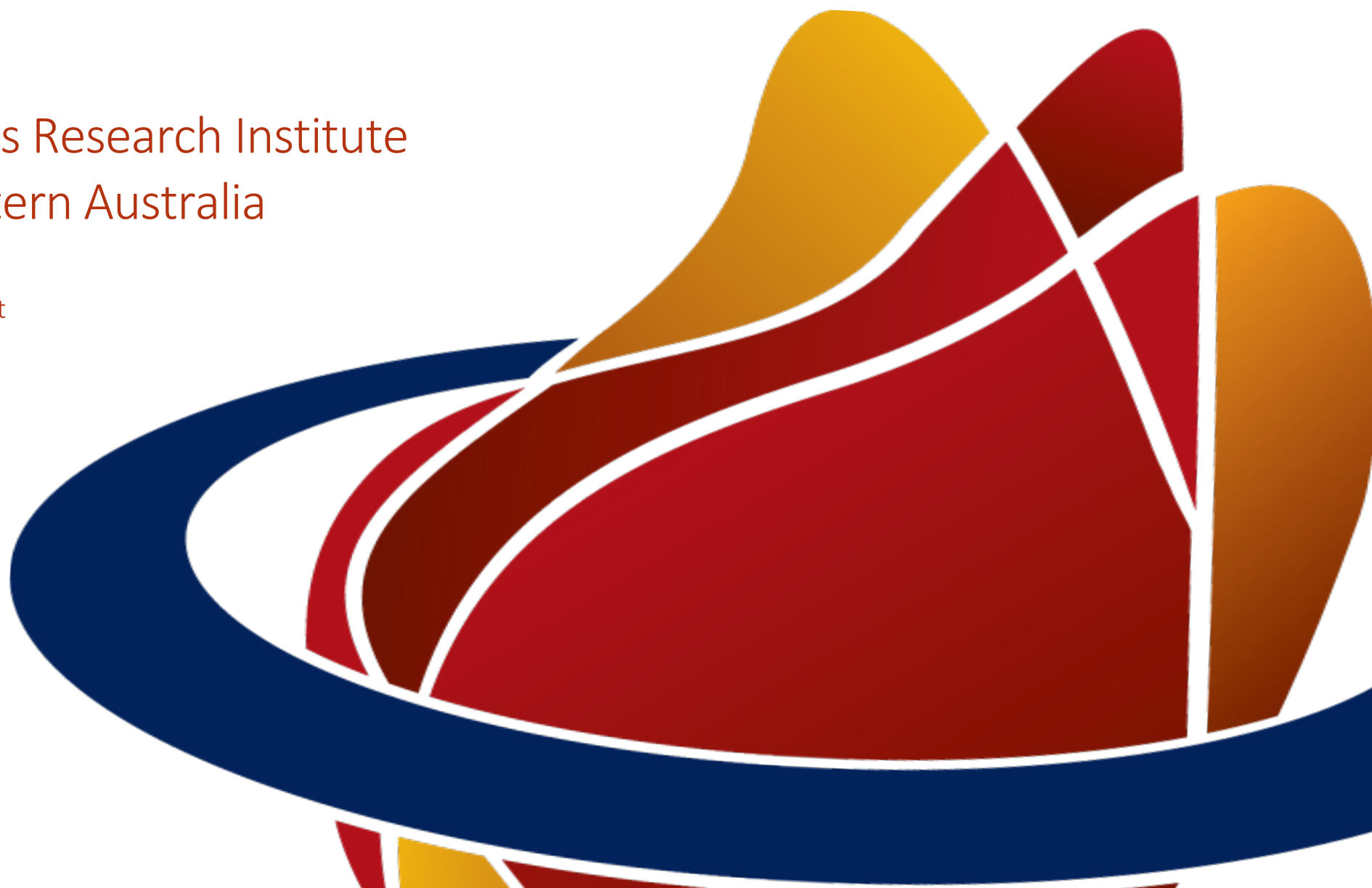




mriwa
Minerals Research Institute
of Western Australia

Minerals Research Institute of Western Australia

Annual Report
2018-2019



Statement of Compliance

For year ended 30 June 2019

HON BILL JOHNSTON MLA
Minister for Mines and Petroleum

In accordance with section 63 of the *Financial Management Act 2006*, we hereby submit for your information and presentation to Parliament, the Annual Report of the Minerals Research Institute of Western Australia for the reporting period ended 30 June 2019.

