

Mineral Resources Tasmania

Department of Infrastructure, Energy and Resources



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

Mineral Resources Tasmania Annual Review 2007/2008

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Mineral Resources Tasmania

Mineral Resources Tasmania (MRT) is a Division of the Department of Infrastructure, Energy and Resources (DIER). It is Tasmania'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 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 present Government Policy, Partnership Agreements and goals of *Tasmania Together*.

— Mission —

- To contribute to the economic development of Tasmania by providing the necessary geoscientific information and services to foster mineral resource and infrastructure development and responsible land management 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 geoscientific information for integration 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 on Tasmania's geohazards;
- regulation of mineral and petroleum exploration and development in Tasmania, including offshore waters administered by the State, and the promotion of vacant areas available for onshore and offshore exploration;
- setting and monitoring of standards for both the performance of exploration activities and the technical reporting of exploration records and case histories;
- environmental appraisal, monitoring and management of mining heritage and land access issues; and
- issue of legal titles for 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.

— Major issues and initiatives for 2008/2009 —

- Continuation of the four-year *TasExplore* geoscientific data and promotion initiative, following acquisition of aeromagnetic and radiometric data over northeast Tasmania and the Furneaux Group, with geological data acquisition in northeast Tasmania to upgrade the geological interpretation for input to the 3-D geological model.
- The second stage of the gravity survey in northeast Tasmania will be completed. Production of geological maps covering central northern Tasmania following the geological mapping program of the previous year.
- 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.
- 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.

Contents

Mineral Resources Tasmania — Divisional Overview	5
Financial performance	10
Review of MRT Branch Activities, 2007/2008	13
Metallic Minerals and Geochemistry	13
Industrial Minerals and Land Management	16
Hydrocarbons	16
Environment, Land Management and Industrial Minerals	18
Urban Geology	20
Registry	21
Information Systems and Geophysics	24
Data Management	27
Finance, Royalty and Administration	27
Publications	27
Library	28
Mineral Sector Overview	31
Value of the Tasmanian mineral industry	33
Mineral exploration expenditure	35
Commodity prices	36
Review of Mineral Sector Operations	37
Metallic minerals	40
Industrial minerals	47
Fuel minerals	48
Construction materials	49
Mineral processing operations	52
Annual Report, Rehabilitation of Mining Lands Trust Fund	53

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Divisional overview, 2007/2008

As in previous years the mineral extraction and processing sector continues to be Tasmania's largest export industry. In 2007/2008 the sector accounted for 53% of mercantile exports (\$2.8 billion), up from 49.4% the previous year.

Mineral Resources Tasmania, by providing information on the prospectivity and high mineral resource potential in Tasmania, encourages private sector exploration which we anticipate 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.

The mining industry in Tasmania again benefited from continuing strong metal prices during the year. At the time of writing the outlook for 2008/2009 is positive and there is an expectation that commodity prices will generally remain strong. Royalty revenue collected for the State by MRT in 2007/2008 reached a record \$41.4 million.

As mentioned in last year's overview, 'perception' is a wonderful concept that allows all kinds of misconceptions to occur in the face of counter facts. During 2007/2008 a proactive campaign was undertaken by MRT staff at national and international symposia and conferences in an attempt to dispel the negative perceptions and misconceptions about undertaking mineral exploration and mining in Tasmania. These negative perceptions continue to be recorded in the Fraser Institute annual survey (as mentioned in last year's overview) and by resource stocks.

Even with further promotion and disclaimers, the latest Fraser Institute survey still records the perception of companies that Tasmania has 'uncertainty concerning native land claims' despite the fact that it has been stated in numerous forums on numerous occasions that it is highly unlikely that a native title claim could succeed in Tasmania.

There is increasing importance and a rising level of investment in Australian resource projects by major smelting and refining companies in major metal consuming countries such as China, Japan, Korea and, increasingly, India. These companies have historically restricted investment in Australia to advanced-stage mining projects but are

increasingly making investments at an earlier stage in projects, with some entering into exploration joint ventures with Australian companies.

Face-to-face meetings with global explorers are great opportunities to explain the new government initiatives, give examples of new data acquired to date, explain how to access the information and demonstrate it on line, as well as discuss new discoveries and mineral projects and promote Tasmania as a positive place for mineral exploration and project development and to negate the negative perceptions.

During the year MRT officers attended *Mining 2007* in Brisbane in late October 2007; *China Mining 2007* in Beijing in November 2007; an Australian Mineral Exploration Investment Seminar in Tokyo during February 2008; the World Mines Ministers Forum and the Prospectors and Developers Association of Canada Convention (PDAC) in Toronto during March 2008, as well as meetings with mineral companies in Australia, Canada and Europe associated with the above conferences.

The Tasmanian delegation participated with delegates from all other Australian governments as *Team Australia*. This is an important part of the promotional program endorsed by the Ministerial Council on Mineral and Petroleum Resources and coordinated through the Chief Government Geologists Committee.

The objective of the combined Australian governments promoting mineral exploration investment in Australia is to encourage and enhance mineral exploration and discovery, with each jurisdiction focussing on their own State/Territory and Geoscience Australia providing an Australia-wide overview. This will allow for the discovery and development of economic mineral deposits at world competitive costs, and will dispel perceptions that Australia is a mature exploration province and has numerous other negative reasons for companies not to explore here.

The strategy also emphasises the importance of tailoring geoscientific and tenement information and data to meet the needs of potential investors, and of taking full advantage of the internet in information dissemination.

The events in both Tokyo and Toronto were organised through *Team Australia*, with representatives from all

Federal, State and Territory Geological Surveys/Mines Departments, which gives Australian exploration potential, and its stable political and economic framework, a credible and visible presence. The Australian pavilion at PDAC is always admired and visited by both explorers and other government agencies.

The Australian Mineral Exploration Investment Seminar, held in Tokyo, Japan on 26 February 2008, was coordinated by the Australian Government's Geoscience Australia and Invest Australia, the Australian Embassy, Tokyo, and the Japan Oil, Gas and Metals National Corporation. The seminar was undertaken by *Team Australia* en-route to the Prospectors and Developers Association of Canada international minerals conference in Toronto, Canada.

This year's PDAC Conference and Trade Show attracted a record attendance of 20,162 registrants from over 100 countries and comprised 1001 booths. The Trade Show totalled 360 exhibits including those by government agencies from 36 countries (27 in 2007), with additional exhibits from individual Canadian provinces and USA states. The Investors Exchange featured in excess of 640 exhibitors.

The Tasmanian booth, within the Australian Pavilion, was extremely busy (as were the booths of other jurisdictions). The main questions asked at the booth were about new discoveries, access to land for exploration, new geoscientific information and how to access it, and uranium policy and uranium potential. Time was also taken to visit other company and government booths, formal and informal meetings, and networking.

The Tasmanian Government should see signs of the benefit of this travel as we gain more investment from Japan and China, and more involvement by Canadian and North American exploration and mining companies over the next four to five years. Face-to-face discussions, relationship building, and information exchange were key parts of our promotional activities at these events.

The year in review

Allegiance Mining NL further developed the Avebury nickel mine, with the first concentrate produced in July 2008 and the first shipment expected the following month. During

the year, Allegiance was the subject of a successful takeover by Zinifex Limited (now OZ Minerals Ltd) which was finalised on 18 July 2008. Recent drill intersections in the East Avebury area indicate that further growth in the Avebury resource is likely.

Exploration to further extend resources continued at the Zinifex Limited Rosebery mine, and feasibility studies into potential expansion of surface infrastructure and construction of a new tailings dam commenced. The objective is to extend the life of the mine beyond 2030 at current mining rates.

Bass Metals Ltd delivered the first ore from the Que River mine to Rosebery in August 2007 and at year's end had established a profitable operation, with over 37 500 tonnes of ore delivered during the year.

Stemcor has sold 90% of Australian Bulk Minerals to a consortium of Chinese companies, headed by the Shagang Group. The open-cut mine at Savage River is being expanded with a view to extending mine life by at least 25 years.

King Island Scheelite Limited has completed negotiations with the Hunan Nonferrous Metals Corporation to commence the redevelopment of the Grassy scheelite mine and at year's end was awaiting approval from the Chinese Government, the final condition to be satisfied.

Metals X Limited commenced mining tin ore at Mount Bischoff and reopened the Renison Bell mine in July 2008. For the first time, copper will be produced from the mine from the September 2008 quarter, as well as tin. A feasibility study into recovering tin and copper from the Renison Bell tailings dam continued to yield positive results and work has progressed to detailed design stage.

Exploration programs continued at the Mount Lyell and Henty mines.

Mining rates at the Beaconsfield gold mine have reached the levels achieved prior to the April 2006 rock fall. A program of accelerated exploration was due to commence in the mine and in the Beaconsfield area, and exploration tenement packages were secured in the Lefroy and Mathinna areas.

Van Dieman Mines plc is developing its alluvial tin, sapphire, gold and spinel mine at the Scotia deposit near Gladstone and expects to commence production in the December 2008 quarter.

Cominex Pty Ltd and Sumitomo Australia Ltd have transferred the silica flour tenements in northwest Tasmania to Tasmanian Advanced Minerals Pty Ltd. The new company has recently received Level II permits to allow the extraction of 50 000 cubic metres a year at the Corinna and new Blackwater mines. Tasmanian Advanced Minerals Pty Ltd completed the construction of a silica flour treatment plant near Wynyard.

The Thylacine and Yolla gasfields are both in Tasmanian offshore waters. Thylacine commenced production in September 2007, while Yolla began production in October 2006. The gas from both these fields is piped to Victoria. Installation of the Thylacine platform and development drilling, including a deviated exploration well, began in late 2005. The deviated exploration well was successful, resulting in a development well and subsequent production licence application which was granted in November 2006.

The new Commonwealth *Offshore Petroleum Act 2006* will be proclaimed on 1 July 2008. This Act will replace the *Petroleum (Submerged Lands) Act 1967*. Tasmania finalised its amendments to the mirror legislation and four sets of Regulations on 16 June 2008.

MRT initiatives

The major initiatives and issues affecting MRT in 2007/2008 included:

- Continuation of the four-year *TasExplore* geoscientific data and promotion initiative, with acquisition of aeromagnetic and radiometric data over northeast Tasmania and the Furneaux Group, and geological data acquisition in central northern Tasmania to upgrade old geological interpretation, especially where discrepancies with the 3-D geological model were noted. All airborne geophysical datasets and associated interpretation reports have been released. The first stage of the gravity survey in northeast Tasmania has been completed. New geological mapping in central northern Tasmania has been completed, compiled and submitted for map production.
- Enhancing the provision of geoscientific data through the Tasmanian Information on Geoscience and Exploration Resources (TIGER) System.
- Undertaking a series of promotional activities to further encourage the

upsurge in mineral exploration in Tasmania.

- 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 2008/2009 are to:

- Continue work on the *TasExplore* geoscientific data initiative through undertaking the second stage of the ground gravity survey in northeast Tasmania and commencement of upgrading of the geological mapping and interpretation of northeast Tasmania and King Island. 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.
- 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.

Achievements against strategies identified for 2007/2008

New initiatives to stimulate mineral exploration in Tasmania

According to Australian Bureau of Statistics (ABS) data, expenditure on mineral exploration for the 2007 calendar year was \$27.4 million, down 1% from the previous year. Tasmania's share of Australian exploration expenditure was 1.47%, down from 1.9%. ABS data show that \$9.8 million, or 35% of total expenditure, was spent on the search for new deposits.

During the year, an ABS out-posted officer conducted a project to update and provide much more rigour to MRT's methodology for collecting mineral exploration statistics. Using the new methodology, MRT data indicate that the ABS still significantly under-reports Tasmanian exploration expenditure, as the MRT figure for calendar year 2007 was \$38.12 million

of which \$18.53 million or 48.6% of the total was spent of exploration licences.

Promotion of mineral and petroleum potential

- The Tasmanian Government provided \$240,000 in 2007/2008 to actively market mineral exploration opportunities in Tasmania. Activities undertaken included presentation of a paper and holding a display at the world's leading exploration forum, the Annual Meeting of the Prospectors and Developers Association of Canada (PDAC) in Toronto and visiting leading international mining companies in Tokyo, Vancouver, Toronto, and London, both as part of the integrated Australian Federal/State/NT government promotional team and as a separate Tasmanian group.
- Several meetings were also held with companies on a one-on-one basis. In addition to the PDAC meeting, displays were presented at the *Mining 2007* meeting in Brisbane in October.
- Presentations were made at the *Mining 2007* meeting, to a group from Fujian province in November, to a visiting private sector group from China in January, to the Tasmanian Minerals Council Exploration Group Meeting at Launceston in May, and to the Canadian Consul General in June.
- Regular two-monthly updates on exploration progress in Tasmania were provided to the international Society of Economic Geologists newsletter as part of a global review of mineral exploration.
- Promotional missions and functions were conducted in Perth, Sydney, Brisbane, Melbourne and Adelaide. During these visits, there was continued strong positive feedback on the mineral potential, infrastructure and business climate in Tasmania, as well as the geoscientific programs conducted by MRT. These promotions have been successful and continue to play a direct part in attracting new exploration companies to Tasmania.
- The buoyancy of the exploration sector is demonstrated through such advances as the announcement of an iron ore resource at Mount Lindsay north of Renison Bell by Venture Minerals Limited, new zinc-lead exploration projects by Bass Metals Ltd at the Fossey zone at the southern end of the Hellyer ore

body, and by OZ Minerals Ltd at the Jupiter prospect south of Rosebery, and studies into the potential development of a nickel laterite resource near Beaconsfield by Proto Resources and Investments Limited.

- The boom in petroleum exploration and development offshore is a welcome adjunct to the growth in mineral exploration and investment onshore. Gas is produced from the Yolla gas field in Bass Strait and the Thylacine gas field in the Otway Basin west of King Island and is processed onshore in Victoria.
- One new offshore petroleum exploration permit was granted, bringing the total number of permits in Commonwealth waters to nineteen. Nine seismic surveys were completed during the year. Offshore exploration expenditure amounted to \$76 million.
- Aeromagnetic data were collected over the offshore Bass and Otway basins as a joint project with Geoscience Australia.

Collection, integration, interpretation, publication and presentation of data

As in previous years 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 website. Other information available includes mineral tenements and documents held by MRT, and general information for MRT and DIER clients.

The volume of downloads from the MRT website totalled of 2538 gigabytes compared to a total of 4426 gigabytes in the previous year and reflects, to a large part, more mature search engine indexing of the site. The peak of 391 gigabytes was downloaded in July 2007. Development and maintenance of the TIGER System was successfully carried out using a combination of contractors and MRT staff. In addition to data being accessed from the MRT website, 185 data packages were distributed on CD to clients.

The collection and presentation of information on Tasmania's mineral wealth and geoscientific nature continues. The major task was completion of compilation of new mapping in central northern Tasmania carried out as part of the *TasExplore* initiative. The field work resulted in

significant changes to ten tiles (Stowport, Ulverstone, Riana, Kindred, Latrobe, Loyetee, Castra, Railton, Sheffield and Liena) and changes to eight others (Loongana, Wilmot, Lea, Cethana, Gog, Deloraine, Pencil Pine and Montana) resulting from regional geological interpretation. The work provided better correlation between units of the Mount Read Volcanics in the region with those in the mineralised belt of western Tasmania and will provide a firmer basis for mineral exploration. Two other 1:25 000 scale map tiles (Gordonvale and Tiger) were prepared for digital capture during the year.

Field work for the *TasExplore* project commenced in northeast Tasmania. A team of six geologists was assigned to map in the region, with another geologist commencing work on the first detailed government mapping on King Island. Field work on this project will continue in 2008/2009.

Data capture/output was completed for seven of the *TasExplore* initiative map tiles in central northern Tasmania (Castra, Deloraine, Kindred, Latrobe, Montana, Sheffield and Stowport) with capture/output commencing on a further nine map tiles (Lea, Liena, Loongana, Loyetee, Pencil Pine, Railton, Riana, Ulverstone and Wilmot).

Data capture/output was completed for twelve 1:25 000 scale map tiles in other parts of Tasmania (Blackmans Bay, Blessington, Collinsvale, Elliott, McPartlan, Mulcahy, Nunamara, Patersonia, Roys, Solitary, Strathgordon and Wings).

New aeromagnetic and radiometric data for northeast Tasmania were released in December and three interpretive reports were released in February. The geophysical data are providing a firm basis for the geological mapping team.

A report on the petrology of rocks from the Savage River iron deposit was completed during the year and provides a new understanding of the origin of the deposit. The project will conclude with an examination of the geochemistry of the deposit. This work will have important implications for future exploration of the Arthur Lineament of northwest Tasmania.

A revised edition of the *Catalogue of Minerals of Tasmania*, the first in some forty years, was completed during the year and submitted for publication in 2008/2009.

A project verifying data on Tasmania's mineral deposits and locations was suspended when 98.5%

complete due to termination of a temporary employee after the maximum permissible period of service. The work will be completed in 2008/2009.

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 North West Coast area is underway, with maps of the Launceston, Hobart and Glenorchy areas having been completed in previous years. Funding assistance from the Australian and Tasmanian governments through the Natural Disaster Mitigation Programme (NDMP) has supported this project. The resultant landslide 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.

A debris flow validation project and risk assessment, involving nationally recognised landslide experts and funded by the NDMP, has been completed for the Wellington Range area. This project largely confirmed the mapping approach by MRT and has offered suggestions for further work.

The TIGER landslide database forms a critical data foundation for the landslide project. MRT, in collaboration with Geoscience Australia, has built an internet facility linking various landslide databases throughout the country. There are currently over 2000 records in the database, a number of which were added from Forest Practices Authority records during the year.

MRT continues to liaise on an informal basis with stakeholders in regard to land stability issues. It has collaborated with Geoscience Australia in the writing of a chapter on landslides as part of a national review document on natural hazards in Australia.

Historically, MRT has monitored a number of active landslides in Tasmania that have affected roads, railways and subdivisions. Most of these monitoring networks have been abandoned with

the exception of the Taroona landslide (Hobart) and the Lawrence Vale landslide (Launceston) networks. MRT was awarded funds through the NDMP to install a near real-time monitoring facility for the Taroona landslide in Hobart. This will enable a better understanding of landslide performance with regard to rainfall and groundwater that in turn will be of benefit to stakeholders by allowing improved risk management options. The facility, designed and serviced by the University of Wollongong, is nearing completion.

MRT is coordinating a project in the Hobart area, funded through the NDMP, to determine whether palaeotsunamis have affected the area during the last 10 000 years. The information is important if the risk of tsunami is to be estimated. Most of the work is being contracted externally and involves collaboration with Geoscience Australia and use of their inundation modelling facility. A report on investigations for palaeotsunami has been completed and research into historical records on Tasmanian reports advanced. Project funds have contributed to the acquisition of airborne laser scanning data in order to improve the quality of the forthcoming inundation modelling.

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 *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 is currently under review to ensure that consistency is maintained with the *Tasmanian Reserve Management Code of Practice*.

During the year 96 exploration work programs were submitted to MRT, compared to 86 in the previous year. Of these programs 74 were approved, 20 of which were in reserves derived from the Regional Forest Agreement (RFA) and required assessment by the Mineral Exploration Working Group.

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 into this system to give a complete record of all the environmental information relating to exploration.

Development of the upgraded system has been completed. This system 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 2007/2008 there were 621 mining leases in force. A total of 46 new leases and 76 lease renewals were applied for during 2007/2008. This took the overall total of applications and renewals currently being processed to 235.

Mining development continued during the year, requiring assessment and approval of several operations. The largest scale development was at Savage River, where Australian Bulk Minerals, in agreement with its new owner Shagang Group, commenced development of North Pit. This required replacement of the mining fleet, new workshops, and repairs to the Savage River crossings which were severely damaged by flash flooding.

At Hellyer, the Polymetals Pty Ltd-Intec Ltd joint venture gained approval for zinc leaching from tailings retreatment and electric-arc furnace dust, with the import of dust commencing. Open-cut redevelopment of the former Que River mine by Bass Metals Ltd commenced and regular shipments of ore were made to Rosebery for treatment. Metals X Limited commenced mining at Mount Bischoff following permit approval, with the tin ore being transported to Renison Bell for treatment. Operations at the Beaconsfield gold mine were suspended following a rock fall in April

2006. Approval to recommence mining was granted in stages until full production was achieved. Mining to recover alluvial tin commenced at Scotia near Gladstone, while development of a new mine on the Fenton Seam at Mount Nicholas by the Cornwall Coal Company is underway.

Town planning can be an important constraint on the development of extractive operations. Submissions, representations and appeals have been made to the West Tamar, Central Coast, Clarence and Meander Valley councils concerning planning schemes or development applications. A long running appeal over the Tolosa Street quarry in Glenorchy was attended. The most important representation was to the Northern Midlands Council concerning a proposed residential development adjacent to three quarries at Western Junction.

Following the successful application by MRT for rezoning under the Clarence Planning Scheme during 2006/2007, Sanbar Pty Ltd obtained permit approval at Seven Mile Beach and commenced sand extraction to

supply the southern construction industry.

Alleged illegal mining was investigated at Sandford, Wivenhoe, and at Circular Head.

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 their non-renewable resources.

Mineral royalties totalling \$41.4 million were collected for the 2007/2008 financial year which was a further significant increase over the \$33.8 million collected in the 2006/2007 financial year. Mineral royalty collections have increased nearly ten-fold since 2002/2003. The increase in royalty revenues is the result of the sustained commodity price boom and the resulting high profitability of most of the major mines in Tasmania.

The reasons for the commodity price increases are well documented, with high commodity demand from China and India resulting in strong

prices. These higher prices are expected to continue through 2008/2009.

Rehabilitation of Mining Lands Trust Fund

The major focus of activity during 2007/2008 was shaft safety, with twenty-one mine shafts at Pipers River and Lefroy being either capped or fenced to provide for public safety. Minor safety programs were also carried out at Warrentinna, Waratah, Gladstone and Royal George. Revegetation programs were carried out at Storys Creek and the Argonaut mine at St Helens. Weed control was continued at Queensberry, Punchs Terror at Dunorlan, and The Badgers at Sheffield. Other minor works included drainage improvements at Storys Creek and the Oonah mine at Zeehan, and water quality monitoring at Luina and Royal George. A total of \$170,050 was spent on trust fund projects during 2007/2008.

Dr A V (Tony) Brown

*Director, Mineral Resources
Tasmania and State Chief Geologist*

Financial Performance

The 2007/2008 consolidated fund appropriation to Mineral Resources Tasmania was \$6.84 million. This funding consisted of:

- \$3.97 million for salaries for 53.8 full-time-equivalent staff, plus two temporary staff;
- \$1.77 million for operating expenditure, including rent;
- \$0.16 million for the Restoration of Degraded Mineral Lands;
- \$0.24 million for the promotion of Tasmanian mineral opportunities; and
- \$0.70 million for the second year of the project for updating TIGER and the 3D model, which includes funding for three temporary staff.

In 2006/2007 MRT was funded \$5.06 million over four years under Election Commitment funds to undertake a significant promotional program and for the acquisition of new data for updating TIGER and the 3D geological model.

There were no significant variances in funding between 2006/2007 and 2007/2008 with the exception of the Election Commitment funding which decreased as planned in 2007/2008 with the completion of the data acquisition flying program in the previous year.

Commonwealth Natural Disaster Mitigation Programme funds were received to continue the Tasmanian Landslide Mapping Program (\$102,240). Funds were also carried forward from 2006/2007 for the landslide project (\$28,436), for a project to investigate the occurrence of palaeotsunamis in the Hobart area (\$50,361), and for real-time monitoring of the Taroona landslide (\$59,646).

Outputs — Application of funds, 2007/2008

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 overheads associated with head office and carry forward funds that are loaded into outputs.

MRT has two outputs:

Output	\$'000
1. Minerals exploration and land management	4,196
2. Tenement management of the exploration and minerals industry	3,080
Total	7,276

Descriptions of Outputs and Outcomes, 2007/2008

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;
- the 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.

The outcome achieved is 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;
- the provision of advice to all levels of government and the public on land management issues;
- the administration of mining legislation, including the issue of legal titles for mineral tenements;
- the collation and recording of statistics relating to mining production and exploration; and

- the audit and monitoring of fee, rental and royalty collection.

The outcome is 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 \$41.4 million were collected during the 2007/2008 financial year, a significant increase from the \$33.8 million collected in 2006/2007 and continuing the upward trend of previous years (\$24.0 million in 2005/2006).

