
Mineral Resources
Tasmania



Tasmania

Tasmanian Geological Survey Record 1998/08

Vision for Mineral Sector Growth TASGEOL 2005 — Phase 2

Enhancing Tasmania's Mineral Prospectivity and Land Management Capability

17 December 1998

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VISION FOR MINERAL SECTOR GROWTH

EXECUTIVE SUMMARY

INTRODUCTION

TASGEOL 2005 was originally devised in 1995 following the successful completion of the NETGOLD Project (1993/94). The purpose of the strategy was to increase expenditure on mineral exploration from the low levels of the early 1990's (\$7.8 million, 1991/92; 1992/93) to a sustainable level of approximately 2% of Australian expenditure or around \$30 million per year.

Exploration expenditure in 1997/98 was \$20.7 million, down on the previous year's 15 year high of \$26.0 million but the second highest for fourteen years (fig. 1). Exploration activity in the State can only be maintained by a continuing Government focus on this vital sector of the economy.

Tasmania, through the work of MRT, is up with the fore-front of digital data capture, interpretation and output of pre-competitive geoscientific information. This information is used by the mineral and petroleum exploration industries as well as being used in effective and efficient land management decisions.

TASGEOL 2005 was designed as three triennial phases for funding and reporting reasons. Phase 1 occurred during 1995/96-1997/98. Phases two and three will occur between 1998/99-2000/01 and 2001/02-2003/04.

During Phase 1, MRT underwent a restructuring of work processes and started to digitise its existing open file data for promoting Tasmania to the mineral exploration industry. This resulted in an increase in exploration expenditure in Tasmania from a low of 1.23% of total Australian expenditure in 1992/93 to 2.26% in 1996/97.

Phase 1 of TASGEOL 2005 specified a goal of 20% per annum increase in exploration expenditure, until sustainable levels were reached (~\$30 million/year in real terms, being around 2% of the 1996/97 Australian expenditure), and then to maintain this level while attempting to further increase it. Phase 2 is designed to continue this objective by building on the success of Phase 1. Due to the major changes in the World exploration scene in the past 12 months, this goal may need to be reassessed.

Tasmania contains a number of world-class mines within its various mineral provinces and mining in Tasmania has been an integral and vital part of the State's economic development for well over a century. Growth in investment in mineral exploration activity is essential for future development of the mineral sector and for the economic well being of Tasmania.

Mining and mineral processing accounts for over 40% of Tasmania's export capacity. During 1997/98 the mining and mineral processing industries paid \$17.9 million in State and Local Government charges and taxes and \$8.2 million in royalties. This investment must be protected by facilitating the discovery of new ore deposits for the mines of the next century.

Approximately 25% of Tasmania's area is currently unavailable for mineral exploration due to reserves of World Heritage, National Park or State reserve-type classification (fig. 2). As well as this, the majority of areas of known high prospectivity; for example the Mount Read volcanic belt-'Dundas Trough', northeastern gold areas and the Arthur Lineament, are already dominantly covered by exploration licences (fig. 2).

To attract further increases in the areas under exploration, Tasmania needs to be able to demonstrate that there are further areas of high mineral prospectivity within the State, or that the available data over presently explored areas have increased. To do this the Government needs to obtain new pre-competitive, geoscientific information with which to convince the exploration industry that the

ANNUAL EXPLORATION EXPENDITURE (1998 Dollars) (MRT data)

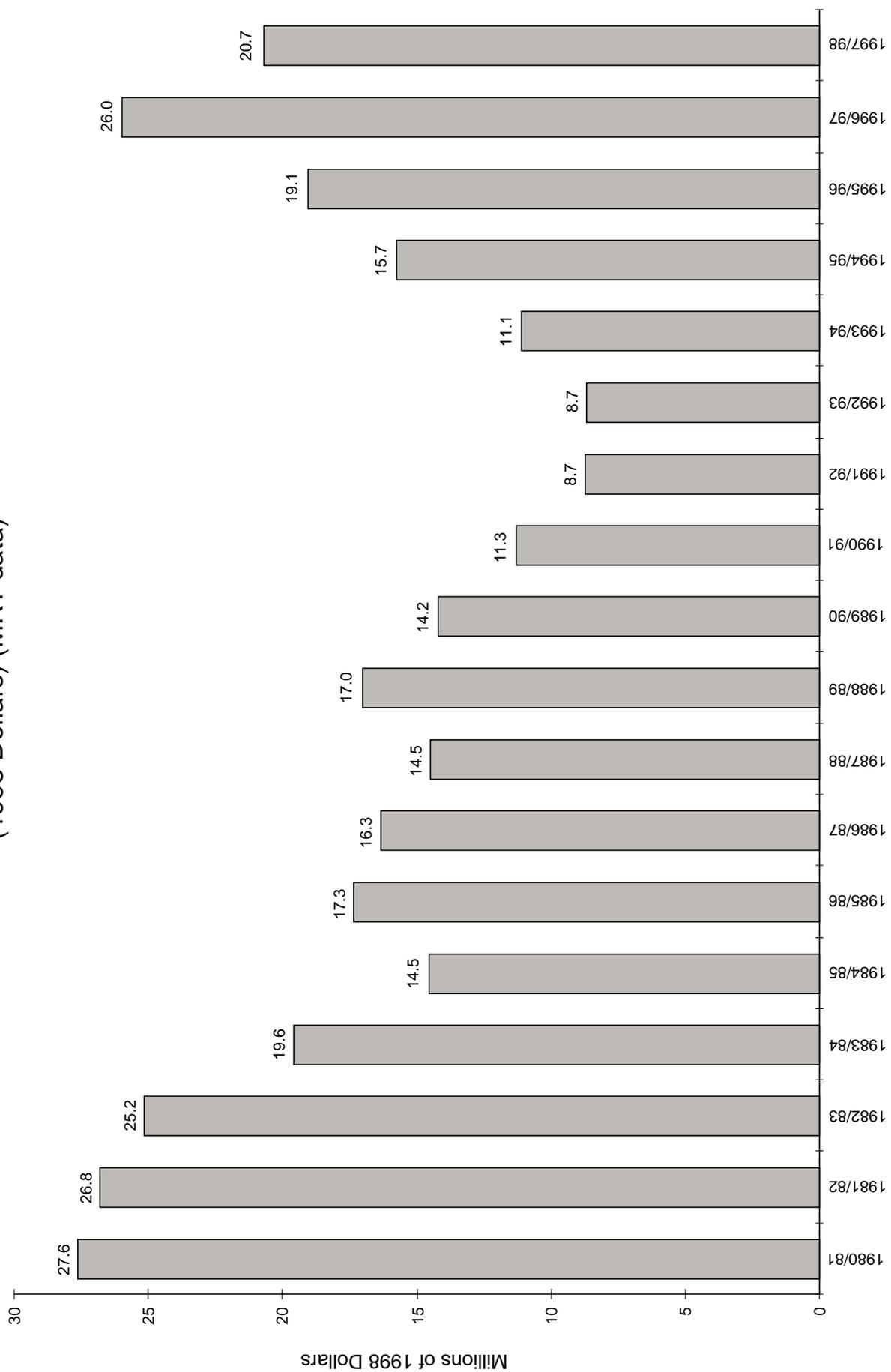


Figure 1

mineral prospectivity of specific areas of Tasmania is higher, and thus worth exploring, compared with other areas in Australia or overseas.

Such areas are, for example, the probable southern and western continuations of the gold-bearing sequence from northeast Tasmania; the possible southeastern extension of Mount Read-type rocks under younger cover sequences in the Midlands and in the southeastern parts of the State; and the relatively unknown area to the northwest of the Arthur Lineament (fig. 2).

BACKGROUND

Australian exploration dollars are increasingly being directed offshore. Over the last five years (1993/94–1997/98) the proportion of the Australian exploration budget spent overseas has risen from 28% to 45% (Mineral Council of Australia figures), and this trend is expected to continue.

To entice mineral exploration companies to explore in their areas, mainland States and the Northern Territory have committed some \$158 million for special projects to acquire new geoscientific data between 1993/94 and the year 2001/02. The new data sets are being released to exploration companies as soon as they become available. These projects and the related data have seen exploration expenditure, especially in NSW, Victoria and South Australia, double since the beginning of the projects.

The interstate programs include:

New South Wales	Discovery 2000	\$35 million over 7 years from 1994 to 2000
Northern Territory	Exploration Initiative	\$16 million over 5 years from 1998 to 2003
Queensland	GEOMAP 2005	\$24 million over 7 years from 1994 to 2000
South Australia	SA Exploration Initiative	\$45 million over 8 years from 1993 to 2000
Victoria	Exploration Initiative	\$25 million over 8 years from 1994 to 2001
Western Australia	Accelerated Mapping and Petroleum Initiative	\$29 million over 9 years from 1994 to 2002

In contrast, Tasmania's new initiative spending has only been \$0.6 million on the NETGOLD Project during 1993/94.

Funding for new initiatives projects in Tasmania is urgently required to enable the State to not only keep, but also to increase, its current share of the Australian exploration budget. New geoscientific information needs to be obtained if Tasmania is to maintain a competitive edge, data packages, based on new data, must be prepared and then aggressively marketed.

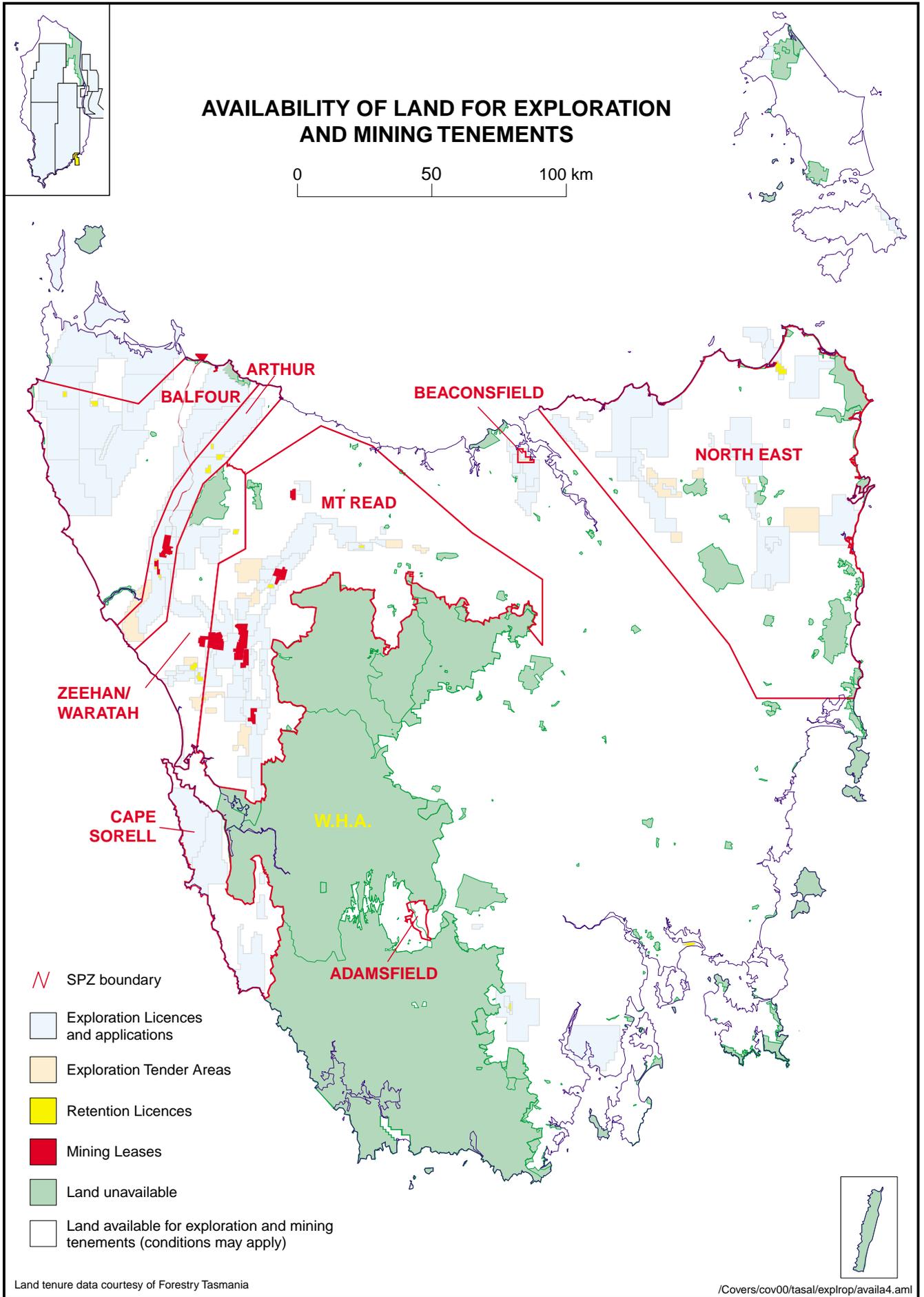


Figure 2

NEW PROJECTS

Phase 2 of TASGEOL 2005 is designed to consist of the eight projects listed below.

Projects

1. Establish and fund geoscientific data gathering projects in northern, northwestern and southeastern Tasmania (MIDMIN, NORWESTMIN and SOUTHGOLD);
2. Undertake Phases 4 and 5 of Project TIGER;
3. Undertake remote sensing data capture across strategically important areas of Tasmania;
4. Evaluation of the prospectivity, and promotion of Tasmania's offshore oil and gas basins;
5. Expand Mineral Resources Tasmania's core library facility to accommodate core in excess of present storage capacity;
6. Provide continued funding for the CODES SRC Centre for Ore Deposit Research at the University of Tasmania;
7. Provide continued funding for a Regional Minerals Program over the Western Tasmanian Mineral Province;
8. Develop remediation programs for acid producing soils and acid mine drainage problems at abandoned mine sites;
9. Develop geoscientific information databases for land management and local council planning schemes.

Projects 1 to 5 are new initiative projects requiring new funding.

Projects 6 and 7 require continuing funding of established projects.

Project 8 is based on an objective contained in the draft State Policy on Water Quality Management and requires new funding.

Project 9 is due to the *Land Use Planning and Approvals Act 1993*; the *Resource Management and Planning Appeals Tribunal Act 1993*; and a group of new Acts relating to local government (all 1993) and also requires new funding.

The level to which these programs can be implemented depends on the level of funding received.

