



M E R I W A

MERIWA Annual Report 2011-2012

**MINERALS AND ENERGY RESEARCH INSTITUTE
OF WESTERN AUSTRALIA**

“To encourage the development of the
Minerals and Energy Industries within the
State by fostering and promoting all
aspects of minerals and energy research”





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Letter of Transmittal

MINERALS AND ENERGY RESEARCH INSTITUTE
OF WESTERN AUSTRALIA

Annual Report 2011-2012

Hon. Norman Moore MLC
Minister for Mines and Petroleum
Parliament House
PERTH WA 6000

On behalf of the Board of Directors, I am pleased to submit the Annual Report of the Minerals and Energy Research Institute of Western Australia (MERIWA) for the year ending 30 June 2012, for your information and presentation to Parliament.

MERIWA's objectives are to promote and co-ordinate research for the development of the minerals and energy industries in this State, and the Board is satisfied with the results of MERIWA's operations for the year and its performance towards the achievement of these objectives.

The Board acknowledges the valuable support given to the Institute by your office and by the Department of Mines and Petroleum during the year, and by the Minerals Research Advisory Committee, many of the members of which have contributed their time and assistance in an honorary capacity.

P C Lockyer
Chairman
Board of Directors
20 September 2012



Statement of Compliance with Relevant Written Law

Enabling Legislation

The Minerals and Energy Research Institute of Western Australia is established under the Minerals and Energy Research Act, 1987, as amended by The Energy Legislation Amendment Act, 2003 and the Minerals and Energy Research Amendment Bill, 2006.

Legislation Administered

The Institute does not administer legislation.

Legislation Impacting on the Institute's Activities

In the performance of its functions, the Institute complies with all relevant written laws including the following:

- ◆ Financial Management Act, 2006; (FMA)
- ◆ Public Sector Management Act 1994
- ◆ Equal Opportunity Act 1984
- ◆ Occupational Safety and Health Act 1984
- ◆ State Records Act 2000
- ◆ Government Financial Responsibility Act 2000
- ◆ Interpretation Act 1984
- ◆ Minimum Conditions of Employment Act 1993
- ◆ Industrial Relations Act 1979
- ◆ Library Board of Western Australia Act 1951
- ◆ Disability Services Act 1993
- ◆ Freedom of Information Act 1992
- ◆ Public Interest Disclosure Act 2003
- ◆ Electoral Act 1907
- ◆ Superannuation Guarantee (Administration) Act 1992

In the financial administration of the Minerals and Energy Research Institute of Western Australia we have complied with the requirements of the FMA and every other relevant written law, and exercised controls which provide reasonable assurance that the receipt and expenditure of moneys, the acquisition and disposal of public property and incurring of liabilities have been in accordance with legislative provisions.

In its general administration, MERIWA has also complied with public sector standards for human resource management and the code of ethics and code of conduct, as required by the Public Sector Management Act 1994, and report that no applications for breaches of these standards have been lodged during the 2011/2012 year.

The Board continues to support regional research centres, particularly the Western Australian School of Mines at Kalgoorlie.



Statement of Compliance with Relevant Written Law

Compliance Statements

Advertising and Sponsorship

Expenditure incurred by the Minerals and Energy Research Institute of Western Australia during 2011/2012 in relation to section 175ZE of the Electoral Act 1907 was as follows:

	\$
Advertising agencies	Nil
Market research organisations	Nil
Polling organisations	Nil
Direct mail organisations	Nil
- West Australian Newspapers	2,514

Freedom of Information

There were no applications under the Freedom of Information Act during the year. A copy of the Information Statement is available by contacting the Executive Officer on 9222 3397 or by writing to the Minerals and Energy Research Institute of Western Australia, 100 Plain Street, East Perth 6004.

Disability Services Plan

The Institute is housed within the Department of Mines and Petroleum building, Mineral House, 100 Plain Street, East Perth, which has a comprehensive and effective plan to ensure compliance with the Disability Services Act, 1993.

Customer Group Outcomes

Due to the small size of the Institute matters concerning women, family and domestic violence, equal employment opportunities, language, cultural diversity and youth will be addressed on an individual basis as required.

Corruption Prevention

The Board of MERIWA is satisfied that the processes and procedures followed by the Institute, its staff and committees are robust and effective in the requirement to eliminate the possibility of corruption.

Information Systems and Services

In accordance with the State Records Act of 2000, the effectiveness and efficiency of the record keeping and disposal schedule was approved in 2009 and will be reviewed in 2014.

- ◆ Staff were familiarised with the Plan.
- ◆ Due to the small size of the Agency, training and familiarisation for new employees will be undertaken on a “one on one” basis as required.
- ◆ The effectiveness of the Plan was reviewed and the plan updated to reflect name changes to government departments.



Statement of Compliance with Relevant Written Law

Public Sector Occupational Safety, Health and Injury Management

The Institute is housed within the Department of Mines and Petroleum building, Mineral House, 100 Plain Street, East Perth and MERIWA adheres to the OSH and Injury Management Policies and Practices of the Department of Mines and Petroleum. There were no fatalities or lost time injuries during 2011/12.

All research completed is published as reports that are available to the public at cost of production. Reports are available in both CD-ROM and hardcopy formats.

At the date of signing, we are not aware of any circumstances which would render the particulars included in this statement misleading or inaccurate.

P C Lockyer
CHAIRMAN,
BOARD OF DIRECTORS

B.Evans
DIRECTOR

20 September 2012



Functions

The Minerals and Energy Research Institute of Western Australia (MERIWA) was established under the Minerals and Energy Research Act, 1987 (No. 89 of 1987), and is a statutory authority. The function of the Institute is to encourage the development of the minerals and energy industries for the benefit of the State by fostering and promoting all aspects of minerals research and energy research through:-

- (a) undertaking, in its own right or in conjunction with other persons, such research projects as it thinks fit, and evaluating research projects so undertaken;
- (b) investigating matters, and undertaking research projects relevant to the development of those industries, referred to it by the Minister;
- (c) co-ordinating, when appropriate and practicable, research projects undertaken by persons who -
 - (i) have received financial assistance or any other form of support from; or
 - (ii) seek or agree to have their research projects co-ordinated by,
 the Institute;
- (d) receiving and considering applications from persons undertaking or wishing to undertake research projects and seeking financial assistance from the Institute;
- (e) allocating, at its discretion to persons, out of the Account, financial assistance to enable or assist persons referred to in paragraph (d) to undertake or continue research projects;
- (f) entering into agreements with persons to whom the Institute has allocated financial assistance with respect to the terms and conditions of the allocation of that financial assistance, which terms and conditions may include a condition that such a person shall comply with any directions or guidelines issued by the Institute in relation to the conduct of a research project;
- (g) monitoring and evaluating research projects in respect of which the Institute has allocated financial assistance and other minerals research work or energy research work within the State and elsewhere;
- (h) maintaining a collection of all reports or other literature or information issued or compiled by the Institute or by the Mining Institute;
 - (i) the reports produced by the Institute; and
 - (ii) the reports produced by the Mining Institute formerly established by the *Mining and Petroleum Research Act 1981*;
- (i) conferring and collaborating on matters relating to minerals research and energy research with the Department and other appropriate authorities and institutions within the State and elsewhere; and
- (j) promoting public awareness of matters relating to minerals research and energy research, informing the public concerning the latest developments in the fields of minerals research and energy research and receiving and considering submissions from the public concerning -
 - (i) the performance by the Institute of its function; or
 - (ii) matters relating to minerals research and energy research in general.

[Section 5 amended by No. 89 of 1994s. 109; No. 53 of 2003s. 76 and 90]



Structure



**MINISTER FOR MINES AND PETROLEUM
THE HON NORMAN MOORE MLC**

BOARD OF DIRECTORS



**MR P C LOCKYER
CHAIRMAN**



**MR S D ELLIS
DIRECTOR FOR WA - AUSTRALIAN PETROLEUM
PRODUCTION & EXPLORATION ASSOCIATION LTD**



**MRS A DAVIES
LAWYER**



**PROFESSOR B EVANS
HEAD - PETROLEUM ENGINEERING
CURTIN UNIVERSITY OF TECHNOLOGY**

**MINERALS RESEARCH ADVISORY COMMITTEE
CHAIRMAN: PROFESSOR ODWYN JONES**

**EXECUTIVE OFFICER
MR ROSS MARSHALL**

**CHIEF FINANCE OFFICER
MR JOE FORTUNA**

**PROJECT COORDINATOR
DR TONY BAGSHAW**



Board of Directors' Report

MERIWA is a Statutory Authority established under the Minerals and Energy Research Act (1987) to promote minerals and energy research which will encourage the development of the Minerals and Energy Industries in this State. The desired outcome is that the amount of research undertaken will achieve the level of technological advancement required to meet the future technical challenges of these industries, ensuring their competitiveness and hence continued development.

MERIWA's financial results and research achievement for 2011/2012 are summarised in this report from the Board. The outputs produced and performance indicators, as well as the detailed financial statements for the 2011/2012 year are examined in more detail in a later section of the report.

Overview

MERIWA's financial results and research achievement for 2011/2012 for minerals research are summarised and compared with the results for 2010/2011 in Table 1. Points of note for the year are -

- ◆ Total value of new minerals research projects was \$4.936 million, a significant increase of \$2.504 million on the 2010/2011 figure of \$2.432 million.
- ◆ Industry sponsorship was \$4.179 million compared to \$1.773 million in 2010/2011. The proportion of industry sponsorship for minerals research was 85% against a target of 65%.
- ◆ For every dollar expended by the Government through MERIWA, \$5.61 of minerals research was generated.
- ◆ Administration costs were 7.83% of the value of research generated.

Research Activities

MERIWA's minerals and petroleum research results are identified in Table 4 (refer "Operating Report"). Six new research projects were commenced in 2011/2012 for a total value of \$4.936 million. This compares with \$2.432 million in 2010/2011.

New industry sponsorship coordinated through MERIWA for the year was \$4.179 million.

TABLE 1: Summary of Results

	2011/12 \$'000	2010/11 \$'000
FINANCIAL		
ACCUMULATED FUNDS Opening balance at 1 July	1 620	794
Plus funds received and sponsorship committed	**2 716	**2990
Less funds expended and committed	***2639	***2164
ACCUMULATED FUNDS As at 30 June	1 697	1 620
Total value of research commenced	4 936	2 432
% sponsorship to new research Commenced	85%	73%
Ratio of research value to government funds utilised (grants and administration)	5.61	4.90

* Cash plus investments held in trust or yet to be collected from industry sponsors for committed research activities over the next three years.
 ** Government funding, industry sponsorship, interest.
 *** Research grants, scholarships, administration

Industry sponsorship for the year in review was 85% of the research value of projects against a target of 65%.

No projects were abandoned or completed below budget during the year. Government funds utilised by MERIWA for minerals research, including funds brought forward from 2010/2011 and resources received free of charge, totalled \$800 550 of which \$745,550 was applied to research grants and \$55 000 to scholarships.

The actual administration cost of \$259 385 was 7.83% of the value of research generated. Funding committed for new projects was \$757,000.

Table 2 shows the allocation of funds among different research areas as well as the industry support achieved in each, while Table 3 shows the organisations that have contracted to undertake MERIWA research projects and the recipients of MERIWA post-graduate scholarships this year. The quality of research projects, their innovation and potential benefits to Western Australia continue at a very high standard.



Board of Directors' Report (Continued)

TABLE 2: Allocation of Funds

Research categories	No. projects	MERIWA \$'000	Industry \$'000	Total \$'000
Geoscience	1	92	143	235
Hydrocarbons	1	169	350	519
Engineering	2	270	2398	2668
Minerals processing	1	180	1153	1333
Environmental-rehabilitation	1	46	135	181
Total	6	757	4179	4936

This year two projects totalling \$329,000 that were approved by the Board are not contracted to receive funding this financial year but will be carried forward to 2012/13. Four projects carried forward from last year and two projects approved this year, totalling \$4,179,000, are all contracted to receive funding this financial year. This year the research activities involved CSIRO with two projects, Curtin University of Technology with three and the University of Western Australia with one project.

Projects

Four projects were approved by the Board during the year, covering a variety of research themes. These included further studies on technologies for metal production via solvent extraction, increasing the use of proactive seismic risk management in underground mines, evaluating a more rapid, cheaper technique for analysing real Bayer liquors in alumina refining, and studies to reduce the production of acid mist in the electrowinning of metals.

M418 – Advances in Solvent Extraction Technology.

Solvent extraction (SX) processes have been used extensively to recover U, Cu, Ni, Co, rare earths and other metals. Although recovering different metals, SX plants all use similar equipment (mixer-settlers or, more recently, pulsed columns), and face similar issues such as phase separation efficiency, crud formation, entrainment and organic degradation.

This M418 project importantly builds on the successful outcomes and findings of the earlier M401 project (Improving SX Technology). The project will cover four areas of research:

- develop fundamental capabilities and improved understanding of relevant mechanisms, chemistry, speciation, kinetics, mass transfer,

TABLE 3: Allocation of Mineral Research Funds to Research Organisations

Research Organisation	No. projects	Funding \$'000
C.S.I.R.O.	2	1569
The University of Western Australia	1	1458
Curtin University	3	1910
Total research	6	4936
SCHOLARSHIPS		
The University of Western Australia	3	25
Murdoch University	1	10
Curtin University of Technology	3	30
Edith Cowan University	-	-
WA School of Mines	-	-
Total scholarships	7	65
Total funding		5001

entrainment, engineering and operational issues;

- develop computational code and validate CFD models for SX contactors, mixers, settlers and columns at laboratory, pilot and full scale;
- develop improved probes and physical modelling capabilities to demonstrate improvements including flow patterns, dispersed phase mapping, droplet size distribution and entrainment determination; and interact with operating sponsor sites, apply probes to diagnose problems and identify opportunities for improved performance through alternate engineering designs and operating conditions.

