THE HEARING COOPERATIVE RESEARCH CENTRE BRINGS TOGETHER AN INTERNATIONALLY UNIQUE CONSORTIUM OF RESEARCH, CLINICAL AND INDUSTRY ORGANISATIONS DEDICATED TO THE COMMON PURPOSE OF ‘creating sound value’ THROUGH RESEARCH AND EDUCATION – TO PREVENT AND BETTER REMEDIATE THE LOST PRODUCTIVITY RESULTING FROM HEARING LOSS IN CHILDREN AND ADULTS.

OBJECTIVES

The objectives of the HEARing Cooperative Research Centre are:

- To enhance Australia’s industrial, commercial and economic growth through a program of sustained, user-driven cooperative research into hearing loss prevention and mitigation; and

- Through education and commercialisation of research findings, to reduce the incidence of hearing loss and increase the effectiveness with which hearing loss and hearing disorders are treated through improved technology, processes or clinical services.

The consortium will also create opportunities for industry growth in hearing healthcare together with improved clinical tools and procedures to meet projected increases in demand for hearing healthcare.

Dr Jin Xu has been working in the cochlear implant field since 1987. Dr Xu’s work in the CRC has established a specialised x-ray imaging lab capable of providing real-time fluoroscopic images and high resolution still images.

These imaging techniques facilitate the ongoing optimisation of intra-cochlea electrode array design and were integral in the development of the cochlear implants that are now used every day by the hearing impaired.

A recent publication in Hearing Research about an improved cochlear implant electrode array for experimental studies led to one of Dr Xu’s images being featured on the Journal front cover. The front cover of this annual report also features one of Dr Xu’s microfocus radiographic images of the cochlea with an implanted experimental electrode.
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THROUGH RESEARCH AND ITS UTILISATION, THE HEARING CRC AIMS TO REDUCE THE IMPACT OF HEARING LOSS BY:

- Maximising lifelong hearing retention;
- Reducing loss of productivity due to hearing loss;
- Increasing uptake and use of hearing technology; and
- Providing postgraduate and professional training.

WHO IS AFFECTED BY HEARING LOSS?

2011
2 in 12 Australians

The Hearing CRC will act to prevent this rise

2050
3 in 12 Australians

Age related prevalence of hearing loss in Australia

Economic Cost: $11.75 billion per year

<table>
<thead>
<tr>
<th>1 REVIEW</th>
<th>6 WORKSHOPS</th>
<th>27 ALLIANCES</th>
<th>32 STUDENTS</th>
<th>60% REINVESTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRC Program 3rd Year Review successfully completed</td>
<td>6 Cochlear Implant Training Workshops held; 110 attendees from 16 countries</td>
<td>27 international collaborative alliances</td>
<td>32 PhD students total; 7 new students enrolled, 3 theses submitted and 1 new graduate</td>
<td>60% of commercial income reinvested in HEARing CRC research – key licensing activities include:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HEARLab™ released by Frye Electronics Inc</td>
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<thead>
<tr>
<th>6 PATENTS</th>
<th>20% INCREASE</th>
<th>36 PUBLICATIONS</th>
<th>57 REPORTS</th>
<th>100 PRESENTATIONS</th>
<th>3,000 ATTENDEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 new commercial patents (taking our portfolio to 24), including 2 novel sound coding strategies already in clinical trials</td>
<td>20% increase in monthly visits to the HEARing CRC website</td>
<td>36 peer-reviewed journal articles and conference proceedings</td>
<td>57 publications and reports transferring know-how or practical information to end-users</td>
<td>100 conference presentations</td>
<td>3,000th attendee at Cochlear Implant Training Workshops</td>
</tr>
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</table>
EXECUTIVE SUMMARY

CHAIRMAN AND CEO REPORT

“THE [HEARING] CRC IS VERY STRONGLY AlIGNED WITH ITS END-USER ENVIRONMENT. THE CRC HAS DEMONSTRATED THAT IT UNDERSTANDS THAT THE END-USER GROUP IS FAR WIDER THAN JUST THE CRC PARTICIPANTS, AND IS INCLUSIVE OF PATIENTS AND PATIENT SUPPORT GROUPS.”