The Annual Report has been prepared in accordance with the provisions of the *Financial Management Act 2006* and any other relevant written law.

The financial statements comply with Australian Accounting Standards – Reduced Disclosure Requirements issued by the Australian Accounting Standards Board.

Vision

Minerals research advancing WA

Values

Engaged, Connected, Progressive, Respectful, Agile

Goals

IMPACTFUL RESEARCH

Applied research creates capability and delivers economic and social benefit for Western Australia

COLLABORATIVE RESEARCH LEADERSHIP

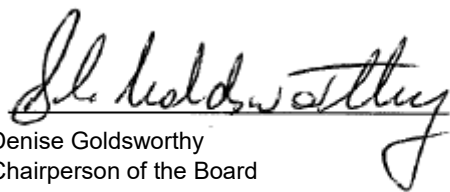
Industry, academic and government relationships activate innovation and research networks attracting investment in high value activities

KNOWLEDGE TRANSFER

MRIWA is well-known and its minerals research outcomes are implemented.

GOVERNANCE

Robust governance and contemporary fit-for-purpose corporate practices



Denise Goldsworthy
Chairperson of the Board

Date: 28 August 2019



Helen Cook
Deputy Chairperson of the Board

Date: 28 August 2019



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Overview

Highlights

\$46.6M

Total Value of Research Supported by MRIWA

\$37.7M

Total Value of 46 Individual
Research Projects

\$7.1M

Invested by MRIWA in
3 Cooperative
Research Centres

\$1.7M

Invested by MRIWA in
17 PhD Scholarships



Message from the Chair

Ms Denise Goldsworthy

It has been a pleasure to lead MRIWA through a time where our impact on the industry and the State has been widely acknowledged, culminating in approval for additional funding in the recent State Budget. We also welcomed our new CEO Nicole Roocke, and farewelled our previous CEO Mark Woffenden, who retired during the year. Key milestones achieved by the organisation have been many and varied.

In March this year, the results of the *Minerals Research Institute of Western Australia Act 2013* review were released. ACIL Allen found MRIWA has been effective in meeting its overall objectives as established in its Act and Research Priority Plan, notwithstanding at the time the review was completed, MRIWA had yet to meet its formal effectiveness KPI regarding funding leverage.

It is pleasing to note this year MRIWA has indeed met its effectiveness KPI regarding funding leverage.

The review found the Act does not constrain MRIWA in any way, and as demonstrated by the assessments of efficiency and effectiveness, MRIWA has delivered on its statutory objectives.

The review explored three areas in detail:

- *Is MRIWA operating efficiently?*

MRIWA's administrative costs have not increased beyond its original levels, averaging around \$1 million per annum or around 19 per cent of total expenditure between 2013-14 and 2017-18. The Institute has met its efficiency indicator in the last two years of operation as research funding commitments increased.

- *Has MRIWA been effective in meeting its overall objectives?*

This assessment was linked to the economic impact assessment review also completed by ACIL Allen. Using their Benefit Cost Assessment framework, they estimated MRIWA is forecast to deliver a net social benefit of \$37 million between 2018-19 and 2027-28, calculated as the difference between the cost to the State of MRIWA's operations of \$17.4 million and the anticipated benefit of the research programs analysed in the study which are forecast to deliver \$54.5 million.

This results in a Benefit Cost Ratio of the Institute's operations since its inception of 3.12, implying for the research programs analysed every dollar of State Government funding is forecast to produce at least \$3.12 of benefits.

MRIWA's benefits also extend to intangibles such as fostering collaboration and assisting to create linkages between stakeholders who would otherwise have no means of connecting organically.

- *Does a demonstrable need exist for MRIWA?*

The mining industry must continually work to become more productive and efficient in the face of growing competitive challenges.