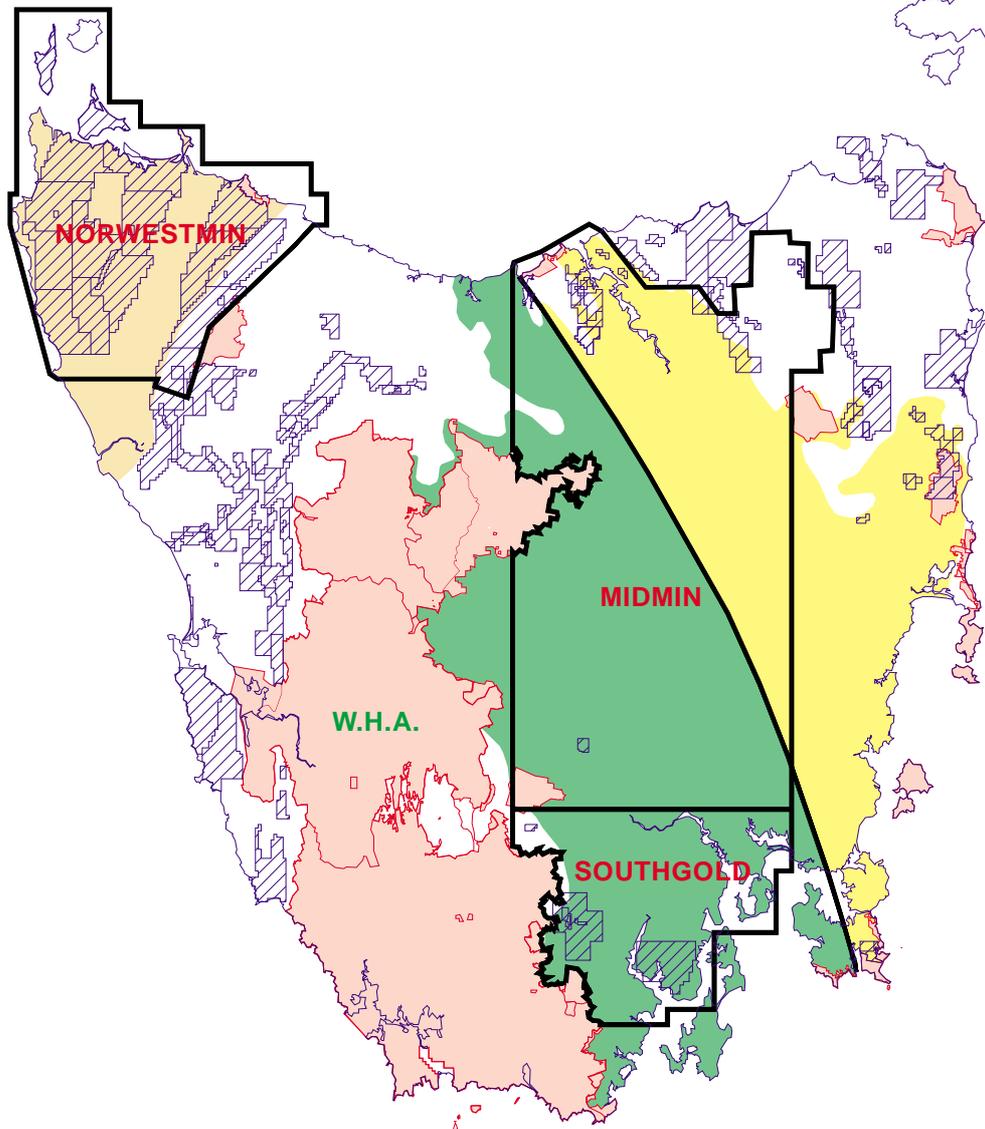
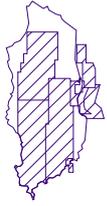
The Objectives of Mineral Resources Tasmania (MRT) are to:

- Promote growth in exploration expenditure and investment by working with the exploration industry.
- Collect, maintain and distribute modern geoscientific data in such form as can be readily accessed and used for minerals and petroleum exploration and land management purposes (a community services obligation).
- Increase acceptance by the community of the need for exploration and mining for community wealth generation, and to foster and encourage development of environmentally sensitive mining and effective rehabilitation techniques.

These objectives are critical to the Government's ability to service the minerals and petroleum exploration industries and to deliver effective land and environmental management planning decisions.

The strategies proposed by Mineral Resources Tasmania are designed to protect and expand the current level of exploration expenditure in Tasmania and to enhance land management decision making for the benefit of the State.

AREAS OF FUTURE WORK TO ENHANCE MINERAL PROSPECTIVITY



- Area of possible continuation of gold-bearing rocks under younger cover (approximately 16% of Tasmania)
- Area of possible continuation of Mt Read type rocks under younger cover (approximately 22% of Tasmania)
- Poorly known sequences in northwest Tasmania (approximately 7% of Tasmania)
- Exploration and Retention Licences (approximately 15% of Tasmania)
- World Heritage Area and National Parks, including RFA National Parks (National Parks/State Reserves approximately 25% of Tasmania)

Land tenure data supplied courtesy of Forestry Tasmania

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Figure 3

PROJECT SUMMARIES

Project 1: Undertake the SOUTHGOLD, MIDMIN and NORWESTMIN, Geoscientific Projects

Project Title: SOUTHGOLD, MIDMIN and NORWESTMIN Geoscientific Projects

Together with Project 3, these projects will provide an integrated coverage of modern geophysical, geological and geochemical data over major areas of Tasmania currently regarded as having low or unknown mineral prospectivity.

The project will entail the acquisition of geological and remote sensing data. The results will allow industry to examine Tasmanian geological structures in three dimensions.

The level of data coverage will allow explorers to assess prospectivity as part of their planning for exploration activities. Modern remote sensing methods can now be successfully used to map the geological structure of areas which are obscured by younger, non-mineralised, cover rocks.

The data collected under the MIDMIN and SOUTHGOLD Projects will allow assessment of the prospectivity of the central northern and southeastern parts of Tasmania, most of which is covered by dolerite and flat-lying sedimentary rocks. This area of the State has the potential to be underlain by mineralised rocks similar to those found in the highly mineralised western and northeastern parts of Tasmania. Following the completion of the Regional Forest Agreement (RFA) the area has a further advantage in that most of it will not be compromised by acquiring National Park or similar land status.

The NORWESTMIN Project will produce similar results for the far northwestern part of the State.

To increase the area of Tasmania under exploration licence, the State needs to attract industry to areas which have not been explored by modern techniques. MRT proposes to develop the data obtained by these projects into up-to-date data packages over these areas of the State where there is evidence of mineralisation, but where exploration activity is minimal. This increase in target area will help prevent a recurrence of the stagnation in exploration expenditure experienced between the mid 1980s and mid 1990s.

Importantly, this initiative will create a competitive, increased and more effective mineral exploration investment climate in Tasmania. The projects will provide excellent new data and act as a major incentive to minerals exploration groups to invest in Tasmania.

Project 2: Provision of Integrated Digital Geoscience Databases Project TIGER — Phases 4 and 5

Project Title: Project TIGER (Tasmanian Information on Geoscientific and Exploration Resources) — Phases 4 and 5

This initiative will fund the production and population of data bases not within the framework of Project TIGER Phases 1 to 3, as well as the ability for the data bases to be accessed via the World Wide Web. At the completion of Phase 5 the Government will be able to provide all Mineral Resources Tasmania's non-confidential geoscientific data in digital format to mineral and petroleum exploration companies, all tiers of government, the private sector, and the community, on a supply on demand basis.

The objectives of these initiative are to:

1. Increase the level of economic activity in the mineral exploration and mining sectors.
2. Support effective land management decision making by ensuring that geoscientific information is more readily available to all tiers of government, the private sector and the community.
3. Secure the State's geoscience information asset, provide more efficient access to the information, and increase the value of the asset over time.
4. Market and distribute geoscientific information to a wider audience.

The first three phase of this project: to computerise tenement management information system; to populate existing data bases; and to produce an integrated data management system; have either been completed (Phases 1 and 2) or are being actively worked on (Phase 3, completion date December 1999).

Project 3: Undertake remote sensing data capture across strategically important areas of Tasmania

Project Title: Various — depending on the area and type

This initiative will provide information which will increase the probability of maintaining or increasing the level of mineral and oil exploration in the State and thus increase the likelihood of the discovery of further mineral or oil deposits, and so provide a range of benefits to the people of Tasmania.

The objectives of this project are:

1. Produce the pre-competitive geophysical data necessary to attract industry participation in mineral and oil exploration in Tasmania;
2. Determine the nature of the basement under the younger cover rocks in the Midlands area and produce a package to be used for promoting the mineral resource potential of this area;
3. Promote all areas of Tasmania available for mineral and oil exploration to potential explorers.

The results from the project should:

1. Increase the revenue to the State by increasing the area held for minerals and petroleum exploration;
2. Increase the standard of living of all Tasmanians by the finding of commercial mineral, oil and gas deposits.

Project 4: To evaluate the prospectivity of, and promote, Tasmanian offshore oil and gas basins

Project Title: Evaluation and promotion of Tasmanian offshore oil and gas basins

This initiative will provide an information package which will increase the probability of commercial oil and gas discoveries in Tasmanian offshore basins and so provide a range of benefits to the people of Tasmania.

The objectives of this project are to:

1. Produce a promotional package summarising the known geology and petroleum prospectivity of various offshore areas;
2. Promote the available offshore areas to potential explorers.

The results should be:

1. To increase the revenue to the State by increasing the area held for petroleum exploration offshore;
2. To eventually increase the standard of living of all Tasmanians by the finding of commercial oil and gas deposits offshore.

Project 5: Expand Mineral Resources Tasmania's Core Library facility to accommodate core in excess of present storage capacity

Project Title: Core Library Project Initiation Process

Mineral Resources Tasmania, in common with other agencies in Australia responsible for the administration of the mining and mineral exploration industries, maintains and curates a library of drill core from past mining operations and exploration programs in the State.

Short of the discovery of economically viable mineral deposits, drill core is the most valuable product of mineral exploration. With present day drilling costs of around \$100 per metre, core not only represents a significant investment by private enterprise, but it also provides a wealth of material for future re-interpretation and re-evaluation as geological concepts evolve and new technology is introduced. A practical example of this is the discovery of the Henty gold mine, which was made by assaying core which was ten years old for gold.

Mineral Resources Tasmania currently holds 355 kilometres of drill core. A current acquisition cost for this core would be approximately \$35 million. Of this core 292 kilometres is stored in racks for easy access in the main core library building, which is now full, and 63 kilometres is stored on pallets on the floor in an overflow building a short distance away on the same road as the main building. Storage on pallets on the floor is unsatisfactory as it makes access to the core difficult.

The department is currently investigating whether another building on the same site could also be used. This building would hold a relatively small amount of additional core stored on pallets on the floor.

There are requests from the private sector to store over 25 kilometres of core which is presently stacked in the open and deteriorating, while the Hydro-Electric Corporation has requested that they transfer about 25 kilometres of core to this department when storage becomes available. The department recently agreed to store three kilometres of core from the former Materials and Research Laboratory prior to the formation of the Department of Infrastructure, Energy and Resources.

Holders of licences are required to lodge core with the Director of Mines on the expiry of their tenements. Under the *Mineral Resources Development Act 1995*, the holders of mining leases are required to give Mineral Resources Tasmania (MRT) notice before they dispose of core. In effect this gives the MRT the opportunity to archive material important for future exploration.

The future demand for drill core storage can be gauged from the amount of core obtained in current exploration programs and on past arrival rates at about 25 to 30 kilometres of core per year. However, there is 400 to 500 kilometres of core held by private industry and substantial amounts of this core might be sent to us at short notice if there is a downturn in mineral exploration or if a major mine is closed. Therefore further storage is required urgently.

Project 6: Provide funding for the CODES SRC Centre for Ore Deposit Research at the University of Tasmania for the triennium 1999/2000–2001/2002

Project Title: Government funding of CODES

The CODES SRC, through its research and teaching, makes a highly valuable contribution to Tasmania's mining and mineral exploration industries, and the new ideas and models generated may well provide the key to future discoveries and the continuation of the industry.

The Tasmanian Government, through MRT, has been funding CODES SRC since its inception in 1989. The funding has been in the order of \$175,000 per year, until 1997/98, and consisted of three components:

- General Purpose Grant;
- Tasmanian Government Mining Scholarships;
- In-kind Services Grant.

The *General Purpose Grant* was distributed between research staff, laboratory, and field costs.

The *State Government Mining Scholarships* are allocated to Honours, M.Sc. and Ph.D. students to work on projects in Tasmania of relevance to the mining industry. The projects are vetted by, and in some cases co-supervised by, MRT staff.

In-kind Services were mainly provided by MRT (e.g. x-ray diffraction services, geophysical equipment hire), but included purchases from other Government agencies, such as digital base maps from DPIWE and publications from the Printing Authority of Tasmania.

In 1997/98 the Government reduced the grant to \$68,000, which was for use for scholarships only. The same amount available for 1998/99.

An amount of \$180,000 has been requested by CODES SRC for the years 1999/2000 to 2001/02, again being for the three components:

- A general purpose cash grant of \$50,000;
- State Government Scholarship grant of \$70,000; and
- In-kind support of \$50,000.

The general purpose and scholarship grants are to be payable annually, at the beginning of the financial year, according to the previous arrangement (i.e. on receipt of certificate signed by suitably qualified person to the effect that the previous grants were received and disbursed for the purpose for which they were given).

In-kind support is provided to CODES SRC through MRT, and is for the purchase of goods from Government agencies.

Project 7: Provide continued funding for Regional Minerals Program over the Western Tasmanian Mineral Province**Project Title: Tasmanian Regional Minerals Program**

A Regional Minerals Program (RMP) is a tripartite program between the Commonwealth and State Governments and private industry. The purpose of the initiative is to improve investment potential and job opportunities in new and existing resource developments.

The development of the RMP would occur in two stages:

1. A review of existing infrastructure synergies for operating and planned resource developments in western Tasmania; and
2. Assessment of the level of pre-competitive geoscientific work required to provide data of a standard acceptable to industry to sustain an appropriate level of mineral exploration in the State.

The aim of this initiative is to produce a regional development plan for the infrastructure needed for new mining and mineral processing projects, which would also improve the economic situation of currently operating projects, associated industry, and any other industries within the area of study.

The proposal will be based on the concept of a 'Western Tasmanian Mineral Province'. The present known extent of the province has two components, one onshore and one offshore.

The aims of a Tasmanian RMP (TRMP) would be to:

- to lower the development cost of new projects;
- make existing mining and mineral processing operations more cost effective; and
- gather remote sensing data to facilitate mineral exploration.

It is anticipated that a TRMP would consist of:

- A regional study of existing projects, those that are about to come on stream, and those in the planning stage. It will look at the existing operations, identify common elements or future needs in infrastructure, such as water, roads, rail, power, gas, etc. not only for mining but also for on-site smelting and associated support industries.
- Obtain, with the aid of the Commonwealth Government's Australian Geological Survey Organisation (AGSO), modern remote-sensing data over areas where such data do not presently exist. Mineral Resources Tasmania would undertake geological field mapping to produce up-to-date, digital, geological maps of areas not presently covered to a standard acceptable to industry.

This would lead to:

- A regional development plan to identify the infrastructure needed to support an expanded industrial base in Tasmania; and
- A regional geoscientific database of the standard required to encourage and expedite mineral exploration.