CSIRO researcher Dr Dave Robinson leads the research team. Sponsorship for this study has been committed by eight companies via the Parker Centre: \$1 152 500, with MERIWA contributing \$180 000 for a total project value of \$1 332 500 at this stage.

M419 – Advancing Rockburst Risk Mitigation Techniques.

This project builds on the experience gained and knowledge acquired over four previous MERIWA projects: M328 (completed in 2002), M355 (2005), M386 (2008) and M406 (2012).

Its objective is to increase the use of a proactive seismic risk management approach in mines. Such an approach relies on seismic hazard calculations applied to future production areas, from which mitigation measures tailored to the forecasted seismic hazards can be defined and implemented prior to undertaking extraction in that area.



Board of Directors' Report

(Continued)

As the mining industry exploits deeper deposits, the effective management of rockburst risk becomes increasingly important, if mines are to continue to operate safely and productively. At most mines where seismic monitoring systems are used, the focus is on following the seismic activity as it occurs, to be able to react appropriately when the activity becomes intense or the seismic response is not as expected. This is a reactive approach to seismic risk management.

Only a few mines have the time or expertise to perform the more sophisticated analyses required for proactive management of seismic risks. The previous MERIWA projects developed and implemented the MS-RAP software for automating the most useful seismic data analysis techniques. The current project will enhance this software in Version 4. In addition, research will focus on three key areas for developing new techniques: seismic hazard control, re-entry protocol and dynamic ground support.

Drs Yves Potvin and Johan Wesseloo will lead the research at the Australian Centre for Geomechanics, UWA. Fifteen companies are sponsoring the project, contributing \$1 308 000 with MERIWA contributing \$150 000 for a total of \$1 458 000.

M420 – not accepted for funding.

M421 – *Bayer Liquor Analysis by Infra-Red (BLAIR) for Process Liquors.*

Previous work by the research proponent, Central Chemical Consulting (CCC), has proven up a method utilising Fourier Transform Infra-Red (FTIR) as a means to measure various chemical species in Bayer liquors (used in the processing of bauxite to alumina). CCC has patented this approach.

BLAIR is a new technology with the potential to revolutionise the chemical analysis of process liquors in alumina refineries around the world. In a single measurement BLAIR is capable of providing a complete Bayer liquor analysis for alumina, total caustic, total alkalinity, total organic carbon (TOC), sodium chloride, carbonate, sulfate and all derived ratios. It can also provide the density of a liquor sample.

The minimum liquor volumes required for an analysis are very small (50µL) and the total measurement time is less than three minutes.

BLAIR could replace multiple existing methods of analysis in the laboratory with a single rapid method, providing high quality results in much shorter times at a lower total cost. There is potential to increase the benefits by using BLAIR for “at-line” analysis of refinery process liquors, providing direct process control.

The project will focus on working up the analytical algorithms for real process liquors provided by the industry sponsor Rio Tinto Alcan from its alumina refineries worldwide. Drs Vince Patrick and Emmanuel Karakyriakos from CCC will direct this research. CCC together with Rio Tinto Alcan, will each contribute \$9 500 and MERIWA \$10 000 for this six-month project.

M422 – *Enhancing Electrowinning Technology: Reduction of Acid Mist Generation.*

The generation of sulfuric acid mist during the production of base metals via electrowinning poses serious hazards: the mist has been classified as a carcinogen and is highly corrosive, causing damage to tankhouse equipment and infrastructure. A better understanding of the operational factors affecting acid mist generation would improve current mitigation strategies, and develop new ones, for the reduction of acid mist.

The project aims to scientifically underpin current knowledge of the impact of operational factors on acid mist generation, focussing on:

- producing a literature survey and state-of-the-art review to establish current operating procedures and knowledge;
- developing fundamental capabilities for acid mist quantification utilising a half-full scale cathode electrowinning cell;
- developing an improved fundamental understanding of the correlations between bubble formation, acid mist droplets and electrolyte physical properties; and
- investigating the effect of varying key operational parameters such as current density, electrolyte flow rates and patterns, operating temperature, chemical additives and physical barriers on acid mist formation.

CSIRO researcher Dr Rueben Rajasingam leads the research team. Sponsorship for this study has been committed by eight companies via the Parker Centre: \$250 000, with MERIWA contributing \$50 000 for a total project value of \$300 000 for this 12-month project



Board of Directors' Report

(Continued)

Scholarships

In keeping with its policy to encourage PhD students to embark upon careers in the minerals and petroleum industry, MERIWA has again offered Supplementary Scholarships to help finance students and their projects. The selection committee awarded seven scholarships; Mr Amir Mokaramin, Ms Vida Minaeian and Mr Bryn Funnekotter of Curtin University of Technology, and Ms Margaux Le Vaillant, Ms Zoja Vukmanovic and Ms Kerryn Chia of the University of Western Australia and Ms Maryam Jozegholami Barmi from Murdoch University. Six consist of a \$5 000 stipend and \$5 000 for project maintenance and one of a \$5 000 stipend only.

Amir Mokaramin

Amir is in the first year of his PhD at Curtin University of Technology. The primary objective of his research is to introduce the technology of Coiled Tubing Drilling (CTD) from existing applications in the oil and gas industry to deep mineral exploration drilling. The most critical element in the performance of CTD is the Downhole Motor. Development of a new Downhole Motor Turbodrill with high power and ultra-high speed is the aim of this research. A Turbodrill that is of small size (5-8cm Outer Diameter) with high output rotation speed (8000-1000 rotation per minute) that can be mounted on a Coiled Tubing assembly would allow deeper, faster and cheaper drilling and thereby transform deep hard rock mineral exploration drilling.

Vida Minaeian

Vida is in the second year of her PhD at Curtin University of Technology. With Shale gas becoming an increasingly important source of energy it is important to understand the parameters of gas distribution and saturation and identify the target zones of hydraulic fracturing to enable effective drilling in terms of safety and costs. Therefore the physical and mechanical characterisation of shales is necessary. Vida's research aims at investigating the physical and mechanical characteristics of gas shale. Actual and synthetic samples will be subjected to true triaxial loading to investigate the effect of applying three independent stresses on rock deformation and failure. Saturated and partially saturated shale samples will be tested to determine the effect of the degree of saturation and the mechanical behaviour of shales.

Bryn Funnekotter

Bryn is in the second year of his PhD at Curtin University of Technology. His aim is the development of effective cryopreservation protocols for the safest and cost effective long-term storage of high volume tissue culture of propagation-recalcitrant native plants currently used for minesite biodiversity restoration by ALCOA Australia and BHP Billiton Worsley Alumina. As many native plant species are extremely difficult to propagate by conventional means (seeds or cuttings) tissue culture under costly sterile conditions on artificial substrates is necessary. However it is difficult to maintain such plants for many years and it is believed cryopreservation would overcome losses due to fungi and bacteria contamination.

Margaux Le Vaillant

Margaux is in the second year of her PhD at the University of Western Australia. The main objective of her research is to understand the nature, geometry and size of hydrothermal remobilisation of base metals, platinum group elements and gold around magmatic nickel sulphide deposits. Such understanding would provide many possible applications for nickel exploration. The first aim is to define the nature of the footprint using geochemical and mineralogical techniques. A second step will be to constrain the 3D geometry of the defined footprint using 3D modelling software. By doing so, she will acquire fundamental empirical information on the geometry, the 3D distribution and the orientation of geochemical, mineralogical and isotopic signatures created by the circulation of hydrothermal fluids around nickel sulphide deposits. This knowledge about the signature of hydrothermal processes around nickel sulphides will represent a great tool for the understanding of the processes themselves, and will be of fundamental interest to improve exploration targeting for these small and often deep seated deposits.

Maryam Jozegholami Barmi

Maryam is in the third year of her PhD at Murdoch University. Her goal is to produce efficient cobalt composite electrodes for base metal electrowinning systems. Having identified the best performing lead-cobalt electrodes, Maryam is currently investigating the deposition of composite coatings on a titanium substrate which is the most common material for the manufacture of dimensionally stable anodes (DSA's). In the final phase of her studies Maryam will prepare large scale anodes of the most suitable composites for extensive long term comparative testing.



Board of Directors' Report

(Continued)

Zoja Vukmanovic

Zoja is in her third year of her PhD at the University of Western Australia where her thesis topic is, *Micromechanical and Geochemical Analysis of Remobilization of Komatiite-Hosted Ni Sulphide Ores*. This research promises to be an important contribution to the development of WA's nickel resources. Primary nickel sulphide ores often were remobilized in shear zones, and a detailed understanding of the micro-scale environment in which this occurs is lacking. Zoja's research is supervised by Dr Steven Barnes of CSIRO and Dr Florian Fuisseis and Dr Marco Fiorentini of UWA.

Kerryn Chia

Kerryn is in her second, part-time year of her PhD at the University of Western Australia where her thesis topic is "Ecology, Seed Dormancy and Germination Biology of *Persoonia longifolia* for Use in Land Restoration and Horticulture". The research will investigate methods to reduce dormancy loss and improve germination in *Persoonia longifolia* (Snottygobble) seeds. Successful completion of this long term project should result in improved densities of the plant in rehabilitated jarrah forests. The tree has proved a difficult species to return to rehabilitated areas following bauxite mining and is defined as a recalcitrant species (i.e. common in the forest but absent or in low densities in rehabilitated minesites). This project is ideally suited to part-time research as buried seeds can take up to 18 months before germination commences (even under laboratory conditions).

Publication

Six final reports on minerals projects were published during the year and distributed in CD-ROM form to technical libraries in Western Australia and interstate. A synopsis of each of the reports is included in later pages of this document.

The number of reports published by MERIWA since its inception now totals 294, and it has been pleasing to see an ongoing demand for copies of them. Reports in hard copy, microfiche or CD-ROM are provided to companies or private individuals on request, at nominal prices, sufficient to recover the cost of reproduction. In 2001/2012 - 5 hard copy and 26 CD-ROM reports were sold, producing revenue of \$ 1 401.50

Finance

The financial statements for MERIWA for 2011/2012 appear later in the report.

The net assets for the year \$1,697,275. The total cost of services was \$2 639 613 (\$2 164 385 in 2010-11) of which \$1,873,241 was paid for research grants. Revenue of \$1,823,126 was received from industry and \$93 548 from interest and other income related to services. The net cost of services was thus \$722,939 (\$465,444 in 2010-11) which was funded by government appropriation and resources free-of-charge of \$800 550 (\$1 291 585 in 2010-11). The surplus was added to previous accumulated surplus.

Staff and Committees

The Board again acknowledges the valuable assistance that has been provided to the Institute by the Minerals Research Advisory Committee under the able Chairmanship of Professor Odwyn Jones.

Both the members and deputy members met on a regular basis during the year, in sub-committee or in committee, to assess the research proposals received, and to advise the Board of their suitability and technical merit before grants were approved. This takes considerable time, and as the great majority is provided on an honorary basis, MERIWA is most appreciative of this contribution.

Finally, the Board acknowledges the contribution and competence of the MERIWA Staff and contract staff in coordinating and administering the affairs of the Institute.

P C Lockyer
CHAIRMAN,
BOARD OF DIRECTORS





Operating Report

MERIWA's Minerals Research Program

MERIWA's mission is:

"To encourage the development of minerals and energy industries within the State by fostering and promoting all aspects of minerals and energy research".

Mineral deposits and oil and gas accumulations are finite, and new discoveries must continue to be made and developed to replace depleted deposits. If this is not achieved, and the industry does not sustain itself but slowly degenerates, the effects on the State's economy would be quite disastrous.

Much of the industry is international, and companies operating internationally will compare the prospectivity and exploration and mining costs in Western Australia with those applying in other countries, before deciding on where their exploration budget will be most profitably spent. Investment in mining project development is also based on the quality and cost of supporting services, such as infrastructure, but also in the downstream processing-orientated industries and the availability of highly skilled technical "problem solvers".

Western Australia has established itself as a reliable provider of not only physical resources to the world but also as centre for excellence in many areas of mineral and hydrocarbon research. The Board of MERIWA continues to foster and encourage this "intellectual" development process knowing from past experiences that industry, research institutes, government and individuals profit from investments in "ideas".

There is also a continuing need to promote research on regulatory issues of concern to the community at large, such as minesite rehabilitation, tailings disposal and containment, and occupational health and safety issues in the industry. The advances made in these fields and the support from the mining industry in undertaking this research, have been excellent over recent years.

To achieve its mission, MERIWA aims for an outcome by which the amount and quality of research undertaken by the Minerals and Petroleum Industries achieves the

level of technological advancement required to meet the future technical challenges of these industries, and helps ensure their competitiveness and continued development.

Promotion of Research

The key incentive provided by governments to encourage more research is to subsidise its cost. MERIWA's policy has been to retain the magnitude of the subsidy to a maximum of 35% of the cash cost, encouraging a higher level of participation from industry. This allows a larger volume of research to be supported and ensures that the key objective of promoting research relevant to industry is achieved.

The level of subsidy must be such, however, to allow MERIWA to maintain the authority to rigorously assess research programs and to establish "Conditions of Grant" that facilitate coordination and accountability, and ensure that final reports can be published and widely distributed. The subsidy must be of a level to enable promotion of research on regulatory issues such as occupational health and safety and minesite rehabilitation.

Value of Minerals Research Financed Jointly with the Minerals and Petroleum Industries

The table below compares the value of research commenced for each of the last five years, jointly financed by MERIWA and industry sponsorship. The level of research funding has fluctuated over the period, a direct reflection of industry's economic performance. The variation in commodity prices, exchange rates and levels of activity continues to be erratic across all sectors. Continued consolidation in the corporate sector has also changed research investment patterns. Never the less it has been apparent this year that good ideas will continue to attract industry funding if the research is targeted to the needs of the industry.