MRIWA's role is arguably more vital than ever as a catalyst for mining innovation and technology development in Western Australia, as the industry moves and evolves beyond the blunt instrument of billions of dollars of new mines and turns to the more specific toolkit enabled by technology and innovation.



There was universal endorsement of the important role MRIWA is playing in supporting the minerals industry in Western Australia by filling a gap in the market between science and application; between industry and academia.

MRIWA is seen by stakeholders as part of the State's comparative and competitive advantage in the mining and minerals industry.

- *What to do differently?*

Increase the awareness of MRIWA; review the Research Priority Plan to ensure each of the research themes are still contemporary; allocate a greater share of the funding portfolio towards technology and supply chain innovation and review treatment of IP and alternative funding sources.

Building on the recommendations from the review, ongoing policy guidance from the Minister and his advisers, and input from the Board and the Executive a new Strategic Plan was developed for MRIWA. While predominantly an internal document, it includes the following four pillars and goals:

- Impactful Research - applied research creates capability and delivers economic and social benefit for Western Australia.
- Collaborative Research Leadership - industry, academic and government relationships activate innovation and research networks to attract investment in high value activities.
- Knowledge transfer - MRIWA is well-known and its minerals research outcomes are implemented.
- Governance - robust governance and contemporary fit-for-purpose corporate practices.

This, combined with the revised Research Priority Plan due to be released in the second half of 2019, will set the direction of the Institute for the coming years.

Reflecting on the last twelve months, the Board approved new MRIWA investment of \$1.74 million matched by sponsors' cash support of \$4.9 million.

An investment of \$1.73 million of MRIWA funds continues to be made into PhD research projects via scholarships, with 15 scholarships directly funded by the Institute and a further 2 scholarships via the ARC Industry Transformation Training Centre.

These figures bring the value of R&D supported by MRIWA to \$46.6 million at the end of the financial year, of which 80% is directly managed by the Institute.

This includes the significant contribution by the State Government into developing a future battery industry.

The Future Battery Industry Cooperative Research Centre was successful in securing Federal funding in April 2019.

As the active representative for the WA Government in this collaboration, MRIWA has a key role in ensuring quality governance processes and prioritisation of research aimed at supporting the State's Future Battery Industry Strategy.

I am most grateful to all my Board colleagues as they exercise their responsibilities with enthusiasm and commitment.

The members of the Advisory Committee and Theme Advisory Committees also continue to provide indispensable advice to the Board on proposed research project investment and priorities.

I would also like to thank the small but dedicated MRIWA team for successfully managing the organisation.

Denise Goldsworthy
Chairperson of the Board



Responsible Minister

Hon. Bill Johnston MLA, Minister for Mines and Petroleum.

About Us

MRIWA is a statutory body established by the Western Australian Government in 2013 under the *Minerals Research Institute of Western Australia Act 2013* (the Act).

Our Work

MRIWA fosters and promotes minerals research for the benefit of the State by:

- Undertaking, procuring or managing minerals research projects;
- Fostering academic activities;
- Conferring and collaborating on matters relating to minerals research;
- Maintaining current knowledge of minerals research;
- Promoting awareness of and fostering public interest in matters relating to minerals research; and
- Providing advice to the Minister.

Economic Impact

MRIWA's
Minerals Research Investment
forecast to deliver

\$121.5M
In Real Income

\$166M
In Real Output

\$42.8M
In Real Consumption

\$6.6M
In Government Revenue

91
Jobs per year

to Western Australia
over the next 10 years

Source: ACIL Allen, MRIWA Economic Impact 2018



Message from the CEO

It was my privilege to join the MRIWA team in November 2018.

The initial challenge on arrival was to seek further funding from the State Government. With the support of the Minister, a further \$6 million has been secured over the forward estimates.

This, combined with the funding commitment made in the 2017-18 budget for \$5.5 million for the Future Battery Industry Cooperative Research Centre (FBI CRC), will enable the Institute to invest an average of \$2.8 million of state government funds per year into minerals research which will deliver benefit to Western Australia.

Twelve new research projects were approved by the Board during this financial year for work to be undertaken across the mining value chain. The third-party support for this research is evident in the Institute achieving its Effectiveness KPI for the first time.