This project would involve officers from both governments, industry, and external consultants. The process would take approximately two years (1997/98 and 1999/2000). The cost to Tasmania would be around \$300,000, with the Commonwealth Government and industry (through the Tasmanian Minerals Council) contributing similar amounts.

Project 8: Develop remediation programs for acid producing soils and acid mine drainage problems at abandoned mine sites

Project Title: Acid Drainage Study

Acid drainage is an insidious problem affecting soils and waterways. There are two sources, with the most apparent being discharges from abandoned mines. The second is from naturally acid soils or pyritic rock close to surface, which can readily produce acid if disturbed by earthworks or clearing of vegetation.

The problem is highlighted in the State Water Quality Management Policy, and the Sustainable Development Advisory Council has recommended that MRT make surveys of both problem areas. Sites requiring remediation will be listed and areas which require appropriate development controls (i.e. limited earthworks, no clearing of flora, etc.) will be identified.

The State's rich mineral heritage has resulted in degradation of land and waterways by historic mining operations. Remediation programs at prominent sites such as Mount Lyell and the King River catchment, Storys Creek in the South Esk catchment, and the Zeehan area are being conducted. Some areas previously thought free of the problem, such as the alluvial tin fields in the northeast, have recently been found to emit contaminated water. These areas have the potential to affect downstream activities such as agriculture, industry, environment and leisure pursuits. A systematic survey is required to establish the extent of the problem across Tasmania and identify priorities for remediation work. This will ensure that resources for rehabilitation can be properly assessed and wisely spent.

Conditions which produce acid sulphate soils exist in some important agricultural areas in the northwest and on King Island. Very little is known about their extent or their potential to affect agricultural activity, or the potential effects on downstream activities or water use. The proposed study will provide information for town planning, clearing for agriculture, and farm development. The impact of farm developments and the need for developing preventative guidelines will be better understood.

Project 9: Develop geoscientific information databases for land management and Local Council Planning Schemes

Project Title: Geoscientific information for land use planning

This project will provide up-to-date geoscientific information to land-use planners, particularly local government, for the preparation of planning schemes so that issues concerning the mining industry, groundwater resources, foundation conditions (including landslide risk), and sources of construction materials and mineral fields are taken into account in the preparation of these schemes.

The State's development policy has been reformed by the introduction of new environmental and planning legislation including the *Local Government Act 1993*, which requires regular reviews of planning schemes. The preparation of comprehensive geoscientific information packages for planning schemes is a new function for the Department.

Provision of adequate geoscientific advice to councils for the preparation of planning schemes is growing into an important segment of Mineral Resources Tasmania's business. MRT has a function under the *Local Government Act (Section 36, Building and Miscellaneous Provisions) 1993* to declare landslide areas where considered appropriate. As well as landslide risk, information related to other foundation problems, such as expansive or reactive soil, soils with low bearing capacity and soils having erosion potential, should continue to be collected. MRT administers the *Groundwater Act 1985* and functions include guarding against groundwater pollution.

MRT provides information relating to the location of mineral fields and construction material sources (sand, gravel, clay) and the location of existing quarries and mines so that inappropriate zoning does not lead to inadvertent sterilisation of the State's mineral resources.

This project would:

- Ensure that areas with mineral deposits and construction materials are suitably zoned to allow for future extraction;
- Ensure that groundwater resources have adequate protection from land use activities that will cause pollution;
- Ensure that areas with known foundation problems, including the potential for landslide, are clearly indicated on planning schemes.

FUNDING

These nine distinct, but inter-related strategies, would provide Tasmania with geoscientific information in modern, interactive, database format, of a quality necessary to maintain the State's natural competitive advantage as a world-class mineral provider and as an effective land manager.

The following table summarises the level of annual funding required to carry out the proposed strategies.

<i>Funding</i>	<i>1999/2000</i>	<i>2000/2001</i>	<i>2001/2002</i>	<i>2002/2003</i>	<i>2003/2004</i>
Project 1	\$1,000,000	\$1,000,000	\$1,000,000	\$750,000	\$750,000
Project 2	\$250,000	\$250,000	\$250,000	\$150,000	\$150,000
Project 3	\$2,127,000	\$2,104,000	\$2,090,000	\$2,129,000	\$1,951,000
Project 4	\$100,000	\$100,000	\$120,000	Nil	Nil
Project 5	\$515,000	\$270,000	Nil	Nil	Nil
Project 6	\$170,000	\$170,000	\$170,000	TBN	TBN
Project 7	(\$150,000) ¹	Nil	Nil	Nil	Nil
Project 8	\$70,000	\$70,000	Nil	Nil	Nil
Project 9	\$165,000	\$65,000	\$65,000	\$65,000	\$65,000
Total Outlay	\$4,397,000	\$4,029,000	\$3,695,000	\$3,094,000	\$2,916,000

TBN = To be negotiated

(1) Funding already agreed to within Department of State Development's Assistance to Industry budget.

Against these costs, designed to provide not only for a sustainable mineral industry but also for community service needs in responsible land management, must be balanced the revenue government enjoys from the mineral industry.

<i>UPDATE</i>	<i>1995/96 Actual (\$'000)</i>	<i>1996/97 Actual (\$'000)</i>	<i>1997/98 Actual (\$'000)</i>
Royalties	6,267	7,768	8,189
Rents and Fees on Mineral Lands	783	853	781
Payroll Tax	10,500	10,700	10,500
Other charges and taxes*	3,000	3,100	3,400
Total	20,550	22,424	22,870

* Includes Local Government charges of \$2.0 million per year.

PROJECT 1

Undertake the SOUTHGOLD, MIDMIN and NORWESTMIN geoscientific projects

Project Title: SOUTHGOLD, MIDMIN and NORWESTMIN geoscientific projects

Description

These projects will increase the area of Tasmania that is currently regarded as prospective and will, with Project 3, provide an integrated coverage of modern geological, geochemical and geophysical data over major areas of Tasmania currently regarded as having unknown mineral prospectivity. The project will dovetail with the acquisition of aeromagnetic, radiometric and gravity data which are detailed and costed under Project 3. The results, when used in conjunction with new geological data, will allow industry to examine Tasmanian geological structures in three dimensions.

This initiative will allow explorers to assess prospectivity as part of their planning for exploration activities. Data generated by the MIDMIN and SOUTHGOLD Projects will allow assessment of the prospectivity of northern, central and southeastern Tasmania, areas of the State which have the potential to be underlain by mineralised rocks similar to those found in the highly mineralised western and northeastern parts of Tasmania.

The NORWESTMIN Project will provide data over prospective, but poorly known parts of Tasmania. The project will cover areas with known magnesite, iron, copper, gold, silica, ochre and dolomite deposits, and with mineral resource potential for major base and precious metal deposits and industrial minerals with potential for associated downstream processing.

Although much of the area is currently held under exploration licence, past experience has shown that exploration has not been very effective. There has been a history of rapid turnover of ground, with areas being relinquished before anything worthwhile was accomplished. Recent examples include the tenements held by Allstate Explorations in the Arthur Lineament north of Savage River, by North Ltd east of the Arthur Lineament and the work by Pasminco Exploration in the Luina-Waratah area. Older examples include work over large tenements by BHP Exploration Pty Ltd and the CRAE-Geopeko joint venture. These were regional in scope and, apart from on a very few prospects, did not get down to the level of detail needed to find an orebody.

A major contributor to the paucity of success of these projects was the lack of appropriate infrastructure in the form of good, reliable geoscientific data, especially geological maps. This is a situation that still exists, but would be remedied by this project.

To increase the area of Tasmania under exploration licence, the State needs to attract industry to areas which have not been explored by modern techniques. MRT proposes to develop up-to-date data packages over areas of the State where there is evidence of mineralisation, but where exploration activity is minimal. This increase in target area will prevent the stagnation in exploration expenditure experienced in the last decade.

Importantly, this initiative will create a competitive, increased and more effective mineral exploration investment climate in Tasmania. The initiative will provide excellent new data and act as major incentive to mineral and petroleum exploration groups to invest in Tasmania.

Output Link(s)

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

To facilitate and encourage the mineral exploration needed to sustain the Tasmanian mining industry in a globally competitive environment.

Production System

The projects included in this initiative will be managed by Mineral Resources Tasmania. Contractors will acquire most of the geophysical data and will undertake some of the field mapping. Mineral Resources Tasmania staff will provide the geological backup, including most of the field mapping, the geochemical data, input of data collected into TIGER (the Tasmanian geoscience digital data storage and retrieval system), and complete data interpretation and presentation.

Users

Exploration and mining industries, Mineral Resources Tasmania, Forestry Tasmania, primary industries and building construction industries; DPIWE, local government, research institutions, AGSO, libraries, schools.

Alternatives

The alternative is not to collect new data over areas of unknown mineral potential. This option is rejected as it will result in Tasmania losing its share of the exploration expenditure and a reduction in the rate of new mineral discoveries, with a consequent reduction in royalties as producing mines close down.

MRT has had considerable success in 'repackaging' existing data in an effort to attract exploration to new areas, but its capacity to maintain this is limited by the available data.

The acquisition of new data, using the currently available funds, will not generate the data needed to attract the investment required to find new mineral and petroleum deposits.

Implications

Currently 45% of the Australian exploration expenditure goes overseas (1995/96 figures).

Other States have initiatives which enable them to compete for exploration expenditure:

New South Wales	Discovery 2000	\$35 million over 7 years from 1994 to 2000
Northern Territory	Exploration Initiative	\$16 million over 5 years from 1998 to 2003
Queensland	GEOMAP 2005	\$24 million over 7 years from 1994 to 2000
South Australia	SA Exploration Initiative	\$45 million over 8 years from 1993 to 2000
Victoria	Exploration Initiative	\$25 million over 8 years from 1994 to 2001
Western Australia	Accelerated Mapping and Petroleum Initiative	\$29 million over 9 years from 1994 to 2002

By contrast, Tasmania has only spent \$0.6 million on the NETGOLD Project during 1993/94.

Without a commitment from Government to continue the acquisition of geoscientific information, Tasmania's share of the mineral exploration industry will steadily diminish. As a result, income generated by the mining industry will diminish with time.

Revenue

Direct and indirect income generated by the exploration for, discovery and mining of new mineral deposits.

Duration

This initiative requires five years funding to complete the MIDMIN, SOUTHGOLD and NORWESTMIN projects.

Funding

The funding for the first three years will cover part of the MIDMIN and all of the NORWESTMIN projects. Years four and five will complete MIDMIN and allow SOUTHGOLD to be undertaken.

1999/2000	\$1,000,000
2000/2001	\$1,000,000
2001/2002	\$1,000,000
2002/2003	\$750,000
2003/2004	\$750,000

PROJECT 2

Continue with the provision of integrated digital geoscience databases (Project TIGER — Tasmanian Information on Geoscientific and Exploration Resources) Phases 4 and 5

Project Title: Project TIGER — Phases 4 and 5

Background

The aim of this project is the development of data bases, the integration of all MRT's non-confidential, geoscientific and tenement databases into a single, interactive system, and the ability of clients to access the data via the World Wide Web. This will enable government to provide up-to-date digital data to mineral exploration companies, all tiers of government, the private sector, and the community.

The first phase of this project, to computerise tenement management information, has been completed, with the interactive system currently being developed (Phase 3 — 1997/79 to 1999/2000).

Project TIGER, Phases 4 & 5

This initiative will fund the production and population of data bases not within the framework of Project TIGER Phases 1 to 3, as well as the ability for the data bases to be accessed via the World Wide Web. At the completion of Phase 5 the Government will be able to provide all Mineral Resources Tasmania's non-confidential geoscientific data in digital format to mineral and petroleum exploration companies, all tiers of government, the private sector, and the community, on a supply on demand basis.

TIGER — capture of outstanding data

Complete capture of all outstanding geoscientific data from open file exploration reports. This could be done by external contract, or in house, over three years.

Estimated cost \$250,000 per year for three years

Library indexes and indexing

Convert the existing specialised card indexes to digital format and indexing the remainder of the MRT information. This will take two years.

Estimated cost \$150 000 per year for two years

Description

This initiative will fund the integration of all Mineral Resources Tasmania's non-confidential geoscientific and tenement databases into a single, interactive system, to enable government to provide up-to-date digital data to mineral exploration companies, all tiers of government, the private sector, and the community.

The objectives of this initiative are to:

1. Increase the level of economic activity in the mineral exploration and mining sectors.
2. Support effective land management decision making by ensuring that scientific information is more readily available to all tiers of government, the private sector and the community.
3. Secure the State's geoscience information asset, provide more efficient access to the information, and increase the value of the asset over time.
4. Market and distribute geoscientific information to a wider audience.

Budget Output Link(s)

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

This initiative originated with the government's restructuring of the old Department of Mines into Mineral Resources Tasmania (MRT) in 1993 and the direction from government that MRT was to proceed towards digital data management of geoscientific data, its storage, analysis, assessment, interpretation and publication/distribution of these data. This initiative will complete the development stages of the system and provide for its ongoing maintenance, upgrading and delivery of data to clients.

Production System

Phase 1 of this project, the Public Access Inquiry System (PAIS), which was to computerise tenement management information, was completed during 1994/95. A prototype of the user interface for the completed system was developed and proved successful in operation.

Phase 2 encompasses the development of geoscientific databases. This occurred between 1995/96 and 1996/97.

Phase 3, the development of the interactive system, is currently underway (1997/98–1999/2000). The TIGER system has been largely designed, produced, and developed by current MRT staff. Specific modules of the project are being designed and built by external consultants, as the expertise to undertake the production of these modules does not reside within the Agency.

Users

The Minister, DIER Executive, Mineral Resources Tasmania, State Audit, Treasury, exploration and mining industries, Forestry Tasmania, primary industries and building construction industries, DPIWE, SES, HEC, Works Tasmania, local government, research institutions, AGSO, libraries, general public.

Alternatives

The only known alternative to producing the system was to have out-sourced the production of the project to private industry. This alternative was not acceptable because of the cost of such a contract, and the fact that the majority of the project could be produced in-house with the aid of temporary input staff.

With increasing rates of data acquisition, and similarly increasing demands from clients for the data, the system is needed to fulfill our output requirements. The required gain in the efficiency of storage and retrieval of data can only be met by moving to digital methods.

A move to electronic storage and retrieval of geoscientific information is critical to maintaining the value of the asset.

To remain reliant on hard copy information:

- is inconsistent with the expectations of the users;
- restricts opportunities for value adding; and
- is dangerous with regard to maintaining the value of the asset.

Revenue

Direct and indirect income to Government generated by the mineral exploration and mining industries during exploration for, discovery and mining of new mineral and hydrocarbon deposits.

Duration

This initiative requires specific funding for three years (2000/01–2001/03), following the completion of Phase 3 (1999/2000), to complete the building of the TIGER system, and ongoing funding for the three positions need to upgrade, maintain and output information.

A draft Business Case for this project, which will include the funding required, will be produced by the end of December 1999.