	\$'000				
	2011-12	2010-11	2009-10	2008-09	2007-08
Value of minerals research commenced	4936	2 432	2 366	3 408	2911
Scholarships	55	50	50	40	50
Total	4995	2 482	2 416	3 448	2941



Operating Report (Continued)

	2011-12	2010-11	2009-10	2008-09	2007-08
Industry sponsorship achieved	85%	73%	86%	81%	81%
Target	65%	65%	65%	65%	65%

Industry Participation

Industry participation is encouraged by MERIWA through every phase of a project.

- ◆ Industry involvement from the initial draft proposal stage ensures that the project is focussed to its particular needs.
- ◆ Industry sponsorship encourages ongoing participation through regular sponsor meetings; this creates closer communications between industry and the research groups and is beneficial to both sides.
- ◆ Its investment in the research means that the research results are more likely to be applied.
- ◆ Its participation facilitates the provision and availability of data to the research group, and by working closely with researchers, creates a more research and technically oriented industry, and a more practical research group attuned to the technical challenges faced by industry.

The table above shows the average level of industry sponsorship achieved as a percentage of the research value.

Technology Transfer

Research benefits will best eventuate if the results are made widely available and are applied. The importance of this aspect of MERIWA's operations is recognised in the functions of the Institute as listed in the Minerals and Energy Research Act (1987). Because of their financial commitment and participation throughout the study, sponsoring companies require a return on their research investment by application of the results. In a broader, industry-wide sense, however, technology transfer is encouraged by publication of the final reports and their distribution to most universities, CSIRO and state technical libraries, or by the provision of copies directly by MERIWA.

The benefits of publication are two-fold:

- ◆ Publication of reports gives all companies relatively cheap access to the technology.
- ◆ Publication benefits the researchers and their institutions, by enabling their work to be acknowledged internationally and increasing their profile professionally. This attracts students and external funding, which in turn is beneficial to both industry and the State.

MERIWA has published 294 reports on the research projects it has supported since its inception. CD-ROM copies are distributed widely to all relevant technical libraries in Western Australia and to most Australian universities. Reports in microfiche, CD-ROM or hard copy format are sold to industry at prices which cover production and distribution costs. The table below shows that 1 713 research project reports have been distributed or sold to industry and technical libraries over the past 5 years.

Synopses of all reports published during 20011/12 are included in this annual report, and complete lists of reports available are included with the publication "Research News" and on the MERIWA webpage at: www.dmp.wa.gov.au/meriwa/reports/reports.html

Measures of Performance

The predominant measure of performance is the value of research undertaken, but as MERIWA is often limited by the funds available, its effectiveness is measured by the ratio of the total value of research commenced to the Government funds utilised.

MERIWA measures its efficiency by the administration cost as a percentage of the value of research generated. This is calculated on a three-year moving average basis to reflect the average duration of projects, covering the project development assessment and funding phase, coordination while in progress, and the final reporting and publication phase of the project.

No. of reports distributed or sold	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Microfiche	0	0	1	2	2
Hard copy	56	95	96	121	83
CD-ROM	152	187	282	369	267
Total	208	282	379	492	352



Operating Report (Continued)

Effectiveness

The table below indicates that for every dollar of government funds expended on research in 2011/2012 (excluding scholarships), \$6.78 of research was commenced.

	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Ratio of research value to government funds utilised	5.61	3.81	2.28	2.81	2.82

Efficiency

MERIWA's overall efficiency increased significantly in 2011/2012 due to a high value of research commenced. (Three year moving average).

	2011-2012	2010-2011	2009-2010	2008-2009	2007-2008
Administration cost as a percentage of value of research generated	7.83	8.85	9.48	8.23	9.09

Table 4 summarises the key components of MERIWA's performance over the past five years.



Operating Report

TABLE 4: MERIWA Results

Factors	2011/12	2010/11	2009/10	2008/09	2007/08
PROJECTS					
Applications received	7	8	4	2	8
Projects approved	4	8	3	3	7
Projects completed	6	6	6	9	6
TECHNOLOGY TRANSFER					
No. reports published	6	6	6	9	6
No. microfiche issued or sold	-	-	1	2	2
No. hard copies issued or sold	56	95	96	121	83
No. CD ROM copies issued or sold	152	187	282	369	267
Other publications (Research News)	2	2	2	1	2
FUNDS UTILISED (\$'000)					
Budget appropriation - Consolidated Revenue Fund	413	907	641	633	630
- Exploration Incentive Scheme	350	350	350	0	0
Interest on cash flow	92	65	56	89	119
Other income	1	2	2	3	3
Transferred from (to) reserves	(76)	(826)	(13)	(487)	(330)
Total Government funds utilised	880	498	1 036	1 212	422
Less administration costs	*260	*278	*244	*205	*211
Funds utilised to support research	620	221	792	1 007	211
MERIWA GRANTS					
For research projects	757	659	341	641	222
For scholarship	65	50	50	40	50
Total grants	822	428	391	681	272
INDUSTRY SPONSORSHIP					
Total industry sponsorship coordinated through MERIWA	4 179	1 773	2 225	2 767	967
Total value of new research projects	4,936	2 432	2 366	3 408	1 189
Value of research generated to government funds utilised	5.61	3.81	2.83	2.81	2.82
Administration cost to value of research generated**	7.83%	8.85%	9.48%	8.23%	9.09%

* Three-year moving average.



Minerals Research Advisory Committee

Nominated by the Minister	Professor I O Jones (Chairman)	Consulting Mining Engineer
	Mr I M Suckling	Director – Underground Mine Engineer, Newmont Australia Limited
	Dr J Kyle (Deputy Member)	Group Leader Research, Murdoch University
	*Mr J Cucuzza	Director Project Delivery, AMIRA International Limited
	Mr D Flanagan (Deputy Member)	Managing Director, Atlas Iron Limited
	Ms D Lord	Senior Consultant - Geologist, SRK Consulting
	Mr B Staunton (Deputy Member)	Manager, Gold Technology Group, WA School of Mines
	*Professor W Stock	Centre for Ecosystem Management, Edith Cowan University
	Dr E van Etten (Deputy Member)	Faculty of Computing, Health & Science, Edith Cowan University
	Dr B Smith	Consulting Geologist – Geochemist (AMEC)
Nominated by: Department of Mines and Petroleum	Mr P Bewick (Deputy Member)	Exploration Director, Encounter Resources Limited
	Ms B S Bower	General Manager – Petroleum Tenure & Land Access
Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Dr I Roberts (Deputy Member)	Executive Director – Mineral Titles
	Dr R Hough	Senior Research Scientist – Stream Leader
The University of Western Australia	Dr J Cleverley (Deputy Member)	Senior Geochemist – Stream Leader and Project Leader
	W/Professor M B Bush	Winthrop Professor of Mechanical Engineering
Murdoch University	W/Professor J Dell (Deputy Member)	Faculty of Engineering, Computing and Mathematics
	Professor P Bahri	School of Electrical, Energy and Process Engineering
Curtin University of Technology	Dr G Senanayake (Deputy Member)	Faculty of Minerals & Energy, Chemical & Mathematical Sciences, Extractive Metallurgy
	Professor K Wright	Faculty of Science and Engineering
Chamber of Commerce and Industry of WA	Dr A Thompson (Deputy Member)	Principal Research Fellow and Consulting Engineer, WA School of Mines
	Dr C L Baker	Program Manager, Impurity Removal, Alcoa World Alumina
Chamber of Minerals and Energy of WA (Inc.)	<i>Position Vacant</i> (Deputy Member)	
	Mr G Danckert	General Manager – Resource Development, Rio Tinto Iron Ore
Australian Petroleum Production and Exploration Association	<i>Position Vacant</i> (Deputy Member)	
	Mr N Fitzgerald	Chief Geophysicist, FitzGeo Consulting
	Marcel Pieren (Deputy Member)	Technical Assurance & Capability Manager Shell Development (Australia) Pty Ltd



Minerals Research Advisory Committee

It has been said that our minerals industry has three main vulnerabilities;

- its ability to source the industry's human capital needs,
- its ability to train leading edge researchers, and
- its ability to undertake the kind of research required to ensure the industry's sustainability.

MERIWA has over its thirty year existence been a significant contributor to addressing the last two of these issues. It has successfully administered over 400 applied research projects, most of which involved the training of PhD and/or Masters postgraduate students and it has for many years awarded a number of highly sought after PhD supplementary scholarships for those pursuing research of relevance to the WA minerals industry.

The Minerals Research Advisory Committee (MRAC) continues to play its crucial role of appraising the quality and relevance of all research proposals submitted to the Institute. This is a demanding task since it involves investigating the quality and relevance of both researchers and their proposals. This work is largely carried out by the sub-committees of which there are five embracing the fields of geoscience, mining and engineering, mineral processing, hydrocarbons (oil and gas) and the broadly based areas of mine-site rehabilitation, environmental and medically related sciences. These sub-committees submit their findings and recommendations to MRAC for final scrutiny before the final outcome is formulated as recommendations to the Board.

Another task recently initiated by MRAC and approved by the Board involved a series of Workshops to identify those areas of strategic research relevant to WA which need more attention. This exercise is timely for many reasons, not the least being the recent announcement by the Hon Norman Moore, Minister for Mines and Petroleum of a further \$7.5 million of funding over three years commencing in 2013 for an expanded Minerals Institute. My colleagues and I acknowledge the great encouragement and support given to the Institute by the Hon. Norman Moore and we wish him many healthy and happy years following his impending retirement from public life.

The total cash value of this year's four approved projects is \$2,939,500 of which \$2,549,500 is industry sponsorship leaving only \$390,000 as State Government funds.

Such an advantageous leverage of industry funding is testament to the high regard and trust that industry stakeholders have in the quality of MERIWA's appraisal and management systems. Let me therefore pay tribute to my MRAC colleagues who invest so much of their time and expertise in the work of the Institute, which in most cases, is given with no thought of monetary reward. MRAC has a complement of 14 members and 13 alternates; all of whom are invited to attend meetings. All appointments are approved by the Minister for three year terms.

Unfortunately during the past year we have had three resignations; of whom two were longstanding and all three extremely valuable MRAC contributors. Professor Will Stock of Edith Cowan University was for many years Chairman of the General Sub-committee and Ms Deborah Lord of SRK Consulting was an extremely valuable member of the Geoscience Sub-committee whilst Joe Cucuzza, who was Melbourne based and represented AMIRA, was always a diligent contributor despite his frequent international travel arrangements. All three will be sorely missed.

Once again I had the privilege of participating as a member of the Institute's Scholarship Committee which, on this occasion, granted six full (i.e. \$10,000 per annum) and one half-value supplementary scholarships for minerals-related PhD students, having received over thirty applications.

Finally, I must record my sincere thanks and gratitude for the support and assistance given to me and my colleagues by the Institute's small team of dedicated part-time staff, which include its Executive Officer, Mr Ross Marshall, its Project Manager Dr Tony Bagshaw and the Institute's Secretary, Mrs Yvonne Lewis.

Emeritus Professor Odwyn Jones, AO
Chairman.





Reports Published in 2011/12

M389 A FOUR-DIMENSIONAL INTERPRESTATION OF THE GEOLOGICAL EVOLUTION OF THE PROTEROZOIC WEST TANAMI REGION AND ITS MINERAL SYSTEMS

Report No. 294

Grantee: University of WA
Applicants: Prof. C McCuaig / Dr L Bagas / Dr F Bierlein
Grant Amount: \$242 363
Duration: 3 years
Commenced: July, 2006
Sponsors: Geological Survey WA
 Tanami Gold NL

The study reports the results of remapping the Granites-Tanami Orogen (GTO) in the North Australian Craton (NAC) of Western Australia and structural, geochemical, and isotopic studies of its constituent supracrustal and intrusive rocks. Results of these studies were integrated with regional geophysical datasets to form a 4D model for the Western Granites-Tanami Orogen. Structural, geochemical, and isotopic studies on gold deposits in the region form the basis for an interpretation of the genesis of the gold deposits within the overall evolution of the terrane. Prospectivity maps to aid exploration for further gold mineralisation in this region were then produced first using a manual mineral systems approach, followed by automated empirical and fuzzy logic approaches in a GIS platform.

From these studies, it is concluded that gold in the Granites-Tanami Orogen of Western Australia are orogenic lode gold deposits that formed late in the D_{GTO2} event, broadly coeval with, albeit postdating in detail, granite emplacement at ca. 1795 Ma and redistributed during consequent deformation events.

This improved understanding of the evolution of the Granites-Tanami Orogen may aid exploration for orogenic gold (and other metals) within this fertile yet relatively under-explored region and analogous terrains throughout the NAC and particularly in areas that have experienced collisional tectonics.

Most large deposits in the world similar to those in the GTO have been detected applying conventional geophysical and geochemical approaches. This study presents a new holistic technique that relates mineralization to the 3D architecture of the crust in order to identify the fundamental controls on spatial distribution of mineral deposits.

M393 BANDED IRON FORMATIONS AND IRON ORES OF THE HAMERSLEY PROVINCE: NEW INSIGHTS FROM FIELD, PETROGRAPHIC AND GEOCHEMICAL STUDIES

Report No. 293

Grantee: Curtin University
Applicant: Prof. B Rasmussen / Prof. B Krapez
Grant Amount: \$435 000
Duration: 3 years
Commenced: January, 2008
Sponsors: BHP Billiton Iron Ore,
 Rio Tinto Iron Ore.

Although it is established that iron ore in the Hamersley Province is located in structurally controlled sites, it has long been suspected that there is a stratigraphic control over those sites.

To investigate the possibility of a primary depositional control on iron ore generation, a new look at the sedimentology of banded iron formation was required. This took the form of lithofacies core-logging as a base for new petrography.