The 2010/11 year has been one of significant achievements for the HEARing CRC, with several of our research projects reaching the stage of commercialisation and take-up by end-users. These successes demonstrate the value of the multidisciplinary and multiparty approach engendered by the Commonwealth CRC Program, and we are grateful for the ongoing strong commitment of our Member organisations.

Success in research depends on the dedication and expertise of our Project Leaders and their team members, ably supported by our Key Scientists drawn from across the Member organisations. The HEARing CRC is also fortunate to have the wise counsel provided by our Science Advisory Group under the Chairmanship of Prof Robert Patuzzi. This Group has worked with the Board, Management and Project Leaders to evaluate and improve the focus of individual Projects, ensuring that our work is directed to achieving the greatest impact.

Recent commercial successes include the trainable hearing aid released by Siemens AG, licencing of NAL-NL2 fitting software to 16 international hearing aid and audiological equipment manufacturers, and HEARLab™ and its Aided Cortical Assessment Test Module being marketed world-wide by Frye Electronics.

These achievements underline the HEARing CRC’s focus on developing technology that meets the needs of industry and clinical service.

It is especially pleasing to note that revenue generated from commercialisation is being reinvested in our research and education projects.

During 2010/11 we undertook a Third Year Review as required by the Commonwealth CRC Program. The panel’s report was very positive, noting that the HEARing CRC was on track to deliver all proposed outputs and outcomes. The panel further noted world-class successes arising from our research and the establishment of international linkages; the very strong alignment with end-user needs and environment; the approach to PhD training and the high calibre of students; and the comprehensive and varied Professional Educational Program.

The review panel also noted challenges for the HEARing CRC, in particular in the context of fine-tuning the research profile and capturing the benefits of collaboration to ensure ongoing future success. While the Board was satisfied with the panel’s report, it has already taken steps to implement appropriate solutions to the recommendations.

It is very pleasing to note that the full complement of higher degree research students has now been recruited to the HEARing CRC and that four PhD students, in total, have finished their studies and been awarded their degrees.

In addition, our Professional Education Program, in partnership with Cochlear Ltd, has continued to deliver high quality Cochlear Implant Training Workshops for surgeons and healthcare professionals from across Asia Pacific.

The HEARing CRC’s extensive list of conference presentations, peer-reviewed journal papers and public reports reflect key elements of our communication strategy. To promote professional take up of new clinical services and public awareness of lifelong hearing protection the HEARing CRC is currently developing the Hearing Education and Research Network (HEARnet).

Finally, the Board recognises the future challenges facing the HEARing CRC in a new and potentially difficult financial environment. The Board believes the HEARing CRC is well positioned to continue to make a major contribution to hearing healthcare in Australia, and will be exploring new initiatives to extend its benefits to a wider population of end-users.

The achievements detailed in this report would not be possible without the expertise of our Board members and we would thank each of them for their valuable contributions and ongoing support.

We are exceedingly fortunate in having a highly-skilled and enthusiastic Management team who have all contributed to the outcomes that we have reported to date.

As in previous years, we would like to thank all of our Members for their ongoing support and interest in achieving our mission and objectives. We also give special thanks to the adults, children and their families, who give so generously of their time to participate in our research.

MR RICHARD SEARBY AO QC
CHAIRMAN

ASSOCIATE PROFESSOR ROBERT COWAN
CHIEF EXECUTIVE OFFICER
The HEARing CRC is a multidisciplinary collaboration of five Core and 21 Support Members, each of which contributes specific expertise and infrastructure to the strategic program of activities.

There have been no changes to the Members of the HEARing CRC during the 2010/11 year.

HEARworks manages the intellectual property (IP) and commercial activity of the HEARing CRC. It was established by the predecessor CRC HEAR for these purposes and continues to act as Trustee and the licensing / commercial agent of the CRC HEAR IP Trust.

HEARip acts as Trustee of the HEARing CRC IP Trust.

### MEMBERS

**Core Members**

- Australian Hearing
- Cochlear
- MACQUARIE UNIVERSITY
- SIEMENS

**Support Members**

- Acoustics Pty Ltd
- attune™
- Audiology Australia
- Bionics
- Hearing and Say Centre
- hybrid
- Murdoch Childrens Research Institute
- Neuronomics
- Royal Institute for Deaf and Blind Children
- SCIC
- Sydney South West Area Health Service
- The Royal Victorian Eye & Ear Hospital
- The Shepherd Centre
- University of Wollongong
- VicDeaf
- Walter+Eliza Hall
GOVERNANCE STRUCTURE

HEARING CRC BOARD OF DIRECTORS

The HEARing CRC Board of Directors is responsible for setting strategic goals and objectives. It also oversees the performance of the activities of the HEARing CRC, including IP and commercial operations as managed through HEARip and HEARworks. The Board is accountable to the Commonwealth and the Members for the governance, management and control of the business and affairs of the Company.