Funding

The funding for the first three years will cover part of the MIDMIN and all of the NORWESTMIN projects. Years four and five will complete MIDMIN and allow SOUTHGOLD to be undertaken.

1999/2000	\$250,000
2000/2001	\$250,000
2001/2002	\$250,000
2002/2003	\$150,000
2003/2004	\$150,000

PROJECT 3

To undertake remote sensing data capture across strategically important areas of Tasmania

Project Title: Aeromagnetic, Radiometric and Gravity Surveys

Description

This initiative will provide information which will increase the probability of maintaining or increasing the level of mineral and oil exploration in the State and thus increase the likelihood of the discovery of further mineral or oil deposits and so provide a range of benefits to the people of Tasmania.

The objectives of this project are:

1. To produce the pre-competitive geophysical data necessary to attract industry participation in mineral and oil exploration in Tasmania;
2. To determine the nature of the basement under the younger cover rocks in the Midlands area and produce a package to be used for promoting the mineral resource potential of this area;
3. To promote all areas of Tasmania available for mineral and oil exploration to potential explorers.

The results from the project should:

1. Increase the revenue to the State by increasing the area held for minerals and petroleum exploration.
2. Eventually increase the standard of living of all Tasmanians by the finding of commercial mineral, oil and gas deposits.

Output Links

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation, and publication.

Policy Objective

To facilitate and encourage the mineral exploration needed to sustain the Tasmanian mining industry in a globally competitive environment.

Production System

This initiative will be managed by Mineral Resources Tasmania. Contractors will acquire most of the geophysical data and will undertake the specialised interpretation of the Midlands area. Mineral Resources Tasmania staff will provide geological backup, input of data collected into TIGER (the Tasmanian digital geoscientific data storage and retrieval system), integration with pre-existing data and complete data interpretation, presentation and promotion.

Users

The Minister, DIER Executive, Mineral Resources Tasmania, Treasury, the minerals and petroleum exploration industry, land managers, local government, agricultural bodies, research institutions, AGSO, libraries and schools.

Alternatives

There are no alternatives to this project, which will generate the new data needed to attract the exploration expenditure required to sustain the search for new mineral deposits in Tasmania.

Implications

Without a commitment from government to acquire new geoscientific information and promote it to the mineral and oil exploration industry Tasmania's share of exploration will steadily diminish. As a consequence income generated by the mining industry will diminish with time.

Revenue

Direct and indirect income generated by the exploration for, discovery and mining of new mineral deposits.

Duration

This initiative requires funding for five years.

Funding

1999/2000	\$2,127,000
2000/2001	\$2,104,000
2001/2002	\$2,090,000
2002/2003	\$2,129,000
2003/2004	\$1,851,000 plus \$100,000 salary = \$1,951,000

Project 4:

To evaluate the prospectivity of, and promote, Tasmanian offshore oil and gas basins

Project Title: Evaluation and promotion of Tasmanian offshore oil and gas basins

Description

This initiative will provide information which will increase the probability of commercial oil and gas discoveries in Tasmanian offshore basins and so provide a range of benefits to the people of Tasmania.

The objectives of this project are:

1. To produce a promotional package summarising the known geology and petroleum prospectivity of various offshore areas;
2. To promote the available offshore areas to potential explorers.

The results from the project should:

1. Increase the revenue to the State by increasing the area held for petroleum exploration offshore;
2. Eventually increase the standard of living of all Tasmanians by the finding of commercial oil and gas deposits offshore.

Output Links

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

To facilitate and encourage the mineral exploration needed to sustain the Tasmanian mining industry.

Production System

The project will be undertaken as a collaborative project between Mineral Resources Tasmania and the National Centre for Petroleum Geology and Geophysics in South Australia. Reports will be produced to encourage industry to invest exploration capital in Tasmanian offshore areas.

Users

The Minister, DIER Executive, Mineral Resources Tasmania, Treasury, the petroleum exploration industry.

Alternatives

There are no alternatives to this project, which will entice exploration expenditure into the offshore areas.

Implications

Tasmania will miss out on vital offshore expenditure and development if this initiative is not adopted.

Revenue

Tasmania currently receives rents of over \$100,000 per year from permits in the Bass Basin. With encouragement, industry could be persuaded to look at additional areas which are currently not held under permit. Revenue spent could be regained in rent alone.

Duration

This initiative requires funding for three years.

Funding

<i>Year</i>	<i>Total</i>	<i>Salary</i>	<i>Non Recurrent</i>
1997/1998	\$100,000	\$70,000	\$30,000
1998/1999	\$100,000	\$70,000	\$30,000
1999/2000	\$120,000	\$70,000	\$50,000

PROJECT 5

Expand Mineral Resources Tasmania's Core Library facility to accommodate core in excess of the present storage capacity

Project Title: Core Library Extension

Background

Mineral Resources Tasmania, in common with other agencies in Australia responsible for the administration of the mining and mineral exploration industries, maintains and curates a library of drill core from past mining operations and exploration programs in the State.

Under the *Mineral Resources Development Act 1995* (MRDA), the government is obliged to archive drill core. Holders of licences are required to lodge core with the Director of Mines on the expiry of their tenements. In effect this gives the MRT the opportunity to archive material important for future exploration.

The current drill core library is full and 63 kilometres of the 355 kilometres currently held by the department is stored in an overflow building, where access is difficult and which is also close to capacity. An additional storage facility is urgently required.

Description

The aim of this proposal is to increase the drill core storage capacity of MRT by constructing a new building and by increasing the storage density in the existing building. This will enable MRT to continue to archive drill core and make it available for inspection and study by the clients of the division. Under the MRDA, the holders of mining leases are required to give Mineral Resources Tasmania (MRT) notice before they dispose of core.

The new building will be on the same site as the current MRT core library building at 93 Mornington Road, Mornington.

It is proposed to provide additional core library capacity in two stages:

1. Construction of new store and racking, followed by moving of some existing core into new store in 1998/1999. This will provide storage for 169.34 km of core.
2. Reconfiguration of the existing store with new racking in 1999/2000. This has the potential to increase the current core storage capacity of 292 km to 559 km, assuming that a quarter of the existing store is dedicated to general storage purposes. This represents an improved storage density of 91.4%.

Output Link(s)

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

To facilitate and encourage the mineral exploration needed to sustain the Tasmanian mining industry.

The Government's role in the provision of a core library service is laid out in Part 6 of the *Mineral Resources Development Act 1995*.

Production System

The construction and detailed design of the new storage module will be tendered. Contract labour, supervised by MRT staff, will be engaged to move and re-stack the drill core. Provision of racking will be tendered. The process of rehousing the core will be staged in such a way as to minimise disruption to the core library service.

Users

Mineral Resources Tasmania, exploration and mining industry, petroleum industry, building and construction industries, DPIWE, HEC, Works Tasmania, local government, research institutions, AGSO.

Alternatives

It is a legal requirement of the *Mineral Resources Development Act* 1995 that mineral exploration drill core is archived. It is not practical to out-source this task to private industry.

Implications

Archiving drill core provides a service to the mineral exploration industry and other clients which makes their work faster and cheaper. Success of the mineral exploration industry in finding new, economically-viable mineral deposits would be beneficial to the Tasmanian economy.

Revenue

Direct and indirect income to government generated by the mineral exploration and mining industries during exploration for, discovery and mining of new mineral and hydrocarbon deposits.

Duration

Two years for the financial years 1999/2000 to 2000/2001.

Cost Estimate

New building	\$237,600	1998/99
Design and supervision fees	\$54,000	1998/99
Other costs (fork lift truck)	\$110,000	1998/99
Loose furniture and equipment	\$12,000	1998/99
Site services (including pavement)	\$30,000	1998/99
Contingency	\$13,000	1998/99
Racking: new building	\$51,840	1998/99
existing building	\$142,218	1999/2000
Labour and material costs for reconfiguration of racking in existing building	\$97,207	1999/2000
Compactus shelving (rock storage)	\$20,000	1999/2000
Display bench	\$5,000	1999/2000
Additional display area	\$5,000	1999/2000
Total project cost	\$780,865	

Funding

1998/1999	\$511,440
1999/2000	\$269,425

PROJECT 6:

Continue Government funding of the Centre for Ore Deposit Research (CODES SRC) over the trimester 1997/1998 to 1999/2000

Project Title: Government funding of CODES

Background

The Tasmanian Government funding for the Centre for Ore Deposit Research Special Research Centre (CODES SRC) at the University of Tasmania was initiated in 1989. In 1993 the government made a commitment to continue funding for a further three years (1994/95 to 1996/97) at a rate of approximately \$170,000 per year. This was followed by a further two-year commitment for 1997/98 and 1998/99 at the reduced rate of \$68,000 per year for scholarships only.

The funding commenced following the government's direction to the then Department of Mines that it was to cease geoscientific research work which could be undertaken by the CODES SRC. It was accepted that the CODES SRC facility was achieving high standards and that it was providing the most relevant earth science courses in the country. Its value to the State as a geoscientific centre for research, and its contribution to the promotion of Tasmania's mineral exploration investment potential, was also acknowledged.

Until 1996/97 the support was in three parts:

- a general purpose grant;
- a line of credit with MRT for the purchase of 'in-kind' services from government agencies; and
- State Government Mining Scholarships.

The funding was allocated so as to provide support to MRT's geoscientific initiatives. During 1997/98 and 1998/99 the support consisted of funding for State Government Mining Scholarships only.

The State Government Mining Scholarships are allocated to Honours, Ms.C. and Ph.D. students to work on projects in Tasmania of relevance to the mining industry. The projects are vetted by, and co-supervised by, MRT staff. In the 1998/99 budget, funding for the scholarship program is \$68,000.

The achievement by CODES of attaining the Special Research Centre (SRC) status in 1997 has assured it of a higher level of Commonwealth funding for nine years. Retention of the Tasmanian Government Mining Scholarship scheme enables the close and mutually beneficial relationship between MRT and CODES SRC to continue.

The CODES SRC, through its research and teaching, makes a highly valuable contribution to Tasmania's mining and mineral exploration industries, and the new ideas and models generated may well provide the key to future discoveries and the continuation of the industry.

Although the CODES SRC has been amalgamated with the Geology Department over the last two years, its high profile work in economic geology, and its world-class research, will continue, and will continue to be important to the State's mining industry.

The CODES SRC is strongly positioned to assist the Tasmanian mining industry in the discovery of new mineral deposits, through both student projects and targeted industry research. Through collaboration with MRT, and with the infusion of State Government funding, new joint research projects can be advanced with the ultimate aim of finding new deposits, for new mines, and increasing the strength of the Tasmanian mining sector.

Achievements

For the past nine years, the State Government (through MRT) has supported the development and growth of the CODES SRC by funding several research projects. The benefits of this funding support to Tasmania include:

- Development of improved exploration models for massive sulphide deposits in the Mt Read Volcanics. Both student scholarship projects and industry collaborative projects (through AMIRA) have lead to a better understanding of the volcanic architecture and controls on the location of major mineral deposits. This research is critical for the discovery of new ore deposits similar to Hellyer and Henty that will be needed in the next 5–10 years in order to sustain the importance of the mining industry as a cornerstone of the State's economy;
- Development of alteration halo models for massive sulphide deposits which provide bigger targets for exploration and will allow companies to use geochemical vectors to find deposits at depths below 300–500 metres – the likely depth for discoveries in the future.

The Future

Further potential collaboration between MRT and the CODES SRC is also possible through a wider, co-operative program of research by the CODES SRC and MRT.

CODES SRC is the major mineral deposit research centre in Australia, and has gained an international reputation for high-quality mineral exploration research conducted in collaboration with the mining industry. About 40% of CODES research effort is directed toward improving mineral discoveries in Tasmania by working closely with Tasmanian mining companies on new exploration technology developments. The remaining 60% of research is on mineral deposits and exploration developments in mainland Australia and overseas.

Resumption of the previous levels of State Government funding to CODES SRC in cash and scholarships (around \$175,000 per annum) would enable the development of new collaborative projects between CODES SRC researchers and MRT geological staff to support the mineral exploration industry in discovering new deposits.

Benefits of this research will be:

- improved tectonic and structural understanding of the Proterozoic rocks in northwest Tasmania to define potential new areas and deposit styles for exploration;
- definition of the mineralogical, chemical and isotopic halos associated with copper-lead-zinc massive sulphide and gold deposits in the Mt Read Volcanics, utilising the state-of-the-art laser ablation microbeam techniques for trace, REE and isotopic analysis. Preliminary data indicate this will be a powerful tool and mining companies are keen to see this development proceed as a priority project. The University of Tasmania is putting \$700,000 into this new microbeam facility, and the applications to Tasmanian exploration projects should commence by mid-1999. This exciting development has the potential to have a major impact on the Tasmanian exploration industry.
- a series of new student projects, developed in close collaboration with MRT and industry geologists, to utilise a combination of structural, geochemical, sedimentological and petrological research techniques to define the characteristics of various mineral prospects and districts, which will improve mineral exploration strategies throughout the State.

Even if resumption of the past funding level was not possible, MRT wishes to fully support the continuation of funding for the State Government Mining Scholarships at a level of \$70,000 per year for the next three years.

In order to develop on-going collaborative links between MRT and CODES, a joint application for funding a Tasmanian research program through the Australian Research Council (ARC) Strategic Partnerships with Industry – research and training (SPIRT) scheme is possible.

This scheme is designed to bring University research groups together with industry and/or public sector departments to undertake collaborative research projects of mutual interest for the parties. A second object is to produce for Australian industry a pool of world-class, Ph.D.-trained researchers who are capable of addressing the nation's economic development and social objectives, as well as understanding and addressing Australian industry research needs.

The type of proposal suggested is a project which involves at least two CODES SRC staff, two MRT staff, and several Ph.D. and/or Honours students.

Financial contributions (cash and in-kind) from industry and MRT would be required (over three years) and CODES SRC would apply for matching funds from the ARC. No new cash contribution would be required from MRT; part of the current Scholarship funding (about \$40,000) could be allocated to the project, with in-kind support from MRT of about another \$40,000.

A further contribution would be sought from key Tasmanian companies towards Ph.D. projects on their deposits or licences of about \$10,000 per annum per company. This would allow application for about \$150,000 per annum from the ARC. These funds would then be used to appoint a new Research Fellow to work on the project (shared between MRT and CODES) plus cover field and analytical costs.

Last year the CODES SRC was successful in gaining an ARC-funded SPIRT project of this type with the Geological Survey of New South Wales, and MRT is confident a similar co-operative program would be successful in Tasmania.

Description

The Centre for Ore Deposit Research (CODES) was established at the University of Tasmania in 1989, with a Commonwealth grant and additional funding from the State Government and mining industry.

The Centre has established an international reputation for excellence in research and teaching in economic geology, with particular reference to Tasmanian mineral deposits. The work of the Centre is seen as a highly valuable contribution to the mining and exploration industries in Tasmania.