Commodity prices in general rose to record levels throughout 2007/2008. The increase was the result of the continued strong demand for commodities from China and India. 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 \$1.429 million in 2007/2008, which was well above budget expectation and reflects the increased mining activity in Tasmania.

	Target 07/08	Actual 07/08	Target 08/09
Royalties (\$,000)	33,100	41,421	43,200
Rents and Fees (\$,000)	1,124	1,429	1,106
Rents and Fees — Petroleum (net of administration) (\$,000)	67	191	60
Sales of Maps and Publications (\$,000)	46	47	41

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 regime where royalty is paid on the net sales and on the profit of a mine. Royalty on the recovery of non-metallic minerals on Crown leases is set on a 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 only requires mining companies to pay a lesser fixed minimum royalty in times of no profitability, but ramps up to a maximum of 5% of net sales as profits increase.

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.

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 contribute the vast majority of royalty revenue.

Mineral Resources Tasmania — Legislation and Committees

Legislation administered

- Mineral Resources Development Act 1995
- Mineral Resources Development Amendment Act 2006
- 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 Committee and associated Working Groups
- CODES Centre of Excellence in Ore Deposits Advisory Board
- CODES Centre of Excellence in Ore Deposits Science Planning Committee
- Crown Land Services Technical Advisory Group
- Crown Land Assessment Working Group
- 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 Virtual Core Library Project Committee
- Rehabilitation of Mining Lands Trust Fund Committee
- Tasmanian Statistical Advisory Committee

Mineral Resources Tasmania

— Review of Branch activities, 2007/2008

During 2007/2008 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 2007/2008, the Metallic Minerals and Geochemistry Branch continued work on the government-funded initiative TIGER Geoscience (TasExplore) Project, but also continued to develop databases for delivery on the world-wide web and to verify and update existing databases.

The continued increase in mineral exploration activity in Tasmania has further expanded work loads in processing exploration tenement applications and reviews, extracting and maintaining metadata from reports, and attending to a greater number of enquiries. This is affecting the capacity of the branch to adequately deal with these demands as well as achieve the time frames required by the *TasExplore* project, and increased resourcing must be considered.

Geoscientific data generation

Geological maps in central northern Tasmania have been upgraded as part of the *TasExplore* project. Field work and regional geological interpretation resulted in significant changes to ten tiles (Stowport, Ulverstone, Riana, Kindred, Latrobe, Loyetee, Castra, Railton, Sheffield and Liena) and changes to eight others (Loongana, Wilmot, Lea, Cethana, Gog, Deloraine, Pencil Pine and Montana). A key outcome has been the more confident correlation of Cambrian volcanic units in central northern Tasmania with the highly mineralised Mount Read Volcanics of western Tasmania. This work should result in more effective mineral exploration in the region. A report on this work was submitted for publication.

Work continued on a project to understand the nature of the Savage River iron ore deposit, as part of a broader review of the mineral endowment and potential of the Arthur Lineament. A report was completed on the petrology of the rocks in the mine area, which will result in an improved understanding of mineralising processes

at Savage River and throughout that part of northwest Tasmania.

Following the receipt and preliminary interpretation of new geophysical data, a team of geologists commenced work to update the geology of northeast Tasmania. One geologist commenced work on King Island and at the end of the year field work for the Grassy 1:25 000 scale map sheet had been completed.

The project to systematically verify the more than 4000 entries in the Tasmanian mineral deposits database continued, with one person occupied on this work. At year's end 98.5% of entries had been verified and 273 new deposits had been added to the database. The project has been suspended following the completion of the maximum allowable period of employment for a temporary staff member.

Two map tiles (Gordonvale and Tiger) were prepared for digital capture during the year, completing the task of the Branch in preparing old maps for digital capture at 1:25 000 scale.

A revised edition of the *Catalogue of Minerals of Tasmania*, the first in some forty years, was completed during the year and submitted for publication in early 2008/2009.

Stream sediment samples from nineteen sites throughout Tasmania were collected as part of the National Geochemical Survey in conjunction with Geoscience Australia. These will be subjected to precise analyses and will form part of a benchmark data set.

A trial of a hyperspectral infra-red core logging device was successfully completed, with twelve holes from the Mount Read Volcanics, Grieves Siding, the Mathinna Group of northeast Tasmania and the Cygnet area being scanned. A similar instrument, funded by the Commonwealth under the National Critical Research Infrastructure (NCRIS) Auscope Virtual

Core Library Project, will be installed permanently in late 2008/2009 and will significantly add to the potential of the core library to provide information to drive new mineral exploration projects.

Database development

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

Changes to the samples, geochemistry and mineral deposits databases were made and at year's end these were being moved to the production environment.

Branch members contributed to the development of a national data model for mineral deposits and occurrences.

Core library

The increasing level of usage of the core library continued, with 169 drill core inspection days occurring during the year, a 96% increase on the previous year.

A total of 9.8 kilometres of core was added to the library collection during the year.

During the year a team from the Centre of Excellence in Ore Deposits (CODES) at the University of Tasmania commenced using the core library as the site to determine detailed physical properties of rocks from drill core, as part of a major project aimed at improving metallurgical recovery from ores.

A safety audit was conducted at the core library and issues requiring attention were identified. At year end all electrical equipment at the core library, rock preparation and lapidary laboratories had been tested for electrical safety, passed and tagged. Noise levels were tested and existing hearing protection was found to be adequate.

Mineral exploration and other promotional activities

The Tasmanian Government provided \$240,000 in 2007/2008 to actively market mineral exploration opportunities in Tasmania. Activities undertaken included holding a display at the world's leading exploration forum, the Annual Meeting of the Prospectors and Developers Association of Canada (PDAC) in Toronto and visiting leading international mining companies in Tokyo, Toronto, London and Vancouver, both as part of an Australian team and as a separate Tasmanian group. The latter also visited companies in London and Europe. A presentation was made at an Australian Mineral Exploration Investment seminar in Tokyo.

Several meetings were also held with companies on a one-on-one basis with DIER personnel. In addition to the PDAC meeting, a display was presented at the *Mining 2007* meeting in Brisbane in November and at the Association of Mining and Exploration Companies National Mining Congress in Perth in June.

Presentations were made at the *Mining 2007* meeting and to the Tasmanian Minerals Council Exploration Group Meeting in Launceston in May.

Additional presentations were made to a delegation from Fujian province, a private Chinese company, and the Canadian Consul-General during visits to the Department of Economic Development.

Promotional missions and functions were conducted in Perth, Sydney, Brisbane, Melbourne and Adelaide by officials from DIER. During these visits, information on the new, four-year, \$5.06 million *TasExplore* geoscience and promotion initiative was well received by industry.

These promotions have been successful and continue to play a direct part in attracting new exploration companies to Tasmania and in maintaining interest in the State in the face of strong competition from other jurisdictions.

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 as part of a global review of mineral exploration.

The petrologist conducted displays and publication sales at the Zeehan Mineral Fair held in November and presented a talk to 70 students at the Howrah Primary School.

Petrology

The petrologist supervises the petrological and lapidary laboratories, which provide services for internal and external clients.

The laboratories provided a total of \$48,020 worth of analyses and services to both DIER (\$30,520) and external clients (\$17,500). Most of this external work cannot be otherwise conducted within Tasmania.

The lapidary laboratories prepared 538 standard thin sections and 205 other sections, making a total throughput of 743 samples. The geological technician did most of these on an as-needed basis, interspersed with field assistant duties; this work was valued at \$22,675.

The technical officer for petrological services processed 312 samples by X-ray diffraction, including 115 quantitative dust analyses. He also conducted 47 soil and 17 sizing tests and 63 optical asbestos identifications, for a total of 439 samples processed, valued at \$25,345.

A total of 280 external (contract) samples were received for investigation, mostly by X-ray diffraction analysis. These samples included 192 for occupational health clients, nine soils, three forensic samples, twelve construction materials, 25 industrial samples and 27 general rocks and other samples. This work came from a wide range of external sources, including the Transport Division of DIER, Workplace Standards Tasmania, Tasmania Police, Environment Division, Consumer Affairs Division and other state and federal 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 examined included geological materials (construction materials, mineral concentrates, ore samples, rocks, soils, sands and clays) and anthropogenic materials (including concrete, asbestos sheeting, industrial materials and dusts).

The petrologist, as radiation safety officer, has overseen radiation licence renewals, certification for storage, X-ray equipment safety inspections and other safety issues. Laboratory safety audits are underway. Assistance was given with safety audits and a safety forum was attended. The mineralogist/petrologist assists with supervising the storage of radioactive, asbestos-bearing and other dangerous substances. Procedures and standards in place for their handling were upgraded during the year.

Curatorial work has included the cataloguing, sorting, compiling and storage of rocks and thin sections, preparation and moving of displays, locating samples for internal and external users, and general supervision of the rock store. The old rock collection and storage databases continue to be updated and are being digitised and migrated into the TIGER System. A total of 2990 new samples were added, and 2630 existing sample details were updated in the database. The oldest samples are gradually being boxed and palletised to make space for new samples. New systems to streamline sample submission and to implement safer storage are being developed.

The petrologist also handled about 92 public and commercial enquiries on mineral, mining, gem, soil and rock-related matters, particularly in regard to gem, rock and mineral locations and identification, occupational health issues, and mine locations. He also provided occasional mineralogical and curatorial advice and assistance to the Tasmanian Museum and Art Gallery and Queen Victoria Museum and Art Gallery, and has been appointed an honorary research associate of both.

Geochemical laboratory

The laboratory was staffed for most of 2007/2008 by an acting Senior Geochemist and three technical officers (two full time and one part time). One of the technical officers, initially appointed as a fixed-term full-time employee in July 2007, was subsequently employed as a permanent staff member in March 2008. The acting Senior Geochemist was appointed to the position of Senior Geochemist in February 2008. The Senior Geochemist was also involved in geological projects, TIGER databases, safety issues and tenement administration.

The geochemical laboratory generates the geochemical data necessary to maintain MRT's databases

and geological mapping. Laboratory activities during the 2007/2008 financial year included:

- Addressing OH&S issues has resulted in considerable improvements in the laboratories, including disposal of all redundant chemicals, consolidation of chemical stores into one store, segregation of incompatible substances and preparation of all necessary OH&S documentation. Many other steps were also taken to provide a much safer working environment. The laboratories were inspected by the DIER's Safety Consultant and were considered to be Australian OH&S compliant. MRT was praised for its safety protocols in the laboratories.
- Annual medical examinations of technical officers were undertaken, including general health, hearing and blood tests.
- A total of 429 rock samples were registered for major and trace elements, with 14,610 individual determinations being performed (XRF results, FeO, CO₂, gold and silver determinations), equivalent to the analysis of 350 rock samples with a value of around \$112,000.
- A new fluxer unit (for making fused discs) was purchased. This has considerably increased the productivity of XRF rock analyses.
- Analytical and rock crushing equipment was calibrated and maintained. The XRF unit was in a generally stable condition, but because of its age continued to suffer from intermittent problems that were time consuming and costly to locate and rectify.
- The Leco Induction Furnace continues to produce reliable CO₂ values (necessary for a complete rock analysis), although requiring extensive experimental work to locate and rectify faults. The Leco is over 25 years old and may need to be replaced in the near future as it is becoming increasingly difficult to source replacement parts.

Other activities

- Field staff updated first aid qualifications in August.
- Four staff members are on safety committees.
- 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.
- Another branch member is on a committee to provide a national model for mineral deposits data.
- A branch member is on the Operations Committee for the National Virtual Core Library Project.
- Site visits were made to various exploration project sites and mines during the year as 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.
- Science planning meetings of the Centre of Excellence in Ore Deposits (CODES) at the University of Tasmania were attended.
- Three geologists attended parts of the CODES course on brownfields exploration in June and a paper was presented.

Industrial Minerals and Land Management

This branch is responsible for the investigation and promotion of industrial minerals, including coal, hydrocarbons and geothermal resources; 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 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 mineral tenements at the end of June 2008 are shown below.

The resources boom is reflected in the tenement holdings for metallic

minerals within the Mount Read SPZ increasing from 48.9% to 54.5% occupancy, the Balfour SPZ increasing from 32.1% to 44.2%, the Cape Sorell SPZ increasing from 50.2% to 59.6%, and the Zeehan/Waratah SPZ increasing from 63.2% to 68.5%.

HYDROCARBONS

Petroleum Exploration and Production

Nineteen offshore permits and two onshore permits are currently held for oil and gas exploration. Three 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. Hydrocarbons are produced in Tasmanian offshore waters from the Yolla field, where production

commenced in the third quarter of 2006, and from the Thylacine field, where production commenced in September 2007.

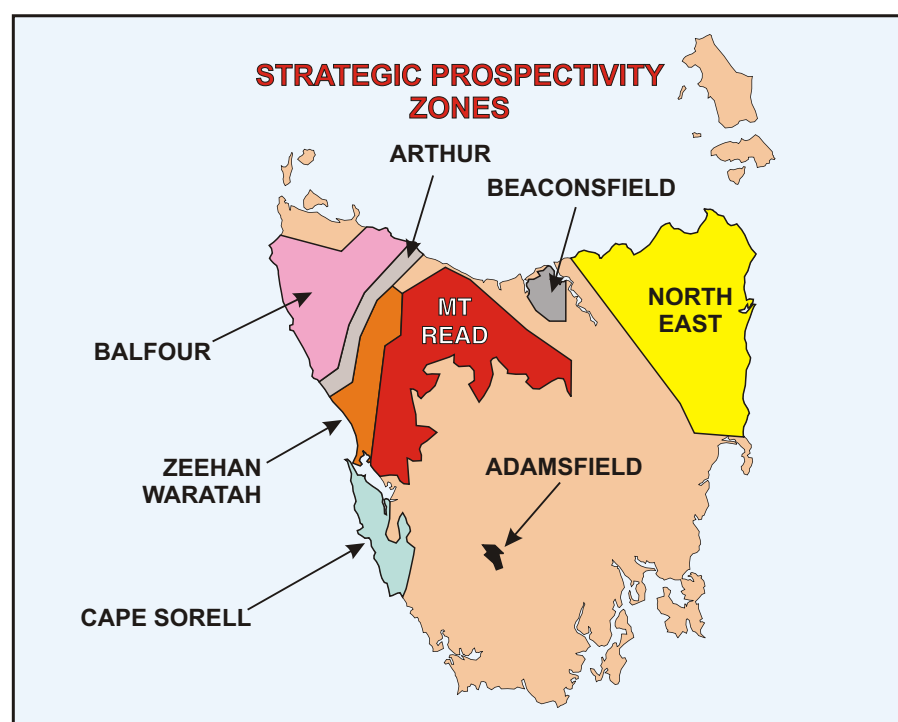
The production licence over the Yolla gas-condensate field in the Bass Basin is held by a consortium headed by Origin Energy Resources Limited and AWE Petroleum Limited. The BassGas project to develop the Yolla field involved construction of a production platform, two development wells and an undersea pipeline to an onshore processing plant near Lang Lang in Victoria. The infrastructure was substantially completed by late 2004, but production of gas was delayed by technical and safety issues. Commissioning was completed in late 2006, with this project expected to supply around 10 per cent of Victoria's natural gas needs for fifteen 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. An additional production licence, adjoining the existing production licence, was subsequently granted to allow production from the southern extension. The sequential drilling of four development wells then commenced, with the program being completed in October 2006. Thylacine gas is piped to a processing plant near Port Campbell in Victoria to supply the growing southeast Australian gas market.

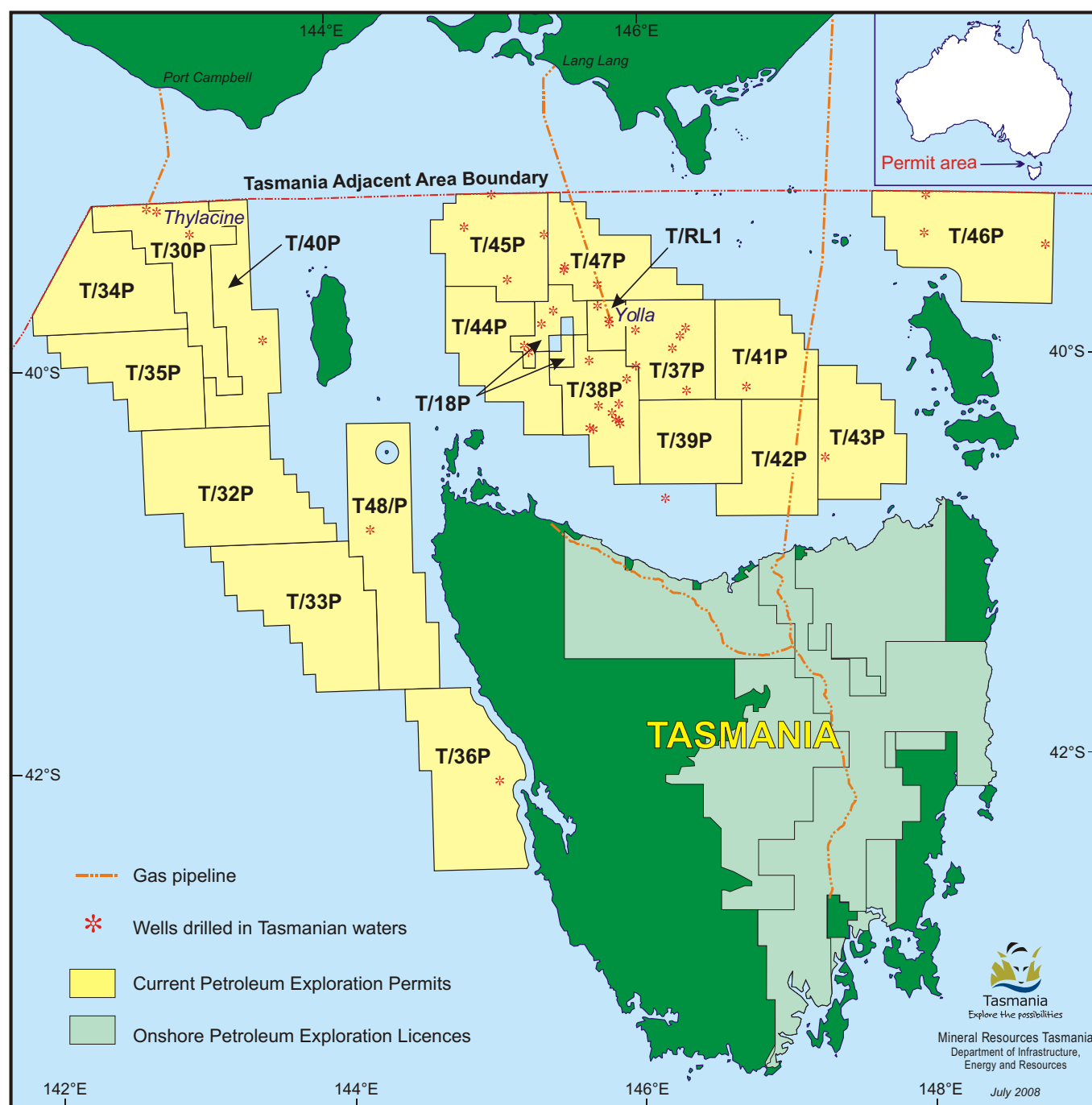
Nine seismic surveys, which encompassed eleven permits, were completed during the year. These comprised five 3D surveys and four 2D surveys. Historically there have only been 104 seismic surveys in the last forty years within Tasmanian administered waters, and the current surveys represent almost 10% of the past total.

A Controlled Source Electro Magnetic (CSEM) marine survey was completed by Santos in permit T32/P during August 2007. This was the first use of this new technology in Tasmanian administered waters. Santos

SPZ	Metallic		Non-metallic	
	Area (km ²)	Occupied (%)	Area (km ²)	Occupied (%)
Adamsfield	70.3	95.5	0	0
Arthur	873.6	78.9	304.3	27.4
Balfour	1726.3	44.2	242.4	6.2
Beaconsfield	21.5	100.0	0	0
Cape Sorell	824.2	59.6	626.7	45.3
Mount Read	3951.0	54.5	682.9	9.5
North East	3626.6	37.3	1 042.9	10.7
Zeehan/Waratah	1254.6	68.5	169.9	9.3
	(12 348.1)		(3069.1)	



TASMANIAN OFFSHORE ACREAGE AND ONSHORE PETROLEUM EXPLORATION LICENCES



also drilled a wildcat exploration well in T33/P during May/June 2008. This was only the fourth well to be drilled in the under-explored Sorell Basin off western Tasmania and the first since 1982. The well was dry with no evidence of hydrocarbons present.

Geotechnical coring survey work has been undertaken in T38/P and T39P in preparation for wells to be drilled during 2008/2009. It is anticipated that another exploration well will be drilled in T34P during this period.

Offshore oil and gas exploration in Commonwealth waters is currently controlled by the *Petroleum (Submerged*

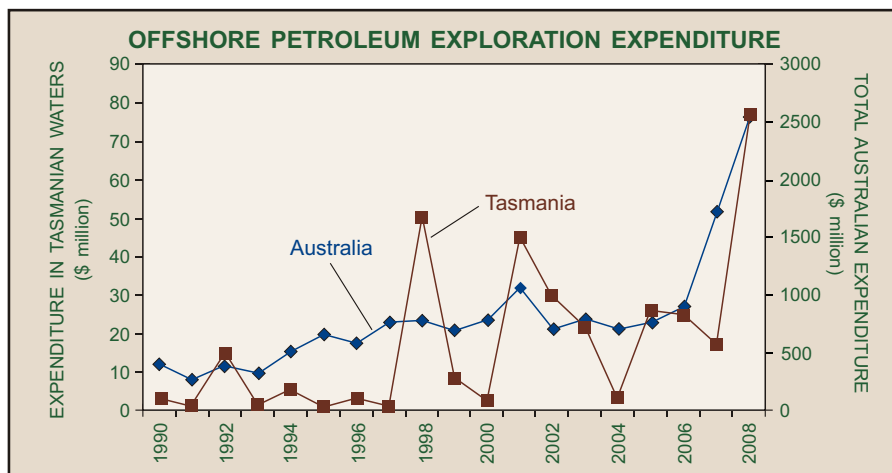
Lands) Act 1967. This act will be replaced by the *Offshore Petroleum Act 2006* from 1 July 2008. Tasmania finalised amendments to the *Petroleum (Submerged Lands) Act 1982* and four sets of regulations on 16 June 2008, to mirror the Commonwealth legislation.

An amendment to the *Petroleum (Submerged Lands) (Data Management) Regulations 2004* removed the requirement for offshore exploration companies to submit quarterly reports on their activities. Companies are still required to submit annual reports.

Total Tasmanian offshore petroleum exploration expenditure for 2007/2008 was approximately \$76.67 million.

Cataloguing of sample collections related to offshore petroleum exploration continued during the year, with fifty reports being received during the year and indexed. Open-file exploration reports can be viewed and downloaded from the MRT website.

Onshore, two Special Exploration Licences are held for petroleum exploration, one by Great South Land Minerals Limited and the other by Primeline Petroleum Corporation. Seismic surveying was carried out by Great South Land Minerals Ltd in early 2007. OME Resources Australia Pty Ltd holds a Special Exploration Licence for coal bed methane.



Tasmanian Natural Gas Pipeline

Babcock Brown Infrastructure (BBI) acquired the Tasmanian Natural Gas Pipeline (TNGP) from Alinta DTH Pty Ltd on 1 September 2007. Powerco Tasmania Pty Ltd, which is owned by BBI, is the day-to-day manager of the pipeline. 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. Ten permanent staff are based in Tasmania to operate the pipeline.

ENVIRONMENT, LAND MANAGEMENT & INDUSTRIAL MINERALS

Industrial Minerals

Tasmania Magnesite NL holds Retention Licences over the large, high-grade magnesite deposits at Arthur River and Lyons River in western Tasmania. The company recently changed ownership and it is the intention of the new owners to progress the resource definition to a stage where a Mining Lease can be applied for and the deposit developed. The new owners continue to look for opportunities for the use of this resource, while the CSIRO is getting closer to developing a commercial magnesium metal process.

Tasmanian Titanium Pty Ltd sold its interests to companies associated with Dr Alan Bond. The new owners intend to initially extract ilmenite from the existing stockpile at Naracoopa, on King Island, followed by the mining of heavy mineral beach sands. The new

owners are seeking approval from the King Island Council for the transport arrangements for the stockpile, and a number of possible joint venture partners are talking to the owners about further downstream processing potential.