A key focus since commencing in the role has been to engage with the Board and stakeholders to understand where there is future opportunity for the Institute.

Consistent across all discussions is the need to promote the outcomes of the research MRIWA is involved with, not just to increase awareness, but to also encourage implementation, adoption and new application.

To achieve this focus, one of the four key pillars of the strategic plan, now approved by the Board, is Knowledge Transfer.

As we have a suite of projects nearing completion, we will be increasing our efforts to communicate this work.

The review of the Institute's Research Priority Plan encompassed a broad range of preliminary consultation which informed the development of a revised Plan. This was released for public consultation with the board due to consider the feedback at its first meeting in 2019-20.

Significant Issues and Trends

Current and Emerging Issues and Trends

Future Battery Industry

With the successful outcome of the FBI CRC bid and the release of the State Government's Future Battery Industry Strategy, the Institute has been working to develop an approach to support the early commencement of the FBI CRC to maximise the opportunity from the State Government's investment and support the delivery of the Future Battery Industry Strategy.

Close interagency collaboration across government will be required to achieve this.

Research Sponsorship

MRIWA's research program is highly regarded and funded through a combination of state government appropriation, federal government research grants and sponsorship from third parties.

Strategic changes in government policy, exposure to variation in economic conditions and decisions by other research grant bodies all influence the success and efficiency of this model.

Maintaining key sponsor relationships is crucial to ensuring the continuity and momentum of key research programs.

Likely Developments And Forecast Results Of Operations

It is likely the MRIWA operations will undergo a period of consolidation during 2019 as a result of the implementation of the new strategic plan and drive for continuous improvement in grants administration practices.

The most significant areas for change will be in relation to the implementation of improvements in grant administration processes and databases and an increase in the communication of research outcomes.

I would like to thank the MRIWA team for their support and preparedness to find opportunities to grow the organisation above and beyond its current strong foundations.

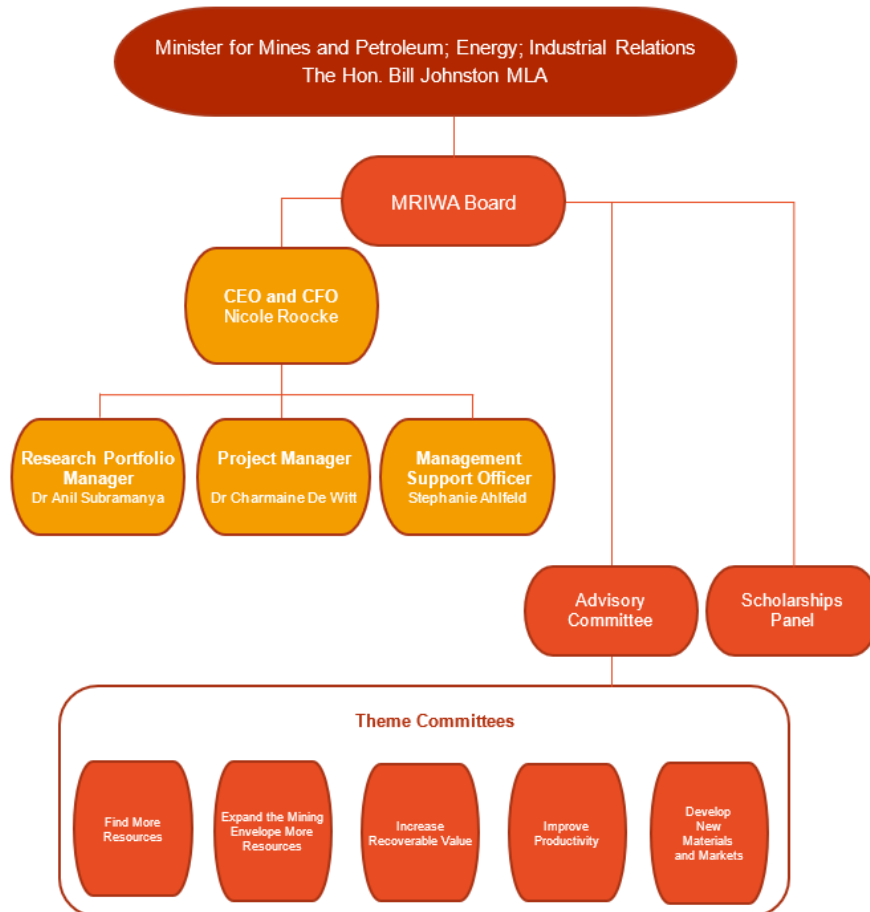
The commitment of Board and committee members to deliver benefit to Western Australia through minerals research is to be commended. This delivers collaboration, alignment and leverage of expertise across the whole minerals research ecosystem.