The petrographic study has identified a probable depositional texture. This comprises voluminous spheroids of metamorphic stilpnomelane in varying degrees of recrystallisation, and textural destruction. The clay-mineral precursor to those spheroids is interpreted to have been an iron-rich smectitic clay that formed proximal to deep-sea hydrothermal vents and basaltic volcanoes. A biological association is interpreted for the formation of the clay spheroids. Micro-granules of clay are considered to have been the original source of iron in banded iron formations.

In contrast to previous studies, that hematite is recognised to have formed during a post-diagenetic stage, by the replacement of stilpnomelane spheroids. The formation of ore-generation hematite was a regional process, occurring throughout the Hamersley Province.

It appears that the precursor banded iron formation to martite-goethite ore was of a different mineralogy to the baseline/proto-ore studied here. One hypothesis is that the chert in the precursor banded iron formation was replaced by iron-rich carbonate and talc, which is the precursor to goethite formed during weathering. This hypothesis requires new research combining regional structural mapping to define different levels of thrust sheets, mineralogy, geochemistry and geochronology.



Reports Published in 2011/12

M395 THE IMPACT OF SUBMARINE SLIDES ON SEABED PIPELINES

Report No. 290

Grantee: University of WA
Applicant: Prof M Randolph / Dr D White
Grant Amount: \$1 124 000
Duration: 3 years
Commenced: July, 2007
Sponsors: BHP Billiton Petroleum,
 BP Exploration,
 Chevron Energy Technology,
 Petrobras,
 Shell,
 Woodside Energy.

Oil and gas developments are moving into deeper waters, farther from shore. The viability of these developments depends increasingly on the engineering of pipeline tie-backs to shore, which are often required to safely negotiate geohazardous regions of potential submarine slides.

This project aimed to develop new techniques to characterise and model the geotechnical aspects of submarine slide behaviour. A program of novel centrifuge model tests generated a library of well-characterised submarine slides as well as a database of slide-pipe interaction force measurements. These results were used to validate numerical run-out computations that were performed using two levels of sophistication – a new, and more refined, implementation of the industry-standard depth-averaged approach, and a continuum-based large deformation finite element method.

A further significant part of the project was the development of a new geotechnically-based framework to characterise the strength of soft seabed deposits, based on extensive laboratory measurements using different soil types. In addition, extensive analytical studies were performed to support the development of new models for the interaction forces between slides and pipelines, and these were distilled into simple design recommendations.

In many respects the project exceeded the original scope. The depth-averaged modelling was not part of the original proposal, but emerged as a powerful tool to complement the physical modelling and the numerical back-analyses. In addition, the success of the constitutive framework spanning the solid and fluid domains was unexpected; this opens up the possibilities for a more unified treatment of submarine slide in the future, since there is no need to invoke an artificial phase transformation from the solid to the liquid phase.

M401 IMPROVING SOLVENT EXTRACTION TECHNOLOGY

Report No. 289

Grantee: CSIRO
Applicant: Dr D Robinson
Grant Amount: \$150 000
Duration: 3 years
Commenced: September, 2007
Sponsors: Parker Centre.

Efficient solvent extraction (SX) performance is crucial to an increasingly broad range of mineral processing operations. The challenge is to understand how to increase throughput, reduce entrainment, optimise performance, reduce costs and improve operational stability. Reductions in capital and operating costs and improved efficiencies can be achieved in SX plants by:

- optimising the use of current equipment (usually mixer-settlers) through improvements in design and operation;
- where appropriate, introducing newer technology such as pulsed columns; and
- better management of reagents, especially with respect to phase separation and organic degradation and loss.

The focus of the project was to translate developments in fundamental understanding into outcomes for SX plant operations. This involved a balance of fundamental and generic research as well as site-focussed and more specific activities. Highlights of the research outcomes included:

- development of a variety of measures and probes for mixer-settler characterisation including a robust and intrinsically safe flow measurement probe for use in laboratory, pilot scale and operating plants;
- improvement in two-phase computational fluid dynamics (CFD) modelling capabilities for droplet formation, collisions and coalescence and development of specific mixer and settler models of laboratory, pilot and full scale unit processes;
- design, construction and use of an improved Lewis cell for fundamental kinetic and mechanistic studies and incorporation of on-line analytical capabilities; and
- on-site investigations on the operations of three sponsor companies, involving measuring and characterising flow patterns, identifying shortcomings in their operations, proposing opportunities for improvements and assisting plant personnel with justifications for making changes to achieve these improvements.



Reports Published in 2011/12

M405 APPLICATION OF U-Th-Pb-He DOUBLE-DATING TECHNIQUES TO DIAMOND EXPLORATION

Report No. 292

Grantee: CSIRO
Applicant: Dr B McInnes / Dr N Evans
Grant Amount: \$188 800
Duration: 2 years
Commenced: October, 2008
Sponsors: Primary Industries & Resources, South Australia (PIRSA), NT Government, Flinders Diamonds Ltd, North Australian Diamonds Ltd, Kimberley Diamond Company, Venus Resources.

Current diamond exploration strategy includes the search for kimberlite indicator minerals (KIMS) such as chromite, garnet and Cr-diopside in stream sediments and soil samples. KIMS are, however, prone to chemical dissolution in tropical weathering conditions, and therefore alternative approaches involving the chemical analysis of resistant minerals such as zircon would enhance exploration success in Australia.

This work has shown that helium thermochronology or (U-Th)/He dating is a technique that can be utilised to detect "hot" zircon originating from deep crustal regions. Helium retention in zircon is temperature-dependent and controlled by the Earth's geothermal gradient. With a nominal helium closure temperature of ~180°C, zircon xenocrysts from depths greater than 6 km entrained within a kimberlite eruption will have (U-Th)/He ages equivalent to the eruption age of the kimberlite. In contrast, upper crustal zircon will have (U-Th)/He ages approaching the age of formation of the craton (i.e. "cold" zircon).

The project has successfully proven this hypothesis through the development of an innovative zircon U-Th-Pb-He "double-dating" technique involving SHRIMP U/Pb and (U-Th)/He dating of single zircon grains. Controlled studies at the Ellendale lamproite and Merlin kimberlite fields demonstrated a significant bimodal distribution of U-Th-Pb-He ages that discriminate between zircon from diamond-facies lithologies and barren country rock. It further became evident that the zircon in these diamond pipes was exclusively of crustal origin, thereby allowing the project to focus on the use of the more cost-effective helium dating technique at additional test sites at Argyle/Smoke Creek (WA), Seppelt (WA) and Eurelia (SA).

M409 IN-PLACE LEACHING OF OXIDISED GOLD ORES

Report No. 291

Grantee: CSIRO
Applicant: Dr M Jeffrey et al.
Grant Amount: \$35 000
Duration: 9 months
Commenced: October, 2011
Sponsors: BASF Australia, Goldfields, Minotaur Exploration, Newcrest Mining, Newmont Asia Pacific, Orica Mining, METS, PIRSA, GSWA.

The project aimed to develop novel systems for recovering gold from currently uneconomic oxide gold resources in Australia by using a modified *in situ* leaching method. Work included ore characterisation, hydrometallurgy, hydrogeological investigations, reactive transport modelling and a literature review of microbial aspects in oxide gold leaching.

Detailed studies of selected samples of oxide-gold ores were characterised using petrographic studies including optical microscopy, QEMSCAN analysis of gold grain distribution and permeability studies. The results indicated that the ores have good potential for leaching by lixiviant solutions, the gold grains are mineralogically and texturally associated with secondary minerals, and the rocks have an overall high degree of permeability.

Lixiviant systems examined to assess their potential for leaching gold in oxidised rocks included solutions based on thiosulfate, iodide and chloride.

Column leaching experiments on gold-bearing drill chips using the thiosulfate and iodide-based lixiviant systems produced high gold recoveries.

Long term stability studies showed that minerals such as goethite, haematite and kaolinite did not significantly affect the stability of the thiosulfate and iodide-based systems.

Reactive transport modelling, via an initial proof of concept study, confirmed the overall feasibility of an *in situ* leaching approach.

Gold recovery from leaching solutions was achieved using an ion exchange resin.

The literature review identified microbial processes which may be relevant or hold potential for the *in situ* leaching of oxide gold ores.



Projects in Progress: 30 June 2012

No.	Project Title	Applicants	Institute	Term (years)	Cash Cost (\$)	Notional Value (\$)
M381	Ecohydrological characterisation of the natural and rehabilitation ecosystems at Newcrest's Telfer Gold Mine	Prof H Lambers Dr C Hinz	UWA	4	650 000	2 175 000
M394	Integrating novel tools to mitigate total grazing pressure following fire and mining. 1: Olfactory fear cues	Dr M Parsons Mr K Dods	Murdoch	3	213 318	218 318
M396	Establishing a chronostratigraphic framework for the Devonian Canning Basin Reef Complex	Dr E Tohver	UWA	3	440 000	650 160
M399	Susceptibility to <i>Phytophthora cinnamomi</i> and sensitivity to phosphate in native Australian plants: why are they linked?	Prof H Lambers A/Prof G Hardy	UWA / Murdoch	5 yrs	700 000	1 375 000
M406	Advancing the strategic use of seismic data in mines	Prof Y Potvin Dr J Wesseloo	ACG	3	1 140 000	1 140 000
M410	High grade Au deposits: Processes to prediction	Dr J Walshe Dr R Hough	CSIRO	3	977 000	1 495 000
M411	Geochemical greenfields exploration in a regolith dominated terrane: The Yilgarn Margin-Albany-Fraser Belt. Implications for mineral system prospectivity	Dr R Hough Dr J Walshe	CSIRO	3	570 000	870 000
M412	A study of shale gas geomechanics in the Perth basin	A/Prof. V Rasouli A/Prof. R Rezaee	Curtin	3	619 082	619 082
M413	Hydrothermal footprints of magmatic nickel sulphide deposits	Dr S Barnes Dr M Fiorentini	UWA	3	384 945	501 945
M414	Improved hydrogeochemical exploration in the northwest Yilgarn – adding value to underexplored areas	Dr D Gray Dr R Noble	CSIRO	21 mths	293 900	380 300
M415	Mine waste rock dump design using mixed integer programming (MIP)	Dr E Topal Dr D Williams	WASM	3	180 599	180 599
M416	Fine particle agglomeration in process slurries	Dr E Karakyriakos Dr V Patrick	Central Chemical Consulting	15 mths	165 649	165 649
M417	Dynamic testing of surface support systems	Prof. E Villaescusa Dr A Thompson	WASM	3	1 260 000	1 260 000
M418	Advances in Solvent Extraction Technology	Dr D J Robinson	CSIRO	3	1 332 500	1 777 000



Projects in Progress: 30 June 2012
(Continued)

No.	Project Title	Applicants	Institute	Term (yrs)	Cash Cost (\$)	Notional Value (\$)
M419	Advancing Rockburst Mitigation Techniques	Prof. Y. Potvin Dr J. Wesseloo	ACG	3	1,507,500	1,507,500
M421	Bayer Liquor Analysis by infra Red (BLAIR) for Process Liquors	Dr E Karakyriakos Dr V Patrick	Central Chemical Consulting	6 months	29,000	29,000
M422	Enhancing Electrowinning Technology: Reduction of Acid Mist Generation	Dr R.Rajasingam	CSIRO	1	260,000	260,000

Research Assistance

The function of the Institute is to encourage the development of the minerals and petroleum industries in Western Australia by fostering and promoting research in the exploration, development and production of minerals, hydrocarbons and fossil fuels.

Applications for financial assistance for funding of projects may be submitted to the Executive Officer at any time throughout the year. The approval process generally takes 3 to 4 months. These are scrutinised first by the Minerals Research Advisory Committee before its recommendations are considered by the Board.

Organisations with research proposals that have the potential to benefit the minerals or petroleum industries in this State may seek further information by contacting:

The Executive Officer, MERIWA
3rd Floor, Mineral House
100 Plain Street
EAST PERTH WA 6004

Telephone: (08) 9222 3397
Facsimile: (08) 9222 3727
Email address: Yvonne.LEWIS@dmp.wa.gov.au
Website: www.dmp.wa.gov.au/meriwa



Financial Assistance from Industry

The following list is of companies and organisations which provided financial sponsorship in 2011/12 for projects in progress. The Board of Directors thank these groups for their sponsorship and support.

MINERALS RESEARCH

Agnico-Eagle Mines Ltd	Kirkland Lake Gold Inc.
Alcoa World Alumina Australia	Lightning Nickel Pty Ltd
AngloGold Ashanti Australia Ltd	LKAB Sweden
AREVA Group	Mark Creasy
Athena Resources	Mincor Resources
Barrick (Australia Pacific) Ltd	Mindax Limited
BCD Resources (Operations) NL	Minjar Gold Pty Ltd
Beadell Resources Ltd	MMG Golden Grove Pty Ltd
BHP Billiton Iron Ore	MMG (Minerals and Metals Group)
BHP Billiton Nickel West	Newcrest Mining Ltd
BHP Billiton Olympic Dam	Newmont Mining Corporation Asia Pacific
BHP Billiton Worsley Alumina	Newmont USA Limited
Birla Nifty Pty Ltd	North Australian Diamonds Ltd
Buru Energy Ltd	Northern Territory Govt.
Carnarvon Petroleum Ltd	Norwest Energy NL
Cameco Australia Pty Ltd	OZ Minerals
ChemCentre WA	Parker Centre
Chevron Energy Technology	Perilya Broken Hill Limited
Codelco Chile, Division El Teniente	Primary Industries and Resources SA (PIRSA)
CMTE Development Ltd (CRC Mining)	Ramelius Resources Limited
Department of Water	Resource Mining Corporation Ltd
Doray Mineral Ltd	RioTinto Iron Ore
Dywidag Systems International Pty Ltd	Savannah Nickel Mines
Enterprise Metals Ltd	Sipa Resources Ltd
First Quantum Minerals (Australia) Pty Ltd	Spark Energy Pty Ltd
Flinders Diamonds Ltd	St Ives Gold Mining Company Pty Ltd
Geobruigg Australia Pty Ltd	Tanami Gold NL
Geological Survey of Western Australia	Tiwest Pty Ltd
Geotech International Pty Ltd	Triton Gold Limited
Gold Fields Australia Pty Ltd	Vale Canada
Iluka Resources Limited	Venus Metals Corporation Pty Ltd
Independence Group NL	Western Areas
Integra Mining Limited	Woodside Energy Ltd
International Goldfields	Xstrata Copper - Kidd Creek Mine
Jabiru Metals Ltd – Jaguar	Xstrata Nickel Australasia
Kalgoorlie Consolidated Gold Mines	Xstrata Nickel (Cosmos Nickel Project)
Kimberley Diamond Co.	