There has been active exploration for silica flour throughout the past year. Tasmanian Advanced Minerals Pty Ltd have started mining at the new Blackwater mine, south of the Arthur River, and is exploring in the Hawkes Creek area to the north. The company has completed construction of a new silica flour treatment plant at Wynyard.

Environmental Management

The number of exploration work programs submitted for approval has remained at the record levels of 2006/2007.

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*.

The auditing system (TEAMS II) allows the detailed recording of all exploration activities across Tasmania's many types of land tenure. The life of the exploration activity is tracked from proposal through approval, works completed and rehabilitation. The following tables of statistics are produced as standard reports from the system. As the system accurately records exploration details and land tenure, it is not possible to directly compare this year's statistics with those in previous years.

Ninety-six work programs were submitted to MRT during the year compared with eighty-six in 2006/2007.

Of those received, 74 were approved (thirteen were withdrawn, eleven have since been approved and four are still pending). Eighteen 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.

A total of 3.37 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.

Of the 3.37 hectares of disturbance, 0.70 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 security deposit.

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 21% of the area disturbed in the reporting period, for all land categories, has been rehabilitated.

A total of 182.08 line kilometres of gridding was undertaken during the year, with the division between land tenures presented in Table 4.

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

Approximately 38% of overall disturbance has been rehabilitated. Disturbances are no longer counted as such if no further rehabilitation work is required of the explorer, or if 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).

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

Table 1: Activities approved

Activity	Car Reserve System	High Quality Wilderness	State Forest	Crown Land	Private Property	HEC Land
Drill site	74	29	170	16	85	0
Helipad site	5	3	5	0	0	0
Bulk sample site	1	0	3	0	3	0
Camp site	4	4	0	0	0	0
Costean (km)	0	0	0	0	0.31	0
Grid (km)	91.92	9.96	61.03	23.39	2.95	2.80
Track (km)	0.64	0.64	0.50	0.00	0	0

Table 2: Area of disturbance (ha)

Activity (ha)	Car Reserve System	High Quality Wilderness	State Forest	Crown Land	Private Property	HEC Land
Drill site	0.45	0.21	0.94	0.07	0.41	0
Track	0.46	0.46	0.29	0	0	0
Costean	0	0	0	0	0.12	0
Helipad site	0.12	0.04	0.20	0	0	0
Bulk sample site	0.01	0	0.24	0	0.03	0
Camp site	0.02	0.02	0	0	0	0

Table 3: Area rehabilitated (ha)

Activity (ha)	Car Reserve System	High Quality Wilderness	State Forest	Crown Land	Private Property	HEC Land
Drill site	0.09	0	0.16	0.04	0.14	0
Track	0	0	0	0	0	0
Costean	0	0	0	0	0.08	0
Bulk sample site	0.01	0	0.14	0	0.03	0
Camp site	0	0	0	0	0	0

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 4: Distribution of gridding (line kilometres)

Car Reserve System	High Quality Wilderness	State Forest	Crown Land	Private Property	HEC Land
91.92	9.96	61.03	23.39	2.95	2.80

Table 5: Disturbance and rehabilitation over three years

Year	Car Reserve System	State Forest	Crown Land	Private Property	HEC Land	Total
Disturbance (ha)						
2004/2005	6.24	1.40	1.51	0.18	0.17	9.49
2005/2006	5.66	2.10	0.79	0.07	0.25	8.88
2006/2007	4.33	4.98	0.28	0.82	0.04	10.45
2007/2008	1.07	1.66	0.07	0.56	0.00	3.37
Rehabilitated (ha)						
2004/2005	5.72	0.15	0.68	0.17	0.09	6.81
2005/2006	1.25	0.41	0.14	0.06	0.00	1.85
2006/2007	0.91	1.58	0.13	0.15	0.00	2.77
2007/2008	0.11	0.30	0.04	0.25	0.00	0.70

Table 6: Disturbance and rehabilitation, High Quality Wilderness areas

Year	Disturbance (ha)	Rehabilitated (ha)	Percentage of overall disturbance rehabilitated
2004/2005	1.97	1.97	100%
2005/2006	1.71	1.14	67%
2006/2007	1.61	0.30	19%
2007/2008	0.74	0.00	0%

the Tasmania–Commonwealth Regional Forest Agreement. It is planned to have the revised code ready for public comment in 2009.

The second edition of the *Quarry Code of Practice* is a code under the *Mineral Resources Development Act 1995* and is currently under review.

Mines Inspection

Mines

Mines continued to prosper during the year with the following developments taking place.

A consortium of Chinese companies, headed by the Shagang Group, has acquired the Australian Bulk Minerals (ABM) operation at Savage River, following reviews of the resource in North Pit. The Savage River mine had been winding down for closure in 2008, but the new owner approved the rapid development of North Pit and is considering increasing production. New equipment was acquired and development accelerated to a rate of 50 000 cubic metres of material mined per day. Constructing of an in-pit workshop complex is nearing completion.

Flooding impeded progress by washing out the main crossing of the Savage River and severely damaging the low-level crossing. North Pit was flooded to a depth of ten metres. Both crossings needed extensive reconstruction. A span of the pipeline bridge over the Arthur River was also damaged.

Allegiance Mining NL continued with development of its nickel mine at Avebury west of Zeehan. Construction and commissioning of a concentrator is advanced and underground development is proceeding.

Bass Metals Ltd took bulk samples from the former Que River mine for treatment at Rosebery. The trials were successful and open-cut mining of P-Q and S lens commenced, with 5000 to 7000 tonnes of ore per week being shipped to Rosebery for treatment.

The Beaconsfield Mine Joint Venture gold mine at Beaconsfield returned to full production, in stages, following the closure of the mine following the rock fall of April 2006.

Bluestone Mines Tasmania Pty Ltd received approval for a level 2 permit for the Mount Bischoff mine and work on developing an open-cut mine commenced. Ore is transported to Renison Bell for treatment. Development of the Renison mine, which was on care and maintenance,

recommended and the concentrator was refurbished to commence production from both mines in July.

The Cornwall Coal Company NL installed a mini-wall at the Duncan colliery. Preparations for mining the Fenton seam at Mount Nicholas commenced with portal construction for the Blackwood No. 4 mine.

Intec Ltd recorded good production on their joint venture with Polymetals to retreat tailings at the Hellyer mine site. The company also received development approval for its leaching process to recover metals from electric arc furnace dust and low grade lead concentrate from the tailings.

OZ Minerals Rosebery is conducting a major development program to identify ore resources and provide an additional twenty-year mine life. The company was granted a mining lease at South Marion Oak for the investigation and design of a new tailings dam to replace the Bobadil dam which is nearing capacity.

Tasmania Mines made improvements to the treatment plant at Kara to increase capacity. The company applied for a lease extension to provide for increased tailings storage.

Van Dieman Mines plc commenced development at the former Scotia alluvial mine near Gladstone in northeast Tasmania. Dams were constructed and a treatment facility was built in the township.

Exploration on Mining Leases

On-lease exploration programs were approved on the Avebury, Beaconsfield, Mount Lyell, Henty, Rosebery and Stonehenge leases.

Mine rehabilitation

The Savage River Remediation Program is a joint program between the Department of Environment, Parks, Heritage and the Arts (DEHPA) and Australian Bulk Minerals to improve historic environmental liabilities at the Savage River mine. Work continued during the year to reduce legacy acid drainage on the mine site. A surveillance report on the Main Creek No. 1 tailings dam (or 'Old Tailings Dam') was reviewed and tenders were called for the dam's rehabilitation. Treatment trials of acid seepage from B dump continued, with mine carbonates and limestone being used as reagents. The Australian Acid Mine Drainage Conference was held in Burnie, with an inspection of the mine and the SRRP program being included in the program.

A remediation program is underway to reduce acid drainage from the Mount Lyell mine into the Queen River, which discharges into the King River and Macquarie Harbour. A proposal to treat acid seepage from the Mount Lyell Lease has been under investigation by the DEHPA. A water treatment plant design, which will partially neutralise seepage, extract 50 per cent of the zinc by ion exchange, and extract over 90 per cent of the copper by iron cementation, has been selected. Further design work is planned for 2008/2009.

Town planning and quarries

Comments were provided to the DEHPA on environmental management plans for the Intec Ltd tailings leaching at Hellyer, Tasmanian Advanced Minerals operations near Corinna and at Arthur River, Boral quarries at The Nook, Launceston and Beaconsfield, and Fieldwick's quarries at Blackberry Hill (Sheffield) and Dianas Basin (St Helens).

Comments were provided to municipal councils and submissions were made at Resource Planning and Development Commission hearings for the review of planning schemes for the Central Coast, Clarence, Meander Valley and West Tamar municipalities. Land stability, access to mineral resources and encroachment onto extractive industries are important issues in these municipalities.

The Break O'Day council is assessing Fieldwick's quarry at Dianas Basin, where a level 2 permit is required to reflect current production levels. Similar situations have arisen at quarries at Welborough Pass and Blackberry Hill.

The Launceston City Council approved a proposed residence near DTK Logging's operation near Lilydale. The lessee successfully appealed against the decision.

In the past the quarry at Tolosa Street, Glenorchy, encroached into the Wellington Park. Although a boundary adjustment was negotiated, the lessee appealed against conditions applied to the permit. The appeal is yet to be resolved.

Hanson Construction Materials Pty Ltd continues to negotiate with the Clarence City Council to purchase land adjacent to the quarry at Flagstaff Gully. The company has presented potential quarry extension proposals at community consultation sessions in anticipation of a rezoning application to permit future development of the

quarry. MRT lodged an objection against a proposed subdivision adjoining the quarry's boundary.

The Northern Midlands Council received an application to rezone land, near three quarries at Western Junction, for tourism and residential use. MRT objected to the residential component of the application. The quarries are considered to be of regional importance and any residential encroachment will impede their development. Hearings will occur later in 2008.

In 2006/2007 MRT successfully applied for rezoning of the Seven Mile Beach Protected Area to permit sand extraction. As a result, Sanbar Pty Ltd applied for a mining lease and permit, and comments were provided on their Environmental Management Plan. A permit was issued and development of this resource commenced in June. In consideration of competing matters of public interest in the protected area, the Department of Economic Development appointed Victorian planning consultants TRACT to draft a strategic plan to review potential options for the area's long term use.

A Draft State Policy on the protection of agricultural land is under consideration by government. Submissions were made to prevent conflict between the policy and important extractive industries surrounded by agricultural land.

Statements were submitted to the Director of Public Prosecutions concerning sale of material illegally extracted from a property at Sandford. Notice was served on a former lease applicant near Heybridge to stop extraction and apply for a Mining Lease, with a lease application resulting from this action. Two similar reports are under investigation at Nabageena in the Circular Head area.

Work commenced on developing a mining lease inspection system (MLIS) to interface with REGIS in the TIGER System. Development of the mine disturbance GIS (MLIGIS) program continued.

URBAN GEOLOGY

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

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, database development and landslide monitoring.

A regional landslide mapping program of the Devonport to Boat Harbour Beach area on the North West Coast, incorporating recently developed risk assessment methodologies, is in progress. This area is renowned for the high incidence of landslides, particularly close to the coast where there is increasing pressure for urban development. The landslide maps, when finished, will potentially improve land use decisions by regulators and other stakeholders. This project is in partnership with local councils and with funding assistance from the Australian and Tasmanian government's Natural Disaster Mitigation Programme (NDMP).

The TIGER landslide database forms a critical data foundation for the landslide project. Ongoing data entry and maintenance occurred during the year and there are now over 2000 records from throughout Tasmania. A substantial upgrade of the functionality of the database occurred and a simplified view is now available on the Geoscience Australia website. MRT contributed to the landslide chapter in the *Natural Hazards in Australia. Identifying Risk Analysis Requirements* monograph published by Geoscience Australia.

MRT continues to coordinate the ongoing monitoring of the Taroona landslide in Hobart and the Lawrence Vale landslide in Launceston. Regular inclinometer surveys provide information for the management of these areas and their surrounds. With funding assistance from the NDMP, MRT has begun installing a near real-time monitoring facility for the Taroona landslide to improve our ability to understand the causal factors to landslide movement.

MRT participated in a validation study of the debris flow mapping it had previously undertaken in Glenorchy and Hobart in 2005. The study involved two leading geotechnical experts in the field and resulted in the production of a report that has been presented to the State Emergency Service for consideration.

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

Tsunami

With funding assistance from the NDMP, MRT project-managed an investigation of palaeotsunami deposits in the greater Hobart area and undertook a review of historical records of tsunami in Tasmania. This work is being done in conjunction with inundation modelling by other parties, which together will lead to the quantification of hazard and risk.

REGISTRY

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 TASXPLOER 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-six Exploration Release Areas (ERA), covering 2263 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 249 clients of MRT by facsimile (69) and post (180), and is also available on the MRT website. Applications were received for areas within thirteen advertised ERA's resulting in thirteen exploration licence applications covering 709 km² of ground.

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

Mining Legislation

The *Mineral Resources Development Act 1995* is the principal legislation relating to the 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 for downloading on MRT's website.

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 Director 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

Tribunal claims lodged with Mineral Resources Tasmania during the year, or still in progress, were:

74307 *Richey Fishing Co. Pty Ltd, R Jessup, Tasmanian Scallop Fisherman's Association and Tasmanian Fishing Industry Council v Bonaparte Diamond Mines NL* — EL32/2006

Objection lodged on effects of exploration and mining on fishing grounds. Objections withdrawn following mediation.

74313 *M & P Blythe and G & W Blythe v Diatreme Resources Pty Ltd* — EL6/2007

Objections lodged by land holders. Objections withdrawn following mediation.

74322 *C Schwach v Goldstock Mining NL* — EL 20/2006

Objection lodged by operator of tourism business. Objection withdrawn following mediation.

74323 *J Hepehi and A Winkel v G Smith* — 1243P/M

Objection lodged by land owners in relation to encroachment by adjoining quarry operation. Mediation held. Referred to Mining Tribunal.

74327 *V Smith v Accord Mining Pty Ltd* — EL30/2007

Objection by land owner not wanting exploration on property. Objection withdrawn.

74328 *Tarkine National Coalition Inc. v Icon Resources Ltd* — EL26/2007

Objection lodged in regard to high conservation values within application area. Objection withdrawn.

74329 *Tarkine National Coalition Inc. v Bass Metals Limited* — EL24/2007

Objection lodged in regard to high conservation values within application area. Objection withdrawn.

74334 *K R Cuthbertson v New Hope Exploration Pty Ltd* — EL44/2007

Objection by land owners not wanting exploration on property. Objection withdrawn.

74339 *Roaring 40s Renewable Energy Pty Ltd and Tasmatex Pty Ltd v Geopower Pty Ltd* — SEL 37/2007

Objections by wind farm developer and property owner. Objections withdrawn.

74341 *North East Bioregional Network Inc. v Green River Resources Limited* — EL52/2007

Objection lodged in regard to high conservation values within application area. Objection withdrawn following mediation.

74343 *Kinsbrook Pty Ltd v P McIvor* — 1780P/M

Dispute between land owner and operator of mining lease. Referred to Mining Tribunal.

74344 *M and E Phelan v T Kapitany* — 25M/2000

Appeal against registration of caveat on a mining lease.

74346 *Go Wild Consulting and others v Planet Minerals Pty Ltd* — EL60/2007

Objections lodged in regard to high conservation values within application area. Licence refused by Minister.

74348 *T Dudley and A Hunkeler v J I Stewart and Geotech International Pty Ltd* — EL2/2008

Objections lodged in regard to high conservation values within application area. Meeting of parties undertaken.

74351 *Van Diemans Land Company v Mineral Holdings Australia Pty Ltd* — EL14/2008

Objection lodged by land and lease holder. Objection withdrawn following mediation.

74352 *Van Diemans Land Company v Mineral Holdings Australia Pty Ltd* — EL12/2008

Objection lodged by land and lease holder. Objection withdrawn following mediation.

74353 *Red River Resources Limited v Tasmania Mines Limited* — 8M/2008

Objection by holder of exploration licence. Objection withdrawn following mediation.

74354 *J R Wilson v Mincor Zinc Pty Ltd* — EL18/2008

Objection lodged by land holder. Application withdrawn by applicant.

74355 *J and P Meny, and others v Dove River Pty Ltd, Gujarat NRE Resources NL, Southern Ocean Science Pty Ltd and J McDougall* — EL16/2008

Objections lodged by land holders.

74356 *P & G De Burgh-Day and others v Mincor Zinc Pty Ltd* — EL17/2008

Objections lodged by land holders.

Lease Applications, 2007/2008

Total number of all types of exploration rights held as at 30 June 2008

Mining Tenement	Number	Area
Exploration Licences —		
Category 1 (Metallic minerals)	214	15 280 km ²
Category 2 (Fuel minerals)	18	2 178 km ²
Category 3 (Construction minerals)	36	2 985 km ²
Category 4 (Oil — onshore)	3	39 666 km ²
Category 5(a) (Industrial minerals)	68	6 062 km ²
Category 6 (Geothermal)	7	31 555 km ²
Retention Licences —		
Category 1 (Metallic minerals)	21	101 km ²
Category 2 (Fuel minerals)	5	163 km ²
Category 3 (Construction minerals)	20	99 km ²
Category 5 (Industrial minerals)	19	102 km ²
Prospectors Licences issued	145	Not applicable
Permits to explore for minerals under the Commonwealth <i>Offshore Minerals Act 1994</i>	2	517 blocks
Retention Licence under the Commonwealth <i>Offshore Minerals Act 1994</i>	1	20 blocks
Permits to explore for petroleum under the Commonwealth <i>Petroleum (Submerged Lands) Act 1967</i>	19	1022 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 CPSLA 1967	3	8 blocks

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

Leases applied for in 2007/2008

Product	Number	Area (ha)
All minerals	1	20
Dolerite	2	561
Easement	5	670
Gold	1	40
Gravel	9	182
Sand	7	800
Sand and gravel	4	94
Sand and stone	2	101
Silica	1	214
Stone	12	1096
Stone and gravel	2	42
Total	46	3 820

Leases granted in 2007/2008

Product	Number	Area (ha)
All minerals	2	669
All minerals and stone	1	247
Dolerite	1	6
Easement	3	242
Gravel	3	27
Sand	3	553
Sand and gravel	3	33
Silica	1	214
Stone	2	147
Stone and gravel	1	4
Tin	1	382
Total	21	2 524

Total number of leases in force at 30 June 2008

Product	Number	Area (ha)
All minerals	26	19 084
All minerals and stone	5	5 958
Clay	4	83
Coal	2	6 289
Coal and stone	1	175
Copper	1	5
Dolerite	3	567
Dolomite	3	238
Easement	18	1950
Gold	13	960
Granite	5	55
Gravel	165	3 012
Gravel and clay	1	29
Lime sand	3	21
Limestone	5	1 268
Nickel	2	1 346
Peat	1	9
Quartzite	1	191
Sand	55	2 546
Sand and gravel	27	1 426
Sand and stone	13	915
Sandstone	5	34
Shale	2	35
Silica	2	324
Silica sand	1	20
Slate	3	165
Specimens	8	70
Stone	213	5 889
Stone and gravel	23	436
Tin	9	694
Tungsten	1	544
Total	621	54 338

Information Systems and Geophysics

The main activities of the Information Systems and Geophysics Branch in the 2007/2008 year were:

- The ongoing maintenance and development of the TIGER (Tasmanian Information on Geoscience and Exploration Resources) System.
- Completing acquisition of good quality aeromagnetic and radiometric data over northeast Tasmania as part of the *TasExplore* project.
- Participating in a National Geoscience Agreement Potential Field Study of Bass Strait and areas offshore from western Tasmania and west of King Island.
- Supporting the information technology environment in MRT.
- Migrating data into the TIGER System.
- Preparing materials for and participating in MRT promotional activities.

The branch also provided geophysical services and advice to MRT and our clients.

The branch is structured to reflect the functions needed to achieve the outcomes required by MRT and provides operational and geophysical services. At 30 June there were five permanent systems support staff in the Operations Section. The systems support staff are deployed within the functional areas of PC and network operations or database and TIGER System support. The branch manager is also responsible for MRT's geophysical activities.

Major branch achievements during the year included:

- Release of the first ever good quality aeromagnetic and radiometric data over northeast Tasmania.
- Producing the first combined grid of good quality aeromagnetic data over Tasmania and Victoria.
- Completion of the first phase of acquisition and integration of new gravity data from northeast Tasmania as part of the *TasExplore* project.
- Introducing significant improvements into a number of TIGER modules.
- Building an increased information skills-base for MRT staff.
- Participating in major national and international promotional activities.

Geophysics

The *TasExplore* project is acquiring new airborne and ground geophysical data over northeast Tasmania and the Furneaux Group as part of the 2006 State election initiative to encourage mineral exploration in northeast Tasmania and parts of northwest and central northern Tasmania. Flying commenced early in 2007 and all new aeromagnetic and radiometric data from the Furneaux Group and northeast Tasmania were released in 2007. A series of qualitative and quantitative interpretation reports based on the new airborne data were released in March 2008 and are available on the MRT website. The first phase of ground gravity data acquisition was completed early in 2008 and 860 new readings were integrated with the existing data. Tenders will be called in July for a second phase to commence in October 2008.

As part of a joint National Geoscience Agreement project MRT has been provided with good quality aeromagnetic data over Bass Strait and from areas offshore of western Tasmania and King Island. For the first time it has been possible to produce a good quality grid of aeromagnetic data over Tasmania and Victoria and to attempt to establish the nature of geological relationships between the two states.

The MRT website 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 website as it is received. All open-file airborne geophysical datasets have been converted to provide information in both AGD66 and GDA94 datums. Survey control point information can be easily retrieved from The LIST after carrying out a map-based search on the MRT website.

During the year 3709 open-file and closed-file gravity readings were added to the Tasmanian database which now contains a total of 75,373 stations. MRT supported the fieldwork of an Honours student, Thomas Methorst, to acquire gravity data over the central part of Flinders Island. Significant gaps remain in the State coverage with areas in the northeast being targeted this year and next as part of the geophysical

component of the *TasExplore* project. The gravity base station information available on the MRT website has been extended with the addition of a number of new stations in northeast Tasmania.

The branch has participated extensively in both the production of promotional materials and in promotional activities at a number of national and international conferences.

TIGER System

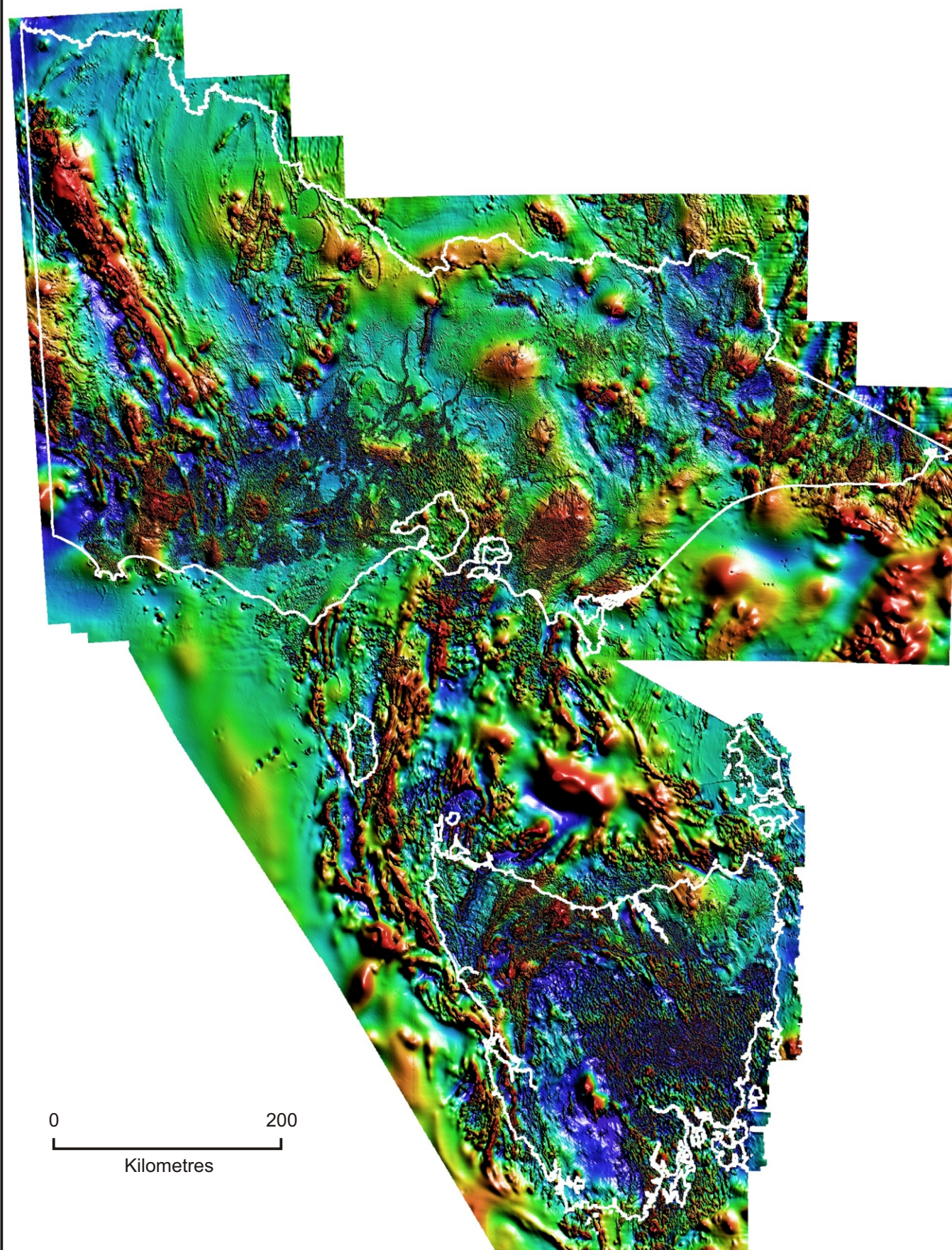
Following completion of Project TIGER on 30 June 2003 the TIGER System, which provides a single storage environment for MRT's corporate data, has been supported entirely from MRT resources. As recommended in the 2006 review by Deloitte Growth Solutions Pty Ltd, maintenance and targeted enhancement of the TIGER System has been undertaken by means of a series of small contracts where the contractors work closely with Information Systems and other MRT staff. This strategy has proven effective, with a number of significant improvements being made to the TIGER intranet applications used by MRT staff and to searching and delivery of information on the MRT website.