I would also like to thank Minister Bill Johnston and his staff for their valued advice and support.

Nicole Roocke
Chief Executive Officer and Chief Financial Officer



Our Organisational Structure



Our Team

Senior Officer

Ms Nicole Roocke, Chief Executive Officer and Chief Financial Officer

Appointed CEO in November 2018, Nicole spent the last 15 years at the Chamber of Minerals and Energy of Western Australia coordinating industry input on a variety of government regulatory and policy issues and facilitating collaboration within the resources sector. Nicole holds a Master of Science in Industrial and Organisational Psychology from UWA and a Master of Risk Management from UNSW.

Mr Mark Woffenden

Mark was inaugural Chief Executive Officer for MRIWA from March 2013 until 19 November 2018.

MRIWA Team

Dr Anil Subramanya, Research Portfolio Manager

Anil is a Geochemist/Exploration Geologist with more than 25 years' experience in minerals exploration and the management of large, multi-disciplinary teams within the mining industry. Anil has spent significant time in the private and public sectors, and as a researcher, in fomenting and developing collaboration between the METS and Mining industries, particularly SMEs, academia and government.

Dr Charmaine de Witt, Project Manager

Charmaine has an extensive research career in the Alumina industry as an acknowledged expert in lime chemistry.

Ms Stephanie Ahlfeld, Management Support Officer

Stephanie's career in the public service include roles in Administration, Finance and Human Resources within a Regional Local Authority. She commenced as the Institute's Management Support Officer at the end of 2015 with a focus on customer service, compliance and continuous process improvement. Stephanie holds a Bachelor of Commerce (Accounting) from Curtin University.



Our Directors



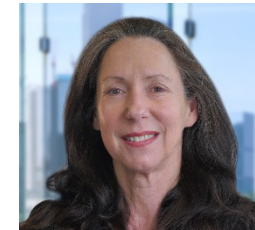
Ms Denise Goldsworthy became Chair of the Minerals Research Institute of Western Australia in January 2018.

Following 17 years at BHP Steel and 14 years in Mining (iron ore and minerals), including roles as Managing Director Dampier Salt, Managing Director Hismelt and Chief Commercial Officer Autonomous Haul Trucks (Rio Tinto), Denise has successfully transitioned to the third phase of her career as a Non-Executive Director and advisor on research, technology and innovation through the company Alternate Futures, of which she is the owner and Managing Principal.

Among Denise's honours is being named the 2010 Telstra Australian Business Woman of the Year. A member of Chief Executive Women (CEW), she was inducted into the WA Women's Hall of Fame in 2011.

Denise is a member of the Cooperative Research Centres advisory committee.

Denise's other current board positions are Chair, ChemCentre WA; Non-Executive Director, Western Power; Non-Executive Director, Export Finance Australia; Member of Council and Chair Quality, Audit and Risk Committee at Edith Cowan University; Member of Commercialisation Advisory Board, Curtin University; Fellow of ATSE and Chair of ATSE's Resources Forum; and Chair for the Navy Clearance Diver Trust.



Ms Helen Cook became Deputy Chair of the Minerals Research Institute of Western Australia in October 2017.

Helen has over 20 years of board experience across a range of sectors including resources, infrastructure, insurance, finance and in government.

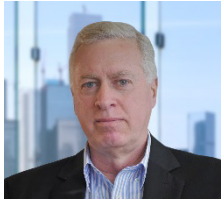
Prior to joining the MRIWA Board in 2014, Helen was the National Partner in charge of KPMG's Energy and Natural Resources Group. Helen's other current board positions are Non-Executive Director RAC Holdings, RAC Finance; and RAC Insurance, UWA Mining Energy and Natural Resources Law Advisory Board; Major Performing Arts Panel, Australia Council; Chair, Chamber of Arts & Culture WA; Councillor of the National Art Gallery.

