \$37,400.

Balfour

A three-year rehabilitation program at Balfour, in northwest Tasmania, was completed during the year. Work in 2005/2006 was aimed at revegetating small areas not targeted in previous work, fertilising, and increasing the cover of tea-tree slash.

Expenditure totalled \$34,200.

Oonah/Queen Hill, Zeehan

Drainage diversion works were undertaken to separate relatively clean water flows from acid mine drainage. This work included:

- polluted outflow from the Queen Number 4 shaft was piped to a wetland on Pea Soup Creek;
- Oonah Creek was diverted away from the Oonah mine workings;
- a new wetland was constructed to promote precipitation of heavy metals emanating from Bell's Adit and surrounding workings; and

- surface run-off on the northern side of Queen Hill was diverted away from abandoned mine workings.

Approximately 1.5 hectares of gorse was cleared from the entry track to Oonah in conjunction with drainage works.

Expenditure totalled \$31,500.

Storys Creek

Further revegetation was carried out on the tailings repository. Stockpiled logs, from the original site works, were spread over the site to aid emergent vegetation. Local provenance seed was collected and spread over the repository.

Expenditure totalled \$8,000.

This was the third year of a water sampling program to assess the impact on water quality of previous remediation work at Storys Creek. Reports have been produced for each sampling round, although efforts to obtain representative samples have been frustrated by lack of high river flow. The final report is awaiting a further sampling during a high rainfall event.

Expenditure totalled \$8,800.

Program maintenance

Revegetation maintenance, involving infill seeding, fertilising, weed management and erosion control, was carried out on six established programs. The aim of the maintenance is to ensure the ongoing value of benefits derived from rehabilitation programs.

Maintenance during 2005/2006 was carried out at:

- Rossarden red mud trial plots — follow-up seeding.
- Cat Gully, Gladstone — fertilising and weed management.
- Badger quarry, Sheffield — fertilising and weed management.
- Merrywood — revegetation of washery site.
- Zeehan — weed management.
- Websters Creek, Mt Bischoff — maintenance on the limestone drain installed during 2004.

Expenditure totalled \$8,200.

Quarry rehabilitation

The major quarry rehabilitation project during 2005/2006 was at Punchs Terror near Deloraine in northern Tasmania. The program involved re-contouring, drainage work, and seeding with local provenance species. The aims of this work were to prevent sediment transport from the site, improve habitat value, and improve visual amenity.

Expenditure totalled \$33,500.

Royal George

Remediation of mine tailings at Royal George, in northeast Tasmania, was investigated by Pitt and Sherry, Consulting Engineers. A strategy was documented and work on stage one of remediation is scheduled for 2006/2007.

Expenditure totalled \$9,700.

Queensberry Track gorse control

An on-going program of weed control at the abandoned Queensberry mine, managed by the Parks and Wildlife Service, again received funding.

Expenditure totalled \$5,000.