The GDA94 datum has now been implemented for tenement information across the TIGER System and on the MRT website. In most modules spatial location information is retained with the original values as entered and a corresponding spatial data object created with un-projected GDA94 values.

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, drilling, geohazards, samples, geochemistry and observations, mineral deposits and geophysics from a number of browser-based thin client applications accessed via the MRT intranet. The MRT website 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 website using customised textual and spatial searches and a number of basic data sets are also available for download.

A total of 2538 gigabytes was downloaded from the MRT website this year compared to 4426 gigabytes

AEROMAGNETIC DATA TASMANIA-VICTORIA REGION



last year, this reduction reflecting more mature search engine indexing of the site and a number of website crashes associated with large downloads. An upgrade of the website is planned to overcome this problem. The number of visits per day has dropped to 698 from 1114 over the course of the year.

Development of a Microsoft Excel-based bulk loader for loading and editing sample and geochemical data for the TIGER System was completed during the year. A revised map viewer client for all TIGER modules and the MRT website is in the late stages of testing and will significantly improve the presentation of map-based information. Scanned drill logs and seismic sections can now be retrieved using metadata searches and viewed on or downloaded from the MRT website. Other major upgrades to the TIGER System that are in progress include development of a module for handling all MRT clients and contacts and a textual interface for the Mining Lease Inspection System.

Delivery of MRT geochemical data as part of the SEEGrid demonstrator ceased following the implementation, in conjunction with Geoscience Australia, of a web-based Geohazard Demonstrator using a new version of Geoserver.

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. Availability of MapInfo has been extended to more users and datasets have been modified to simplify the use of these with MapInfo.

There are several network PC servers running Windows Server. The main PC network server is running Netware 6.5 with approximately 600 gigabytes of on-line storage. Windows 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. Windows Server Update Services have been implemented throughout the Microsoft-based components of the MRT network. Single sign-on is being introduced across the entire network including PC servers, the TIGER System, mail and Unix servers and will reduce the burden on users previously required to remember and maintain separate passwords for each function.

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 website. The MRT website is located in the Rosny Park building to simplify maintenance and up-loading of data to the website servers and has a 50 Mbit/sec connection to the internet.

The MRT website continued to be well used with an average monthly download volume of 211 gigabytes and a peak monthly download volume of 391 gigabytes. The daily average number of visits decreased over the year from 1114 per day to 698 per day. The MRT website 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 website offers an OGC Web Map Service

allowing connection from popular GIS packages to a restricted number of data sets. 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.

Data capture

Capture of metadata summarising technical documents relating to exploration continued throughout the year, with 212 new summaries entered and 374 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 are required to be in the national standard format for digital reporting but compliance with the report format at initial lodgement has continued at approximately 90 per cent compared to the target of 100 per cent. This is the same as in the previous year and appears to have occurred as a result of increased activity and demand for resources within companies. Consultation with and assistance to stakeholders has ensured that non-compliant reports have been updated to conform to the data formats detailed in the national guidelines. Because of the extended time before GDA94 topographic base maps will be available for all Tasmania all incoming reports continue to be checked to ensure that the geodetic datum used is clearly specified.

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 2007/2008 the capture of 1:25 000 scale digital geological data continued. This work resulted in the completion of twelve new map areas.

- eight completed 1:25 000 scale digital geological maps in southern Tasmania (Blackmans Bay, Collinsvale, Elliott, McPartlan, Mulcahy, Solitary, Strathgordon, Wings);
- four completed 1:25 000 scale digital geological maps in northeastern Tasmania (Blessington, Nunamara, Patersonia, Roys).

Data capture/output was completed for the revision of seven map areas for

the *TasExplore* initiative in central northern Tasmania (Castra, Deloraine, Kindred, Latrobe, Montana, Sheffield and Stowport) with capture/output commencing on a further nine map areas (Lea, Liena, Loongana, Loyetee, Pencil Pine, Railton, Riana, Ulverstone and Wilmot).

The conversion of existing 1:25 000 scale digital geology maps from the AGD66 datum to the GDA94 datum commenced.

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 commenced on the landslide hazard series maps for Devonport and Ulverstone.

CAD continues to be used as a support tool for many projects, with 15 maps and plans and 289 tenement maps and diagrams being produced throughout the year.

Tenement administration work included:

- seventy-five new exploration licence applications processed and entered into the MRT tenement information system;
- fifteen Exploration Release Area plans produced and entered into the MRT tenement information system;
- forty-six new mining leases processed and entered into the MRT tenement information system; and
- the production of maps and data files for 97 proposed 'on ground' work programs for exploration licences.

A total of 1287 hardcopy output products of digital geology and tenement data were produced on demand using the agency's inkjet plotters, with 185 data sets of digital geological data being produced for clients.

Royalty, Finance and Administration

This branch provides the corporate support function for Mineral Resources Tasmania. The main activities of the branch include:

- Ensuring 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.
- The maintenance of the static content of the MRT website.
- Ensuring that all corporate information is kept in an orderly manner and is readily retrievable.

- Maintaining the MRT library collection and ensuring that resources are provided to undertake the development and delivery of information services to MRT staff, the mineral industry and members of the public.
- Providing executive support to the Director of Mineral Resources Tasmania.

Information and Access Services

Publications

MRT produces a range of publications to support its activities, including geological reports, promotional documents, newsletters, materials for displays, Exploration Release Area flyers, and other reports and promotional materials as required.

Major publications produced during the year included:

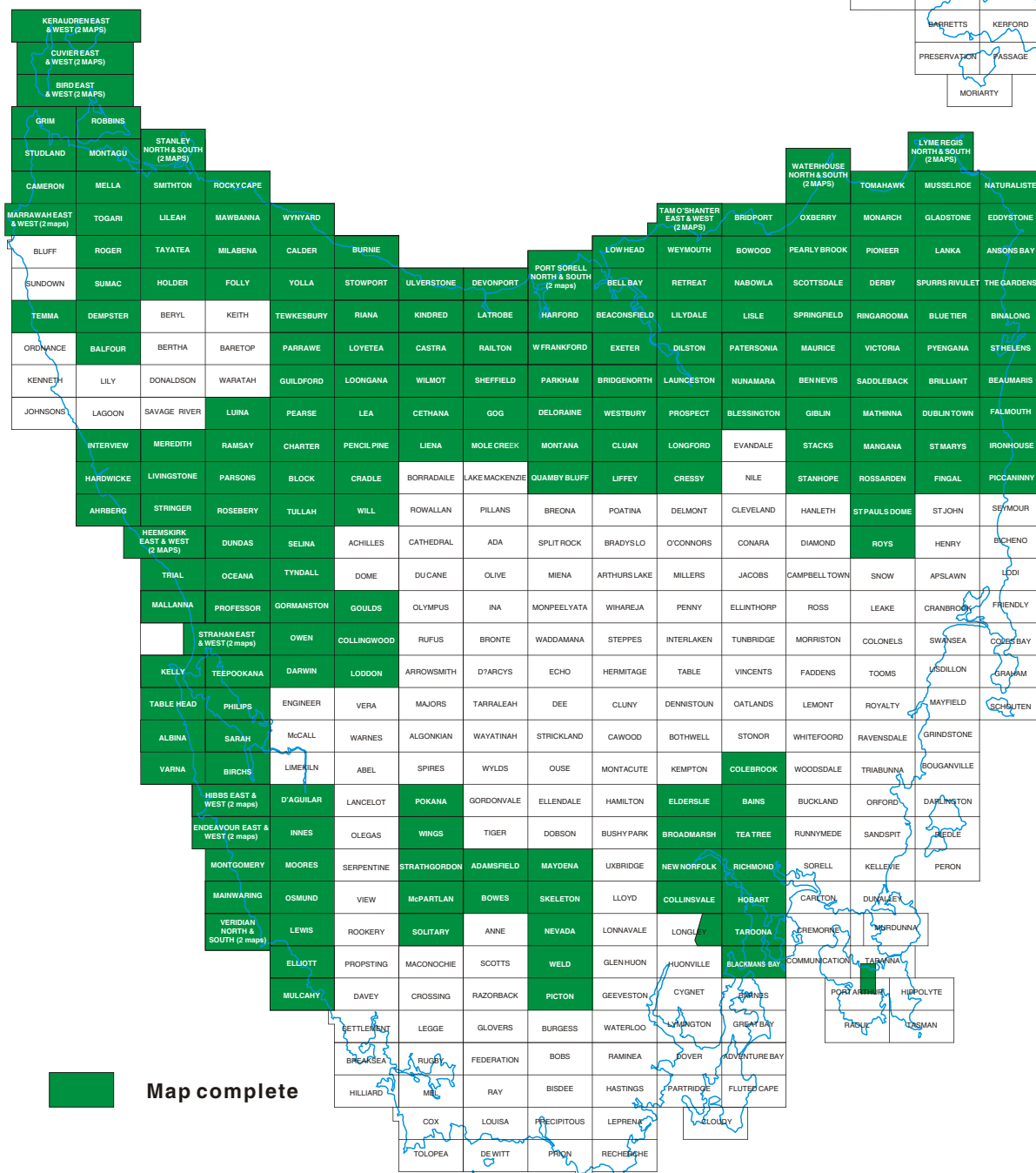
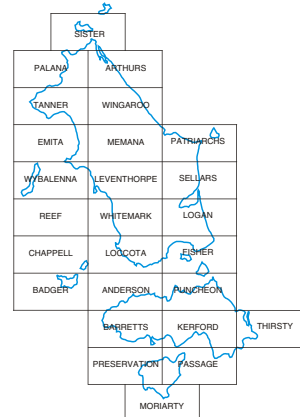
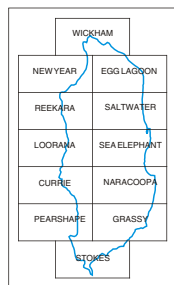
- The Mineral Resources Tasmania *Annual Review* for the year 2006/2007.
- *Explanatory report for the Maydena, Skeleton, Nevada, Weld and Picton geological map sheets*, by C. R. Calver, S. M. Forsyth and J. L. Everard (Explanatory Report 1:25 000 Scale Digital Geological Map Series 1).
- *Regional geology of the Southern Smithton Synclinorium. Explanatory Report for the Roger, Sumac and Dempster 1:25 000 scale geological map sheets, far northwestern Tasmania*, by J. L. Everard, D. B. Seymour, A. R. Reed, M. P. McClenaghan, D. C. Green, and C. R. Calver (Explanatory Report 1:25 000 Scale Digital Geological Map Series 2).

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

1:25 000 SCALE

DIGITAL GEOLOGICAL MAP PROGRAM

As at 1 July 2008



MINERAL RESOURCES TASMANIA
DEPARTMENT of INFRASTRUCTURE, ENERGY and RESOURCES



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

- 2006/04 — *Geology of the Maydena, Skeleton, Nevada, Weld and Picton 1:25 000 scale map sheets*, by C. R. Calver, S. M. Forsyth and J. L. Everard.
- 2007/03 — *A late Oligocene basalt from Keach Hill, near Campbell Town, and its stratigraphic significance*, by J. L. Everard, F. L. Sutherland and S. M. Forsyth.
- 2007/04 — *Lawrence Vale Landslide Investigations: implications for landslide hazard assessment in Launceston*, by A. R. Ezzy and C. Mazengarb.
- 2007/05 — *Petrology of the host rocks, including mineralisation and adjacent rock sequences, from the Savage River mine*, by R. S. Bottrill and J. Taheri.

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

Library Service

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 11.00.

The first stage of the library project to cross-check the DOMINFO database with the card catalogue, and making amendments to the database as required, was completed. A number of deposit names were found to be missing from the database. The next stage of the project will involve the inclusion of these deposits in the deposits authority list and further amendments of records as required.

Work is continuing on DB-Textworks database maintenance and cleanup.

Collection

Sixty-two engineering geology reports were retrieved from archived files for inclusion in the collection and the DOMINFO database.

All journal subscriptions were renewed except for one petroleum subscription which is no longer required and one engineering geology title which was replaced by a more relevant subscription.

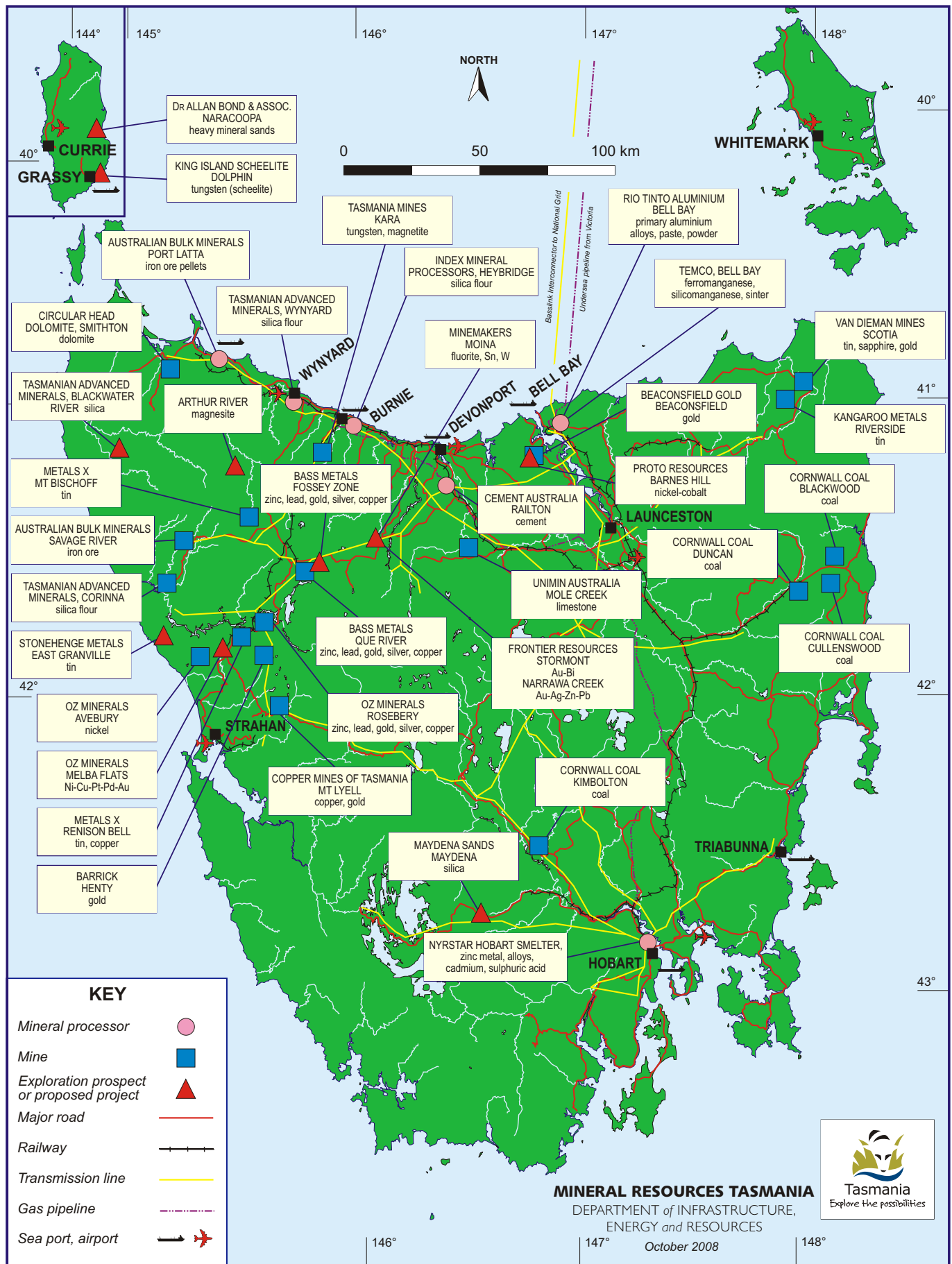
Electronic access

The library intranet pages were updated. Online access to journal subscriptions has been provided to all titles where full-text access is included in the cost of the print subscription and to a selection of titles only available electronically.

Investigations into using WebPublisher software to make the library catalogue available on the intranet/internet commenced. The Department of Premier and Cabinet is providing a service to agencies to host WebPublisher. This will allow DB-Textworks library management software to be uploaded and the library catalogue to be published on the intranet and/or internet.

— Tasmania —

Major Mining and Mineral Processing Operations and Proposed Projects



Mineral Sector Overview

Growth in mineral exploration activity is essential for the future development of the mineral sector and for the economic well-being of Tasmania.

According to the Australian Bureau of Statistics (ABS), expenditure on mineral exploration in Tasmania for the 2007/2008 year was \$32.4 million, up 37% on the \$23.7 million recorded in 2006/2007. Tasmania's share of expenditure was down marginally from 1.38% to 1.32%.

Tasmania experienced the fourth highest rate of increase, after Western Australia (50%), Queensland (46%) and the Northern Territory (44%), but ahead of New South Wales (32%), South Australia (30%) and Victoria (14%).

Mineral Resources Tasmania data record a higher expenditure of \$41.54 million, of which \$20.47 million or 49% was spent on exploration licences. This high figure is gratifying in that it shows a strong commitment by the private sector to discover the new deposits needed to sustain the future mining industry.

Buoyant conditions continued in the mining sector in 2007/2008, driven by strong metal prices, including renewed interest in iron ore. The mineral extraction and processing sector is Tasmania's largest export industry, accounting for \$2.8 billion worth of production and 53% of mercantile exports, up from 49.4% the previous year.

MRT, 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.

Producing mines

Allegiance Mining NL further developed the Avebury nickel mine, with the first production of concentrate in July 2008 and the first shipment expected during the following month. During the year, Allegiance was the subject of a successful takeover by Zinifex Limited (now OZ Minerals Ltd) which was finalised on 18 July 2008. Recent drill intersections in the East Avebury area indicate that further growth in the Avebury resource is likely.

Exploration to further extend resources continued at the Zinifex Limited (OZ Minerals) Rosebery mine, with feasibility studies into potential expansion of surface infrastructure and construction of a new tailings dam commencing. The objective is to extend the life of the mine beyond 2030 at current mining rates.

Bass Metals Ltd delivered the first ore from the Que River mine to Rosebery in August 2007 and at year's end had established a profitable operation, with over 37 500 tonnes of ore delivered during the year.

Bluestone Mines Tasmania Pty Ltd commenced mining tin ore at Mount Bischoff and reopened the Renison Bell mine in July 2008. A feasibility study into recovering tin and copper from the Renison Bell tailings dam continued to yield positive results and work has progressed to detailed design stage.

Stemcor has sold 90% of Australian Bulk Minerals to a consortium of Chinese companies, headed by the Shagang Group. The open-cut mine at Savage River is being expanded with a view to extending mine life by at least 25 years.

Production resumed in the high grade Western Zone of the Beaconsfield gold mine following lifting of the final government restriction limiting underground mining. A new remotely operated mining method has been implemented that enables ore to be extracted without personnel entering active stopes in this part of the mine.

Active exploration programs continued at the Mount Lyell and Henty mines.

Cominex Pty Ltd and Sumitomo Australia Ltd have transferred their silica flour tenements in northwest Tasmania to Tasmanian Advanced Minerals Pty Ltd. Silica flour is used to make LCD screens. The new company has recently received Level II permits to allow for the extraction of 50 000 cubic metres a year at the Corinna mine and the new Blackwater mine. Tasmanian Advanced Minerals Pty Ltd completed the construction of a silica flour treatment plant near Wynyard.

New developments

King Island Scheelite Limited has completed negotiations with the Hunan Nonferrous Metals Corporation to commence the redevelopment of the Grassy scheelite (tungsten) mine and at

year's end was waiting on approval from the Chinese government, the final condition to be satisfied before development can commence.

Van Dieman Mines plc has announced that it was investigating a change to the proposed processing plant and mining methods at the Scotia alluvial tin and sapphire mine, near Gladstone. This would result in a delay to commissioning the operation, but would likely result in a decrease in capital costs.

Proto Resources and Investments Limited has successfully completed a scoping study into operating a nickel-cobalt laterite mine and processing plant at the Barnes Hill deposit, near Beaconsfield. The company will continue to conduct metallurgical testing and drilling as precursors to completing a full feasibility study into commencing the operation.

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.

Mineral exploration highlights

The high level of expenditure on exploration resulted in significant new drill intersections and announcements of resources that reflect the diversity of metallic minerals in Tasmania.

Venture Minerals Ltd has announced an inferred resource of 20 million tonnes at 33% iron at the No. 2 zone of the Mount Lindsay mine, northwest of Renison Bell. The company also announced a significant drill intersection of iron-tin-tungsten mineralisation at its first hole into the Stanley River prospect further west.

Among other iron ore explorers, Iron Mountain Mining Limited announced shallow drill intersections of magnetite in the Hampshire district.

Bass Metals Limited has several significant drill intersections of zinc-lead-gold-silver-copper ore in the Fossey Zone, the southern extension of the Hellyer mine, including 12.75 metres of 18.5% zinc, 8.8% lead, 0.6% copper, 273 g/t silver and 2.83 g/t gold. Bass has announced a resource of remnant ore at Hellyer of 748 000 tonnes of 7% zinc, 4% lead, 0.3% copper, 87 g/t silver and 1.3 g/t gold. Preliminary studies into mining the

Fossey Zone along with the Hellyer remnants have commenced and preliminary metallurgical testing has yielded promising results.

Zinifex Limited reported a 23 metre massive sulphide intersection grading 5.6% zinc, 1.1% lead, 38 g/t silver and 0.8 g/t gold at the Jupiter prospect, five kilometres south of Rosebery.

Zinifex also announced nickel-copper intersections at Melba Flats, east of Zeehan, including 1.9 metres of 1% nickel and 0.8% copper and six metres of 0.8% nickel and 0.7% copper at the North Cuni-Genets prospect; 0.7 metres of 10.8% nickel and 3.81% copper at the Nickel Reward prospect; and 4.7 m of 1.3%

nickel and 0.94% copper at the Devereaux prospect.

Intensive exploration continued at the Avebury mine and environs, with new total resources for the Avebury deposit announced at 18.18 million tonnes of 0.95% nickel. There were a number of promising intersections outside the mine area, including eight metres of 1.5% nickel at the Foundation Stone prospect, 1.5 kilometres to the north of the deposit.

Zeehan Zinc Limited announced an Inferred Resource of 1.392 million tonnes of 2.8% zinc, 3.4% lead and 69 g/t silver at the Boss mine near Zeehan.