Helen is a WA Councillor of the Australian Institute of Company

Directors and a member of Chief Executive Women.

Her past Board roles include Deputy Chair of Fremantle Ports, Chair of the Art Gallery of WA, Perth Theatre Trust and a range of other roles in the resources sector.





Prof Mark Bush has over 30 years of experience in research, research leadership, grant assessment and grant administration, while holding various academic and leadership positions with UWA.

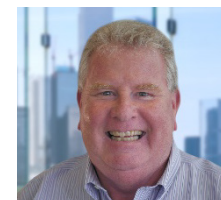
Mark brings with him a broad knowledge of Engineering. He is currently Emeritus Professor with UWA and has served in the past as Head of Department of Mechanical and Materials Engineering; Dean of Faculty of Engineering, Computing and Mathematics; and Director of Animal Research Services.

He is an Honorary Fellow of Engineers Australia (Hon FIEAust) and Chartered Professional Engineer (CPEng), and Fellow of the Academy of Technological Sciences of Engineering (FTSE), and has served in various leadership positions in both organisations.



Ms Jane Hammond has 20 years' experience in government and has worked in a range of senior legal and policy roles in State Government agencies in WA and NSW. Her home agency is the Department of Mines, Industry Regulation and Safety.

Jane has a deep understanding of the structure, functions and strategic aims of government, as well as a strong technical understanding of the legal underpinnings of the system. Jane's background in legislative drafting has led to her involvement in a number of legislative projects for the WA Government, including developing MRIWA's foundation legislation.



Mr Larry Lopez is the Director of the Commonwealth's Accelerating Commercialisation Program. He is responsible for leading the Government's efforts to identify and help businesses, entrepreneurs and researchers commercialise novel products, processes and services with significant market potential.

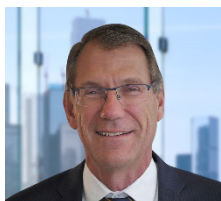
Larry is a Partner at Perth-based Australian Venture Consultants (AVC). AVC enables their clients' decision-making processes through fact-based analytics informed by research and the insights it has acquired through almost 30 years of hands-on experience and engagements across the innovation and technology start-up ecosystem.

Prior to moving to Australia in 2006, Larry spent 17 years at Silicon Valley Bank. During his tenure at SVB he held various senior and executive positions and played a key role in growing the company from a local community bank to a global leader in providing financial services for knowledge-based companies and investors. He was the founder and

Managing Director of the Bank's International Venture Capital Group and was an active investor in Israel, Australia and Europe.

Larry is a Director of several IT-related private companies and sits on several not-for-profit boards. He has also been a partner or director of several venture capital funds in the US and Europe and is currently a director of Jolimont Global Mining Systems, a global venture capital fund focused on investing in technology that enables the mining sector.





Mr David Rose is a Director in mining consulting with KPMG, with 35 years of diverse experience in the mining industry across gold, base metals, coal, diamonds and iron ore, in both open pit and underground, including 15 years in executive leadership roles. David's most recent executive roles were Chief Operating Officer, St Barbara Ltd, and Managing Director, Rio Tinto (Argyle Diamonds and Rio Tinto Iron Ore).

Consulting engagements have included expert panel reviews, operational improvement projects and management systems upgrade projects for mature operating mines. He has also undertaken operational readiness and systems design engagements for pre-start-up and transitional mines, in Australia and overseas.

David is a past Deputy Chairman and now Honorary Fellow of Leadership WA, a Fellow of the AusIMM, a Graduate of the AICD, and is currently President of Rowing WA.



Ms Miriam Stanborough is a chemical engineer with 18 years' experience in the minerals processing industry, across commodities including copper, uranium, gold, silver, alumina and mineral sands. Miriam is currently Group Manager – Productivity & Innovation with Monadelphous, a Perth-based Engineering, Construction & Maintenance company.