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Performance Indicators
for the year ended 30 June 2012

Minerals Research Program

Outcome

"Promote all aspects of minerals research"

The key incentive provided by governments to encourage more research is to subsidise its cost. MERIWA's policy is that the magnitude of the subsidy is nominally 35% of the cash cost, encouraging a higher level of participation from industry.

The subsidy level must be such, however, to give MERIWA the authority to rigorously assess research programs and to establish "Conditions of Grant" that facilitate coordination and accountability, and ensure that final reports can be published and widely distributed. The subsidy must be of a level to enable promotion of research on regulatory issues such as occupational health and safety, and minesite rehabilitation.

In addition, research at PhD level is encouraged by the awarding of seven supplementary research scholarships this year.

Effectiveness Indicator

Research was promoted by subsidy to the extent of the funds available. To maximise the effectiveness of this investment, sponsorship was maximised and the involvement of industry in each phase of the research was promoted to focus the scope of the study on the needs of industry and maximise technology transfer. By publishing reports, the research results were disseminated as widely as possible.

The average level of industry sponsorship as a percentage of research value in 2011/2012 was 85% against a target of 65%. The target was exceeded due to the attraction of a strong level of industry sponsorship.

The effectiveness of postgraduate doctoral research scholarships in promoting research will be gauged by the success of students in ultimately achieving their PhDs and in presentations of technical papers and posters at Australian and international symposia. Seven scholarships were awarded in 2011/2012.

Service

"Finance and coordinate minerals research"

Efficiency Indicator:

The indicator is a function of the number of projects and administration costs. Costs of administration are rising due to normal indexed increases to wages and supplies. This year the administration costs have decreased to \$259,385 from \$277,570 in the previous year, due predominantly to the payment in 2010/11 of long service leave as the consequence of the retirement of a long serving staff member. Salary and superannuation costs, Board and committee fees, equipment upgrades, accommodation expenses and administration fees, have all had a modest rise from the previous year. The current trend is for fewer but larger projects that cost more to be administered per project. This year the target of \$11,000 was exceeded due to less than anticipated numbers of potential proposals proceeding to funded projects resulting in an overall increase in the cost of each grant administered.

Effectiveness Indicator – Outcome	2011/2012	2010/2011	2009/2010	2008/2009	2007/2008
% Industry sponsorship achieved	85%	73%	86%	81%	81%
Target	65%	65%	65%	65%	65%
Research value	4935,105	2 431 570	2 366 385	3 407 752	1 189 334

Efficiency Indicator – Service	2011/2012	2010/2011	2009/2010	2008/2009	2007/2008
\$cost per minerals research grant administered	13 652	13 218	13 565	10 226	8 435
Target	11 000	11 000	11 000	10 000	10 000



Certification of Performance Indicators
for the year ended 30 June 2012

We hereby certify that the performance indicators are based on proper records, are relevant and appropriate for assisting users to assess the Minerals and Energy Research Institute of Western Australia's performance, and fairly represent the performance of the Minerals and Energy Research Institute of Western Australia for the financial year ended 30 June 2012.

P C Lockyer
CHAIRMAN,
BOARD OF DIRECTORS

B.Evans
DIRECTOR

20 September 2012



Statement of Comprehensive Income for the year ended 30 June 2012

	Note	2012	2011
		\$	Restated \$
COST OF SERVICES			
Expenses			
Research grants	6	2,324,399	1,836,067
Scholarships	7	55,000	49,918
Employee Costs	8	94,264	131,817
Institute Contractor fees	9	39,585	29,410
Superannuation expense	10	12,600	14,130
Board and committee fees and costs	11	45,539	42,861
Administration expenses	12	29,597	25,017
Accommodation expenses	13	37,800	34,335
Depreciation expense	14	829	830
Total Cost of Services		2,639,613	2,164,385
Income			
Interest Revenue	15	92,180	65,039
Other Revenue	16	1,368	2,409
Revenues from Industry Sponsorship	17	1,823,126	1,631,293
Total income other than income from State Government		1,916,674	1,698,741
NET COST OF SERVICES		722,939	465,644
Income from State Government			
State Government Grant	18	762,750	1,257,250
Resources received free of charge	19	37,800	34,335
Total income from State Government		800,550	1,291,585
SURPLUS/(DEFICIT) FOR THE PERIOD		77,611	825,941
OTHER COMPREHENSIVE INCOME			
Other		-	-
Total other comprehensive income		-	-
TOTAL COMPREHENSIVE INCOME FOR THE PERIOD		77,611	825,941

Refer to Note 5 (v) 'Change in prior period comparatives'.

The Statement of Comprehensive Income should be read in conjunction with the accompanying notes.



Statement of Financial Position as at 30 June 2012

	Note	2012 \$	2011 Restated \$	As at 1 July 2010 Restated \$
ASSETS				
Current Assets				
Cash and cash equivalents	20	867,631	1,000,724	525,110
Restricted cash and cash equivalents	21	2,446,381	1,707,363	1,707,237
Receivables	22	833,527	561,252	341,411
Other Current Assets	23	5,352	5,158	4,423
Total current assets		4,152,891	3,274,497	2,578,181
Non-current Assets				
Plant and equipment	24	3,733	4,562	5,392
Total non-current assets		3,733	4,562	5,392
TOTAL ASSETS		4,156,624	3,279,059	2,583,573
LIABILITIES				
Current liabilities				
Payables	26	308,277	167,670	393,969
Provision for Leave	27	-	23,941	-
Other Current Liabilities	28	12,715	57,585	15,168
Deferred Revenue	29	2,138,357	1,410,199	1,380,713
Total current liabilities		2,459,349	1,659,395	1,789,850
TOTAL LIABILITIES		2,459,349	1,659,395	1,789,850
NET ASSETS		1,697,275	1,619,664	793,723
EQUITY				
Accumulated Surplus	30	1,697,275	1,619,664	793,723
TOTAL EQUITY		1,697,275	1,619,664	793,723

Refer to Note 5 (v) 'Change in prior period comparatives'.

The Statement of Financial Position should be read in conjunction with the accompanying notes.



Statement of Changes in Equity for the year ended 30 June 2012

	Note	Accumulated Surplus
		\$
Balance at 1 July 2010	30	580,790
Correction of prior period errors ¹		212,933
Balance at 1 July 2010 restated		793,723
Surplus/(deficit) ¹		825,941
Other comprehensive income		-
Balance at 30 June 2011 restated		1,619,664
		\$
Balance at 1 July 2011	30	1,619,664
Surplus/(deficit)		77,611
Other comprehensive income		-
Balance at 30 June 2012		1,697,275

¹ Refer to Note 5 (v) 'Change in prior period comparatives'.

The Statement of Changes in Equity should be read in conjunction with the accompanying notes.



Statement of Cash Flows for the year ended 30 June 2012

	Note	2012	2011
		\$	\$
CASH FLOWS FROM STATE GOVERNMENT			
State Government Grant	2(d)	762,750	1,257,250
Net cash provided by State Government		762,750	1,257,250
Utilised as follows:			
CASH FLOWS FROM OPERATING ACTIVITIES			
Payments			
Research Grant payments		(2,277,668)	(2,091,323)
Employee costs		(124,681)	(102,527)
Institute Contractor Fees		(40,234)	(29,734)
Other Operating Payments		(90,681)	(79,416)
GST Payments on Purchases		(225,931)	(240,790)
Receipts			
Receipts from Sponsors		2,262,984	1,402,019
Interest received		91,986	64,305
Other receipts		1,367	2,408
GST receipts on sales		217,880	130,039
GST receipts from Taxation Institute		28,153	163,509
Net cash provided by/(used in) operating activities	31 (b)	(156,825)	(781,510)
CASH FLOWS FROM INVESTING ACTIVITIES			
Purchase of non-current physical assets		-	-
Net cash provided by/(used in) investing activities		-	-
Net increase/(decrease) in cash and cash equivalents		605,925	475,740
Cash and cash equivalents at the beginning of period		2,708,087	2,232,347
Cash and cash equivalents at the end of period	31 (a)	3,314,012	2,708,087

The Statement of Cash Flows should be read in conjunction with the accompanying notes



Notes to the Financial Statements for the year ended 30 June 2012

1. Australian Accounting Standards

General

The Institute's financial statements for the year ended 30 June 2012 have been prepared in accordance with Australian Accounting Standards. The term 'Australian Accounting Standards' includes Standards and Interpretations issued by the Australian Accounting Standards Board (AASB).

The Institute has adopted any applicable, new and revised Australian Accounting Standards from their operative dates.

Early adoption of Standards

The Institute cannot early adopt an Australian Accounting Standard unless specifically permitted by TI 1101 'Application of Australian Accounting Standards and Other Pronouncements'. There has been no early adoption of Australian Accounting Standards that have been issued or amended (but not operative) by the Institute for the annual reporting period ended 30 June 2012.

2. Summary of significant accounting policies

(a) General Statement

The Institute is a not-for-profit reporting entity that prepares general purpose financial statements in accordance with the Australian Accounting Standards, the Framework, Statements of Accounting Concepts and other authoritative pronouncements of the AASB as applied by the Treasurer's Instructions. Several of these are modified by the Treasurer's Instructions to vary application, disclosure, format and wording.

The Financial Management Act and the Treasurer's Instructions impose legislative provisions that govern the preparation of financial statements and take precedence over the Australian Accounting Standards, the Framework, Statements of Accounting Concepts and other authoritative pronouncements of the AASB.

Where modification is required and has had a material or significant financial effect upon the reported results, details of that modification and the resulting financial effect are disclosed in the notes to the financial statements.

(b) Basis of Preparation

The financial statements have been prepared on the accrual basis of accounting using the historical cost convention.

The accounting policies adopted in the preparation of the financial statements have been consistently applied throughout all periods presented unless otherwise stated.

The financial statements are presented in Australian dollars and all values are rounded to the nearest dollar.

Note 3 'Judgements made by management in applying accounting policies' discloses judgements that have been made in the process of applying the Institute's accounting policies resulting in the most significant effect on amounts recognised in the financial statements.



Notes to the Financial Statements for the year ended 30 June 2012

Note 4 'Key sources of estimation uncertainty' discloses key assumptions made concerning the future, and other key sources of estimation uncertainty at the end of the reporting period, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year.

(c) Reporting Entity

The reporting entity comprises the Institute. There are no related bodies.

(d) Income

Revenue recognition

Revenue is recognised and measured at the fair value of consideration received or receivable. The below specific recognition criteria must also be met before revenue is recognised for the major business activities as follows:

Interest

Revenue is recognised as the interest accrues.

Sponsorship Revenue

Sponsorship from Industry is recognised as revenue by reference to the stage of completion of the transaction, ie when the Institute has fulfilled its obligations for research project grants.

Deferred Revenue is recognised when the sponsorship funds are received or receivable and the Institute has not fulfilled its obligations under the terms of the sponsorship agreement.

State Government Grant

State Government Grant is recognised as revenue at fair value in the period in which the Institute gains control of the appropriated funds. The Institute obtains control of appropriated funds at the time those funds are deposited to the bank account.

Sale of goods

Revenue is recognised from the sale of goods when the significant risks and rewards of ownership transfer to the purchaser and can be measured reliably.

(e) Plant and Equipment

Capitalisation/Expensing of assets

Items of plant and equipment costing \$5,000 or more are recognised as assets and the cost of utilising assets is expensed (depreciated) over their useful lives. Items of plant and equipment costing less than \$5,000 are immediately expensed direct to the Statement of Comprehensive Income (other than where they form part of a group of similar items which are significant in total).

Initial recognition and measurement

All items of plant and equipment are initially recognised at cost.

For items of plant and equipment acquired at no cost or for nominal cost, the cost is their fair value at the date of acquisition.



Notes to the Financial Statements for the year ended 30 June 2012

(e) Plant and Equipment cont'd

Subsequent measurement

After recognition as an asset, the historical cost model is used for the measurement of plant and equipment and stated at cost less accumulated depreciation and accumulated impairment losses.

Depreciation

All non-current assets having a limited useful life are systematically depreciated over their estimated useful lives in a manner that reflects the consumption of their future economic benefits.

Depreciation is calculated using the straight line method, using rates which are reviewed annually. The expected useful life for plant and equipment is 3 to 7 years.

(f) Impairment of assets

Plant and equipment assets are tested for any indication of impairment at the end of each reporting period. Where there is an indication of impairment, the recoverable amount is estimated. Where the recoverable amount is less than the carrying amount, the asset is considered impaired and is written down to the recoverable amount and an impairment loss is recognised. As the Institute is a not-for-profit entity, unless an asset has been identified as a surplus asset, the recoverable amount is the higher of an asset's fair value less costs to sell and depreciated replacement cost.