Stonehenge Metals Limited has announced an Inferred Resource of 562 000 tonnes of 0.5% tin, 1.4% zinc

and 36.4 g/t silver at the Sweeney prospect near Trial Harbour and an Inferred Resource of 287 600 tonnes of 2.8% zinc, 1.5% lead and 31 g/t silver at the Sunshine prospect near Zeehan.

Greatland Gold plc has announced results from a twelve-hole shallow drilling program at the Warrentinna goldfield in northeast Tasmania. Best results were three metres of 2.9 g/t gold within intersections of nine metres of 2.06 g/t gold, and 51 m of 0.51 g/t gold at the Derby mine and three metres of 2.1 g/t gold at the Golden Dyke prospect.

Metals X Ltd has announced a resource of copper within the tin ore bodies at Renison Bell of 1.189 million tonnes of 0.81% copper.

Value of the Tasmanian Mineral Industry

Year ended Commodity	Unit	30 June 2007 [†] Total Quantity	30 June 2008 Total Quantity
Metallic Minerals			
Copper (assayed)	(tonne)	29 322	30 483
Gold (assayed)	(kilogram)	3 780	5 532
Iron ore pellets	(tonne)	1 837 985	2 423 240
Iron (in magnetite)	(tonne)	98 507	135 629
Lead (assayed)	(tonne)	28 833	29 285
Scheelite	(tonne)	30	11
Silver (assayed)	(kilogram)	98 881	98 663
Tin (assayed)	(tonne)	5	0
Zinc (assayed)	(tonne)	96 447	95 541
Value of Metallic Minerals		\$922 133 500	\$803 316 729
Non-metallic, Industrial and Fuel Minerals			
Clay – Brick	(tonne)	22 846	29 323
Other	(tonne)	1 200	5 600
Kaolin	(tonne)	9 373	6 905
Dolomite	(tonne)	5 645	7 696
Limestone – Agricultural	(tonne)	112 310	132 825
Cement	(tonne)	1 701 075	1 856 125
Chemical and metallurgical	(tonne)	49 469	57 101
Other	(tonne)	54 966	62 693
Silica (glass and other)	(tonne)	185 036	205 190
Coal (run of mine)	(tonne)	639 784	725 228
Coal (washed)	(tonne)	409 716	468 895
Peat	(m ³)	*	0
Gemstones	(kg)	‡	0
Value of Non-metallic, Industrial and Fuel Minerals		\$48 960 674	\$55 429 254
Construction Materials			
Building stone – Freestone	(tonne)	167	192
Other	(tonne)	14 984	193 501
Sandstone	(tonne)	827	927
Crushed and broken stone –			
Basalt	(tonne)	1 160 407	904 250
Dolerite	(tonne)	1 277 517	1 271 318
Limestone	(tonne)	49 526	62 002
Sandstone	(tonne)	nil	45
Other	(tonne)	172 800	178 917
Gravel (aggregate)	(tonne)	38 210	36 420
Sand	(tonne)	601 467	626 899
Other road materials	(tonne)	2 625 109	2 219 886
Value of Construction Materials		\$51 683 067	\$71 889 846
Total value with Australian metal prices		\$1 022 777 241	\$930 635 829
Value added production from Tasmanian and other ores		\$1 800 882 479	\$1 726 904 160
(aluminium, cadmium, cement, lead-copper, ferromanganese, silicomanganese, sinter, sulphuric acid, superphosphate, zinc)			
Total value of mining and metallurgical production		\$2 823 659 720	\$2 657 539 989

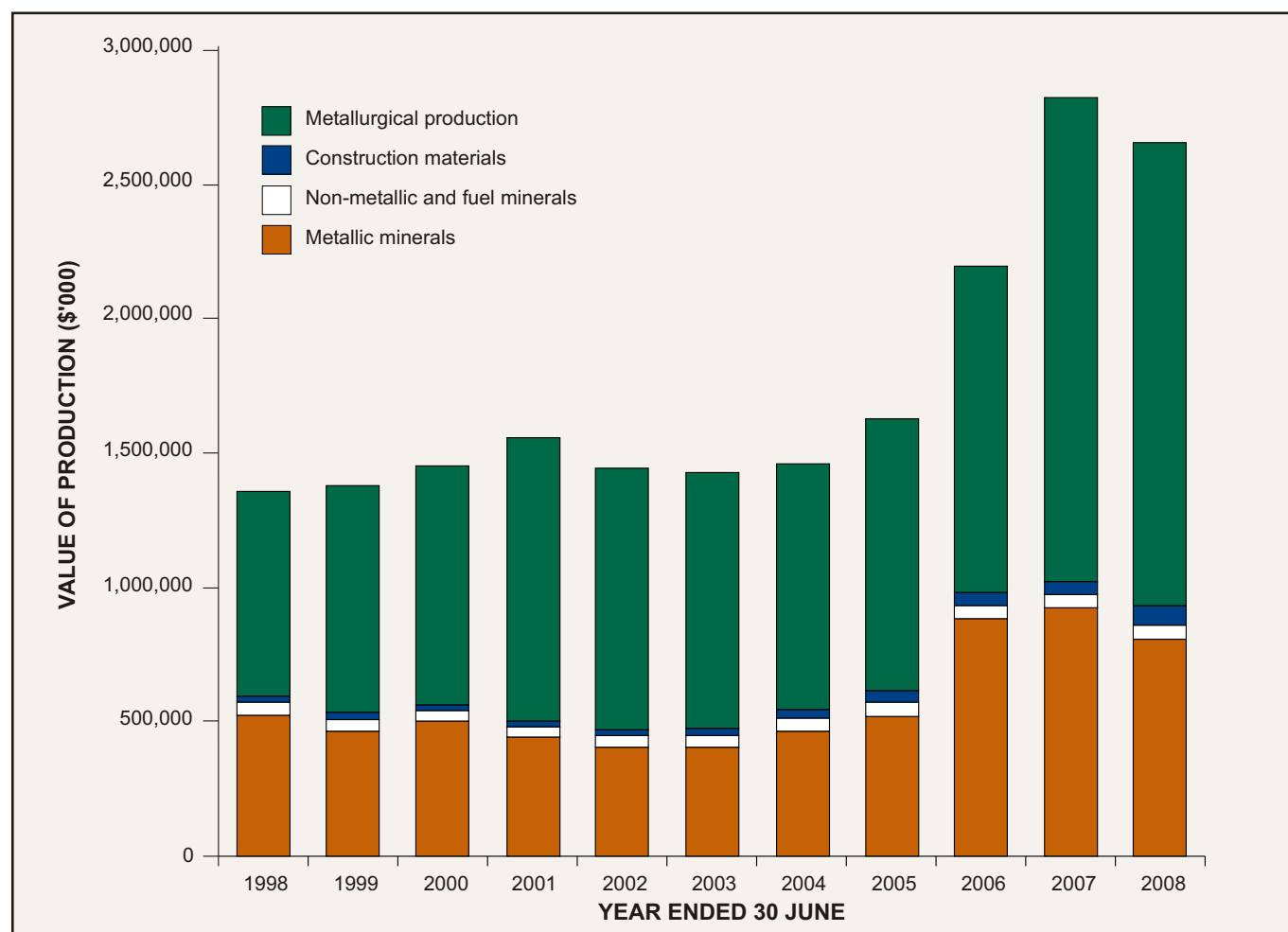
† Figures for 2007 may vary from previously published results because of late or amended returns

* Peat — production less than one tonne

‡ Gemstones — value only recorded

Value of Production, 2006/2007 and 2007/2008

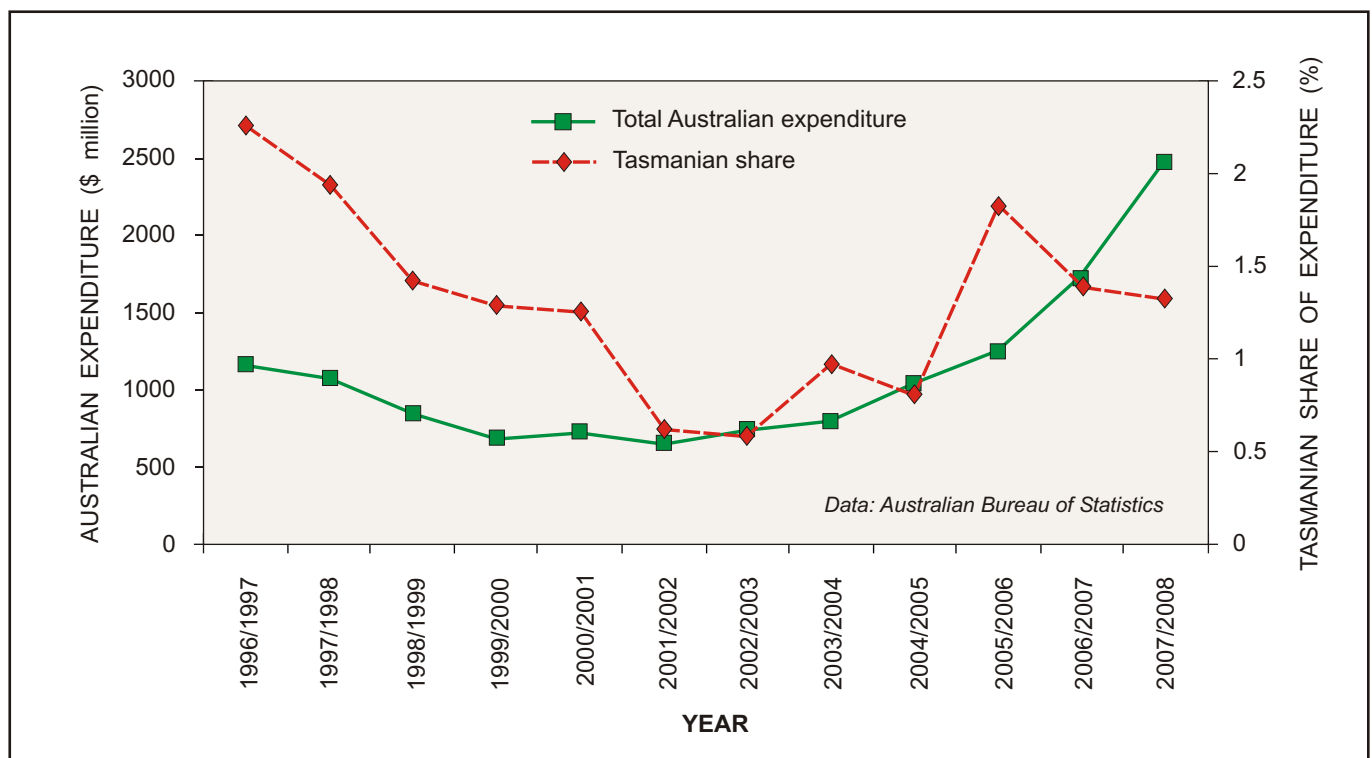
	2006/2007		2007/2008		% Change
	Tonnes	A\$'000	Tonnes	A\$'000	
Copper	29 322	-	30 483	-	4.0
Gold	3.8	-	5.5	-	44.7
Iron ore pellets	1 837 985	-	2 423 240	-	31.8
Lead	28 833	-	29 285	-	1.6
Silver	98.9	-	98.6	-	-0.3
Tin	5	-	0	-	-100
Zinc	96 447	-	95 541	-	-0.9
Total metallic minerals	-	922 134	-	803 317	-12.9
Non-metallic and fuel minerals	-	48 961	-	55 429	13.2
Construction materials	-	51 683	-	71 890	39.1
Value added production from Tasmanian and foreign ores	-	1 800 882	-	1 726 904	-4.1
Value of mining and mineral processing production	-	2 823 660	-	2 657 540	-5.9



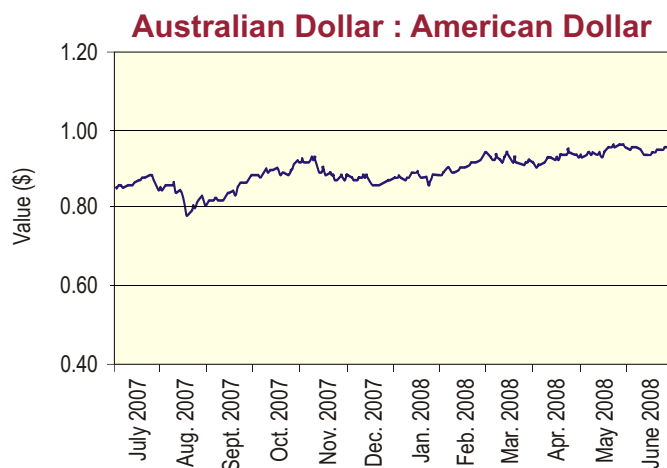
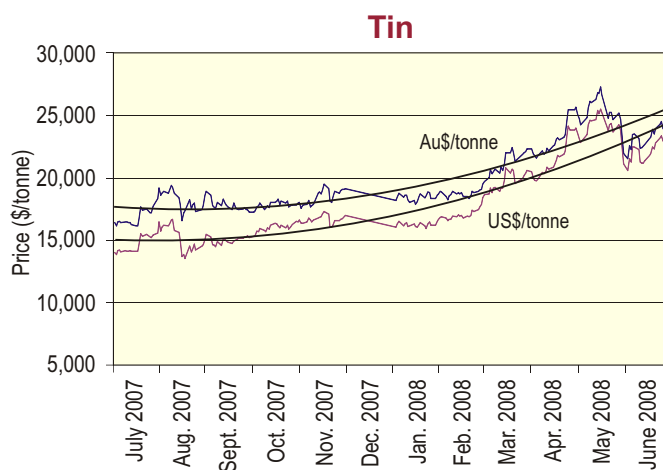
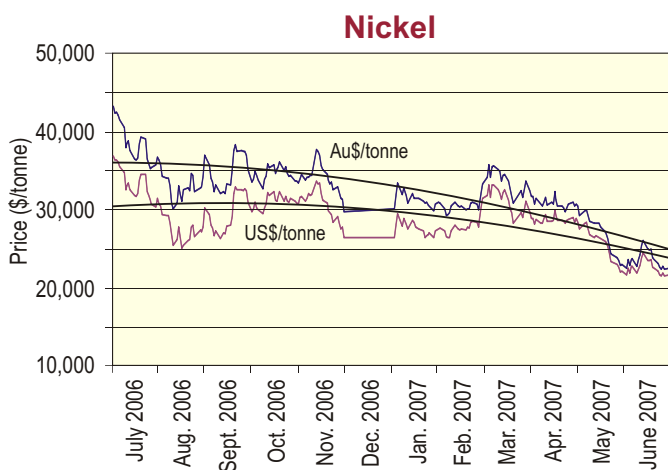
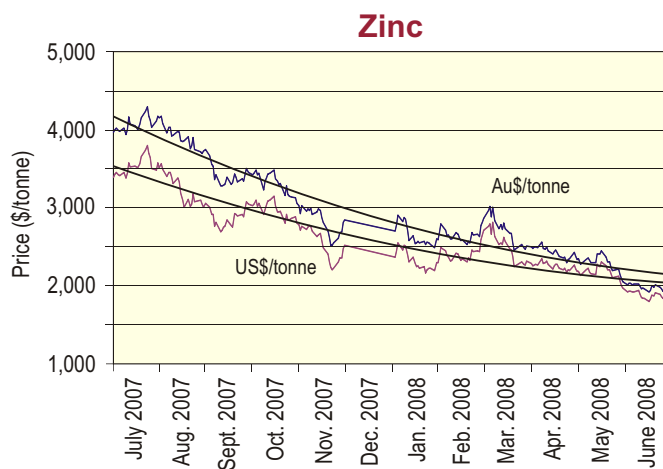
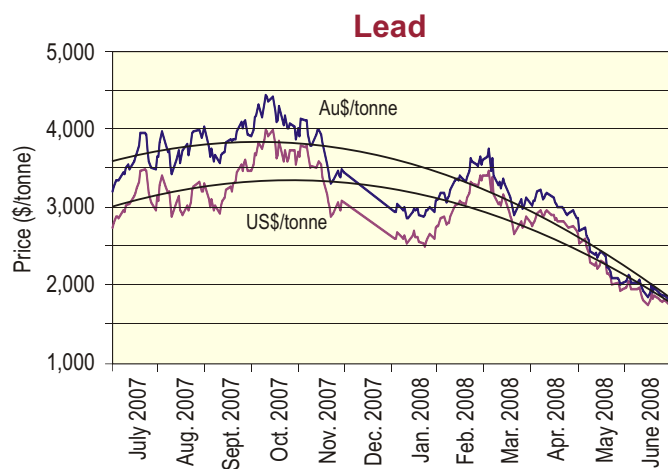
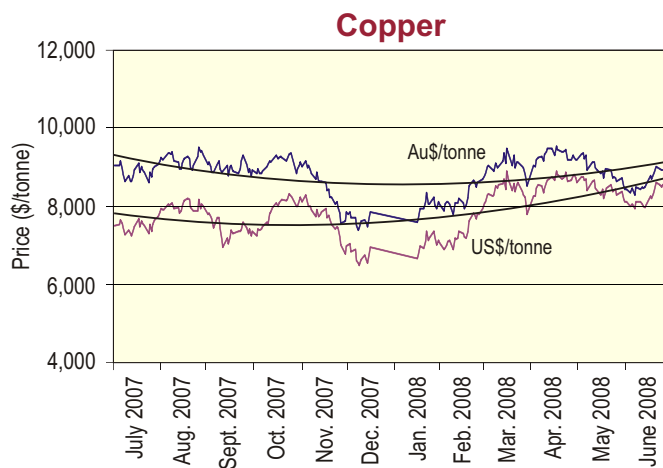
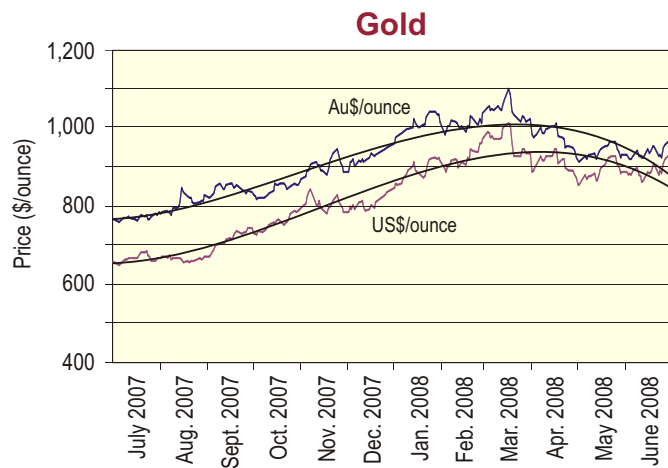
Mineral Exploration Expenditure

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
2006/2007	1714.6	23.7	1.39
2007/2008	2461.4	32.4	1.32

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



Commodity prices and the Australian dollar



— Review of Mineral Sector Operations —

Metallic Minerals

Base Metals

OZ Minerals Rosebery Mine

OZ Minerals Limited operates an underground lead-zinc mine and concentrator at Rosebery on Tasmania's west coast, employing 196 people in the operation.

Mine production

Total underground ore production was 739 000 tonnes at 10.48% Zn. Production from the lower levels was 630 700 tonnes and came mainly from K lens and P lens, with a smaller contribution from V lens ore. Production from the upper levels totalled 108 300 tonnes, with production coming from remnant mining in B South, F and D lenses.

Mine development advance was 6500 metres, with 830 metres driven in the upper levels and 5700 metres advanced in the lower mine. It is estimated that 151 000 tonnes of ore and 109 000 tonnes of waste were produced. Capital development totalled 3200 metres.

Most of the capital development was required to extend the K and W declines to access future ore zones and provide drilling platforms for resource infill and exploration drilling. Development was also undertaken at 17K for the ventilation upgrade to increase the volume of air into the mine.

The operating development was in a number of areas including K Lens, P lens, V lens, Lower B and F lens.

Mill

Ore treated totalled 726 800 tonnes from Rosebery and 34 700 tonnes from Que River. The overall grade was 11.43% Zn, 3.65% Pb, 0.34% Cu, 136 g/t Ag and 1.63 g/t Au. Production totalled:

- 142 900 tonnes of zinc concentrate @ 54.52% Zn.
- 34 000 tonnes of lead concentrate at a grade of 63.64% Pb and 1262 g/t Ag.
- 7380 tonnes of copper concentrate at a grade of 19.3% Cu, 8.72% Pb, 5026 g/t Ag and 49.3 g/t Au.

- 499 kilograms of doré at 35.8% Ag and 60.26% Au.

The zinc flotation concentrate production of 142 900 tonnes for the year reflected a decline in Zn feed grades partially offset by an increase in milled tonnes. Concentrate grade was adversely affected by fluctuations in feed, a period where the addition of reagent to modify pH became unreliable, and mill equipment reliability. Restrictions in circuit capacity proved a bottleneck during months where higher feed grades were experienced.

Lead concentrate production fell below that of the previous year, primarily as a consequence of the reduced feed grade. Reagent addition strategies were extensively modified during the year to address previously identified issues.

Copper concentrate production was sustained but doré production fell to 500 kilograms.

Que River ore was toll-treated through the concentrator during the year following a successful trial in August 2007.

Resources and Reserves

Resources and Reserves for the Rosebery mine at March 2008 have been compiled for end of year requirements and are reported using the *Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves*. Mineral resources quoted are

inclusive of the reported ore reserves and show an overall increase of 3.60 million tonnes compared with 2007. The main reasons for the increase in the measured, indicated and inferred resource are the addition of 2.708 million tonnes from W lens and 2.381 million tonnes from P lens.

The significant increase to the resource at Rosebery was largely due to resource infill and extension drilling in P, K and W lenses, and to a lesser degree B North and V lenses.

Total ore reserves at Rosebery have increased by 1.14 million tonnes. This is mainly due to resource upgrades from resource to reserve in P and W lens of 1.194 million tonnes. Changes to the reserve were due to depletions of 0.737 million tonnes by mining.

The decreases in reserves were offset by conversion of resources to reserves in W Lens (0.934 million tonnes) and revision of reserves in P Lens (0.26 million tonnes).

Rosebery Mine Lease exploration

A total of 60 900 metres of drilling was undertaken from both surface and underground locations on the Rosebery deposit to 31 March 2008.

The main target areas for underground exploration were extensions to W Lens, Lower P Lens, the K-W Corridor, X Lens and V Lens. In each focus area the mineralisation remains open at depth.

Identified Mineral Resources as at March 2008

Reserves	Tonnes ('000)	Pb (%)	Zn (%)	Cu (%)	Ag (g/t)	Au (g/t)	Fe (%)
<i>Rosebery:</i>							
Measured:	2 938	4.32	15.4	0.54	156	2.4	10.5
Indicated:	3 921	3.36	11.3	0.37	132	1.8	9.4
Inferred:	8 479	3.29	10.3	0.30	114	1.4	7.2
Sub total:	15 332	3.51	11.6	0.36	126	1.7	8.4
<i>South Hercules:</i>							
Measured:	977	1.5	3.1	0.1	133	2.44	4.3
Total Resource:	16 336	3.38	11	0.34	126	1.74	8.1

Ore Reserves, Rosebery mine

Reserves	Tonnes ('000)	Pb (%)	Zn (%)	Cu (%)	Ag (g/t)	Au (g/t)	Fe (%)
Proved	3650	3.1	11.0	0.3	111.2	1.5	6.8
Probable	1309	2.2	7.6	0.2	88.7	0.9	7.4
Total	4959	2.9	10.1	0.3	102.3	1.4	7.0

The underground drilling succeeded in increasing the measured indicated and inferred resources of the P, PK and W lenses. Drilling was also successful in extending the inferred resource of X Lens.

The surface exploration drilling was conducted to the north of current known mineralisation. Three northings were drilled targeting along strike of the prospective host position and Rosebery ore lenses. The extents of Y Lens were delineated with a possible merge with X Lens, to be defined in the coming year. Follow-up drilling from the 'Southern Near Surface' project consisted of delineation of U Lens.

Whole-rock geochemistry was completed for drill holes BH348, JE350 and BH351. Down-hole EM studies were completed for holes BH348, 341R, and LB349.

'Project Horizons' is an OZ Rosebery internal project with the aim of increasing the mine life of Rosebery beyond twenty years. The project involves an increase in exploration expenditure of \$19 million over three years, and was approved in May 2006. The drilling was conducted concurrently with the surface exploration and took place in the north of the known resources.

The Horizons project also entails conducting deep drilling from numerous underground locations, including the Northern Exploration Decline. The underground Horizons drilling was centred on extensions to the Y lens, X Lens, and W Lens.