Miriam has previously held roles in Technical Development, Production Management, Project Management, Business Improvement, HR & Diversity strategy, and Sales & Marketing.

She also holds degrees in Arts and Mineral Economics, is a member of the Australasian Institute of Mining and Metallurgy, and a graduate of the Australian Institute of Company Directors.

Miriam's other current board roles are: Chair of SHINE Inspire Achieve Belong Inc, and Board Member of the Northern Agricultural Catchments Council.

MRIWA Board

Board members are appointed by the Minister for Mines and Petroleum, in accordance with Section 27(1) of the MRIWA Act and are remunerated by an annual fee set by the Public Sector Commissioner. The fee has not been varied since first established on 20 Dec 2013.

Membership as at 30 June 2019	Initial Appointment	Term Expires	No. of Meetings Attended
Denise Goldsworthy (Chair)	1 Feb 2016	31 Dec 2021	6 of 6
Helen Cook (Deputy Chair and Chair, Audit and Risk Committee) ^(a)	28 Jan 2014	31 Jan 2020	6 of 6
Mark Bush ^{(a) (b)}	1 Feb 2016	31 Dec 2021	6 of 6
Jane Hammond ^(c)	1 Oct 2017	31 Jan 2020	4 of 6
Larry Lopez ^{(a) (d)}	1 Jan 2016	31 Dec 2021	5 of 6
David Rose ^(b)	1 Jun 2018	31 Jan 2021	5 of 6
Miriam Stanborough ^(b)	1 Oct 2017	31 Jan 2020	6 of 6

Notes:

- (a) Audit and Risk Committee Member - the Committee assist the MRIWA Board by providing an objective review of the effectiveness of the financial management and reporting, risk management, audit and compliance framework. The Chief Financial Officer and KPMG attend ex-officio.
- (b) Foregoes a portion of remuneration and donates back to the MRIWA Director's Scholarship
- (c) Ineligible for remuneration in accordance with Premier's Circular 2010/02 State Government Boards and Committees
- (d) Foregoes all remuneration and donates back to the MRIWA Director's Scholarship



Legislation

Enabling and Administered Legislation

MRIWA was established as an agency in February 2013, under the *Minerals Research Institute of Western Australia Act 2013*.

The Institute administers only the *Minerals Research Institute of Western Australia Act 2013*.

Other Key Legislation Impacting on our activities

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

- *Auditor General Act 2006*
- *Disability Services Act 1993*
- *Electoral Act 1907*
- *Equal Opportunity Act 1984*
- *Financial Management Act 2006*
- *Freedom of Information Act 1992*
- *Government Employees Superannuation Act 1987*
- *Industrial Relations Act 1979*
- *Interpretation Act 1984*
- *Library Board of Western Australia Act 1951*
- *Limitation Act 1935*
- *Minimum Conditions of Employment Act 1993*
- *Occupational Safety and Health Act 1984*
- *Public Interest Disclosure Act 2003*
- *Public Sector Management Act 1994*
- *Salaries and Allowances Act 1975*
- *State Records Act 2000*
- *State Supply Commission Act 1991*
- *Workers' Compensation and Injury Management Act 1981*



Report on Operations

Actual Results versus Budget Targets

	2019 Target	2019 Actual	Variation
	\$	\$	\$
Total cost of services	10,847,817	5,503,209	5,344,608
Net cost of services	6,439,506	3,162,988	3,276,518
Total equity	9,501,850	10,621,653	1,119,803
Net increase / (decrease) in cash held	(1,199,725)	410,684	1,610,409
Approved salary expense level	532,600	587,398	54,798

For detailed information on MRIWA's financial performance, refer to the *Financial Statement and Notes* section of this report.

Summary of Key Performance Indicators

Key Effectiveness Indicator	2018-19 Target	2018-19 Actual
Ratio of total cash investments in research projects to total approved MRIWA cash investment in those research projects	3	3.82
Key Efficiency Indicator	2018-19 Target	2018-19 Actual
Total administration cost for the year as a percentage of the total cash value of research projects and the education program under management during the year	4%	4.2%

For detailed information on MRIWA's Key Performance Indicators, refer to the *Our Performance* section of this report.