The risk of impairment is generally limited to circumstances where an asset's depreciation is materially understated, where the replacement cost is falling or where there is a significant change in useful life. Each relevant class of assets is reviewed annually to verify that the accumulated depreciation reflects the level of consumption or expiration of asset's future economic benefits and to evaluate any impairment risk from falling replacement costs.

The recoverable amount of assets identified as surplus assets is the higher of fair value less costs to sell and the present value of future cash flows expected to be derived from the asset. Surplus assets carried at fair value have no risk of material impairment where fair value is determined by reference to market-based evidence. Where fair value is determined by reference to depreciated replacement cost, surplus assets are at risk of impairment and the recoverable amount is measured. Surplus assets at cost are tested for indications of impairment at the end of each reporting period.

See note 25 'Impairment of assets' for the outcome of impairment reviews and testing.

(g) Financial Instruments

In addition to cash, the Institute has two categories of financial instrument:

- Loans and Receivables; and
- Financial liabilities measured at amortised cost.



Notes to the Financial Statements for the year ended 30 June 2012

(g) Financial Instruments – cont'd

Financial Instruments have been disaggregated into the following classes:

Financial Assets

- Cash and cash equivalents
- Restricted cash and cash equivalents
- Receivables

Financial Liabilities

- Payables
- Other Liabilities

Initial recognition and measurement of financial instruments is at fair value which normally equates to the transaction cost or the face value. Subsequent measurement is at amortised cost using the effective interest method.

The fair value of short-term receivables and payables is the transaction cost or the face value because there is no interest rate applicable and subsequent measurement is not required as the effect of discounting is not material.

(h) Cash and cash equivalents

For the purpose of the Statement of Cash Flows, cash and cash equivalents (and restricted cash and cash equivalents) assets comprise cash on hand and short-term deposits with original maturities of three months or less that are readily convertible to a known amount of cash and which are subject to insignificant risk of changes in value.

More specifically, the Institute has Short term investments comprised of term deposits and bank bills invested in such securities as approved by the Treasurer.

(i) Receivables

Receivables are recognised at original invoice amount less an allowance for any uncollectible amounts (ie impairment). The collectability of receivables is reviewed on an ongoing basis and any receivables identified as uncollectible are written-off against the allowance account. The allowance for uncollectible amounts (doubtful debts) is raised when there is objective evidence that the Institute will not be able to collect the debts. The carrying amount is equivalent to fair value as it is due for settlement within 30 days. See note 2(g) 'Financial Instruments' and note 22 'Receivables'.

(j) Payables and Accrued Expenses

Payables are recognised when the Institute becomes obliged to make future payments as a result of a purchase of assets or services. The carrying amount is equivalent to fair value, as settlement is generally within 30 days. See note 2(g) 'Financial Instruments', note 26 'Payables'.

Accrued Employee Costs represent the amount due to employees but unpaid at the end of the financial year. Accrued Employee Costs are settled within 30 days of the financial year end. The Institute considers the carrying amount of accrued employee costs to be equivalent to its fair value.

(k) Research Grants

Grants expense is recognised when the Institute becomes obliged to make payment to the grantee. The Institute becomes obliged to make payment when the grantee has met the conditions of the grant agreement, normally on a quarterly basis.



Notes to the Financial Statements for the year ended 30 June 2012

(l) Scholarships

Scholarship expense represents the Institute's obligation to fund approved scholarships.

(m) Provision for Leave

All annual leave and long service leave provisions are in respect of employee's services up to the end of the reporting period. There is no annual leave provision as this leave is settled within the reporting period.

The liability for long service leave expected to be settled within 12 months after the reporting period is recognised and measured at the undiscounted amounts expected to be paid when the liability is settled. Long service leave not expected to be settled within 12 months after the reporting period is recognised and measured at the present value of amounts expected to be paid when the liabilities are settled using the remuneration rate expected to apply at the time of settlement.

When assessing expected future payments consideration is given to expected future wage and salary levels including non-salary components such as employer superannuation contributions as well as the experience of employee departures and periods of service. The expected future payments are discounted using market yields at the end of the reporting period on national government bonds with terms to maturity that match, as closely as possible, the estimated future cash outflows.

Unconditional long service leave provisions are classified as current liabilities as the Institute does not have an unconditional right to defer settlement of the liability for at least 12 months after the reporting period. Conditional long service leave provisions are classified as non-current liabilities because the Institute has an unconditional right to defer the settlement of the liability until the employee has completed the requisite period.

(n) Superannuation

The Government Employees Superannuation Board (GESB) and other funds administer public sector superannuation arrangements in Western Australia in accordance with legislative requirements. Eligibility criteria for membership in particular schemes for the Institute's staff (employees and contractors) vary according to commencement and implementation dates.

The Institute makes concurrent contributions to the GESB or other funds on behalf of Contract Staff in compliance with the Commonwealth Government's Superannuation Guarantee (Administration) Act 1992. These contributions extinguish the liability for superannuation charges in respect of the WSS, GESBS or other superannuation funds.

The superannuation expense in the Statement of Comprehensive Income comprises employer contributions paid to the West State Superannuation (WSS) Scheme, the GESB Super Scheme (GESBS) and other superannuation funds.

(o) Resources Received Free of Charge

Resources received free of charge or for nominal cost that can be reliably measured are recognised as income at fair value. Where the resource received represents a service that the Institute would otherwise pay for, a corresponding expense is recognised. Receipts of assets are recognised in the Statement of Financial Position.

Assets and services rendered from other State Government agencies are separately disclosed under Income from State Government in the Statement of Comprehensive Income.



Notes to the Financial Statements for the year ended 30 June 2012

(p) Comparative Figures

Comparative figures are, where appropriate, reclassified to be comparable with the figures presented in the current financial year.

3. Judgements made by management in applying accounting policies

The judgements that have been made by management in the process of applying accounting policies will have no significant effect on the amounts recognised in the financial statements.

4. Key sources of estimation uncertainty

There were no key assumptions made concerning the future, and no other key sources of estimation uncertainty at the reporting period that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year.

5. Disclosure of changes in Accounting policy and Estimates

(i) Initial application of an Australian Accounting Standard

The Institute has applied the following Australian Accounting Standards effective for annual reporting periods beginning on or after 1 July 2011 that impacted on the Institute:

AASB 1054 *Australian Additional Disclosures*

This Standard, in conjunction with AASB 2011-1 Amendments to Australian Accounting Standards arising from the Trans-Tasman Convergence Project, removes disclosure requirements from other Standards and incorporates them in a single Standard to achieve convergence between Australian and New Zealand Accounting Standards. There is no financial impact.

AASB 2009-12 *Amendments to Australian Accounting Standards [AASB 5, 8, 108, 110, 112, 119, 133, 137, 139, 1023 & 1031 and Int 2, 4, 16, 1039 & 1052]*

This Standard makes editorial amendments to a range of Australian Accounting Standards and Interpretations. There is no financial impact.

AASB 2010-4 *Further Amendments to Australian Accounting Standards arising from the Annual Improvements Project [AASB 1, 7, 101 & 134 and Int 13]*

The amendments to AASB 7 clarify financial instrument disclosures in relation to credit risk. The carrying amount of financial assets that would otherwise be past due or impaired whose terms have been renegotiated is no longer required to be disclosed. There is no financial impact.

The amendments to AASB 101 clarify the presentation of the statement of changes in equity. The disaggregation of other comprehensive income reconciling the carrying amount at the beginning and the end of the period for each component of equity is no longer required. There is no financial impact.



Notes to the Financial Statements for the year ended 30 June 2012

(i) Initial application of an Australian Accounting Standard – cont'd

AASB 2010-5 *Amendments to Australian Accounting Standards [AASB 1, 3, 4, 5, 101, 107, 112, 118, 119, 121, 132, 133, 134, 137, 139, 140, 1023 & 1038 and Int 112, 115, 127, 132 & 1042]*

This Standard makes editorial amendments to a range of Australian Accounting Standards and Interpretations. There is no financial impact.

AASB 2010-6 *Amendments to Australian Accounting Standards – Disclosures on Transfers of Financial Assets [AASB 1 & 7]*

This Standard introduces additional disclosure relating to transfers of financial assets in AASB 7. An entity shall disclose all transferred financial assets that are not derecognised and any continuing involvement in a transferred asset existing at the reporting date, irrespective of when the related transfer transaction occurred. There is no financial impact.

AASB 2011-1 *Amendments to Australian Accounting Standards arising from the Trans-Tasman Convergence Project [AASB 1, 5, 101, 107, 108, 121, 128, 132 & 134 and Int 2, 112 & 113]*

This Standard, in conjunction with AASB 1054, removes disclosure requirements from other Standards and incorporates them in a single Standard to achieve convergence between Australian and New Zealand Accounting Standards. There is no financial impact.

AASB 2011-5 *Amendments to Australian Accounting Standards – Extending Relief from Consolidation, the Equity Method and Proportionate Consolidation [AASB 127, 128 & 131]*

This Standard extends the relief from consolidation, the equity method and proportionate consolidation by removing the requirement for the consolidated financial statements prepared by the ultimate or any intermediate parent entity to be IFRS compliant, provided that the parent entity, investor or venturer and the ultimate or intermediate parent entity are not-for-profit non-reporting entities that comply with Australian Accounting Standards. There is no financial impact.

(ii) Voluntary changes in accounting policy

There were no voluntary changes in accounting policy adopted for the current period or is expected to have an effect in future periods.

(iii) Future impact of Australian Accounting Standards not yet operative

The Institute cannot early adopt an Australian Accounting Standard unless specifically permitted by TI 1101 'Application of Australian Accounting Standards and Other Pronouncements'. Consequently, the Institute has not applied early any of the following Australian Accounting Standards that have been issued that may impact the Institute. Where applicable, the Institute plans to apply these Australian Accounting Standards from their application date:



Notes to the Financial Statements for the year ended 30 June 2012

Australian Accounting Standard	Operative for reporting periods beginning on/after
<p>AASB 9 <i>Financial Instruments</i></p> <p>This Standard supersedes AASB 139 <i>Financial Instruments: Recognition and Measurement</i>, introducing a number of changes to accounting treatments.</p> <p>The Standard was reissued in December 2010. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 10 <i>Consolidated Financial Statements</i></p> <p>This Standard supersedes requirements under AASB 127 <i>Consolidated and Separate Financial Statements and Int 112 Consolidation – Special Purpose Entities</i>, introducing a number of changes to accounting treatments.</p> <p>The Standard was issued in August 2011. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 11 <i>Joint Arrangements</i></p> <p>This Standard supersedes AASB 131 <i>Interests in Joint Ventures</i>, introducing a number of changes to accounting treatments.</p> <p>The Standard was issued in August 2011. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 12 <i>Disclosure of Interests in Other Entities</i></p> <p>This Standard supersedes disclosure requirements under AASB 127 <i>Consolidated and Separate Financial Statements</i> and AASB 131 <i>Interests in Joint Ventures</i>.</p> <p>The Standard was issued in August 2011. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 13 <i>Fair Value Measurement</i></p> <p>This Standard defines fair value, sets out a framework for measuring fair value and requires disclosures about fair value measurements. There is no financial impact.</p>	1 Jan 2013



Notes to the Financial Statements

for the year ended 30 June 2012

Australian Accounting Standard	Operative for reporting periods beginning on/after
<p>AASB 119 <i>Employee Benefits</i></p> <p>This Standard supersedes AASB 119 (October 2010). As the Institute does not operate a defined benefit plan, the impact of the change is limited to measuring annual leave as a long term employee benefit. The resultant discounting of the annual leave benefit has an immaterial impact.</p>	1 Jan 2013
<p>AASB 127 <i>Separate Financial Statements</i></p> <p>This Standard supersedes requirements under AASB 127 <i>Consolidated and Separate Financial Statements</i>, introducing a number of changes to accounting treatments.</p> <p>The Standard was issued in August 2011. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 128 <i>Investments in Associates and Joint Ventures</i></p> <p>This Standard supersedes AASB 128 <i>Investments in Associates</i>, introducing a number of changes to accounting treatments.</p> <p>The Standard was issued in August 2011. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 1053 <i>Application of Tiers of Australian Accounting Standards</i></p> <p>This Standard establishes a differential financial reporting framework consisting of two tiers of reporting requirements for preparing general purpose financial statements. There is no financial impact.</p>	1 Jul 2013
<p>AASB 2009-11 <i>Amendments to Australian Accounting Standards arising from AASB 9 [AASB 1, 3, 4, 5, 7, 101, 102, 108, 112, 118, 121, 127, 128, 131, 132, 136, 139, 1023 & 1038 and Int 10 & 12]</i></p> <p>[Modified by AASB 2010-7]</p>	1 Jul 2013



Notes to the Financial Statements for the year ended 30 June 2012

Australian Accounting Standard	Operative for reporting periods beginning on/after
<p>AASB 2010-2 <i>Amendments to Australian Accounting Standards arising from Reduced Disclosure Requirements [AASB 1, 2, 3, 5, 7, 8, 101, 102, 107, 108, 110, 111, 112, 116, 117, 119, 121, 123, 124, 127, 128, 131, 133, 134, 136, 137, 138, 140, 141, 1050 & 1052 and Int 2, 4, 5, 15, 17, 127, 129 & 1052]</i></p> <p>This Standard makes amendments to Australian Accounting Standards and Interpretations to introduce reduced disclosure requirements for certain types of entities. There is no financial impact.</p>	1 Jul 2013
<p>AASB 2010-7 <i>Amendments to Australian Accounting Standards arising from AASB 9 (December 2010) [AASB 1, 3, 4, 5, 7, 101, 102, 108, 112, 118, 120, 121, 127, 128, 131, 132, 136, 137, 139, 1023 & 1038 and Int 2, 5, 10, 12, 19 & 127]</i></p> <p>This Standard makes consequential amendments to other Australian Accounting Standards and Interpretations as a result of issuing AASB 9 in December 2010. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 2011-2 <i>Amendments to Australian Accounting Standards arising from the Trans-Tasman Convergence Project – Reduced Disclosure Requirements [AASB 101 & 1054]</i></p> <p>This Standard removes disclosure requirements from other Standards and incorporates them in a single Standard to achieve convergence between Australian and New Zealand Accounting Standards for reduced disclosure reporting. There is no financial impact.</p>	1 Jul 2013
<p>AASB 2011-6 <i>Amendments to Australian Accounting Standards – Extending Relief from Consolidation, the Equity Method and Proportionate Consolidation – Reduced Disclosure Requirements [AASB 127, 128 & 131]</i></p> <p>This Standard extends the relief from consolidation, the equity method and proportionate consolidation by removing the requirement for the consolidated financial statements prepared by the ultimate or any intermediate parent entity to be IFRS compliant, provided that the parent entity, investor or venturer and the ultimate or intermediate parent entity comply with Australian Accounting Standards or Australian Accounting Standards – Reduced Disclosure Requirements. There is no financial impact.</p>	1 Jul 2013