Exploration planning for 2008/2009 anticipates considerable further drilling.

Capital expenditure

A total of \$44.7 million was expended during 2007/2008, with further expenditure of \$133.3 million planned during 2008/2009.

Personnel

A total of 196 people were employed at 30 June 2008. No production hours were lost due to industrial action during the year. One lost time accident was recorded.

Oz Rosebery Mine obtained AS4801 certification which was achieved in September 2007 and has been maintained throughout 2008. The Safety Management System has undergone continuous improvement since this time with the strengthening of contractor management, increased training and awareness on hazard identification, revised job safety observation program, and additional communication and consultation processes.

The Wellness Program has continued to align with site safety, health and environment initiatives including fatigue management, early intervention, stress management and working in heat, with increased participation from site personnel. The program has also continued to engage employees, contractors and their families to promote a healthier lifestyle.

The Medical Referral Injury Frequency Rate was an improvement over the previous year and is supported by implementation of measures over 2007/2008, including manual handling training, first aid training, pre- and post- shift hydration testing and mental health awareness

sessions. Compulsory fatigue management training also commenced on-site in May 2008, with the view of developing a sustainable fatigue management plan upon completion of the training sessions.

Environment

OZ Rosebery reported four non-compliance events to the Tasmanian Government during 2007/2008, which is a 30% decrease from the previous year. Capital works that commenced in 2006/2007 for an emergency retention system at the filter plant to prevent future uncontrolled discharges from the site have been completed. These works have since been modified to enable the capture of materials emanating from the weighbridge. Site drainage management has also become a main focus following high rainfall events in August and October 2007.

The site has continued to maintain ISO 14001 certification to the 2004 standard. A triennial audit for recertification is to be held in February 2009.

Significant progress was made in addressing environmental legacies, with rehabilitation works continuing at the Hercules mine site. The stormwater upgrade project has been completed, with studies continuing on appropriate methods of acid drainage treatment. Rehabilitation works have continued during 2007/2008 through the continuation of the revegetation plan (Hercules Assessment Index for Rehabilitation), which involved targeted application of lime and fertiliser to promote re-growth.

OZ Rosebery has continued to implement the annual weed spraying campaign, with a significant focus on pampas, English broom, gorse, montbretia and cotoneaster.

Significant works have been completed at No. 2 and 5 dams to improve water quality and commence direct discharge of water into the Stitt River. Work has also commenced on the rehabilitation and revegetation of the wetlands ponds associated with No. 2 and 5 dams.

Toxicological testing of Lake Pieman water has continued, with the use of local water flea to accurately determine the impacts of discharges from mine operations to water on the West Coast. Different testing methods will continue during FY09 with the view that other mine sites on the West Coast may benefit from the results.

Capital expenditure, major projects

Project	Approved budget 2007/08 (\$ million)	Amount spent 2007/08 (\$ million)	Status
Bobadil Tailings Dam works	4.4	3.9	Continuing
Pre-feasibility study — Optimisation ROM	4.0	1.752	Continuing
Rosebery ventilation upgrade	30.0	0.37	Continuing
Mine development	19.6	19.6	Continuing
Mobile heavy equipment	3.9	2.31	Continuing
Power reticulation upgrade	2.4	1.37	Continuing
PCS electrical upgrade	1.299	1.152	Continuing
Zinc surge tank replacement & upgrade	1.539	1.2	Continuing
Mine gem co pilot system	1.0	0.93	Continuing
Underground HV cable replacement	1.502	1.424	Completed
Underground pump stations	1.714	1.040	Continuing
Rock breaker upgrade	0.660	0.536	Completed
Crusher building refurbishment	0.505	0.494	Completed
Retention ponds	0.587	0.487	Completed
Acid mine drainage, Hercules	0.602	0.586	Completed

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 the Tasmanian 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, similar to last year's results. 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.

Additional spigot points have been installed at the Bobadil tailings dam. As Bobadil is nearing the end of its operational life, studies have commenced into the location and construction of a new tailings storage facility at South Marionoak, located across the Pieman River from Bobadil. This project has gained Board approval and is seeking various stakeholder approvals.

Increased focus has been placed on dust monitoring of the site and Rosebery township. GHD has been employed to undertake a dust characterisation survey. Continual high volume atmospheric sampling monitoring was undertaken during 2008.

Community relations

OZ Minerals, in conjunction with the Australian Workers Union, made representation to government ministers and the Premier in a bid to amicably reach a resolution to concerns over the operation of the Rosebery Community Hospital.

It was agreed by all parties to continue to work towards resolving the issue for the community. As a result, and in partnership with OZ Minerals, the hospital is now open 24 hours a day, 7 days a week following a financial commitment from the company for \$500,000 over two years.

There is a registered nurse available at all times and a doctor on call.

In August 2007 western Tasmania experienced heavy rainfall that lasted several days. This resulted in the wetlands at the No. 2 and 5 dam overflowing into the Stitt River. Pumps were operational to pump water back to the effluent treatment plant (ETP) and continual monitoring was undertaken. A crisis management team was formed and agreed to deploy people to monitor the ETP and Bobadil, organise shutting down of underground pumps to minimise water going to the ETP, notify the Department of Tourism, Arts and the Environment, and continually monitor the online weather radar.

The company was notified that the stormwater drains were bubbling and blocked and that concentrate was laying in the carport and yard of a house in Howard Street. The occupant of the residence was encouraged to have a blood lead test as she was pregnant, and it was requested that the children also be tested for precautionary purposes at the company's cost. The family relocated to another residence until the cleanup was completed. A letter drop in the area advised residents of the recent events whereby historical lead and zinc concentrate was eroded by runoff water and washed into adjacent residences. Blood lead test results indicated that two children had elevated blood lead. Further results indicated that levels had not improved with removal of the source exposure.

A community open forum, held in December 2007, advised that blood lead testing would be available for any interested people during the month. Company representatives met with government delegates on the issue of elevated lead levels in a Rosebery family and remained in regular contact with the Tasmanian government to ensure that they were informed of company activities. A lead fact sheet was developed for distribution to the community. Results of recent blood lead tests were presented at a second forum. Aardvark Cleaning and Restoration was employed to extensively clean family items, linen, curtains etc., and the house and yard were extensively cleaned. The company continues to work with the family.

Bass Metals Ltd

Bass Metals Ltd, through the Que River Mining Alliance with Mancala Mining Pty Ltd, operates the Que River

mine near Waratah in western Tasmania. An average of twenty-seven people are employed.

Mining operation

Que River is an open-cut mine, recovering remnant ore left by the previous underground operation conducted by Aberfoyle Resources in the 1980s. Production for the year comprised 43 800 tonnes of ore mined at 11.2% Zn, 6.1% Pb, 0.3% Cu, 163 g/t Ag and 2.9 g/t Au. Waste moved totalled 553 000 bank cubic metres.

A total of 37 960 tonnes of ore was delivered to the OZ Minerals Rosebery mine for processing at 11.9% Zn, 6.7% Pb, 0.3% Cu, 161 g/t Ag and 3.0 g/t Au.

In addition to the remnant resources that are currently being mined, three areas (S Lens, QR32 and Nico) contain virgin resources not previously mined. These areas are being assessed with a view to future mining.

Resources

Total mineral resources are 701 000 tonnes at 5.4% Zn, 2.7% Pb, 1.2% Cu, 83 g/t Ag and 0.88 g/t Au. These comprise:

- *Measured*: 56 000 tonnes at 2.1% Zn, 0.7% Pb, 1.7% Cu, 69 g/t Ag, 0.34 g/t Au;
- *Indicated*: 458 000 tonnes at 6.0% Zn, 3.0% Pb, 1.2% Cu, 88 g/t Ag, 1.0 g/t Au;
- *Inferred*: 187 000 tonnes at 5.0% Zn, 2.8% Pb, 1.0% Cu, 74 g/t Ag, 0.78 g/t Au.

Total mining reserves are 78 400 tonnes at 9.0% Zn, 4.6% Pb, 0.8% Cu, 121 g/t Ag and 2.6 g/t Au.

Exploration

A review of the company's Mineral Resource and Reserves base at Que River was undertaken in July 2008 following mine depletion at PQ and S-Lens deposits as part of the initial mining operation. Whilst some minor additional drilling was undertaken in the project area no other modifications to the Mineral Resources have been finalised.

Further drilling is planned in the 2009 financial year aimed at testing targets prospective for new lenses, such as south of S-Lens, and to delineate potentially mineable resources in close proximity to the existing underground workings.

Human resources

The operation employs an average of 27 people, and works an average of 5000 man hours per month. Employees are sourced from local communities at Waratah, Tullah and Rosebery, with a large proportion travelling from the north coast areas of Burnie and Ulverstone on a daily basis. Some contractors travel from the greater Launceston region and stay at Rosebery while on shift.

Zero lost time and medical treatment injuries were recorded during the year.

Environmental management

The operation reported no environmental incidents during the year. The greatest environmental challenge facing the project is treatment of acidic water generated from both the old underground operation and the current waste rock dumps. Since commencement of mining there has been a significant improvement in the legacy issues surrounding the mine with a major reduction in heavy metals entering the Southwell River.

Intec Ltd

This company employs 48 people in its tailings retreatment operation at the Hellyer mine.

A total of 1.129 million tonnes of tailings was mined from the tailings dam using a suction dredge. Lead-zinc concentrate production was 52 600 tonnes containing 19 200 tonnes of zinc, 6600 tonnes of lead and ten kilograms of silver.

Reserves at November 2006 were 10.8 million tonnes at 2.8% Zn, 3.0% Pb, 0.16% Cu, 88 g/t Ag and 2.6 g/t Au.

Capital expenditure comprised \$2 million on a new transformer.

A tailings bank impoundment was constructed within the tailings dam.

Copper

Copper Mines of Tasmania Pty Ltd, Mount Lyell

This company operates the Mount Lyell underground copper mine and concentrator at Queenstown, employing 288 people in operations.

Production

Ore mined totalled 2.565 million tonnes, with 2.512 million tonnes being

milled, producing 100 800 tonnes of concentrate containing 28 tonnes of copper, 16 000 ounces of gold and 135 000 ounces of silver. Waste mined totalled 39 600 tonnes.

A total of 2400 metres of development was advanced, 2100 metres in ore and 300 metres in waste. Drilling totalled 1000 metres.

Resources and Reserves

The Prince Lyell estimated mineral resource at 31 March 2008, at 1% Cu cut-off grade, was:

Prince Lyell below 1390 RL	5.99 Mt
Prince Lyell cave 2092–1465	2.45 Mt
Western Tharsis	11.77 Mt
King Lyell copper clays	1.2 Mt
Crown 3 crown pillar	0.61 Mt
Total resource	22.020 Mt

The Prince Lyell estimated ore reserve at 31 March 2008, at 1% Cu cut off grade, was:

In situ ore	4.21 Mt at 1.506% Cu
Secondary ore	5.42 Mt at 1.16% Cu
Surface stockpile	50 000 t at 1.27% Cu
Total reserve	9.68 Mt at 1.31% Cu

Employment

The company employed a total of 101 people in management, maintenance and administration. A further 187 contractors were employed in production, transport, treatment and maintenance.

Environmental programs

Copper Mines of Tasmania has continued with its environmental improvement program. The legacy of an old site designed to drain direct to the river has been a challenge. Additional sediment retention ponds, drainage diversions, installation of an automated truck wash facility, flocculent dosing of critical stormwater drains, pumping of stormwater to treatment areas and improved management of ore spillage have contributed to an improvement in stormwater quality. Ongoing strategic planning included a comprehensive review of the site closure plan, a strategic vegetation survey, development of a new heritage management plan, and studies to assess opportunities to improve the site's water and energy efficiency.

The natural revegetation of much of the historic disturbance of the Mount Lyell mining field is progressing well, although the potential for bushfire impact on infrastructure, heritage features and revegetation has become a

significant hazard. The vegetation survey was designed to assist with planning fire management on site. CMT has active programs for increasing community and site personnel's awareness of environmental issues and environmental management at Mount Lyell.

During the year CMT provided informative tours to tourism operators in Queenstown and Strahan to improve their understanding of the legacy environmental issues and the efforts being made by CMT and the State to rectify the impacts from past mining practices.

Copper Mines of Tasmania has continued to assist the State with its program to treat acid drainage from historic Mount Lyell mining activities.

Capital expenditure

A total of \$2.747 million was provided for capital expenditure. Major items were \$1.798 million for decline development, \$172,000 for a fire-fighting vehicle, \$165,000 for a refuge chamber, and \$107,000 for new pumps to upgrade the 1615 pump station.

Gold

Beaconsfield Mine Joint Venture

Production at the Beaconsfield gold mine was suspended after a rock fall in April 2006. Limited production had recommenced by 30 June 2007, with the staged recommencement of underground mining operations continuing during 2007/2008. Development production and stope production from the Eastern Zone of the mine provided 12,843 ounces of gold production in the December 2007 half year, with stope production from the Western Zone of the mine recommencing in December 2007 utilising a new remote mining method in which no personnel enter the production stopes.

Production

By year end the mine had returned to normal production levels and ore processed in June exceeded a rate of 240 000 tonnes per annum for the first time since mining recommenced. A rate of 300 000 tonnes per annum is being targeted by increased tele-remote loading and backfilling capacity. Orders have been confirmed

Identified Mineral Resource, Tasmania Reef as at 30 November 2007

Measured Resource	307 000 tonnes @ 17.8 g/t Au (175,000 ounces contained gold)
Indicated Resource	503 000 tonnes @ 15.1 g/t Au (244,000 ounces contained gold)
Inferred Resource	63 000 tonnes @ 12.2 g/t Au (25,000 ounces contained gold)
Total Resource	873 000 tonnes @ 15.8 g/t Au (446,000 ounces contained gold)

Estimated Ore Reserve, Tasmania Reef

Proved Reserve	392 000 tonnes @ 12.0 g/t Au (151,000 ounces contained gold)
Probable Reserve	703 000 tonnes @ 8.60 g/t Au (194,000 ounces contained gold)
Total Reserve	1 095 000 tonnes @ 9.80 g/t Au (346,000 ounces contained gold)

for two new, larger Elphinstone R1600 loaders.

Mine production during the first six months of the year was restricted to sill driving (development in ore) and stoping production from the Eastern Zone. Following acceptance of the Western Zone Case for Safety by the Chief Inspector of Mines on 28 September 2007, necessary rehabilitation work and the establishment of footwall drives required for the new mining method delayed firing of the first stoping panel in the Western Zone until late December 2007.

The newly introduced remote footwall-driving mining method, in which no personnel enter the production stopes, was successfully introduced throughout the second half of the year, providing access to high grade ore on multiple levels in the Western Zone of the mine.

A total of 141 205 tonnes of ore was mined for the year. The ore treatment plant operated normally throughout the year, although at less than full capacity as mine production ramped up. Ore treated totalled 141 139 tonnes at an average grade of 7.71 g/t Au, producing 33,570 ounces of gold.

Exploration

A diamond drilling program has commenced with the objective of further increasing gold reserves by testing the Tasmania Reef below the F21 Zone (the bottom of the current resource) over an interval of 300 vertical metres between 1200 and 1500 metres vertical depth from surface. The program will take up to a year to attain the drill density necessary to estimate a JORC compliant measured reserve.

Exploration around the Beaconsfield mine focussed on two long diamond-drill holes targeting the North Tasmania Reef and testing prospective mine series host beds that have never before been drilled. A small RC drilling

program was completed in an area immediately north of the mine. Further drilling will be undertaken after encouraging results were obtained.

Beaconsfield Gold acquired the Lefroy Resources Limited exploration tenements covering much of the northeast Tasmanian gold province, with the company planning to systematically drill targets at Lefroy with the aim of developing several open pits from which ore would be trucked to Beaconsfield for processing, utilising spare capacity in the ore treatment plant. The company also acquired two tenements in the historic Mathinna goldfield.

Barrick (Henty) Limited Henty gold mine

This company operates an underground gold mine and treatment plant near Queenstown.

Gold production for the year was 2078 kilograms, with 1468 kilograms of silver also being produced. Waste mined totalled 83 000 tonnes.

Resources and reserves

Reserves at 30 June 2008 were 595 000 tonnes at 7.983 g/t Au, containing 152,900 ounces of gold. The reserves are based on a gold price of US\$750 and the resources are based on a gold price of US\$900 according to the direction of Barrick Corporate.

The reserves increased by 5386 ounces in 2008. This figure accounts for the 8028 ounces that were sterilised from reserves without mining. Sterilisations arose from changed understanding and subsequent downgrading of ore zones through increased knowledge from flat-backing and sludge-hole information in relation to Mount Julia ore blocks. Cost evaluations and subsequent downgrading of Darwin Mid and Darwin North ore blocks also took place. The Tyndall Zone has been added to reserves following a

favourable re-evaluation with new drill-hole data.

Total resources outside reserves were 84 000 tonnes at 7.055 g/t Au (containing 19,000 ounces of gold). This comprised an indicated resource of 56 000 tonnes at 6.688 g/t Au (containing 12,200 ounces) and an inferred resource of 27 000 tonnes at 7.819 g/t Au (containing 6,800 ounces).

Employment

Total employment of staff and contractors was 167, with 19 employed in administration, 76 employed on surface in the concentrator, maintenance and geology, and 72 employed underground.

Environment and major projects

There has been continued focus on energy and water management at the Henty gold mine during 2007/2008. A number of initiatives implemented during the year have resulted in improvements in the efficiency of the water supply infrastructure around the site. These initiatives included:

- Modifications to the pumping system supplying water to underground to reduce reliance on water sourced from the Henty River, and make maximum use of recycled water pumped from the mine.
- Installation of a larger diameter pipeline between the mine water settling pond and the plant raw water tank to make better use of recycled water and reduce reliance on water drawn from surface impoundments.

The potential underground settling process, which was identified last year, is still under consideration, but the stope which is to be used did not become available until recently due to changes in the mining schedule. This project is due to be implemented in the second half of 2008. Once implemented, this project should yield a significant energy saving due to lower pumping requirements in dewatering the mine and pumping the treated water back underground.

Other areas in which energy consumption savings have been realised are:

- Installation of a new compressor for the Inco cyanide destruction circuit, replacing two older, less efficient units.
- Installing timers on heaters in the site change house.

- Further adjustments to the pitch of the blades in the main underground ventilation fan.

The annual bio-monitoring survey of the Henty River upstream and downstream of operations again confirmed that the mine is having no impact on stream fauna. This was the fifteenth 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

Capital expenditure was \$2.2 million. Major items included a mobile jaw crusher (\$792,000), R100 used LDH (\$288,000), and \$340,000 spent on the exploration program.

Iron ore

Australian Bulk Minerals (Savage River mine)

Australian Bulk Minerals operates an open-cut iron ore mine at Savage River and a pelletising plant and ship loading facility at Port Latta.

With the implementation of the Mine Life Extension Plan, ABM took delivery of a new fleet of three Hitachi 3600 shovels, an Hitachi 1900 excavator, and thirteen Cat 789 haul trucks.

Mining has been concentrated in moving old waste material of North West Dump and stripping old waste and intact rock along the west and southeastern walls of North Pit. Ore continues to be mined from the Extension 3 pit floor and is being blended with low grade stockpiles.

The main capital works in the mine were associated with the new In-Pit Workshop Facility and the effects of a major flood event that occurred in early August 2007.

Construction of the new workshop was nearing completion by the end of June 2008. The Reliability Centre with its fuelling services was fully operational and the workshop was being fitted out.

ABM Conveyor Crossing 1 was expanded to allow highway fuel trucks and the new Cat 789 truck fleet access to and from the pit. As the highway fuel trucks could not negotiate the original mine access route, which snakes down under the conveyor, a new workshop access road was constructed.

In August 2007 a major three-day rainstorm caused the overtopping and

destruction of the main eastern river crossing and badly damaged the western crossing. The eastern crossing was replaced with a roller-compacted concrete structure that can overtop during major flow events and has been designed for a 1 in 80 year event. This structure is capable of handling the old fleet but there is inadequate room for the Cat 789 trucks to pass the adjacent crusher/conveyor.

The western crossing therefore required the capacity to pass the new shovel and truck fleets, which were assembled on the south side of the river, as well as the highway fuel trucks. The old crossing was rebuilt with a triple box culvert and a roller-compacted concrete structure. This crossing is design for a 1 in 100 year event and can also be overtopped.

All of the runoff from the mill area, the Emergency Tailings Dam, parts of B Dump and all of Centre Pit are transferred across this structure in a small box culvert arrangement for treatment in South Lens. A new hydrocarbon separator and weir arrangement has been constructed at the South Lens outfall.

Operations

Mine production at Savage River was 0.649 million cubic metres of ore and 11.644 million cubic metres of waste. The total volume mined was 12.294 million cubic metres.

The concentrator crushed 5.821 million tonnes of ore and milled 5.501 million (wet) tonnes, for the production of 2.535 million tonnes of concentrate.

Production at Port Latta totalled 2.423 million tonnes of pellets, with 33 220 tonnes of concentrate and 264 760 tonnes of pellets being stockpiled.

Sales comprised 2.346 million tonnes of pellets, 42 150 tonnes of concentrate and 171 700 tonnes of iron ore chips.

Mineral Resources and Ore Reserves

Mineral Resources and Ore Reserves have been estimated for the Savage River magnetite deposit, at the end of March 2008.

The increase in overall reserve is due to the completion of updated designs and schedules for an expansion in North Pit.

Drilling

Since 1 July 2006 ABM has completed a total of 2510 metres of HQ diamond drilling and 397 metres of reverse circulation percussion (RC) drilling to update the North Pit Resource model. The diamond drilling comprised eleven holes with the objective of upgrading areas of inferred resource within the North Pit Extension 4 design to increase the reserve. All holes produced orientated core using triple tube methods, with three holes subjected to detailed geotechnical logging. The objective of the RC holes was to test the distribution of Tertiary basalt on the ridge top to the north and northeast of the current North Pit.

Employment

A total of 522 people were employed in the operation including contractors. At Savage River 385 people were employed in the mine, concentrator and in the township. At Port Latta and Burnie 137 people were employed in operations and administration.

Savage River	
Total mineral resources, measured, indicated and inferred	
North pit	174.3 million tonnes @ 52.9 (% DTR)
South Deposit	29.11 million tonnes @ 42.9 (% DTR)
Centre Pit South	54.93 million tonnes @ 46.6 (% DTR)
Centre Pit North	57.34 million tonnes @ 52.6 (% DTR)
Centre Pit South Extension	3.67 million tonnes @ 45.5 (% DTR)
Total	323.23 million tonnes @ 50.5 (% DTR)
Total ore reserves proven and probable	
North Pit	107.73 million tonnes @ 50.5 (% DTR)
Centre Pit South	10.97 million tonnes @ 43.4 (% DTR)
South Deposit	8.45 million tonnes @ 43.9 (% DTR)
Total (including stocks)	131.02 million tonnes @ 48.9 (% DTR)
<i>DTR (Davis Tube Recovery) is a measure of the percentage of magnetite mineral that will be recovered into concentrate from magnetite ore.</i>	

Environmental and rehabilitation activities

Weed management continued around the mine and town site, with broom growth reduced considerably compared to the previous year.

Mine waste management continued with in situ classification and segregation of waste rock. Waste from North Pit is stockpiled at the Broderick Creek Dump. The 'flow through' has been extended further north and the dump extended to the west.

Remediation at Port Latta has continued, with ABM funding a Coastcare program from Rocky Cape to East Stanley. A joint project was completed with the Circular Head Council, Parks and Wildlife Service and the Cradle Coast Authority at The Nut at Stanley.

Dust deposition at Cowrie Point and Crayfish Creek is measured by high volume air sampling with selective PM₁₀ inlets. The annual averages were 33.8 g/m³ at Cowrie Point and 22.16 µg/m³ at Crayfish Creek.

ABM operates under the *Goldamere Pty Ltd (Agreement) Act 1996* which requires the company to operate to best practice environmental management. The Savage River Remediation Program is a joint program between the Department of Environment, Parks, Heritage and the Arts (DEHPA) and ABM with the objective of capturing and treating 65% of the site's copper load and consequently not provide an acutely toxic aquatic environment. The company sets internal water quality objectives for emissions to the Savage River to achieve the objective by:

- Providing a centralised water management system so that as much mine water as possible is discharged from a central settlement pit.
- Managing tailings decant water to keep it above pH 6.5 with alkalinity greater than 15 mg/L.
- Increasing the alkalinity in the Savage River through innovative engineering, mine planning and water management as much as practicable with the goal of keeping the river's alkalinity above 15 mg/L and therefore decreasing the legacy copper toxicity.