The Tasmanian Government has been a major and vital funding sponsor for CODES since the Centre's inception in 1989. Mineral Resources Tasmania does not undertake pure geoscientific research and relies on the work undertaken at CODES to assist it in obtaining its outcomes.

Output Link(s)

Mineral Resources Tasmania – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

This project was part of the Labor Government's (1989–1992) and Liberal Government's (1992–1998) Election Policy for mining and mineral processing.

Production System

The State grant comprises three parts:

- General Purpose Grant;
- Tasmanian Government Mining Scholarships;
- In-kind Services Grant.

The General Purpose Grant is distributed between research staff, laboratory, and field costs.

The State Government Mining Scholarships are allocated to Honours, M.Sc. and Ph.D. students to work on projects in Tasmania of relevance to the mining industry. The projects are vetted by, and in some cases co-supervised by, MRT staff.

In-kind Services are mainly provided by MRT (e.g. x-ray diffraction services, geophysical equipment hire), but include purchases from other government agencies, such as digital base maps from DPIWE and publications from the Printing Authority of Tasmania.

Users

Mineral exploration and mining industries, Mineral Resources Tasmania, research institutions, AGSO.

Alternatives

An alternative would be to fund MRT to undertake such research, but this is not currently supported by Government policy. The work undertaken by CODES is not currently done by any other organisation in the State.

Implications

None.

Revenue

Direct and indirect income generated by the exploration for, discovery of, and mining of new mineral deposits.

Duration

Three years for the financial years 1999/2000 to 2001/2002.

Funding

The project is currently funded from the Department of State Development's ATI budget.

Future funding requested by CODES

1999/2000	Cash – General Purpose	\$50,000	
	Scholarship	\$70,000	
	In-kind	\$50,000	\$170,000
2000/2001	Cash – General Purpose	\$50,000	
	Scholarship	\$70,000	
	In-kind	\$50,000	\$170,000
2001/2002	Cash – General Purpose	\$50,000	
	Scholarship	\$70,000	
	In-kind	\$50,000	\$170,000

PROJECT 7:

Facilitate regional development in Tasmania by continuation of the co-operative Regional Minerals Program (RMP) with the Commonwealth Government and the minerals industry

Project Title: Tasmanian Regional Minerals Program

Background

The Commonwealth Government invited the Tasmanian Government to participate with them, and the minerals industries through the Tasmanian Minerals Council, in a Regional Minerals Program. The aim of the program is for a co-ordinated regional approach to encourage the development of new mines, mineral processing and related infrastructure.

The project would involve officers from both governments, industry, and external consultants and would take approximately two years. The cost to Tasmania would be around \$300,000, with the Commonwealth Government and industry contributing similar amounts to the project.

The proposal will be based on the concept of a 'Western Tasmanian Mineral Province'. The present known extent of the Province has two components, one onshore and one offshore.

The aims of a Tasmanian RMP would be to:

- make existing mining and mineral processing operations more cost effective;
- to lower the development cost of new projects; and
- to gather remote-sensing data to facilitate mineral exploration.

It is anticipated that a Tasmanian RMP would consist of:

- A regional study of existing projects, those that are about to come on stream, and those in the planning stage. It will look at the existing operations, identify common elements or future needs in infrastructure, such as water, roads, rail, power, gas, etc. not only for mining but also for on-site smelting and associated support industries.
- Obtain, with the aid of the Commonwealth Government's Australian Geological Survey Organisation, modern remote-sensing data over areas where such data do not presently exist. Mineral Resources Tasmania would undertake geological field mapping to produce up-to-date digital geological maps of areas not currently covered to a standard acceptable to industry.

This would lead to:

- a regional development plan to identify the infrastructure needed to support an expanded industrial base in Tasmania; and
- a regional geoscientific database of the standard required to encourage and expedite mineral exploration.

Description

A Regional Minerals Program (RMP) is a tripartite program, between the Commonwealth and State governments and private industry.

The purpose of the initiative is to improve investment potential and job opportunities in new and existing resource developments.

The development of the RMP would occur in two stages:

1. A review of existing infrastructure synergies for operating and planned resource developments in western Tasmania; and
2. Assessment of the level of geoscientific work required to provide data of a standard acceptable to industry for mineral exploration.

Output Link(s)

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

This project is part of the ongoing acquisition of data for promotion of Tasmania to the mining and mineral processing industries.

Production System

The first phase of the RMP, that of investigating the infrastructure synergies for existing and planned resource developments, would be undertaken by an external consultant but with information provided by the State Government and private industry. The consultancy would be funded by the three parties.

The second phase, that of obtaining remote sensing geoscientific data to a standard acceptable to industry, would be funded by the Commonwealth Government.

Users

The Minister, exploration and mining industries, primary industries and building construction industries, State and Local Government agencies, research institutions, Commonwealth Government agencies.

Alternatives

The only known alternative for undertaking a Regional Minerals Program is for the Tasmanian Government to fund the whole process. The alternative has been rejected because of the cost implications.

Implications

A Regional Minerals Program will allow Tasmania to produce a coherent strategic plan for resource development and infrastructure for the next 25 years. Such a plan will help lower the costs to existing mines and future project developments and provide better information for mineral and petroleum exploration. If the initiative is not undertaken, *ad hoc* development and a lack of knowledge of infrastructure synergies will continue to cause higher cost structures for resource developments in western Tasmania.

Revenue

Direct and indirect income to government generated by the mineral exploration and mining industries during exploration for, discovery and mining of new mineral deposits.

Duration

This initiative requires specific funding for one year to undertake the consultancy phase to study infrastructure synergies.

Funding

1999/2000

\$150,000

PROJECT 8:

To investigate acid drainage problems and prepare an inventory of affected sites and potential risks so that remediation programs may be undertaken for acid producing soils and acid mine drainage problems at abandoned mine sites

Project Title: Acid Drainage Study

Description

Acid drainage is an insidious problem affecting soils and waterways. There are two sources, with the most apparent being discharges from abandoned mines. However, naturally acid soils or pyritic rocks close to surface can readily produce acid if disturbed by earthworks or by the clearing of vegetation.

Outcomes

To produce an inventory of sites requiring remediation and areas which require appropriate development controls.

Output Links

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment interpretation and publication.

Policy Objective

Objective contained in the draft State Policy on Water Quality Management.

Production System

The project will result in an inventory of sites producing acid drainage and identify areas requiring development controls.

Users

The Minister, DIER Executive, Mineral Resources Tasmania, Department of Primary Industries, Water and Environment, Forestry Tasmania, HEC, the mining industry, local councils, developers and the general public.

Alternatives

There are no alternatives to this study, which will provide planning information related to acid drainage.

Implications

There is already a legacy of polluting leachates emanating from mineralised areas and regions of acid soil. Inappropriate development will exacerbate these problems and create additional hazards.

Revenue

The funds spent on this project will result in a cleaner environment for all Tasmanians, with subsequent savings in the long term in terms of health and water quality.

Duration

This initiative requires funding for two years.

Funding

1999/2000	\$70,000
2000/2001	\$70,000

PROJECT 9:

Geoscientific information for land use planning

Project Title: Geoscientific information for land use planning

Background

Fund a 'Land Use Planning Initiative', at a one-off project cost of \$165,000 over two years, and then an ongoing cost of \$65,000 for one new staff member, to enable municipal councils to be provided with accurate data to be used in the review and development of their planning schemes and to enhance the work currently undertaken by the Engineering Geology and Groundwater Section of Mineral Resources Tasmania.

In drawing up Municipal Plans, industrial, mineral resources and community service issues must be covered. These include:

- landslides;
- construction materials;
- quarry sites;
- groundwater reserves and use;
- mineral fields.

Provision of adequate geoscientific advice to councils for the preparation of planning schemes is growing into an important segment of Mineral Resources Tasmania's business. Tasmania's development policy has been reformed by the introduction of the environmental and planning package of legislation, including the new *Local Government Act*. The latter requires regular review of planning schemes by councils.

Planning schemes were intensively reviewed during 1995 because of the above and because of planning consolidation following council amalgamation. As MRT did not have prior knowledge of the impact of the reviews on our work load, no budget or manpower planning was made.

It is estimated that a suitably qualified person will be required for 18 months to two years at a budget of \$165,000 to complete this project, with the person then becoming part of the permanent Engineering Geology/Groundwater Section to continue working on land management data associated with local government and to help with the expanding role of this Section (Appendix 4).

The Department has a function under the *Local Government Act (Section 36, Building and Miscellaneous Provisions) 1993* to declare landslide areas where considered appropriate. As well as landslide risk, information related to other foundation problems, such as expansive or reactive soil, soils with low bearing capacity, and soils having erosion potential, should continue to be collected.

The Department administers the *Groundwater Act 1985*, and the collection of groundwater information and its collation is a continuing activity. Groundwater quality throughout much Tasmania is good and groundwater can be used for a range of purposes. There is a need to ensure that the water quality is maintained as near as possible to the present quality and that groundwater is not contaminated by inappropriate land use.

There is a need to continue the monitoring of groundwater, particularly with respect to use, variation of water tables and changes in quality.

The construction industry is dependent on supplies of clay, sand, gravel and crushed metal for its continued operation. There is a need for long-term supplies to be identified, particularly around the main population centres.

Description

This project will provide up-to-date geoscientific information to land use planners, particularly local government, for the preparation of planning schemes so that issues concerning the mining industry, groundwater resources, foundation conditions (including landslide risk), and construction materials are taken into account in the preparation of these schemes.

Tasmania's development policy has been reformed by the introduction of new environmental and planning legislation, including the *Local Government Act 1993* which requires regular reviews of planning schemes. The preparation of comprehensive geoscientific information packages for planning schemes is a new function for the Department.

Outcomes

- Ensure that areas with mineral deposits and construction materials are suitably zoned to allow for future extraction.
- Ensure that groundwater resources have adequate protection from land use activities that may cause pollution.
- Ensure that areas with known foundation problems, including the potential for landslide, are clearly indicated on planning schemes.

Output Link(s)

Mineral Resources Tasmania Output – Geoscientific data collection, storage and analysis, assessment, interpretation and publication.

Policy Objective

Legislation requires regular reviews of local government planning schemes, and this provides an important opportunity to input geoscientific information into the process.

MRT has a function under the *Local Government Act 1993* to declare landslide areas where appropriate. Large tracts of land throughout Tasmania are subject to landslide.

MRT administers the *Groundwater Act 1985*, and the groundwater resource needs to be protected against contamination and sterilisation of potential supplies.

Production System

The supply of relevant geoscientific data to local government (and other land use planners) will result in the following outputs:

- Geological maps from which geological issues specific to the needs of planners and land managers can be extracted.
- The identification of areas on existing planning schemes with inappropriate zoning as far as resource use is concerned.
- Outline of areas that produce or have potential to produce minerals and construction materials.
- Information on land stability, foundation conditions and groundwater in a form readily accessible to planners.

Users

Local government, planners and land managers, consulting engineers, Mineral Resources Tasmania, Department of Primary Industries, Water and Environment, Forestry Tasmania.

Alternatives

Mineral Resources Tasmania has a large body of information on geology, mineral resources and construction materials. As a result of the Division's functions in administering the *Groundwater Act 1985*, and declaration of landslide areas where appropriate under the *Local Government Act 1993*, MRT has accumulated a large store of information. Much of this information is widely dispersed and not in a readily useable form.

An alternative to this initiative is for local government and other land use planners to assemble the information. For each council to undertake the work separately, rather than having a dedicated person, would be cumbersome. In addition, some of the information is on sensitive or restricted files and maps.

Implications

It is essential that geoscientific data on resources and foundation conditions are considered in making land use decisions. Resources have been locked up by previous decisions and the potential for sterilisation will continue if relevant information is not supplied.

Groundwater resources, at a time when use is increasing, will be more subject to contamination if resource location and vulnerability to pollution are not considered.

Damage to homes and other structures as a result of landslide and other foundation problems will continue to occur, probably at more regular intervals.

Revenue

Direct and indirect income as a result of reserving areas for future extraction of resources.

Duration

Initially two years set up and then one FTE on a continuing basis to allow for on-going maintenance, upgrading and provision of data to clients.

Funding

1999/2000	\$165,000
2000/2001	\$65,000
2001/2002	\$65,000
2002/2003	\$65,000
2003/2004	\$65,000

APPENDIX 1

Detailed background for Project 1

MIDMIN, NORWESTMIN and SOUTHGOLD

The long-term viability of the Tasmanian mining industry depends on mineral exploration. With currently operating mines entering their mature stage, new deposits must be found so that they are ready to be brought on-stream as existing mines are exhausted.

To increase the area of Tasmania under exploration licence, the State needs to attract industry to areas not well explored by modern techniques. To do this, MRT proposes to develop up-to-date data packages over areas of Tasmania where mineral exploration activity is not occurring but where some evidence of mineralisation is known.

To help accomplish this outcome, the *aim* of this new initiative is:

- to increase the area of Tasmania that is regarded as 'highly prospective' for metallic and non-metallic minerals.

The cost of the project will be \$4.5 million over five years at a rate of \$1 million per year for the first three years and \$750,000 per annum for the period 2002/03 to 2003/04. This project will provide up-to-date geological and geochemical data and create a more competitive mineral exploration investment climate in Tasmania. The project will provide a major incentive to mineral and oil and gas exploration groups to invest in Tasmania, which is essential for the development of the mineral sector.

The project has specific data delivery targets and will be reviewed annually.

The geological data, when used in conjunction with the geophysical data generated by Project 3, will allow industry to examine geological structures in three dimensions and assess prospectivity as part of their planning for exploration activities. These methods can be successfully used to map the geological structure in areas where prospective rocks are obscured by younger, non-mineralised cover rocks.

With such data Mineral Resources Tasmania will be able to assess the prospectivity of the Midlands and the eastern/southeastern part of Tasmania. This area is covered by dolerite and flat-lying sedimentary rocks but has the potential to be underlain by mineralised rocks similar to those found in western and northeastern Tasmania.

Basic data and assessment packages will be produced annually for, and promoted to, the mineral exploration industry and other interested parties.

The program is based on the existence of evidence which suggests that:

1. The rocks of the Badger Head and Frankford areas are correlates of rocks which host gold mineralisation at Lefroy and have experienced the same deformational and fluid flow events responsible for gold mineralisation at Lefroy and Beaconsfield.
2. There are rocks similar to those hosting the Renison tin mine cropping out in the Connorville area.
3. A diamond drill hole put down by MRT in 1971 intersected rocks with an identical chemical composition to part of the Mount Read Volcanics near the Henty gold mine.
4. There are known occurrences of, and potential for, industrial minerals and gold in exposed basement rocks in areas such as the Weld River and Maydena. These areas will be mapped and assessed in the early stages of the project, with a view to encouraging further active exploration. Information gained from studies of the exposed basement windows will be important for interpreting the nature of the basement rocks in covered areas.

5. A significant amount of gold (estimated 3000 ounces) was won from the Cygnet goldfield around the turn of the century, from veins and alluvial sediments derived from Cretaceous syenite dykes. This poorly-known goldfield will be mapped and studied to determine the mode of occurrence of the gold and the potential of the field for further exploration.