Notes to the Financial Statements for the year ended 30 June 2012

Australian Accounting Standard	Operative for reporting periods beginning on/after
<p>AASB 2011-7 <i>Amendments to Australian Accounting Standards arising from the Consolidation and Joint Arrangements Standards [AASB 1, 2, 3, 5, 7, 9, 2009-11, 101, 107, 112, 118, 121, 124, 132, 133, 136, 138, 139, 1023 & 1038 and Int 5, 9, 16 & 17]</i></p> <p>This Standard gives effect to consequential changes arising from the issuance of AASB 10, AASB 11, AASB 127 Separate Financial Statements and AASB 128 Investments in Associates and Joint Ventures. The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jan 2013
<p>AASB 2011-8 <i>Amendments to Australian Accounting Standards arising from AASB 13 [AASB 1, 2, 3, 4, 5, 7, 9, 2009-11, 2010-7, 101, 102, 108, 110, 116, 117, 118, 119, 120, 121, 128, 131, 132, 133, 134, 136, 138, 139, 140, 141, 1004, 1023 & 1038 and Int 2, 4, 12, 13, 14, 17, 19, 131 & 132]</i></p> <p>This Standard replaces the existing definition and fair value guidance in other Australian Accounting Standards and Interpretations as the result of issuing AASB 13 in September 2011. There is no financial impact.</p>	1 Jan 2013
<p>AASB 2011-9 <i>Amendments to Australian Accounting Standards – Presentation of Items of Other Comprehensive Income [AASB 1, 5, 7, 101, 112, 120, 121, 132, 133, 134, 1039 & 1049]</i></p> <p>This Standard requires to group items presented in other comprehensive income on the basis of whether they are potentially reclassifiable to profit or loss subsequently (reclassification adjustments). The Institute has not yet determined the application or the potential impact of the Standard.</p>	1 Jul 2012



Notes to the Financial Statements

for the year ended 30 June 2012

Australian Accounting Standard	Operative for reporting periods beginning on/after
<p>AASB 2011-10 <i>Amendments to Australian Accounting Standards arising from AASB 119 (September 2011) [AASB 1, 8, 101, 124, 134, 1049 & 2011-8 and Int 14]</i></p> <p>This Standard makes amendments to other Australian Accounting Standards and Interpretations as a result of issuing AASB 119 in September 2011. There is no financial impact.</p>	1 Jan 2013
<p>AASB 2011-11 <i>Amendments to AASB 119 (September 2011) arising from Reduced Disclosure Requirements</i></p> <p>This Standard gives effect to Australian Accounting Standards – Reduced Disclosure Requirements for AASB 119 (September 2011). There is no financial impact.</p>	1 Jan 2013
<p>AASB 2012-1 <i>Amendments to Australian Accounting Standards arising – Fair Value Measurement – Reduced Disclosure Requirements [AASB 3, 7, 13, 140, & 141]</i></p> <p>This Standard establishes and amends reduced disclosure requirements for additional and amended disclosures arising from AASB 13 and the consequential amendments implemented through AASB 2011-8. There is no financial impact.</p>	1 Jul 2013

(iv) Changes in accounting estimates

There were no changes in accounting estimates that will have an effect in the current period or is expected to have an effect in future periods.

(v) Change in prior period comparatives

The Institute reviewed the accounting treatment surrounding the current Sponsorship arrangements. The review concluded that the earlier treatment of accounting for sponsorship receivables and deferred revenue was not appropriate. The earlier treatment recognised the entire amount of the sponsorship commitment as a receivable and deferred revenue, and the recognition occurred at the point of signing the sponsorship agreement. Deferred revenue is now recognised once funds are received or are receivable at year end from sponsors. Receivables are now recognised when invoices are raised in accordance with payment schedules in the sponsorship agreements. This treatment is in line with the Australian Accounting Standards and the Institute's accounting policy for receivables at note 2 (i).

As a consequence of the above, Deferred Revenue and Receivables have been restated in the comparatives. In addition a prior period error of \$385,866 was identified which relates to unrecognised sponsorship revenue. Revenue from Industry Sponsorship and Accumulated Surplus has been adjusted to correct this prior period error.

Under Australian Accounting Standard AASB 108 'Accounting policies, Changes in Accounting Estimates and Errors' this change must be accounted for retrospectively.



Notes to the Financial Statements for the year ended 30 June 2012

(v) **Change in prior period comparatives –cont'd**

Accordingly, the above changes have been made by restating each of the affected financial statement line items for the prior periods as follows:

	30 June 2011	Increase/ (Decrease)	30 June 2011 (Restated)	1 July 2010	Increase/ (Decrease)	1 July 2010 (Restated)
	\$ (extract)	\$	\$	\$	\$	\$
Statement of Financial Position						
Receivable	1,263,060	(701,808)	561,252	951,022	(609,611)	341,411
Deferred Revenue	2,497,873	(1,087,674))	1,410,199	2,203,257	(822,544)	1,380,713
Equity	1,233,798	385,866	1,619,664	580,790	212,933	793,723

Statement of Comprehensive Income

Revenues from Industry Sponsorship	1,458,360	172,933	1,631,293	-	-	-
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6. Research Grants

	2012 \$	2011 \$
Research Grants – MERIWA	451,158	377,707
Research Grants – Industry Sponsorship	1,873,241	1,458,360
	<u>2,324,399</u>	<u>1,836,067</u>

7. Scholarships

Scholarships	55,000	49,918
	<u>55,000</u>	<u>49,918</u>

8. Employee Costs

Salaries and wages	94,264	131,817
	<u>94,264</u>	<u>131,817</u>

9. Institute Contractor Fees

Institute Contract Staff Fees	39,585	29,410
	<u>39,585</u>	<u>29,410</u>

10. Superannuation expense

Superannuation expense	12,600	14,130
	<u>12,600</u>	<u>14,130</u>

11. Board and Committee fees and costs

Board of Director's remuneration	40,700	36,625
Advisory Committee attendance fees	4,220	5,180
Board and Advisory Committee's expenses	619	1,056
	<u>45,539</u>	<u>42,861</u>



Notes to the Financial Statements for the year ended 30 June 2012

	2012 \$	2011 \$
12. Administration expenses		
Printing and Stationery	2,571	1,590
Advertising	3,506	2,731
Audit fees	16,000	14,950
Worker's Compensation premium	2,384	1,848
Other	5,136	3,898
	29,597	25,017
13. Accommodation expenses		
Rental (notional)	37,800	34,335
	37,800	34,335
14 Depreciation expense		
Plant and Equipment	829	830
	829	830
15 Interest Revenue		
Interest on Investments – Term Deposits	92,180	65,039
	92,180	65,039
16. Other Revenue		
Sale of Publications	1,368	2,409
	1,368	2,409
17. Revenue from Industry Sponsorship		
Sponsorship from Industry	1,823,126	1,631,293
	1,823,126	1,631,293
The 2010-11 comparative amount has been restated - see Note 5 (v) 'Change in prior period comparatives'.		
18. State Government Grant		
State Government Grant	762,750	1,257,250
	762,750	1,257,250
19. Resources received free of charge		
Resources received free of charge have been determined on the basis of the following estimates provided by agencies.		
Department of Mines and Petroleum	37,800	34,335
	37,800	34,335

Where services have been received free of charge or for nominal cost, the Institute recognises revenues equivalent to the fair value of the services that can be reliably determined and which would have been purchased if not donated, and those fair values shall be recognised as expenses. Where the contributions of services are in the nature of contributions by owners the Institute makes an adjustment direct to equity.



Notes to the Financial Statements for the year ended 30 June 2012

	2012	2011
	\$	\$
20. Cash and cash equivalents		
Cash at bank	867,431	1,000,524
Cash on hand	200	200
	867,631	1,000,724

21. Restricted cash and cash equivalents

Research Grants	2,446,381	1,707,363
	2,446,381	1,707,363

Cash held in the account is to be used only for the purpose of providing grants for research and development of projects to grantees.

22. Receivables

	2012	2011	1 July 2010
	\$	\$	\$
<u>Current</u>			
Grants Receivable – Sponsorship	833,527	552,272	229,315
GST Receivable	-	8,980	112,096
	833,527	561,252	341,411

There are no receivables individually determined as impaired at the end of the reporting period.

The 1 July 2010 and 2010-11 comparative amounts have been restated - see Note 5 (v) 'Change in prior period comparatives'.

See also note 2(i) 'Receivables', 2(d) 'Sponsorship Revenue', and note 34 'Financial Instruments'

23. Other Current Assets

Accrued Interest on Short Term Investments	5,352	5,158
	5,352	5,158

24. Plant and equipment

Plant and equipment		
At cost	5,530	5,530
Accumulated depreciation	1,797	(968)
	3,733	4,562

Reconciliation of the carrying amounts of plant and equipment at the beginning and end of the reporting period are set out below:

Plant and equipment		
Carrying amount at start of year	4,562	5,392
Additions		-
Depreciation	(829)	(830)
Disposals		-
Carrying amount at end of year	3,733	4,562

25. Impairment of assets

There were no indications of impairment to plant and equipment assets at 30 June 2012.

The Institute held no goodwill or intangible assets or surplus assets at the end of the reporting period.



Notes to the Financial Statements for the year ended 30 June 2012

	2012 \$	2011 \$
26. Payables		
<u>Current</u>		
Grants Payable – Research	260,662	138,291
Grants Payable – Scholarship	20,110	29,379
GST Payable	27,505	-
	<u>308,277</u>	<u>167,670</u>

See also note 2(j) 'Payables', 2(k) 'Research Grants', 2(l) 'Scholarships' and note 34 'Financial Instruments'

27. Provision for Leave

	2012 \$	2011 \$
<u>Current</u>		
Long Service Leave	-	23,941
	<u>-</u>	<u>23,941</u>

Long service leave liabilities have been classified as current where there is no unconditional right to defer settlement for at least 12 months after the reporting period.

28. Other Current Liabilities

<u>Accrued Expenses</u>		
Accrued Employee costs	8,293	14,768
Institute Contractor fees	3,316	3,965
Superannuation	1,071	3,841
Administration expenses	35	211
	<u>12,715</u>	<u>22,785</u>
<u>Miscellaneous Liabilities</u>		
Sponsorship funds	-	34,800
	<u>-</u>	<u>34,800</u>

See also note 2(j) 'Payables' and note 34 'Financial Instruments'

29. Deferred Revenue

	2012 \$	2011 \$	1 July 2010 \$
<u>Current</u>			
Deferred Revenue – Sponsorship	2,138,357	1,410,199	1,380,713
	<u>2,138,357</u>	<u>1,410,199</u>	<u>1,380,713</u>

The 1 July 2010 and 2010-11 comparative amounts have been restated - see Note 5 (v) 'Change in prior period comparatives'.

30. Equity

Equity represents the residual interest in net assets of the Institute. The Government holds the equity interest in the Institute on behalf of the community.

<u>Accumulated Surplus</u>		
Balance at start of year	1,619,664	793,723
Result for the period	77,611	825,941
Balance at end of year	<u>1,697,275</u>	<u>1,619,664</u>

The 2010-11 comparative amount has been restated - see Note 5 (v) 'Change in prior period comparatives'.



Notes to the Financial Statements for the year ended 30 June 2012

31. Notes to the Statement of Cash Flows

(a) Reconciliation of Cash

Cash at the end of the financial year as shown in the Statement of Cash Flows is reconciled to the related items in the Statement of Financial Position as follows:

	2012	2011
Cash at bank	867,431	1,000,524
Cash on hand	200	200
Restricted Cash and cash equivalents	2,446,381	1,707,363
	<u>3,314,012</u>	<u>2,708,087</u>

(b) Reconciliation of Net Cost of Services to Net Cash Flows Used In Operating Activities

	2012	2011
	\$	\$
Net cost of services	(722,939)	(465,644)
Non-cash items:		
Resources received free of charge	37,800	34,335
Depreciation	829	830
(Increase)/Decrease in assets:		
Accrued Interest	(194)	(735)
Grants Receivable – Sponsorship	(281,255)	(588,087)
Increase/(Decrease) in liabilities:		
Grants Payable –Research and Scholarship	113,101	(226,299)
Deferred Revenue	728,158	294,616
Other Current Liabilities	(68,811)	66,358
Net GST (receipts)/payments	20,102	52,758
Change in GST in receivables/payables	16,384	50,358
Net Cash used in operating activities	<u>(156,825)</u>	<u>(781,510)</u>

The 2010-11 comparative amount has been restated - see Note 5 (v) 'Change in prior period comparatives'.