Appropriate management and monitoring systems are in place and ABM is in current compliance with the requirements.

Capital expenditure

Capital expenditure for the year was \$28 million. Major items included the development of the in-pit workshops (\$14.6 million), fire system upgrade, and extensions to accommodation in the town.

Tasmania Mines NL, Kara mine

This company operates the Kara No. 1 and smaller Eastern Ridge open-cut mines and a processing plant southeast of Hampshire in northwest Tasmania.

The operation produces up to 200 000 tonnes of magnetite ore from a northerly-plunging synclinal skarn-style mineralised deposit, with mining operations proceeding from south to north and becoming gradually deeper. Scheelite concentrate is produced as a by-product of the magnetite mining and processing operations.

Mining operations consist of the mechanised excavation of weathered (oxidised) ore and overburden, and blasting of fresh ore and waste with production blast holes. The mine utilises uniform ten metre bench heights with 70 degree bench faces and an operating bench slope angle of between 42 and 45 degrees. In a major change all ore mined is now crushed within the open pit by a mobile crusher and subsequently moved by truck from the open cut to a stockpile area adjacent to the processing plant. Waste material mined is excavated from the western wall cut-back program and from the active benches at the northern end of the open cut and is stacked as permanent dump material in the mined-out southern end of the open cut.

The Kara No. 1 open cut contains fourteen years of proven and probable reserves at a production rate of 200 000 tonnes of magnetite ore per year. Additional potential resources have been indicated by previous and ongoing exploration drilling programs immediately to the north of the current reserves. Tasmania Mines is in the process of re-evaluation of the resources at Kara No. 1 which will add significantly to current reserve estimates.

Production

A total of 191 400 tonnes of magnetite ore was mined from which 93 400 tonnes of magnetite

concentrate and 14 700 kilograms of scheelite concentrate was produced.

A total of 289 000 tonnes of waste material was mined in the open cut. The majority of the waste mined was moved to the south end of the open cut for permanent storage, with small quantities used on roads or for rehabilitation around the site.

Exploration

A drill program incorporating in excess of 2000 metres of diamond drilling to define resources north of the current Kara No. 1 open cut has been completed and assay, resource and reserve evaluation for the program continue. A further program of resource drilling of the northern Kara No. 1 area will take place next year, together with a definition drilling program for the Kara magnetic anomaly.

Resources/Reserves

Ore reserve estimates for Kara No. 1 are based upon depletion of an ore reserve estimate made in December 2006. Total proven reserves at 1 July 2008 are:

- *Fresh magnetite-bearing ore:* 1.883 million tonnes >30% Fe, including 141 000 tonnes of >30% Fe, 0.55% WO₃;
- *Oxidised magnetite-bearing ore:* 393 900 tonnes >30% Fe, including 38 000 tonnes of >30% Fe, 0.55% WO₃.

Total probable reserves comprise:

- *Fresh magnetite-bearing ore:* 516 000 tonnes >30% Fe, including 5000 tonnes of >30% Fe, 0.55% WO₃;
- *Oxidised magnetite-bearing ore:* 92 000 tonnes >30% Fe, including 8000 tonnes of >30% Fe, 0.55% WO₃.

The indicated resource estimated for Kara North 266 comprised:

- *Total fresh magnetite-bearing ore:* 425 000 tonnes >30% Fe, including 175 000 tonnes >30% Fe, 1.1% WO₃.
- *Total oxidised magnetite-bearing ore:* 275 000 tonnes >30% Fe, including 55 000 tonnes >30% Fe, 0.9% WO₃.

The probable reserve at Eastern Ridge is 43 300 tonnes >30% Fe, 0.45% WO₃.

Employment

Seventeen people are employed full-time directly in operations, together with three full-time and two part-time staff employed in administration. Contractors are

employed in drilling, blasting, earthmoving and maintenance, the number depending on the varying demands of the operation.

Environment

All rehabilitation, environment and pollution control objectives are currently achieved by adherence to the 2006 EMP. A Mine Closure Plan has been produced for Tasmania Mines by Pitt and Sherry who are also currently reviewing the environmental impact of any potential future production increments.

Major projects

An application for a 44 hectare mining lease has been made to permit the planning and construction of a future tailings storage facility to commence.

Capital expenditure

A \$5 million capital equipment program continues to be implemented to improve capacity and reliability of the current crushing, milling and treatment process. Major items are a mobile crusher (\$1.6 million) and the construction of a ball mill (\$519,000).

New developments

The acquisition and implementation of equipment to upgrade the processing plant and support planned production levels with improved capacity — allowing campaign processing or higher rates of production — continues and is planned to be incorporated into the operations within the next 6 to 12 months. Plans for the open cut, incorporating new reserve additions, will be completed during 2008, allowing effective long-term life of mine planning to proceed.

Nickel

Allegiance Mining NL/ OZ Minerals Limited, Avebury mine

Allegiance Mining NL continued to develop the Avebury nickel mine west of Zeehan. Allegiance was the subject of a successful takeover by Zinifex Limited (now OZ Minerals Ltd) which was finalised on 18 July 2008.

There was no concentrate production during the year as the beneficiation plant was still undergoing minor commissioning in some areas, such as the regrind circuit. The

production ramp-up was reported to be ahead of schedule. Mining continued, with 120 100 tonnes of ore and 78 500 tonnes of waste being produced.

Mine development

A total of 4700 metres was advanced in mine development, 820 metres of which was advancing the decline. Level development occurred in the Avebury, Central and Viking ore zones. An additional 300 metres was raised bored for ventilation.

Mineral resources

The total mineral resource estimated at December 2007, at 0.7% Ni cut-off grade, was 14 million tonnes at 1.04% Ni, containing 145 000 tonnes of nickel. This comprised:

- Inferred resource: 6.88 million tonnes at 0.99% Ni;
- Indicated resource: 4.9 million tonnes at 1.09% Ni;
- Measured resources: 2.22 million tonnes at 1.06% Ni.

The total mineral resource estimated until December 2007, at 0.4% Ni cut-off boundary, was 18.180 million tonnes at 0.95% Ni, containing 172 000 tonnes of nickel. This comprised:

- Inferred resource: 9.76 million tonnes at 0.88% Ni;
- Indicated resource: 6.05 million tonnes at 1.01% Ni;
- Measured resources: 2.37 million tonnes at 1.03% Ni.

Exploration

A total of 14 600 metres of diamond drilling was carried out underground, with 16 900 metres being drilled on surface. Exploration concentrated on the Viking Extended and East Avebury prospects. Minor drilling was completed at the Pontiac prospect.

Employment

At year's end the company employed 56 people and 210 contractors. The largest sections were mining, which employed 95 people, and construction which employed 92.

Environmental protection

Avebury has a positive water balance, requiring excess water to be discharged to Comstock Creek. Extensive work has been done over the reporting period to further improve the quality of the water being discharged to the creek.

The water treatment system comprises the settling pond, tailings

storage facility, wetlands and water storage dam. During the reporting period, a flocculent addition system was designed and installed to increase the effectiveness of the settling pond in removing suspended particulate matter (SPM) from the discharge water. Prior to the commissioning of the flocculent system, SPM levels ranged from 7 to 35 mg/L in the discharge water, with levels dropping to 1 to 4 mg/L after commissioning.

Structural work was undertaken in the wetlands in November to increase the residence time of the water, which should further improve the water quality, particularly nitrogen and soluble metal levels. The northwest cell of the wetlands was excavated to increase the flow path, as that area formed a backwater when the water levels were low. The first cell on the eastern side of the wetlands was also expanded and baffles were constructed to slow down the water.

Further monitoring is being undertaken to determine the effectiveness of these measures.

Capital development

Development of the mine and infrastructure required the expenditure of \$256.8 million during the year. Some major items included underground development (\$32 million), tailings dam wall (\$16 million), grinding and floatation structure (\$17 million), ball mill (\$9 million), crusher structure (\$4 million) and fine ore bin (\$4 million).

Tin

Bluestone Mines Tasmania Pty Ltd — Renison Bell and Mount Bischoff

In March 2006, a Tasmanian Tin Projects review was conducted and planning commenced for the restart of the Renison Bell operations and the commencement of operations at Mount Bischoff. The planned Mount Bischoff operation was recognised as critical to achieving short-term economies of scale in ore processing due to the lack of development in the Renison underground operations.

Approval for the Mount Bischoff Development Proposal and Environmental Management Plan was obtained on 24 October 2007, with site activity commencing immediately in accordance with permit conditions.

Development activities at Renison commenced on 7 May 2008, with the purchase of two Atlas Copco M2D jumbos, four Atlas Copco loaders, and four Hitachi 30 tonne trucks.

The Mount Bischoff crusher for run of mine ore is situated at Renison adjacent to the concentrator. Surface plant commissioning was underway on 30 June.

Production

A total of 16 000 tonnes of ore at 0.88% Sn was won from the Mount Bischoff Project open pit during the year.

No ore was produced from Renison mining operations during the year, and no tin-in-concentrates were produced for sale.

Waste mined from Mount Bischoff totalled 281 000 bench cubic metres, with HC and potentially acid-forming waste dumped in the Browns Face historic workings after completion of dump preparation. Neutral waste was utilised for formation of the Happy Valley waste dump keel drain and miscellaneous sheeting in accordance with permit and management plan conditions.

At Renison, 14 000 tonnes of waste was mined from capital development in the South Renison and Radio-Romulus-King Billy ore zones. A total of 126 metres of decline development was completed in the South Renison Decline (SRD), with 103 metres of capital waste development in the SRD 1540 level and 1054 m³ of capital waste stripping completed in the 1840 Radio level.

Employees

As at 30 June 154 employees and 125 contractors were employed on Tasmanian Tin Operations sites, with 31 employed at Mount Bischoff, 57 employed in mining at Renison, 44 employed in processing, 125 employed in maintenance and 22 employed in services and administration. Total budgeted Bluestone Mines Tasmania Pty Ltd employees will be 206 upon full employment.

Environmental and pollution control initiatives

Monitoring programs and frequency were maintained throughout the year to ensure continuity of data for point source and ambient water quality monitoring. A Closure Plan for the Renison lease was completed during the year. Weed and pathogen control measures were continued across the

Identified Mineral Resource estimate, consolidated as at 30 June 2008

<i>Measured</i>	
Renison Bell	645 000 tonnes at 1.87% Sn, 224 000 tonnes at 0.47% Cu
Mount Bischoff	2 900 tonnes at 0.82% Sn
Rentails	18 176 000 tonnes at 0.42% Sn
Sub-total	18 823 900 tonnes at 0.47% Sn
	224 000 tonnes at 0.47% Cu
<i>Indicated</i>	
Renison Bell	1 400 600 tonnes at 2.01% Sn, 767 300 tonnes at 0.32% Cu
Mount Bischoff	1 405 300 tonnes at 1.103% Sn
Sub-total	2 806 000 tonnes at 1.56% Sn
	767 300 tonnes at 0.32% Cu
<i>Inferred</i>	
Renison Bell	2 351 000 tonnes at 2.04% Sn, 386 000 tonnes at 0.66% Cu
Mount Bischoff	1 071 600 tonnes at 0.7% Sn
Sub-total	3 422 600 tonnes at 1.63% Sn
	386 000 tonnes at 0.66% Cu
<i>Totals</i>	
Renison Bell	4 396 600 tonnes at 2.01% Sn, 1 377 200 tonnes at 0.44% Cu
Mount Bischoff	2 479 800 tonnes at 0.94% Sn
Rentails	18 176 000 tonnes at 0.42% Sn
Total	25 052 500 tonnes at 0.75% Sn
	1 377 300 tonnes at 0.44% Cu

Renison mining lease and in Renison Bell township over summer 2007/2008, specifically targeting gorse, montpellier broom and blackberry. A dam surveillance report was completed at Renison by GHD Engineers in October 2007, in expectation of completion of the final two metre lift on tailings dam C over the 2007/2008 summer period.

The Mount Bischoff carbonate North Valley drain was nearing completion at the end of June 2008, with extension of the old MRT limestone drain across to a final polishing pond adjacent to the Waratah gun club via an aqueduct embankment. The drain was upgraded with new limestone.

Pollution control initiatives were implemented as part of plant refurbishment activities, with improved capability for separate layered deposition of sulphidic reactive tailings and acid-neutralising or inert tailings to allow progressive capping. Control and neutralisation of plant water initiatives were also in progress.

Major projects

The Tasmanian operations (comprising the Mount Bischoff and Renison projects) commenced re-start activities in December 2007.

At Mount Bischoff completed work included site preparation and roads, infrastructure development, waste

dump construction, run-of-mine pad construction, tourist area construction, fuel bay installation, and workshop construction. Upgrade and improvement of the MRT carbonate drain for site water management and north-side old workings water neutralisation was mainly completed.

Underground operations completed at Renison included South Renison decline development, services extension, installation of a second egress ladder-way in South Renison from the 1551 metre level to 1669 metre level, and development flat-backing in the Radio ore body on the 1840 metre level.

Commissioning of the Renison concentrator after significant capital upgrade and addition of new equipment to enhance metallurgical performance was in progress.

Dewatering of the North Renison (Rendep) areas down to the 1475 metre level was also in progress. The water level is on hold while the North Renison decline rehabilitation proceeds.

A 100 room West Coast Village, located in Zeehan, was also completed.

Capital expenditure

A total of \$18.5 million was expended on capital at the Tasmanian operations to June 2008. This comprised:

- Plant and equipment at Renison.
- Infrastructure at Renison and Mount Bischoff.
- Rentails project work.
- Renison mine development.
- Mount Bischoff mine development.
- West Coast Village construction.

New developments

Rentails Project

The Rentails project is based upon the re-treatment of 18.2 million tonnes of historical tailings, averaging 0.43% Sn, produced from the Renison mine over the past 40 years. Work undertaken included:

- Rentails feasibility study advanced, with pilot plant testing of both mineral dressing and pyro-metallurgical processes completed.
- Pyro-metallurgical test work was conducted using Ausmelt technology, with results indicating high quality tin fume and copper matte products were attainable from the process at expected metal recoveries.
- Drilling of A and B tailings dams was conducted in March 2008 to obtain samples for variability test work, with sulphur grade critical in sizing of flotation plant and particle size critical in sizing of grinding plant.

Bluestone intends to continue to advance Rentails towards completing a detailed design in the last quarter 2008, as well as continuing to refine and optimise test work and opportunities for the project. GR Engineering Services were retained in February 2008 to complete the detailed design precedent to accurate project economic analysis and board presentation in the last quarter of the 2008 calendar year.

Renison Copper Project

The Federal-Bassett fault contains increasing copper values with depth, particularly as chalcopryrite. An identified mineral resource estimate was completed for copper for Renison Bell in 2007.

Laboratory test work confirmed that a saleable chalcopryrite concentrate could be produced from the sulphide flotation circuit at Renison Bell, and a capital project was initiated to install additional equipment for maximising copper recovery and grade into a dried

filtered concentrate product. The copper is present mainly in association with cassiterite in the fault, allowing a free carry of the copper through to flotation and hence attractive economic conditions. Silver values of up to 400 ppm have also been recorded in the copper concentrate.

Expectations for commissioning of the copper circuit at Renison Bell are for early in the last quarter of 2008.

Van Dieman Mines

Over the past year the company's focus has been on operations at the Scotia and Endurance mines near Gladstone in northeast Tasmania, although exploration and resource development has also been carried out across all of the company's seventeen tenements. There was no production during the year.

Highlights of the year include:

- Scotia mine development approval.
- Central clean-up facility development approval.
- Erection of gravity treatment plant.
- Formation and adoption of a 'Revised Mine Development Plan' at Scotia.
- Endurance DPEMP lodged.

Scotia mine

The Scotia Development Proposal and Environmental Management Plan (DPEMP) was approved by the Tasmanian Government in May 2007 and the Dorset Council in June 2007. Follow-on permits relating to environment and construction activities were issued by various authorities during the following three months.

On receipt of approvals the company immediately commenced the scheduled pre-mining site works. These activities included the upgrade of existing access tracks, freshwater and tailings dam-site geotechnical and construction works, mains power connection, and treatment plant and site office infrastructure construction.

Development approval for commissioning of the central concentrate clean-up plant was received in August 2007.

The gravity treatment plant arrived from the USA in November 2007 in sixteen containers. Construction began immediately on the prepared site.

A comprehensive review of all aspects of the Scotia project was instituted in March 2008. The main findings were that the proposed mining methods and significant components of the original process plant design for Scotia (and also planned for Endurance) were inappropriate, given the degree of water-saturated material encountered in initial pre-stripping of the overburden.

Subsequently the company announced the findings and key recommendations of the review which resulted in the formation of a Revised Mine Development Plan. The plan incorporated significant changes to aspects of mining and processing, including:

- investigations to reduce further risk by dewatering, trial mining and bulk sampling;
- examination and trials of potentially simpler methods to deliver wet ore from the mine to the plant;
- modifications to the primary processing plant and tin shed concentrating facility.

Implementation of the Revised Mine Development Plan has resulted in significant capital savings and will result in lower operating costs, but will further delay commissioning of the plant, now estimated to occur in November 2008.

Endurance mine

The Endurance project will be a major beneficiary of the modifications being implemented at Scotia, being able to take full advantage of these benefits.

The Endurance DPEMP was lodged in March 2008 and is currently under consideration by the regulatory authorities, but on the understanding that there are likely to be variations in the final mining method adopted. Subject to permit approvals and changes to the mine plan, it is now expected that the Endurance project will commence production in around mid 2009.

Employment

At year end the total number of full time and contract employees was 28, with nineteen employed in operations and nine employed in administration and management.

Reserves and Resources

A further conclusion from the Scotia project review was that the basis upon which the previous management team had determined the JORC reserves and resources was not consistent with current best practice. The company has embarked on a limited (approximately 1000 metres) confirmatory drilling program to validate the previously

determined JORC reserves. The proposed drilling program will initially focus on the Scotia Project resource and is scheduled to commence in mid-September 2008.

Capital expenditure

At year end, total capital expenditure on major projects was nearly \$5.4 million. Major items at

Scotia were plant, equipment and infrastructure (\$4.4 million), dam works and road construction. A total of \$108,000 was spent on the tin cleaning facility.

Industrial Minerals

Limestone and dolomite

Beams Bros Pty Ltd

Beams Brothers operates a limestone quarry at Flowery Gully and a dolomite quarry at Cressy, employing a total of 21 people. Production of limestone and dolomite during the year totalled 150 000 tonnes, comprising 57 000 tonnes of metallurgical grade limestone, 14 000 tonnes of lime and limestone for water treatment/neutralisation, 66 000 tonnes of fine limestone and dolomite for the Beaconsfield Gold mine, 4600 tonnes of dolomite by-product and 8400 tonnes of limestone mixing stone. Extensive reserves exist at the Flowery Gully site, while the Cressy lease has a medium reserve level.

During the year 18 000 m³ of waste material was removed from the Flowery Gully and Cressy quarries. Dump pads at both the sites were levelled for rehabilitation works.

Major capital expenditure during the reporting period included equipping all crushing plants with computer controls, which has enabled operators to be reassigned to jobs with less safety hazards.

Circular Head Dolomite and Trading Co. Pty Ltd

The Circular Head Dolomite and Trading Company employs 15 people in its dolomite quarry at Smithton. Total production consisted of over 90 000 tonnes of materials, including 52 000 tonnes of screenings, 37 000 tonnes of dolomite powder and 9000 cubic metres of ready-mix concrete.

Major capital expenditure during 2007/2008 included a new cement mixer and a new spreader. An upgrade of the existing powder plant is currently being investigated.

Unimin Australia Limited

Total production from the Mole Creek quarry included 19 054 tonnes of stone, 36 651 tonnes of aglime and 49 661 tonnes of lime. Overburden waste removed to the dump site totalled 363 707 tonnes. The equivalent of 30 staff was employed throughout the financial year. Twenty of these were in the quarry and lime plant operation, one in maintenance, three in administration and six in management and sales.

Environmental

A Forest Practices Plan was approved for the removal of trees around the dump area on the eastern side of the site. An additional 77 ha of land was purchased on the eastern side of the site to facilitate the construction of a new discharge settling pond and to increase the boundary distance from neighbours.

Kiln environmental performance remains within limits due to the new baghouse. Some modifications have been made to the baghouse to increase efficiency.

No land has been rehabilitated at this time. The total area disturbed by the operation remains approximately 470 000 m².

Reserves/Resources

Kilnstone was a blend of medium and low quality to maximise resources life and meet production quality targets. Whole-of-life stripping ratio and reserves of high, medium and low quality continue to place the life of the mine at greater than twenty years. An Exploration Licence was granted along the western side of the site and exploratory drilling will commence next year.

Major projects and new developments

One of the three forty-tonne dump trucks was replaced during the year, a

new 60 tonne excavator was acquired, and work commenced on a new 30 metre weighbridge.

Silica

Index Mineral Processors

This company employs 27 people in its fine-grained silica sand processing plant near Burnie. Production for the year was 10 400 tonnes of fine and 24 000 tonnes of coarse product.

Reserves/Resources

The Index Group purchases raw material silica sand from Tasmanian Advanced Minerals. A number of potential silica deposits have been investigated by the company during the year, but no sites have been selected.

Major projects and new developments

There was no progress on a development application to sell a third product, presently deemed a waste material. Research and development work has demonstrated the potential to enhance the business viability significantly. It is anticipated that the utilisation of this product will allow sales from the site to match the full 60 000 tonnes nominated in the Development Proposal and Environmental Management Plan.

There are no major projects in progress or planned.

Capital expenditure

Capital expenditure was utilised in sustaining projects and for minor improvements.

Environmental

The Burnie operation site environmental management system was accredited to AS/NZS ISO 14001:2004 in April 2008. There were no environmental breaches or community complaints during the year.

Safety

The company recorded one lost time injury, with an absence of two days.

Ceramics

Austral Bricks Tasmania

Twenty-one individuals and one contractor are employed by Austral Bricks Tasmania. Production for the

2007/2008 financial year totalled over 26 000 tonnes of bricks and pavers, which included the export of approximately 7000 tonnes of product to New Zealand, Japan and Korea.

Minor rehabilitation has been undertaken at both the Longford and Relbia pits. More substantial works were performed at the Greenhill Forest site. The annual environmental audit was successfully completed.

An automated packaging line was completed in February 2008. Significant

refurbishment of the kiln and associated infrastructure is due to be completed prior to February 2009.

Ample reserves of material are available at all sites.

K&D Bricks & Pavers

This company continues to manufacture clay bricks and pavers in the Hobart suburb of New Town.

Fuel Minerals

Cornwall Coal Company NL

The Cornwall Coal Company employs 88 people in coal mining, washing and transport in the Fingal Valley and at Hamilton.

Production continued throughout the year using a combination of both bord and pillar and Miniwall techniques. Almost all underground production by Cornwall Coal from the Fingal Valley was concentrated within the Duncan Colliery, with a negligible amount from Blackwood 4.

Duncan Colliery

The new widehead continuous miner with onboard bolting rigs suffered serious problems with its performance and has been parked since January 2008. The Miniwall system was installed for only one block at Duncan Colliery but had mixed fortunes, with poor roof control being the main problem. The machine was removed to surface and its future is uncertain.

An attempt was made to access reserves to the north of the old workings but failed due to an impassable dyke. Duncan is nearing the end of its economic life but due to the delays in starting Blackwood 4 the mine will be producing from areas of low yield to extend its life until the end of 2010.

Blackwood Colliery No. 3

The rehabilitation has been monitored throughout the year and is progressing.

Blackwood Colliery No. 4 entry

Electrical distribution services were installed and commissioned together with air and water supplies. Mining started in December 2007 and immediately hit problems, with the fan drift striking a fault after some twenty metres and other faults being found as

driving of the roadway continued. The belt road was driven 140 metres through the same set of faults and connected to the fan roadway. Work stopped in June and the workforce was sent to Duncan to try to access the northern reserves.

While the mine was shut down in late July there was an unplanned movement of ground at the high wall. Work will restart in late 2008.

Huntsman No. 2 open cut

The rehabilitation has been monitored throughout the year and is progressing favourably.

Cullenswood open cut

Cullenswood produced coal throughout the period using contractors to remove overburden and stockpile the coal on site prior to transport to the Fingal washery. The Cullenswood reserve is being used to augment the supply from Duncan and is blended to satisfy customer quality requirements.