Other occurrences of metallic and industrial minerals within the cover sequences will also be investigated. These include base metal sulphides and gold, in places associated with dolerite contacts, as well as stone, coal and aggregate resources.

The initiative will consist of a number of phases, which will include:

1. Assessment of the cover sequences in terms of thickness, nature of dolerite intrusions, and depth to basement etc., to assist in the interpretation of geophysics and targeting of drill holes to basement. Reconnaissance mapping and compilation of data on these sequences will be undertaken, commencing in the central northern area adjacent to older, outcropping gold-bearing sequences.
2. Aeromagnetic and gravity surveys will be conducted as part of the overall project, to assist in interpreting the basement structures and rock types. Funding for these surveys will be a major part of this initiative.
3. Deep drilling through the cover rocks to test for basement structures and rock types will be undertaken on the basis of the integrated geological-geophysical interpretations.

Background activities already under way

1. Re-interpretation of the structural controls on gold mineralisation has shown that the major gold deposits in northern Tasmania were introduced during a deformational event which took place about 380 million years ago. This work has also thrown into doubt a long held theory that the Tamar estuary marks a fundamental break in the geological structure of Tasmania. One exciting implication is that the rocks of the Badger Head–Frankford area are about 500 million years younger than previously thought and have high prospectivity for gold deposits of the Beaconsfield and Lefroy types.
2. Mapping in the Weld River area has resulted in the production of the Weld, Maydena, Skeleton and Nevada 1:25 000 scale geological map sheets. Compilation of the Picton sheet is currently underway. Production of a report on the geology and prospectivity.
3. Mapping, sampling and laboratory studies (fluid inclusions, petrology, mineralogy, isotopes) of the Cygnet goldfield, and preparation of report on gold occurrence and prospectivity.
4. Compilation of existing data on cover sequences in the southeast area, combined with reconnaissance mapping (mainly road traverses) of strategic areas, to assist in the production of 1:25 000 scale geological maps of the Maydena–Weld area, and to provide assessment of cover thickness and possible basement structures. This work is to be on-going.

Future work

1. Mapping of basement windows in the Port Sorell–Frankford, Gog Range–Golden Valley, Connorville and Picton–Huon areas; production of maps and report.
2. Further studies of mineralisation in cover sequences, including dolerite-related mineralisation.
3. Continued assessment of cover sequences in the southeast and central areas.
4. Integration with the detailed aeromagnetic coverage and infill gravity coverage and interpretation of basement geology.
5. Diamond drilling of selected basement target(s).

MIDMIN

With the imminent re-opening of the Beaconsfield gold mine, there is growing awareness that Tasmania's gold potential is largely unfulfilled.

The NETGOLD Project achieved its aim of attracting investment in gold exploration and broadening the range of mining companies exploring in Tasmania. However, much of the exploration was based on techniques that have proved to be successful in Western Australia, rather than addressing the specific geological setting of the Tasmanian deposits. Realising this, MRT recently conducted a project on the structural controls of gold mineralisation in northeast Tasmania. This work demonstrated, for the first time, that gold mineralisation at Mathinna, Lefroy and Beaconsfield was introduced during the same structural event.

An unexpected, and welcome, spin-off from the study was that rocks in the Badger Head and Frankford areas underwent the same geological history as the rocks further to the east and therefore are highly prospective for gold. Furthermore, there are indications that some of the gold-bearing structures may have been reactivated and are possibly traceable into the younger cover rocks.

The aims of the MIDMIN Project are to:

- ❑ document the geological nature of the potentially auriferous rocks west of Beaconsfield and map major structures that have the potential to control gold mineralisation;
- ❑ map the eastward continuation of the Mount Read Volcanics (MRV) in the Gog Range–Golden Valley area and correlate these rocks with those in the main mineralised belt of MRV in western Tasmania;
- ❑ define the association of volcanic and carbonate rocks in the Connorville area;
- ❑ in association with interpretation of the geophysical data generated by Project 3, determine the depth and nature of the potentially mineralised basement rocks below the cover sequences of the Tasmania Basin and test some areas of shallow cover by drilling.

SOUTHGOLD

A revival of gold mining in southeast Tasmania is the aim of SOUTHGOLD. The Cygnet area was mined for gold around the turn of this century, yielding approximately 93 kg of metal, which would have a contemporary value of \$1.5 million dollars.

Scientific data are needed to support the notion that further gold-bearing mineralisation occurs in the southeast. Such data would encourage exploration in the area, just as the NETGOLD project of 1993/94 resulted in a sharp rise in exploration in the northeast. Exploration brings its own economic benefits, as well as making discovery possible.

The SOUTHGOLD project will:

- ❑ extend modern geophysical data coverage to the southeast;
- ❑ generate new economic activity in the region;
- ❑ capitalise on the expertise and experience gained by Mineral Resources Tasmania during the award-winning NETGOLD project;
- ❑ launch an eight-year program of geoscientific data gathering that will keep Tasmania competitive in the interstate and international race for exploration dollars.

As many of Tasmania's mines enter a mature stage in their development, it is imperative that new deposits be located to ensure the long-term viability of the industry. Tasmania cannot afford the collapse of a sector that makes such a massive contribution to the State's economy.

To widen the surface area of Tasmania which is attractive to explorers, the State must extend the present coverage of up-to-date geophysical and geological information. The MIDMIN, NORWESTMIN and SOUTHGOLD Projects address this lack of modern information. The projects focus on regions most

likely to contain commercial minerals – both metallic and non-metallic. Target areas, aside from the southeast, include the extreme northwest and areas where the rims of a massive basin-like formation of potentially highly mineralised rock approach the surface. These rocks, which appear to have similar characteristics to those hosting major West Coast mineral deposits, underlie the Midlands and are covered by surface deposits varying from relatively shallow to more than 1000 metres deep.

NORWESTMIN

Tasmania has a number of active world-class mines, mainly in western Tasmania, within a variety of geological rock associations. There are also other proven mineral resources for which new technologies are now allowing extraction. Other, poorly-defined resources, will become viable following the development of new extraction or processing techniques.

Most of the areas of high prospectivity in western and northeastern Tasmania are already under active exploration for further mineral deposits. Thus, for the future of the mineral exploration industry, which at the moment is worth nearly \$15 million a year to Tasmania, the prospectivity of other areas of Tasmania needs to be increased by the production of data packages and promotion, so that exploration commitments can be obtained from industry.

Two areas, one in the far northwest and the other over the Midlands area, have evidence of mineralisation but no modern data sets are available to entice exploration companies to explore these areas.

The aim of the NORWESTMIN project is to:

- determine the nature of the basement rocks;
- assess the potential for mineral deposits in the basement and cover sequences; and
- provide and promote data packages to encourage and assist exploration in these areas.

Much of Tasmania does not have a coverage of acceptable quality geophysical data. Mineral Resources Tasmania has acquired aeromagnetic data in parts of western and northeastern Tasmania since 1980, and gravity data have been collected since the 1960s. Although these data are still referred to by explorers, they are limited in utility by the levels of technology and available geological knowledge at the time of acquisition. The remainder of the State has only sparse reconnaissance coverage.

The MIDMIN, SOUTHGOLD and NORWESTMIN Projects are designed to achieve increased and better focussed mineral exploration in order to maximise the probability of discovery of the new mineral deposits needed to secure the future of the Tasmanian mining and mineral processing industries.

Funding

Year 1	NORWESTMIN and MIDMIN	\$1,000,000
Year 2	NORWESTMIN and MIDMIN	\$1,000,000
Year 3	NORWESTMIN and MIDMIN	\$1,000,000
Year 4	SOUTHGOLD and MIDMIN	\$750,000
Year 5	SOUTHGOLD and MIDMIN	\$750,000

APPENDIX 2

Detailed Background for Project 3

Acquisition of Remote Sensing Data

PROJECT 3: To undertake remote sensing data capture across strategically important areas of Tasmania

Project Title: Aeromagnetic, Radiometric and Gravity Surveys

Proposed aeromagnetic plus radiometric and gravity surveys

Area 1 Mt Read Volcanics – western Tasmania (1999/2000)

The present coverage of the Mt Read Volcanics in this area is irregular. There have been a large number of small surveys flown by companies, with different specifications and different parameters being recorded. It is proposed that this area be covered by a regional survey to be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to encourage exploration activity. In accordance with modern practice, company follow-up would use line spacings of between 50 and 100 metres.

Total line kilometres	15 600
Estimated cost	\$655 000

Area 2 Mt Read Volcanics – northern Tasmania (2000/2001)

The present coverage of the Mt Read Volcanics in this area is small compared to the known outcrop. Few surveys have been flown, with the most comprehensive being a fixed-wing survey flown for MRT using a 500 m line spacing in 1985. It is proposed that this area be covered by a regional survey to be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to encourage exploration activity. In accordance with modern practice, company follow-up would use line spacings of between 50 and 100 metres.

Total line kilometres	15 600
Estimated cost	\$655 000

Area 3 – Northwest Tasmania (2003/2004)

Between the boundaries of the 1993 Arthur Lineament survey and the 1996 Arthur–Pieman survey lies an area with poor ground access and old low-quality data coverage. The newer surveys were both flown with 200 m line spacing and recorded magnetic, radiometric and digital terrain data. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide an incentive for greater exploration of the area. In accordance with modern practice, company follow-up would use line spacings of between 50 and 100 metres.

Total line kilometres	11 500
Estimated cost	\$481 000

Area 4 - Offshore northern Tasmania (2003/2004)

There is a gap between the 800 m spaced TASGO coverage of Bass Strait and the onshore aeromagnetic coverage with 500 m spacing or less. In this gap the data have 1500 m line spacing. It is proposed that the gap be flown with 800 m line spacing to match the specifications of the TASGO survey, using a fixed-wing aircraft. This will enhance our ability to link onshore and offshore magnetic anomalies.

Total line kilometres	8720
Estimated cost	\$105 000

Area 5 – Northeast Tasmania (A) (2001/2002)

This survey will complete coverage of the prospective Mathinna Group rocks and provide magnetic and radiometric data to assist with mapping of the tin granites. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide an incentive for greater exploration of the area. In accordance with modern practice, company follow-up would use line spacings of between 50 and 100 metres.

Total line km	22 500
Estimated cost	\$946 000

Area 6 – Northeast Tasmania (B) (2001/2002)

This survey will provide magnetic and radiometric data to assist with mapping of the tin granites. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide an incentive for greater exploration of the area. In accordance with modern practice, company follow-up would use line spacings of between 50 and 100 metres.

Total line kilometres	16 520
Estimated cost	\$694 000

Area 7 – Northern Midlands (1999/2000)

This survey will provide magnetic and radiometric data to assist with determining the nature of the basement under the younger cover rocks in the area. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to assess the mineral resources potential of the area and provide an incentive for greater exploration of the area.

Total line kilometres	31 950
Estimated cost	\$1 342 000

MINERAL RESOURCES TASMANIA PROPOSED AEROMAGNETIC SURVEYS

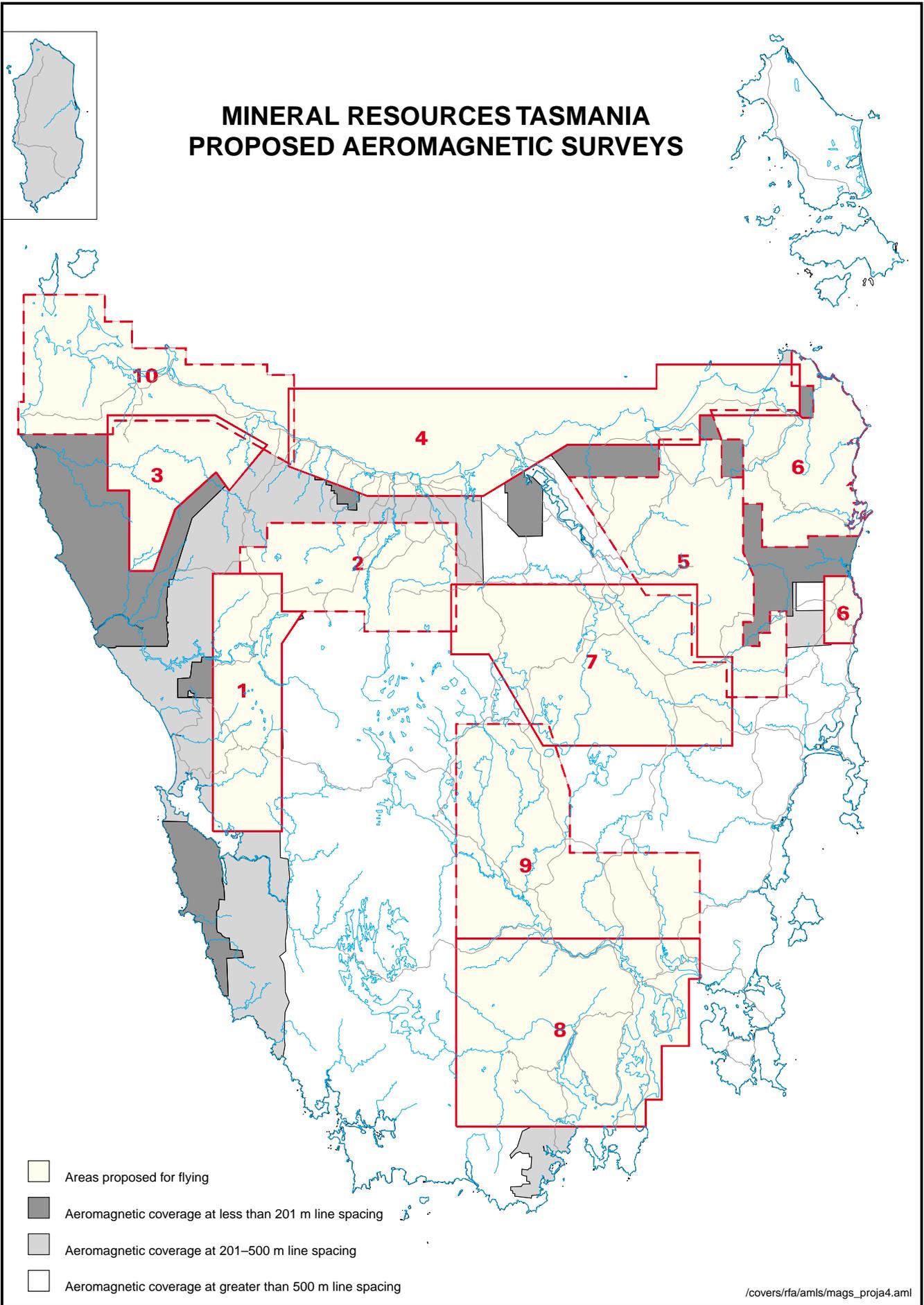


Figure 4

Area 8 – Southern Tasmania (2002/2003)

This survey will provide magnetic and radiometric data to assist with determining the nature of the basement under the younger cover rocks in the area. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to assess the mineral resources potential of the area and provide an incentive for greater exploration of the area.