32. Commitments

At the end of the reporting period the Institute has \$5,339,990 (2011 \$2,911,272) of research grant commitments that are not recognised in the Income Statement. The Institute is obliged to make payment when the grantee has met the conditions of grant (see note 2k) and are payable as follows:

	2012	2011
	\$	\$
Within 1 year	2,520,853	1,745,042
Later than 1 year but not later than 5 years	2,819,137	1,166,230
Total	<u>5,339,990</u>	<u>2,911,272</u>

These commitments are not inclusive of GST



Notes to the Financial Statements for the year ended 30 June 2012

33. Explanatory Statement

This statement provides details of any significant variations between estimates and actual results for 2012 and between the actual results for 2011 and 2012. Significant variations are considered to be those greater than 10% and \$2,000.

(i) Significant variances between estimated and actual result for 2012

	2012 Estimate \$	2012 Actual \$	Variation \$
Research Grants	2,609,750	2,324,399	(285,351)
Scholarships	50,000	55,000	5,000
Institute Contactor fees	30,000	39,585	9,585
Superannuation expense	15,000	12,600	(2,400)
Board and Committee fees and costs	40,000	45,539	5,539
Administration costs	25,170	29,597	4,427
Interest revenue	85,000	92,180	7,180
Revenue from Industry Sponsorship	2,020,000	1,823,126	(196,874)

- Research Grants expense was lower than the estimate due to a smaller number of projects being processed than expected for the period.
- Scholarships were higher than estimate due to an additional scholarship being awarded.
- Institute Contractor fees were higher than estimate due to an increased work load as a result of two major projects requiring extensive review.
- Superannuation expense was lower than estimate due to lower contract staff costs than expected.
- Board and Committee fees and costs were higher than estimate due to a full complement of Directors being appointed for the period.
- Administration costs were higher than estimate mainly due to the need to re-assess the Project Co-ordinator's duties.
- Interest revenue was higher than estimate due to a larger cash balance being maintained for the period.
- Revenue from Industry Sponsorship was lower than the estimate due to a smaller number of projects being processed than expected for the period.

(ii) Significant variances between actual results for 2011 and 2012

	2012 \$	2011 \$	Variance \$
Research Grants	2,324,399	1,836,067	488,332
Scholarships	55,000	49,918	5,082
Employee costs	94,264	131,817	(37,553)
Institute Contract fees	39,585	29,410	10,175
Administration costs	29,597	25,017	4,580
Accommodation costs	37,800	34,335	3,465
Interest revenue	92,180	65,039	27,141
Revenue from Industry Sponsorship	1,823,126	1,631,293	191,833
State Government grant	762,750	1,257,250	(494,500)
Resources received free of charge	37,800	34,335	3,465

- Research Grants expense - the variance is due to an increased value of research projects undertaken.
- Scholarships – the variance is due to an increased number of scholars accepted than in 2010/11.
- Employee costs – the variance is due to the payment of long service leave in 2010/11 as a consequence of the retirement of a staff member.



Notes to the Financial Statements for the year ended 30 June 2012

33. Explanatory Statement

ii. Significant variances between actual results for 2011 and 2012 – cont'd

- Institute contractor fees – the variance is due to an increased work load as a result of two major projects requiring extensive review.
- Administration costs – the variance is mainly due to the need to re-assess the Project Co-ordinator's duties.
- Accommodation costs – the variance is due to an increase in the market rental value.
- Interest revenue - the variance is due to a larger cash balance being maintained for the period.
- Revenue from Industry Sponsorship – the variance is due to an increased value of research projects undertaken over the previous year.
- State Government Grant – the variance is due to the 2011/12 1st quarterly payment being received in 2010/11.
- Resources received free of charge - the variance is due to an increase in the market rental value.

34. Financial Instruments

(a) Financial Risk Management Objectives and Policies

Financial instruments held by the Institute are cash and cash equivalents, restricted cash and cash equivalents, receivables and payables. The Institute has limited exposure to financial risks. The Institute's overall risk management program focuses on managing the risks identified below.

Credit Risk

Credit risk arises when there is the possibility of the Institute's receivables defaulting on their contractual obligations resulting in financial loss to the Institute.

The maximum exposure to credit risk at the end of the reporting period in relation to each class of recognised financial assets is the gross carrying amount of those assets inclusive of any allowance for impairment as shown in the table at Note 34(c) 'Financial Instrument Disclosures' and Note 22 'Receivables'.

The Institute trades only with recognised, creditworthy third parties. The Institute has policies in place to ensure that sale of products and services are made to customers with an appropriate credit history. In addition, receivable balances are monitored on an ongoing basis with the result that the Institute's exposure to bad debts is minimal. At the end of the reporting period there are no significant concentrations of credit risk.

Allowance for impairment of financial assets is calculated based on objective evidence such as observable data in client credit ratings. For financial assets that are either past due or impaired, refer to Note 34 (c) 'Financial Instrument Disclosures'.

Liquidity risk

Liquidity risk arises when the Institute is unable to meet its financial obligations as they fall due. The Institute is exposed to liquidity risk through its trading in the normal course of business.

The Institute has appropriate procedures to manage cash flows including draw downs of appropriations by monitoring forecast cash flows to ensure that sufficient funds are available to meet commitments.



Notes to the Financial Statements for the year ended 30 June 2012

Market risk

Market risk is the risk that changes in market prices such as foreign exchange rates and interest rates will affect the Institute's income or the value of its holdings of financial instruments. The Institute does not trade in foreign currency and is not materially exposed to other price risks. The Institute's exposure to market risk for changes in interest rates relate primarily to Short-term investments comprised of term deposits and bank bills. The risk is managed by the Institute through diversification and variation in maturity dates.

(b) Categories of Financial Instruments

In addition to cash, the carrying amounts of each of the following categories of financial assets and financial liabilities at the end of the reporting period are :

	2012 \$	2011 \$
Financial Assets		
Cash and cash equivalents	867,631	1,000,724
Restricted cash and cash equivalents	2,446,381	1,707,363
Loans and Receivables ^(a)	833,527	552,272
Financial Liabilities		
Financial liabilities measured at amortised cost	2,459,349	1,659,395

(a) The amount of Receivables excludes GST recoverable from the ATO (statutory receivable).

(c) Financial Instrument disclosures

Credit Risk

The following table discloses the Institute's maximum exposure to credit risk and the ageing analysis of financial assets. The Institute's maximum exposure to credit risk at the end of the reporting period is the carrying amount of the financial assets as shown below. The table discloses the ageing of financial assets that are past due but not impaired and impaired financial assets. The table is based on information provided to senior management of the Institute.

The Institute does not hold any collateral as security or other credit enhancements relating to the financial assets it holds.

Aged analysis of financial assets ^(a)

	Carrying Amount	Not past due and not impaired	Past due but not impaired				Impaired financial Assets
			Up to 1 month	1 to 3 months	3 – 12 months	1 – 2 years	
	\$	\$		\$	\$	\$	\$
2012							
Cash and cash equivalents	867,631	867,631					
Restricted cash and cash equivalents	2,446,381	2,446,381					
Receivables	833,527	412,500	272,085	17,160	127,492	4,290	
Other assets	5,352	5,352					
Total	4,152,891	3,731,864	272,085	17,160	127,492	4,290	-

(a) The amount of Receivables excludes GST recoverable from the ATO (statutory receivable).



Notes to the Financial Statements for the year ended 30 June 2012

Aged analysis of financial assets (a) – cont'd

	Carrying Amount	Not past due and not impaired	<u>Past due but not impaired</u>				Impaired financial Assets
			Up to 1 month	1 to 3 months	3 – 12 months	1 – 2 years	
	\$	\$	\$	\$	\$	\$	\$
2011							
Cash and cash equivalents	1,000,724	1,000,724					
Restricted cash and cash equivalents	1,707,363	1,707,363					
Receivables	552,272	-	357,500	-	189,772	5,000	-
Other assets	5,158	5,158					
Total	3,265,517	2,713,245	357,500	-	189,772	5,000	-

The 2010-11 comparative amount has been restated - see Note 5 (v) 'Change in prior period comparatives'.

(a) The amount of Receivables excludes GST recoverable from the ATO (statutory receivable).

Liquidity Risk and interest rate exposure

The following table details the interest rate exposure and the contractual maturity analysis for financial assets and financial liabilities. The maturity section includes interest and principal cash flows. The interest rate exposure section analyses only the carrying amounts of each item.

Interest rate exposures and maturity analysis of financial assets and financial liabilities

	<u>Interest rate exposure</u>			<u>Maturity dates</u>			Up to 1 month	1 – 12 months	More than 1 year
	Weighted Average Effective Interest Rate	Carrying Amount	Variable Interest Rate	Non-interest Bearing	Nominal Amount				
	%	\$	\$	\$	\$	\$	\$	\$	
2012									
Financial Assets									
Cash and cash equivalents	3.90	867,631	867,631						
Restricted cash and cash equivalents	3.25	2,446,381	2,446,381						
Receivables		833,527		833,527	833,527	833,527			
Other assets		5,352		5,352	5,352	5,352			
Total		4,152,891	3,314,012	838,879	838,879	838,879	838,879	-	-
Financial Liabilities									
Payables		308,277		308,277	308,277	308,277			
Deferred Revenue		2,138,357		2,138,357	2,138,357	2,138,357			
Other Liabilities		12,715		12,715	12,715	12,715			
Total		2,459,349		2,459,349	2,459,349	2,459,349	2,459,349	-	-

(a) The amount of Receivables excludes GST recoverable from the ATO (statutory receivable).



Notes to the Financial Statements for the year ended 30 June 2012

Interest rate exposures and maturity analysis of financial assets and financial liabilities – cont'd

	Weighted Average Effective Interest Rate %	Interest rate exposure			Maturity dates			
		Carrying Amount \$	Variable Interest Rate \$	Non- interest Bearing \$	Nominal Amount \$	Up to 1 month \$	1 – 12 months \$	More than 1 year \$
2011								
Financial Assets								
Cash and cash equivalents	1.08	1,000,724	1,000,724					
Restricted cash and cash equivalents	1.10	1,707,363	1,707,363					
Receivables		552,272		552,272	552,272	552,272		
Other assets		5,158		5,158	5,158	5,158		
Total		3,265,517	2,708,087	557,430	557,430	557,430	-	-
	%	\$	\$	\$	\$	\$	\$	\$
Financial Liabilities								
Payables	-	167,670		167,670	167,670	167,670		
Deferred Revenue	-	1,410,199		1,410,199	1,410,199	1,410,199		
Other Liabilities	-	57,585		57,585	57,585	57,585		
Total		1,635,454	1,635,454	1,635,454	1,635,454	1,635,454	-	-

The 2010-11 comparative amount has been restated - see Note 5 (v) 'Change in prior period comparatives'.

(a) The amount of Receivables excludes GST recoverable from the ATO (statutory receivable).

Interest rate sensitivity analysis

The following table represents a summary of the interest rate sensitivity of the Institute's financial assets and liabilities at the end of the reporting period on the surplus for the period and equity for a 1% change in interest rates. It is assumed that the change in interest rates is held constant throughout the reporting period.

	Carrying Amount	-100 basis	Points	+100 basis	Points
		Surplus	Equity	Surplus	Equity
	\$	\$	\$	\$	\$

2012

Financial Assets

Cash and cash equivalents	867,631	(8,676)	(8,676)	8,676	8,676
Restricted cash and cash equivalents	2,446,381	(24,464)	(24,464)	24,464	24,464

2011

Financial Assets

Cash and cash equivalents	1,000,724	(10,007)	(10,007)	10,007	10,007
Restricted cash and cash equivalents	1,707,363	(17,074)	(17,074)	17,074	17,074



Notes to the Financial Statements for the year ended 30 June 2012

Fair values

All financial assets and liabilities recognised in the Statement of Financial Position, whether they are carried at cost or fair value, are recognised at amounts that represent a reasonable approximation of fair value unless otherwise stated in the applicable notes.

35. Remuneration of members of the Accountable Institute and Senior Officers

Remuneration of Members of the Accountable Institute

The number of members of the Accountable Institute whose total of fees, salaries, superannuation, non-monetary benefits and other benefits for the financial year, fall within the following bands are:

		2012	2011
\$ 0 - \$ 10,000		3	3
\$ 10,001 - \$ 20,000		1	1

The total remuneration of the members of the Accountable Institute is:

<u>\$</u>	<u>\$</u>
40,700	36,625

No amounts were paid or become payable to any superannuation fund for the financial year for any of the members of the Accountable Institute.

No members of the Accountable Institute are members of the Pension Scheme.

Remuneration of Senior Officers

The number of Senior Officers other than senior officers reported as members of the Accountable Institute whose total fees, salaries, superannuation, non-monetary benefits and other benefits for the financial year, fall within the following bands are:

		2012	2011
\$ 40,001 - \$ 50,000		1	1

The total remuneration of Senior Officers of the Accountable Institute is:

<u>\$</u>	<u>\$</u>
43,218	43,550

The total remuneration includes the superannuation expense incurred by the Institute in respect of Senior Officers other than senior officers reported as members of the Accountable Institute.

No Senior Officers are members of the Pension Scheme.



Notes to the Financial Statements for the year ended 30 June 2012

36. Remuneration of Auditor

Remuneration payable to the Auditor General for the financial year is as follows:

	2012	2011
	\$	\$
Auditing the accounts, financial statements and performance indicators	15,000	16,000
	15,000	16,000

The expense is included at note 12 'Administration expenses'

37. Supplementary Information

The Institute has no contingent liabilities and contingent assets, or any related or affiliated bodies.

There were no events occurring after the end of the reporting period, or write-offs or losses through theft, defaults and other causes.

No gifts of public property were provided by the Institute.

38. Schedule of Income and Expenses by Service

Treasurer's Instruction 1101(9) requires that statutory authorities provide segment information in the form of services.

MERIWA has one sole activity (or service) which is to finance and coordinate minerals and energy research.

No schedule is prepared as this information is reported in the Statement of Comprehensive Income.