Kimbolton Coal

The difficulties associated with the raw product from Kimbolton have precluded its use at any of our customers without the need for beneficiation of the raw coal at the Fingal washery. The distance between the Fingal and Kimbolton sites renders the transport of the raw product, together with the cost of production, uneconomic unless combined with a backloading arrangement.

Production

Production of raw coal for 2007/2008 totalled 725 490 tonnes. This coal was sourced from the Duncan (430 100 tonnes), Cullenswood (200 500 tonnes), Blackwood 4 (4600 tonnes) and Kimbolton (90 200 tonnes) mines.

Washery throughput of raw coal totalled 712 463 tonnes to produce 436 544 tonnes of saleable coal at a washery yield of 61.3%. Coal sales totalled 453 600 tonnes.

Approximately 275 900 tonnes of reject materials were deposited at the Duncan reject dump.

Employment

The company employed 88 people (including contractors) in the operation. This comprised 68 people employed in underground mining, processing and administration, with a further twelve contractors employed in coal transport and eight in open-cut operations.

Capital expenditure

A total of \$1.5 million was spent to start Blackwood No. 4 mine, with a further \$1.0 million being spent up until the end of June 2008 developing the portals.

Rehabilitation

Rehabilitation at the Huntsman and Blackwood 2 and 3 areas continued to be monitored throughout the year.

Other

The instability in regard to transport distribution from the Fingal Washery site is still a cause for serious concern to the company.

The Department of Justice conducted an audit of the underground and washery operations.

Cornwall Coal was host to the annual Tasmanian Mines Rescue Competition. Seven teams competed in this year's event. Cornwall Coal was the overall winner and Leigh Spilsbury was awarded Best Captain for the fifth year in a row.

Construction Materials

BIS Industrial Logistics

During the 2007/2008 financial year BIS Industrial Logistics operated five mining leases at Launceston, Ridgley, East Devonport and St Helens. In late June 2008 BIS acquired an additional eleven mining leases associated with Fieldwicks Pty Ltd.

The Launceston BIS operation incorporates four open-cut quarries, which have been operational since the late 1970s. The main office and quarry are located at Western Junction, approximately twelve kilometres south of Launceston. The Ridgley quarry, located approximately fifteen kilometres south of Burnie, has been operating since 1988. BIS utilises fixed and portable crushing equipment to produce pavement, screened sealing and drainage materials from basalt, dolerite and quartzite.

A total of eighteen employees and contractors were employed by BIS Industrial Logistics during the past year, including administration staff, full and part-time operators and sub-contractors. With the addition of the new operations, employee numbers have increased to 43.

Crushing production figures for all five sites during the 2007/2008 financial year totalled 585 000 tonnes, comprising 561 000 tonnes of basalt, 15 000 tonnes of dolerite and 9000 tonnes of quartzite. A combined total of 40 000 m³ was removed as overburden at the two basalt operations.

Ongoing progressive rehabilitation continued across all BIS sites, with major improvements in reducing airborne dust from fixed plant from changes to operational procedures and updated dust suppression equipment and practices.

BIS Industrial Logistics maintained tri-certification to AS9001, AS4801 and ISO14001 during the year. This certification incorporates compliance to Department of Infrastructure, Energy and Resources specifications and Australian Standards for pavement materials and aggregates, and Australian Standards for occupational health and safety and environmental compliance.

At the end of June 2008 the BIS Industrial Logistics quarry operations exceeded 13 years since the last Lost Time Injury (LTI), with the Ridgley quarry operation achieving 14 years since the last LTI.

Boral Resources (Tasmania) Limited

Boral Resources operates hard-rock quarries at Bridgewater, Launceston, Flowery Gully and Nook, and a sand operation at South Arm. The company employs a total of 25 personnel.

During the 2007/2008 financial year Boral experienced strong demand for concrete sand and aggregates, with the road base market improving in northern Tasmania over previous years with a number of road projects under construction. The market in southern Tasmania remained slow.

Production for the year exceeded one million tonnes of material, one third of which was concrete aggregates, asphalt and spray seal markets, 8% sand, and the remainder road base products.

All quarries have extensive reserves based on current demand levels. The construction of a haul road at the Launceston quarry to enable access to additional reserves has commenced, with extraction of the additional reserves expected to commence in 2009. Realignment of the haul road at Nook is also being undertaken.

The Tasmanian Government has expressed interest in acquiring land at the Bridgewater quarry (currently used as buffer) for the construction of the Brighton Transport Hub. While a final decision is yet to be reached, encroachment of any type within the buffer area represents a significant risk to the security of the quarry reserve.

During the year the Launceston primary crusher was upgraded to accommodate hard dolerite stone. The new crusher has reduced the downtime and maintenance associated with the old crusher. A new tertiary crusher was installed at the Bridgewater quarry to enable better management of fines production for concrete, asphalt and road base products. A new 966 loader was acquired for the Flowery Gully quarry during the year, and the purchase of a similar loader for Launceston is proposed in the coming year.

The dust suppression measures at the Bridgewater quarry are being upgraded, with a dust extraction unit being installed on the quarry screen house in an effort to reduce the amount of dust being emitted to the atmosphere. Dust captured by this unit will be recycled back into the silos for use in road base products.

The business has been experiencing difficulties complying with the new DIER specification for Polished Aggregate Friction Values (PAFV). DIER has increased the specification for PAFV from 45 in 2006, to 48 in 2007, and 53 in 2008.

Environmental Management Plans (EMP) were completed for two of the four operations, with revisions to the remaining EMPs currently in progress. Rehabilitation is underway at a number of redundant operations around Tasmania.

Dennis Fieldwicks Pty Ltd

Dennis Fieldwicks Pty Ltd operates a variety of quarries across the northwest and east coast of Tasmania, employing 20 people within the operations. During the 2007/2008 reporting period, 25 000 tonnes of concrete products and 57 500 tonnes of road gravel were produced. Approximately 100 m³ of material was stripped as waste across the leases.

Rehabilitation works have been completed within three mining leases. Compacted ground has been ripped, pre-stripped top/subsoil re-spread, water runoff controls installed and weed control undertaken. It is anticipated the formal surrender of these mining leases will be undertaken shortly.

Duggans Pty Ltd

Duggans Pty Ltd operates six mining leases and precast concrete production factories at Cradoc in the Huon Valley and at Launceston. Approximately sixty staff are employed across the operations. Production of raw materials totalled 93 500 tonnes, consisting of 64 000 tonnes of road materials, 27 000 tonnes of construction materials and 2500 tonnes of construction sand.

Major projects completed or progressed during the reporting period included the Barretta waste transfer station at Kingston, various subdivision developments at Huonville, Cygnet and Franklin, precast projects for Centrelink, the Mt St Canice development, Kingston Plaza and the Tasmanian Hockey Centre.

A new J35 Jaques Gyracone crusher has been purchased for the Cradoc quarry at an estimated cost of \$450,000. The new crusher is expected to be fully operational by December

2008. Transition points have also been installed in crushing plants.

An application was lodged for the transfer of an existing mining lease from a local council to Duggans. This sand lease was successfully transferred in July 2008.

No waste materials were stripped or extracted during the year. Recycling of concrete waste has continued and maintenance has been undertaken on site sediment ponds.

Fieldwicks Pty Ltd

During late June 2008 eleven of the twelve mining leases held by Fieldwicks Pty Ltd were acquired by BIS Industrial Logistics. Twenty personnel were employed by Fieldwicks Pty Ltd at the end of June.

Production for the year totalled 25 000 tonnes of concrete products and 58 000 tonnes of road gravel.

Rehabilitation works were completed within three mining leases, with the intention to surrender these leases in the near future. Rehabilitation works have included ripping compacted ground, re-spreading stripped materials, weed control and installing runoff controls.

FR & CM Lazenby and Son

The FR & CM Lazenby and Son sand extraction operation at South Arm employed the equivalent of four full-time and one part-time personnel during the 2007/2008 financial year. Production during this period totalled 12 600 tonnes. Considerable reserves are estimated within the two mining leases.

No waste materials were produced during the reporting period, with 0.5 hectare of rehabilitation works being undertaken.

GL & DH Males Pty Ltd

GL & DH Males operates a sand pit at South Arm and a retail operation in South Hobart, employing three full-time and seven casual staff.

Production from the South Arm mining lease consisted of 88 000 tonnes of concrete sand, 15 000 tonnes of coarse (washed) sand, 3000 tonnes of horticultural sand, 2000 tonnes of bedding sand and 1000 tonnes of sandy loam. Approximately 500 tonnes of top sandy soil were stripped from the coarse sand pit during extraction, with about 500 tonnes of silt being

reclaimed from the settlement dam, enabling the dam to be re-used.

Future sources of dune sand will include re-working of old areas. Because of lower processing rates this resource is expected to last for five to seven years. Coarse sand reserves are expected to maintain supply for the next ten to twenty years.

The road transport fleet was updated during the year, with the purchase of one new and one second-hand loader. A new screening plant is currently being sourced.

Rehabilitation works at the South Arm lease are continuing in line with the site's Environmental Management Plan. The dunes on the southeastern side of the property have been re-contoured and seeded with *Acacia sophorae*, *Acacia floribunda* and *Myoporum insulare*. Transplanting to the foot of the dune is also continuing.

Gunns Forest Products P/L

Gunns Forest Products Pty Ltd manages and operates around 50 licensed quarries across Tasmania, providing road construction and maintenance materials for approximately 6000 kilometres of forest road. New construction of gravelled forest roads in 2007/2008 totalled 121 kilometres. The total direct cost of the road construction and maintenance programs for the year was over \$10 million.

Quarrying and road construction were performed by contractors under the supervision of company staff. In the peak of the construction period, approximately 60 people were engaged in quarrying and road work, reducing to approximately 20 people during the winter months when most activity was road maintenance.

Eight full-time staff are currently employed in quarrying works. During the 2007/2008 financial year approximately 107 000 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 sections of quarries, including ongoing remodelling of benches and housekeeping to clean sumps and drains.

Gunns Forest Products Pty Ltd has a certified Environmental Management System compliant with ISO 14001. In addition the company's forestry operations (including quarrying and

road activities) and forest management system is certified compliant with the Australian Forestry Standard. All forestry activities, including quarrying and road works, are subject to annual independent third party audits.

Hanson Construction Materials Pty Ltd

Hanson Construction Materials has fifteen full-time and one part-time employees at their operations in Hobart, Calder and Potato Hill (George Town). During the 2007/2008 reporting period 150 000 tonnes of aggregates, 152 000 tonnes of road materials and 73 000 tonnes of sand were produced across the three operations.

A Development Proposal and Environmental Management Plan has been drafted for the proposed extension to the Hobart quarry. This plan has been a high priority as access to quarry reserves has become limited. The Shoreline Drive project is nearing completion. Demand for high PAFV values at the Hobart quarry has lead to an internal capital application for a crusher upgrade.

Rehabilitation works have continued in all areas of the Hobart quarry, with contractors engaged to eliminate pampas grass. Overburden stripping has been stockpiled for future rehabilitation work within the Hobart quarry, while the Calder rehabilitation plan has also been completed with southwestern pits one and two 80% rehabilitated, while the west central pit rehabilitation is complete.

HBMI Pty Ltd

Hobart Blue Metal Industries (HBMI) operates a dolerite quarry at Leslie Vale, fourteen kilometres south of Hobart. The company has fourteen permanent employees in production, two with the mobile equipment, and three in the weighbridge and support staff. A further 30 people are employed as subcontractors for material deliveries, drill and blast activities, and maintenance as required.

Production for the year totalled 740 000 tonnes, comprising 680 000 tonnes of road base material, 50 000 tonnes of concrete and asphalt aggregate, and 10 000 tonnes for landscaping.

Stripping has been prioritised over the past twelve months, with approximately 10 000 cubic metres extracted. This will provide enough

open area for the next fifteen years of extraction.

Major projects supplied over this period were the Harvey Norman Home Makers Centre at Cambridge, Esperance Road, Holyman Drive and numerous subdivisions.

Over \$2.5 million dollars have been invested in upgrading the secondary crushing operation. An MVP 450 cone crusher, 20 × 8 three-deck screen, bag house and overhead gantry crane have been installed. These have all been installed in one building with the aim of minimising dust and noise emissions, as well as providing for ease of maintenance.

Industrial Sands & Silica Pty Ltd

This company operates quarries at Marshalls Creek (Port Sorell) and Northdown in northern Tasmania. Two people are employed. Production from the quarries totalled 6100 cubic metres of road gravel, 6300 tonnes of silica, and 1180 tonnes of shingle sand.

Island Resources Pty Ltd

Island Resources employs four full-time individuals and two to three contractors at four quarries in northeast Tasmania. Employees carry out tasks such as screening, washing and blending of sands, and operating the drying plant. Contractors are employed to cart products back to the main lease for processing.

Production from all four operations included 47 000 tonnes of general sand, 26 000 tonnes of concrete sand, 21 000 tonnes of dried sand and 19 000 tonnes of road gravel.

Resource investigations across Island Resources leases have conservatively estimated reserves of raw materials to be in excess of 30 million tonnes.

Lloyds North

Lloyds North employs ten people at the Kimberleys Road and Riggs Road quarries near Ulverstone.

Production from the Riggs Road quarry totalled 909 000 tonnes of basalt. The oversize rock reduction program and excavator replacement continued into 2008. Revision of the existing mining plan is currently being undertaken. The Environmental

Management Plan review has been submitted and approved by the Environment Division, while compliance with the Environmental Protection Notice (EPN) was maintained.

Production at Kimberleys Road consisted of 65 000 tonnes of aggregate and 28 000 tonnes of base course material. Compliance with the Environment Division's EPN also continued. Plant safety upgrades and process improvements continued into 2008.

Norske Skog Boyer

Norske Skog operates quarries primarily to maintain State forest and private roads used for timber harvesting and transport to supply its Boyer paper mill. During the year approximately twelve kilometres of new forestry roads were built, with upgrades and maintenance undertaken on existing roads.

Production for the year consisted of 36 000 tonnes of raw, crushed and screened material. The majority of material is won by dozer/excavator, with only one drill blast being undertaken during the past year. Minimal drill/blast is expected in the future. Norske Skog out-source labour and machinery in the operation of their quarries, with one full time Norske Skog employee supervising contractors.

Due to the variation in demand for quarried material (based on the location of new roads required for harvesting operations and road maintenance, a function of the location of harvesting operations and transport routes and weather) it is anticipated that demand in future years will be similar to current levels, but will reduce slightly over time. Reserves in the existing quarries are unknown but should be sufficient for the next decade of operations.

Approximately one hectare of topsoil and waste materials has been stripped and stockpiled during routine extraction during the year. Rehabilitation works on one quarry site have been completed and are awaiting clearance by Mineral Resources Tasmania.

RNB Trading Pty Ltd

During the 2007/2008 financial year RNB Trading employed eight personnel

at their sand extraction sites at South Arm, George Town and Llanherne. Production from these sites consisted of 125 000 tonnes of building sand and 150 tonnes of bedding sand.

Extraction activities at the Hope Beach sand pit at South Arm were completed, with operations transferred to the Llanherne site from May 2008. Capital expenditure on the new Llanherne operation exceeded \$580,000.

A level two application, under the *Environmental Management and Pollution Control Act 1994*, was granted for the Potato Hill operation at George Town. This resource was purchased by Hanson Construction Materials in April 2008.

Stornoway Quarries Pty Ltd

Stornoway operates two quarries at Raeburn and Birrallee, in northern Tasmania. The operations produced 230 000 tonnes of structural fill and road and pavement materials, mainly for council and forestry operations. There were three full-time and one part-time employees during the year.

Treloar Transport

Treloar Transport Company operates the Shackley Hill quarry at Sheffield, employing four full-time staff and a contract driller and shot-firer. Production for the twelve month period totalled 155 000 tonnes of material, with sales comprising 60 000 tonnes of sub-base material, 60 000 tonnes of base course, 10 000 tonnes of pit-run gravel and 20 000 tonnes of other products.

Major projects completed or in progress during the year have included production of base course and sub-base gravel for the Bass Highway duplication at Ulverstone. Main capital expenditure included an upgrade of the crusher, including improvements to the secondary crusher to increase throughput.

A safety audit was completed for the quarry operations and the recommendations are now being implemented. Acidic drainage produced through the oxidation of pyrite continues to be treated with crushed limestone and settling ponds.

Mineral Processing Operations

Cement Australia Holdings Pty Ltd

A total of 150 people are employed full time at the mine and cement plant at Railton. Production of cement clinker from the plant kiln totalled 1.115 million tonnes. This clinker was used to produce 1.26 million tonnes of cement, 1.1 million tonnes of which was shipped to Victoria and New South Wales via the Port of Devonport. Of the remaining production, 132 579 tonnes was utilised in the local Tasmanian bulk and bag markets. Total dispatches from the Railton factory were 1 242 744 tonnes.

Major projects and new developments

Further expansion of the Northern Cutback and the Western Cutback is planned for the 2008/2009 financial year. Completion of stage two and further progress on stage three of the Site Water Management Plan is expected during 2008/2009.

Capital expenditure

Capital expenditure for the 2007/2008 period totalled \$15.183 million. Projects underway or commissioned during the period include:

- The high viscosity fuel plant, commissioned in February 2008 at a cost of \$3.5 million.
- Kiln precipitator replacement with a bag filter, to be commissioned in the first quarter 2009 at a cost of \$19.2 million.
- Advanced mine dewatering, at a cost of \$1.3 million.
- Spent Cell Liner project, at a cost of \$3.13 million, to burn waste refractory lining from the Bell Bay aluminum refinery.

Environmental

Rehabilitation of the new mine continued, with the batters on the southeast waste dump pushed down to 55–70 mRL. A total of 3305 cubic metres of topsoil derived from the North Cutback and Magazine Buttress areas was stripped and stockpiled for future rehabilitation. Work on the Site Water Management Plan continued during the 2007/2008 period. Stage one of the plan involved lining over two kilometres of Browns Creek drain to improve water quality and was completed in late 2007. Stage 2 groundwater bores are at an

advanced stage of completion. Stage 3 discharge water treatment is in design stages and is expected to be completed in late 2009.

Annual weed control programs included slashing and spraying declared weeds. Monthly groundwater bore checks and water quality testing were ongoing throughout the year.

Nyrstar Hobart Pty Ltd

Nyrstar Hobart has a workforce of 506 employees and 91 contractors in its zinc smelter on the western bank of the River Derwent at Risdon. Production for the year consisted of 247 000 tonnes of zinc and 399 647 tonnes of sulphuric acid.

Reserves/Resources

Nyrstar source the majority of its concentrate requirements from within Australia, predominantly from the OZ Minerals Century and Rosebery mines. Nyrstar Hobart is also focussed on sourcing a higher percentage of secondary zinc oxides to increase flexibility of feed to the site.

Major projects and new developments

Measures are being pursued to increase production volumes during the remainder of 2008. Knowledge sharing across Nyrstar has allowed a targeted technical and engineering focus on the production process. Implementation of new equipment and process modifications developed in-house have resulted in a substantial improvement of the recovery rate from 91.4% in the second half of 2007 to 94.5% in the first six months of 2008, without the need for substantial investment, allowing for increased zinc production from the same level of concentrate input. This was achieved at a capital cost of less than \$0.5 million, a substantial saving on the previously indicated capital cost of \$35 million allocated to implement the goethite process and improve the recovery rate to 96%.

Capital expenditure

Operating costs in the first half of 2008 reduced by 6% compared to the second half of 2007, predominantly as a result of a new ten-year electricity contract which came into effect on 1 January 2008. Major capital expenditure in 2007 included the deferred expenditure for the No. 5

roaster shutdown (\$2.8 million), automated skimming on the casting lines (\$2.2 million), and a stormwater retention pond (\$2.1 million). Capital investments during 2008 have included the successful planned shutdown of the roaster and acid plant, the design of a precipitator to eliminate the visible tail gas stack plume, and automated skimming on casting lines.

Safety

At the end of 2007 the 12-month rolling average Lost Time Injury Frequency Rate (LTIFR) was 4.1.

Environmental

Key environmental initiatives completed in 2007 included installation of additional stormwater retention capacity and finalising arrangements for the treatment and disposal of mercury contaminated wastes. Significant progress has also been made with planned environmental projects addressing historical groundwater and by-product stockpiles and contaminated waste issues.

Rio Tinto Alcan — Bell Bay

The Bell Bay aluminium smelter directly employs a total of 574 individuals and 56 contractors. Production during the 2007/2008 financial year totalled 179 207 tonnes.

Environmental

Numerous pollution control initiatives were introduced, including eliminating the use of chlorine from the site, utilisation of real-time fugitive hydrogen fluoride monitoring, undertaking an energy efficiency opportunity assessment, and water management plan and site water balance.

Major projects and new developments

Total capital expenditure for the year totalled \$20.85 million. Induction furnace upgrades were made during the year. The use of spent cell lining, a waste product from the smelting process, has been successfully trialed as an input material in the manufacture of cement at the Cement Australia site at Railton.

Tasmanian Electro Metallurgical Co. Pty Ltd (TEMCO)

This company operates an electro-metallurgical smelter making ferro-alloys at Bell Bay, the only manganese ferro-alloy plant in Australia. Four electric-arc furnaces and a sinter plant produce high-carbon ferromanganese, silicomanganese and

sinter. Nominal capacity based on the 2007 product mix is 128 000 tonnes of high-carbon ferromanganese, 126 000 tonnes of silicomanganese and 336 000 tonnes of manganese sinter per annum.

Impact Fertilisers Pty Ltd

This company employs 151 full-time employees and 20 part-time contractors. Production of fertilisers at the Risdon plant for the 2007/2008

financial year totalled 216 000 tonnes, of which 120 000 tonnes was phosphate rock.

A review is currently being undertaken on grinding and process change to an 'In Line' production system. Rehabilitation initiatives included removal and recycling of pond sludge, improving drainage, and improving storage and covering of rock heaps.

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 part of mining royalty raised by the Act for the rehabilitation of Crown land affected by historic mining disturbance.

Approximately \$170,050 was spent from the fund during the past year, with the major program being mine shaft capping at Pipers River in northeast Tasmania.

Shaft safety

- A program to address safety risks posed by abandoned mine shafts on a section of the Den Goldfield at Pipers River was undertaken during the year. Fifteen open mine shafts were capped with concrete panels. Expenditure totalled \$59,600.
- A three-year program of shaft capping and fencing was completed at Lefroy. Expenditure totalled \$5,000.
- Grating was constructed to cover an historic water race shaft at Waratah. Expenditure totalled \$10,000.
- Grating was fitted to an adit adjacent to Warrentinna Road near Branxholm. A locked boom gate was installed on the access track to the nearby Golden Mara mine workings

to restrict public access. Expenditure totalled \$21,300.

Other minor safety work encompassed:

- A safety barrier was constructed between a vehicle track and high quarry face within the Cameron Reserve at Gladstone.
- A collapsed mine shaft was backfilled at Royal George.

Expenditure totalled \$1,800.

Mine site rehabilitation

- Revegetation work was carried out on area of approximately three hectares at Storys Creek. This area comprised a former precipitate dam site and obsolete haul road. The program incorporated test plots for varying revegetation treatment methods and rare species trial plots set up by the Royal Tasmanian Botanical Gardens. Expenditure totalled \$25,500.
- Improvements were made to an existing anoxic limestone drain system designed to improve water quality at Storys Creek. Expenditure totalled \$3,200.
- Revegetation work was carried out on approximately three hectares at the Argonaut mine at St Helens. Expenditure totalled \$20,550.
- Site investigations continued on historic tailings at Royal George, including land survey and drainage design. Expenditure totalled \$10,200.

- Weed control and repairs to an erosion gully were carried out at the Endurance mine at Gladstone. Expenditure totalled \$2,000.
- Stage one of a site clean-up was undertaken at an abandoned gold mine camp within the Den Reserve near Pipers River. Expenditure totalled \$2,700.
- Groundwater monitoring wells were installed into a tailings dam at the Cleveland mine at Luina. Expenditure totalled \$2,900.
- A damaged diversion drain was repaired at the Oonah mine at Zeehan. Expenditure totalled \$1,200.
- Water quality monitoring was undertaken at Websters Creek near Waratah. Expenditure totalled \$500.

Quarry rehabilitation

Revegetation maintenance, encompassing weed control and revegetation monitoring, continued at Punchs Terror quarry at Dunorlan and The Badgers quarries near Sheffield. Expenditure totalled \$1,600.

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 \$2,000.