Total line kilometres	35 570
Estimated cost	\$1 502 000

Area 9 – Central Midlands (2000/2001)

This survey will provide magnetic and radiometric data to assist with determining the nature of the basement under the younger cover rocks in the area. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a helicopter system acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to assess the mineral resources potential of the area and provide an incentive for greater exploration of the area.

Total line kilometres	29 970
Estimated cost	\$1 259 000

Area 10 – Smithton (2003/2004)

This survey will provide magnetic and radiometric data over an area of low-quality data coverage. It is proposed that the area shaded (fig. 4) be flown with 200 m spaced east-west lines using a fixed-wing aircraft acquiring magnetic, radiometric and digital terrain data to provide the basic data necessary to assess the mineral resources potential of the area and provide an incentive for greater exploration of the area.

Total line kilometres	22 260
Estimated cost	\$267 000

Capture magnetic data from old surveys of southwest and parts of offshore Tasmania (2003/2004)

A number of large aeromagnetic surveys were flown in the Tasmanian area before the advent of digital recording. The Encounter Bay Survey in Bass Strait has been recovered as part of a joint AGSO/VDME/SADME/MRT project and provides the only basic magnetic coverage of this area. MRT holds contour maps over much of southwest Tasmania and also for areas off the east and southwest coasts that were not flown during the TASGO Project. The data can be digitised by contractors and converted to digital grid format to extend the coverage around Tasmania.

Estimated cost	\$65 000
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Gravity data acquisition – Midlands (1999/2000 to 2003/2004)

Acquire gravity data over the Midlands and eastern part of the Central Plateau using ground and helicopter access. This work would be undertaken by outside contractors (\$130k, \$190k, \$450k, \$387k, \$543k).

Estimated cost	\$1 700 000
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APPENDIX 3

Detailed background for Project 5

Options for increasing drill core storage capacity

Options

Because of the urgency of the problem and the non-funding of the project over the last three years, consideration is being given to three options for increasing the drill core storage capacity.

These are:

1. Build a new building on the main core library site and install pallet racking. This would give an increased capacity of 169.34 km (Appendix F).
2. Install pallet racking in the Plant Store (building used for parking vehicles) at the old store site. This would give an increased capacity of 188.16 km (Appendix G).
3. Reconfigure the main core library by installing pallet racking instead of the current tray racking for three quarters of the building. This would give an increased capacity of 267 km (Appendix H).

The costs of the three options are not completely known at the moment, but they will be established before the end of December 1998.

Known costs are as follows:

Option 1	\$466,192	Cost per kilometre	\$2,753
Option 2	\$166,653	Cost per kilometre	\$885
Option 3	\$290,712 (partial cost)	Partial cost per kilometre	\$1,089

Details of these costs are given in Appendices C, D and E.

Option 1

Good points:

- all the storage would be at the same site so avoiding having to move the forklift truck between two sites;
- the computer data link would be on the same site as all the core;
- rock cutting saw would be on the same site as all the core;
- it would avoid problems of comparing core from two store sites;
- as only one site was being used the forklift truck would not have to be capable of being driven on the road and could have a greater capacity.

Bad point:

- most expensive option since it involves new building costs.

Option 2

Good points:

- it is the cheapest option as it does not require new building;
- the building is empty so racking and core does not have to be moved first.

Bad point:

- core would be spread between two sites producing operating difficulties, the opposite of the good points for option 1 including the point about the requirement for a road-capable forklift truck.

Option 3

Good points:

- it is the cheap option as it does not require new building;
- it has the advantages of having all core on one site listed for option 1.

Bad points:

- it would require a lot of work to dismantle racking and temporarily store core in the open;
 - the function of the core library would be disrupted while the reconfiguration was taking place;
- although it is clearly a cheap option the costs are not fully known.

Recommendations

MRT will investigate the costings of the three options. The proposed new module is the preferred option if funding is available because it would allow MRT to have an integrated facility on one site and it can be built relatively quickly.

If the new module option is rejected the second preference is to rack and use the Plant Store, in spite of fact of splitting the location of the core, because it can be done most quickly and with least disruption.

Following option 2 MRT should then reconfigure the main core library by sections. On completion of this process there would be a further 455 km of storage capacity than at present. The preferred option of building a new module on the main site would then occur when further capacity was required in the future. The problem with this option is that the government does not own the site and the rent may be far exceed the value of the capacity for storage purposes.

The costing of each option includes the purchase of a forklift truck. If two of the above options were carried out the second option would be cheaper than shown above because the purchase price of the forklift truck would no longer need to be included.

Appendix A

The following data about drill core storage are compiled from appendices C and D of Lan and Skinner (1995). All dimensions in millimetres unless otherwise indicated.

Tray Size	1000 long × 400 deep × 60 high
Tray Capacity	7 metres of drill core (NQ core, diameter 47.6)
Tray Weight (max.)	39.86 kg (assumed maximum density 3.2 g/cm ³)
Pallet Size (unloaded)	1100 long × 1000 deep × 125 high
Pallet Weight (unloaded)	5 kg
Pallet Size (loaded)	1100 long × 1000 deep × 1200 high
Pallet Weight (loaded)	1280.52 (5 + (39.86 × 32)) kg
Pallet Capacity	224 (2 × 16 × 7) metres
Bay Size	2590 long × 1000 deep × 1500 high
Bay Capacity	2 pallets or 248 metres
Aisle	2700 width

Note that the dimension of 60 high for trays is incorrect, as a normal tray suitable for holding core is 50 high. The height of loaded pallet should be 1085 (125 + (16 × 60)) using the incorrect tray height, not the 1200 that was given. Using the correct 50 height for a tray the height of a loaded pallet should be 925 (125 + (16 × 50)).

Appendix B

Data used in calculating storage capacity in this report

Tray Size	1000 long × 400 deep × 50 high
Tray Capacity	7 metres of drill core (core, diameter 47.6)
Tray Weight (maximum)	39.86 kg (assumed maximum density 3.2 g/cm ³)
Pallet Size (unloaded)	1000 long × 1000 deep × 150 high
Pallet Weight (unloaded)	5 kg
Pallet Size (loaded)	1000 long × 1000 deep × 850 high
Pallet Weight (loaded)	1121 (5 + (39.86 × 28)) kg
Pallet Capacity	196 (2 × 14 × 7) metres
Bay Size	2300 long × 1000 deep × 1000 high
Bay Capacity	2 pallets or 392 metres
Aisle	2140 width

Appendix C

Costs for new storage module, taken from Lan and Skinner (1995) except those indicated as having been estimated using a current quote from NS Komatsu as a guide. Note that the costs taken from Lan and Skinner (1995) may need to be adjusted for inflation.

New building (24 × 18 metres at \$550 per square metre)	\$237,000
Site services (including pavement)	\$30,000
Contingency	\$13,000
Racking (estimated on quote for racking for the same amount of core by NS Komatsu)	\$51,840
Fork lift truck (Hyster N30XMH) (quote from NS Komatsu)	\$109,352
Wire guidance (quote from NS Komatsu)	\$10,000
Pallets and trays	\$5,000
Display bench	\$5,000

Additional display area	\$5,000
Total cost	\$466,192

Appendix D

Costs for racking Plant Store at old store site from quote by NS Komatsu, October 1998.

Supply and installation of pallet racking and wire guidance	\$57,301
Fork lift truck (Hyster N30XMH)	\$109,352
Pallets and trays	\$5,000
Total cost	\$171,653

Appendix E

Partial costs for reconfiguration of main core library.

Supply and installation of pallet racking and wire guidance	\$171,360
Fork lift truck (Hyster N30XMH)	\$109,352
Pallets and trays	\$10,000
Total cost	\$290,712

Appendix F

Capacity of pallet racking in the proposed new module

The capacity of the new module building is calculated using the data from Appendix B. There is room for racks 9 bays long. There would be 8 racks 6 levels high. The capacity calculation is as follows:

total number of bays	432 ($8 \times 9 \times 6$)
total capacity	169.34 ($432 \times 2 \times 196$) km.

Appendix G

Capacity of pallet racking in the Plant Store at the old store site

Using the data from Appendix B the best arrangement is for the racks to be aligned parallel with the longest dimension. There is room for racks 10 bays long. There would be 4 racks 4 levels high, 4 racks 5 levels high, and 2 racks 6 levels high. The capacity calculation is as follows:

total number of bays	480 ($10 \times ((4 \times 4) + (4 \times 5) + (2 \times 6))$)
total capacity	188.16 ($480 \times 2 \times 196$) km.

Appendix H

Capacity of pallet racking in three quarters of the main core library building

The capacity of the new module building is calculated using the data from Appendix B. The building can be divided into three modules, each of which are a quarter. In each module there is room for racks 14 bays long and there would be 6 racks 4 levels high and 2 racks 5 levels high. The capacity calculation is as follows:

total number of bays	1428 ($(3 \times 14 \times 6 \times 4) + (3 \times 14 \times 2 \times 5)$)
total capacity	559.78 ($1428 \times 2 \times 196$) km

APPENDIX 4

Detailed background for Project 7

Western Tasmania Minerals Province study under the Regional Minerals Program (RMP)

Under the auspices of the Australian and New Zealand Minerals and Energy Council (ANZMEC), a Regional Minerals Program (RMP) has been developed to facilitate regional development.

The program was created following the success of the Carpentaria–Mt Isa Minerals Province Study (Northern Australia), which has been used to facilitate regional development in that area. The study enabled a co-ordinated, tripartite approach to the provision of infrastructure necessary for the development of this region.

The Carpentaria–Mt Isa study is now seen as a model for facilitating development in other regions where major projects are being undertaken.

A similar initiative is planned for the Central Goldfields area surrounding the southern portion of the Goldfields gas pipeline in Western Australia. This initiative is being investigated by the Commonwealth and Western Australian Governments.

On 4 August 1995, at ANZMEC 28 in Perth WA, the Hon. David Beddall, while speaking to Agenda Item 8 – *Mineral Province Enhancement Program, Agenda*, extended an invitation to “...take such an approach in Tasmania, Broken Hill and other areas.”

Following ANZMEC 28, States other than WA and Queensland have been requested to follow-up on the Commonwealth’s invitation by proposing suitable projects for funding under this program.

Project Proposal

This proposal will be based on the concept of a ‘Tasmanian Mineral Province’. The present, known extent of the Province has two components – onshore and offshore:

- The onshore area covers all known mineralised parts of western, northern and northeastern Tasmania. Southern extensions of the onshore areas are found around Glenorchy, Cygnet and near the Weld River. The presence of these extensions indicates that the mineral province may extend under the younger cover of central and southeastern Tasmania.
- The offshore component includes the southern extension of the Otway Basin west of King Island, the Sorell Basin off the west coast of Tasmania, and the Bass Basin, which covers most of Bass Strait. This component also includes the largely unexplored areas of the Eastern and South Tasman Rise.

The aims of a Tasmanian RMP would be to:

- make existing mining and mineral processing operations more cost effective;
- lower the development cost of new projects; and
- gather remote sensing data to facilitate mineral exploration.

The development of a proposal for a Tasmanian RMP would involve two stages. The first stage would be a study of the infrastructure synergies necessary for resource development in remote areas. The second stage would be to assess the level of geoscientific work required to provide data of a standard acceptable to industry for mineral exploration.

It is anticipated that the two phases of a Tasmanian RMP would consist of:

Phase one

- A regional study of projects which are already operating, those that are about to come on stream, and those in the planning stage. This will look at the existing operations, identify common elements or future needs in infrastructure, such as water, roads, rail, power, gas, etc., not only for mining but also for on-site smelting and a diversity of development not currently possible;
- A regional study of existing, planned and potential industry projects. This would include identifying common elements of present and future infrastructure needs of mining and mineral-related operations, such as water, road, rail, power and gas supplies. The study would include consideration of the diverse developments not yet possible because of a lack of co-existing infrastructure.

The result of this phase would be a regional development plan to facilitate the provision of better infrastructure for existing and future projects.

Phase two

- Obtain, with the aid of the Commonwealth Government's Australian Geological Survey Organisation, modern remote-sensing data over areas where such data do not presently exist. Mineral Resources Tasmania would undertake geological field mapping to produce up-to-date, digital, geological maps of areas not presently covered to a standard acceptable to industry.

The results of this phase would be a regional geoscientific database of the standard required to encourage and expedite mineral exploration.

Phase 1 — Mining and mineral processing component of the project

The northwest region of Tasmania is very rich in mineral deposits, and there is a high probability that further substantial mineral resources will be discovered as a result of the ongoing exploration in the area. A review of the operating and potential mining and mineral processing projects reveals the importance of the area to the State, and hence the need to improve the infrastructure in the area.

This review will identify currently operating and potential mining and mineral processing projects and indicate the infrastructure required for such projects to be undertaken or expanded.

Current Mining Operations

Hellyer mine

Western Metals Resources Limited's Hellyer mine, situated some 65 km south of Burnie, is a major base metal mine which has an annual production of about 250 000 tonnes of zinc and 60 000 tonnes of lead in concentrates from 1.3 million tonnes of ore mined. The zinc concentrate is fed to the PasmaHobart Smelter at Risdon, near Hobart, while the lead concentrate is exported. The mine reserves are expected to be exhausted early next century. New discoveries are needed to extend the useful life of this modern processing plant.

Rosebery mine

PasmaHobart Mining's Rosebery mine, situated 90 km south of Burnie, is also a major base metal mine. Annual production is about 114 000 tonnes of zinc and 20 000 tonnes of lead in concentrates, plus 250 kg of gold in doré. The zinc concentrate is processed at PasmaHobart Smelter, while the lead concentrate is exported. A \$40 million underground exploration program is in progress to confirm identified extensions of the ore bodies at depth.

Renison tin mine

The Renison tin mine, situated 15 km southwest of Rosebery, has been recently purchased by Murchison United NL. It is one of the world's largest underground tin mines, producing 8300 tonnes of tin metal in concentrates per year, all of which is exported. An ore hoisting shaft for the Rendeep ore bodies was commissioned in July 1996.

Mount Lyell mine

The Mount Lyell mine, located at Queenstown and 120 km south of Burnie, is a large copper mine. Until recently it was owned by Renison Goldfields Consolidated, who closed the mine at the end of 1994. The leases have been taken over by Gold Mines of Australia Ltd, with the mine reopening in December 1995. \$60 million has been spent on the Phase 1 redevelopment to allow an annual production rate of 2.5 million tonnes of copper ore.

The company is currently completing a feasibility study to increase production to 3.5 million tonnes per annum. Approval of this project, which will cost between \$20 and \$30 million. Investigations are continuing into the on-site production of copper metal, with the company confident that on-site production will have commenced by the year 2000.

Henty gold mine

The Henty gold mine, owned by Goldfields Tasmania Ltd, is located in the Henty Valley, north of Queenstown. The mine was officially opened in July 1996. The deposit is estimated to contain 500 000 tonnes of ore with a grade of 27 g/t gold.

Savage River mine

Until recently Savage River Mines, owned by Pickands Mather Ltd, operated an open-cut magnetite mine located 75 km southwest of Burnie, and a pelletising plant at Port Latta, where the magnetite is pelletised and partly reduced before export across a dedicated loading wharf. Pellet production was 1.6 million tonnes per annum, but the plant has a capacity of 2.5 mtpa. The mine ceased operating in April 1996 and the treatment of stockpiled ore had ceased by the end of 1996. Final shipment of iron ore concentrates and pellets was made in March June 1997.

Following signing of an agreement between the Tasmanian Government and Goldamere Pty Ltd (trading as Australian Bulk Minerals), redevelopment of the mine commenced from March 1997. A production rate of 2.5 mtpa of concentrate is envisaged. The feasibility study by Goldamere indicates a potential mine life of 25 years by deepening of the existing open cut with potential for subsequent underground mining. ABM are also seriously considering downstream processing of the concentrate to either hot briquetted iron or pig iron.

Kara mine

The Kara mine, operated by Tasmania Mines Ltd, is an open pit scheelite-magnetite mine, located 25 km south of Burnie. The principal product is magnetite for heavy mineral separation and for blast furnace feed.

Corinna mine

The Corinna mine is a small open-cut silica mine located south of Savage River. A high-grade silica flour is produced in a beneficiation plant located near Burnie.

Circular Head Dolomite

A quarry is operated near Smithton to produce about 90 000 tpa of dolomite for agricultural and metallurgical use.

Mole Creek Limestone

A quarry operated at Mole Creek produces about 70 000 tpa of high quality limestone, including high-grade material for use in the Pasminco Hobart Smelter zinc refinery. High grade agricultural lime products are also produced.

Future Mining Projects

The Tasmanian West/North West Mineral Province is a highly prospective area with a wide range of geological environments. The area is certain to produce further mineral discoveries and mines beyond those already operating. Among the potential developments are the following.

Gold

The recent opening of the Henty gold mine, the re-opening of the Tasmania mine at Beaconsfield, and the NETGOLD project, have highlighted Tasmania's potential as a high-grade gold producer.

Copper

There are a number of active exploration prospects in the area, with a substantial likelihood of success.

Magnetite

Savage Resources Ltd holds a licence over a substantial reserve of magnetite at Long Plains, close to the Savage River open pit. Future development of this deposit is highly probable.

Lead and Zinc

As with copper, there is considerable exploration for lead and zinc, with the aim of finding new deposits and extending the existing mine reserves. Pasminco Mining is undertaking a \$40 million underground exploration project at their Rosebery mine, and Western Metals Resources Ltd is seeking a new deposit to extend the life of the Hellyer mine. Exploration is also being undertaken to find lead-zinc deposits in limestone, similar to deposits in Ireland.

Natural iron-based pigments

Savage Resources Ltd holds a mining lease, over a deposit of umber, close to the Savage River mine. It is proposed that this deposit should be developed and the umber upgraded to a natural pigment. Magnetite can be similarly upgraded, and these two materials have the potential to become the basis for a pigment industry in Tasmania.

Magnesite

The area contains significant deposits of magnesite that could potentially be developed into a calcined magnesia project. Studies are currently being undertaken to assess the feasibility of mining these huge resources to develop a magnesium metal based sector for Tasmania.

Mineral Processing Plants

There is a wide range of mineral processing plants in the area, and these have tended to push the available infrastructure, particularly electric power, close to the limit. More developments are possible with better infrastructure, especially the development of the Yolla natural gas field in Bass Strait.

The following mineral processing plants are currently operating in the area under consideration:

Port Latta pelletising plant

Australian Bulk Minerals have refurbished the facility at Port Latta and will use this plant to produce 2.5 million tonnes a year of hematite pellets from magnetite ore.

Goliath Portland Cement Company Ltd

Goliath Cement operates a modern low-cost cement plant at Railton near Devonport. Following a recent expansion project, the plant now has an annual production capacity of one million tonnes of cement. A one million tonnes per year limestone mine is operated on the site to feed the plant. A further doubling of this capacity is actively being considered.

Potential Mineral Processing Plants

The Yen/Australian Dollar exchange rate and increasing transportation costs are making the on-site processing of minerals and metal concentrates more attractive. However, the poor level of infrastructure development in northwest Tasmania could hinder further mineral processing opportunities. Given adequate development and favourable markets the following projects could be possible:

Copper smelting

Copper Mines of Tasmania, the new operator of the Mount Lyell mine, is investigating the possibility of constructing a copper processing plant on site. This would be a major power consumer, and hence an upgrading of the supply would be required. The project would become more attractive if other copper deposits are discovered in the vicinity.

Hellyer tailings processing plant

A study is being undertaken by Western Metals Resources Ltd to investigate the recovery of zinc and other metals from the Hellyer mine tailings. If the project is successful the plant could be a considerable energy consumer, of both natural gas and electric power.

Tin smelting

With the planned further development of the Renison tin mine by Murchison United Limited, smelting of the concentrate on site could again become attractive.

Yolla Gas Field

Talks are continuing between the consortium holding a Retention Licence over the Yolla gas field and Duke Energy on behalf of the Tasmanian Government. The onshore delivery of gas from the Yolla field is dependent on reserves and identification of a suitable market prior to future drilling to assess the size of the resource.

Dolerite super quarry

A large area of dolerite at Tippoogorree Hills, near Bell Bay, is currently held under a Retention Licence. It is proposed to mine about one million tonnes of rock per year to supply the Pacific-Japan Region with building and road construction stone.

Magnesite processing

Investigations are continuing on the use of the substantial deposits of magnesite in the northwest area for feedstock to produce magnesium metal. The establishment of one or more mines and processing plants will require a substantial level of infrastructure development in the area, and a probable requirement for the supply of natural gas to Tasmania for use in processing.

Other mineral processing possibilities

The Tasmanian Government is actively promoting the development of the area in the vicinity of the Port Latta pelletising plant as a future Heavy Industry Zone, given that the area has a history of this type of operation. Should this proceed, there would again be an increased need for infrastructure development in the region.

Infrastructure Requirements

Natural gas

Access to natural gas is an important element for several large projects currently being considered in Tasmania. These projects include copper smelting at Mt Lyell, magnesite processing, treatment of Hellyer tailings, and downstream processing of iron ore from Savage River. Except for the Savage River project, the absence of natural gas should not prevent these projects going ahead, but the availability of gas would greatly enhance their viability.

Power

The West Coast has a poor electricity supply system. Despite the fact that much of Tasmania's electricity is generated in western Tasmania, there are a number of limitations upon the system in that area. Any large development on the West Coast would require a much improved electrical infrastructure.

The requirements for a power system upgrade would include lines, substations and the channelling of power towards, rather than away from, the West Coast.

Road

Increased development on the West Coast is likely to lead to significant demands upon the current road network. While some roads on the West Coast have been recently reconstructed, large areas of the West Coast remain sub-standard for bulk transport by road.

It would be necessary to improve the road infrastructure on the West Coast to be able to withstand regular transport by heavy trucks.

Rail

The current rail system on the West Coast is a 134 kilometre long private line owned by Australian Transport Network. This line runs from Melba Flats, south of Rosebery, through to Burnie, with a recently constructed branch line running into the Hellyer mine processing plant. A currently disused line runs west from Burnie to Wiltshire, passing close to Port Latta.

If rail is to continue to be an important part of the transport system it would be necessary to upgrade the rail system and extend it to Port Latta and to other mines in the area.

Water

The West Coast has a high rainfall and ample reserves of water. However, Port Latta, the likely site of any major mineral processing operations in the northwest, does suffer from a limited water supply.

To supply 45 ML of water per day to Port Latta would require either a significant upgrade to the current pipeline from Savage River to Port Latta or the construction of a storage dam and pump station on the Dip River or Black River, with a pipeline to Port Latta.

Air transport

The West Coast is currently serviced by two airports, one at Queenstown and the other at Strahan. However there is no longer any regular commuter service to either airport. The northwest airports at Wynyard and Devonport have regular interstate and intrastate services.

An improved air transport system would allow increased access to the area for staff and equipment.

Communications

The West Coast suffers from a limited telephone network. In particular, analogue mobile phones are presently unable to operate in large sections of the West Coast. The newer digital mobile phones can be operated over parts of the West Coast.

Given the importance of communications to modern business operations, it would be beneficial to operations in the region to have access to an improved telephone network on the West Coast.

Phase 2 — Proposed Geoscience Component of the Project

The proposed project would involve aeromagnetic surveys over two areas — far northwestern Tasmania and that part of Bass Strait not yet covered by modern surveys.

The surveys would provide high quality (200 m line spacing) aeromagnetic and radiometric data of northwest Tasmania, west and north of the Arthur Lineament (fig. 4), and aeromagnetic data over the area of Bass Strait, administered by Tasmania, and not yet covered by AGSO surveys.

The new northwest Tasmania surveys would be combined with data from existing surveys, with a 1 km overlap in the case of high resolution onshore surveys and 3–4 km in the case of the AGSO offshore surveys.

In conjunction with these surveys, geological mapping is proposed for areas not yet covered by maps with a scale accuracy greater than 1:250 000. This mapping, to be undertaken by Mineral Resources Tasmania, would draw upon the detail of the new geophysical data.

APPENDIX 5

Detailed background for Project 8

Geoscientific information for land use planning

A growing segment of the community service work provided by Mineral Resources Tasmania is the provision of adequate geoscientific advice to councils in the review or preparation of their planning schemes. The State's development policy has been reformed by introduction of the environmental and planning package of legislation, including the new *Local Government Act 1993*. The latter requires the regular review of planning schemes by councils. This, and council amalgamation, has caused the intensive review of local government planning schemes.

The new process of planning review provides an important opportunity for geoscientific information to be included at an early stage in the process. If such information is incorporated in an appropriate manner it will not only benefit administration at council and State level but, more importantly, will assist development applications and reduce the prospect of wasteful appeals.

Submissions to councils must be made to ensure consideration is given to the following matters in the drafting of planning schemes:

- Possible sterilisation of resources by subdivision or incompatible development;
- Attenuation distances between industry and residential development are maintained;
- Future resource needs of the community are addressed;
- Groundwater resources are given protection for future use;
- Groundwater is not polluted by landfill, sewage disposal or excessive septic tank run off or other waste disposals;
- Development is controlled in areas of identified and potential landslide;
- Soil salinity and erosion-prone areas are identified and inappropriate land use is prevented.

To be able to undertake this work the available geoscientific information needs to be collated and checked to provide for the specific requirements of councils, as they do not have the facility or experience to extract the information they need from our data as it is presently structured.

To enable Mineral Resources Tasmania to service this fast growing market we need to be able to provide the following:

- Maps which identify geological issues specifically for the needs of land managers and planners;
- Identify existing inappropriate zoning in individual planning schemes;
- Maps which indicate regional resource inventories;
- Upgrade land stability and groundwater information into a form readily accessible to planners.

Mineral Resources Tasmania has a function under the *Local Government Act (Section 36, Building and Miscellaneous Provisions) 1993* to declare landslide areas where considered appropriate. Large tracts of land throughout Tasmania are subject to unstable conditions and it is important that the Division is aware of areas where landslide risk is high, particularly in zones that may be developed for housing but also where other kinds of land use are proposed.

The mapping of areas with landslide risk on a regional scale can result in a significant input into regional planning decisions and it is necessary that such surveys continue to provide this basic information.

Occasionally it will also be important to examine local areas where particular problems occur as a result of specific geological conditions.

As well as landslide risk, information related to other foundation problems, such as expansive or reactive soil, soils with low-bearing capacity, and soils having erosion potential, should continue to be collected. The reasons for these problems and their relationship to geological conditions need to be identified so that decisions on appropriate land use can be made or adequate precautions can be taken.

MRT administers the *Groundwater Act* 1985 and although groundwater use is not as great as in other States, it is expanding with time. The collection of groundwater information from specific assessment surveys (drilling, pump testing, quality analysis), data from private contractors, monitoring of groundwater use and quality variation, and ensuring significant contamination of groundwater does not take place are important functions to be continued.

An assessment of the groundwater resource has been undertaken in some areas but many other areas require assessment to provide adequate information for present and potential future users. More detailed information on groundwater prospectivity will decrease the risk associated with drilling for water, whether it be for stock, domestic irrigation or small-town supplies.

As demand for water increases, groundwater will increasingly become an alternative to surface water and the ready availability of information on groundwater prospectivity will be a significant aid to decisions on where water supplies will be sourced. The production of groundwater maps and associated notes are seen as the best means of disseminating this information.

Compilation of groundwater information over regional areas of the State will allow all of the currently known information to be presented, with the ability to update as new data become available.

Information is currently being collected, mainly from contract drillers' reports, for presentation on a scale of 1:250 000 and covering the whole State. At this scale it will only be possible to extract broad regional information, and this will not replace the need to undertake specific assessments of particular areas or groundwater provinces.

Groundwater quality throughout much of Tasmania is good and groundwater can be used for a range of purposes, e.g. almost always for stock, often for irrigation and garden, and in a significant number of locations it can be used for domestic supplies. There is a necessity to ensure that groundwater quality is maintained, as near as possible, to its present quality and that the resource is not contaminated by inappropriate land use.

Particular attention needs to be given to waste disposal (e.g. household, factory, abattoir, sewage, waste water) and the siting of the associated disposal facilities. Work in this field, in association with the Department of Primary Industries, Water and Environment, has expanded rapidly in the last decade and needs to be continued to guard against groundwater contamination. The vulnerability of various aquifers to pollution will be included as part of the resource assessment surveys.

Monitoring of groundwater needs to be continued. Base data to indicate natural variations in water tables and changes in quality are currently being obtained. There is a need to monitor groundwater levels in areas of high use to determine whether recharge is sufficient to maintain the level of use, whether use can be expanded, or whether overuse is occurring.

This information is necessary to support the proclamation of groundwater areas or the application of well orders (*Groundwater Act*) so that use can be controlled. Monitoring of groundwater quality around particular facilities, or to monitor the effects of new disposal techniques (e.g. land disposal of sewage) on groundwater quality, will be required from time to time.

The building and construction industry is dependent upon a guaranteed supply of clay, sand, gravel and crushed metal for their continued operation. It is essential that new reserves are identified and suitably protected to ensure the long-term viability of the industry. A source of material close to the main population centres is an important factor, as transport is a major component in the cost of supplying the material.

There is a growing concern that potential future sources of construction materials are being sterilised as a result of land use planning decisions. This issue is no more apparent than the situation with respect to the available sand resources remaining in the greater Hobart region, where some prospective source areas have already been lost through urban development.

Other potential major deposits, for example at Seven Mile Beach, have been sterilised by either prohibition or the placing of restrictions on extractive industries. It is important that planning decisions in the future accommodate and provide for rational access to these vital resources.