The Board and Management follow good corporate governance practice as recommended by Australian Securities Exchange (ASX) and Australian Institute of Company Directors (AICD). To assist the Board in fulfilling its duties, it has established two committees and three groups. Day-to-day management of the HEARing CRC has been delegated to the Chief Executive Officer (CEO) and through him, the Management team.

Finance and Audit (F&A) Committee

The Finance and Audit Committee assists the Board by providing oversight of the financial operations and affairs of the Company. This Committee also oversees the relationship with the external auditor, and the process of identification and management of business, commercial and financial risks.

During the reporting period this committee met four times and the members’ attendance record is disclosed on page 49. It is Company practice that the CEO and Chief Financial Officer (CFO) are in attendance for all meetings.

Membership:
- Barry Roberts (Chair)
- Richard Searby (Ex officio Member)
- Robin Evans
- Neville Mitchell

Nominations and Appointments (N&A) Committee

The Nominations and Appointments Committee assists the Board by making recommendations on the appointment and remuneration of Directors to the Boards of the HEARing CRC and HEARworks. If required, this Committee also assists in the appointment of a Chair, or CEO, and in making recommendations on the remuneration of these officers.

For the reporting period this committee met two times and the members’ attendance record is disclosed on page 49. It is Company practice that the CEO is in attendance for all meetings.

Membership:
- Dr Michele Allan: The HEARing CRC
- Dr Lisa Springer: The HEARing CRC
- Adjunct Prof Harvey Dillon: National Acoustic Laboratories
- Ms Jenni Lightowlers: Francis Abourizk Lightowlers (FAL) Lawyers; and
- A/Prof Robert Cowan: The HEARing CRC

Commercialisation Working Group

The Commercialisation Working Group assists in the development of commercial and technology transfer strategy and plans. The group’s role is to provide informed recommendations to the Board and Management on licensing and other commercial activities, as well as work with individual Project Leaders to develop commercial plans.

Membership:
- Adjunct Prof Harvey Dillon: National Acoustic Laboratories
- Prof Richard Dowell: The University of Melbourne
- Prof Louise Hickson: The University of Queensland
- Prof Doug Hilton: The Walter and Eliza Hall Institute of Medical Research
- Prof Bronya Keats: Australian National University
- Dr Catherine McMahon: Macquarie University; and
- A/Prof Jim Patrick: Cochlear Ltd.

Science Advisory Group

The Science Advisory Group, Chaired by Professor Rob Patuzzi, includes Key Scientists drawn from across the Members. The group assists the Board and CEO in the annual Research Project Review, and in special reviews, such as the Third Year Review, conducted under the CRC Program.

Membership:
- Prof Rob Patuzzi (Chair): University of Western Australia
- A/Prof Robert Cowan: The HEARing CRC
- Adjunct Prof Harvey Dillon: National Acoustic Laboratories
- Prof Richard Dowell: The University of Melbourne
- Prof Louise Hickson: The University of Queensland
- Prof Doug Hilton: The Walter and Eliza Hall Institute of Medical Research
- Prof Bronya Keats: Australian National University
- Dr Catherine McMahon: Macquarie University; and
- A/Prof Jim Patrick: Cochlear Ltd.

Support Members Group

The Support Members Group is intended to provide a forum for the Support Members to meet with the Board and Management. Meetings are held as required, with at least one meeting held per year.

HEARWORKS BOARD OF DIRECTORS

HEARworks Pty Ltd operates under a Management Deed and Trust Deed with the HEARing CRC and its Members, and is charged with managing commercial operations for the HEARing CRC. The HEARworks Governing Board of Directors comprises:

- Richard Searby (Chair)
- Robert Cowan (Managing Director)
- Kathryn Greiner
- Barry Roberts
BOARD OF DIRECTORS

The Board of Directors of the HEARing CRC comprises:

- an independent Chair
- a nominee Director from each of the five Core Members (each of whom have the right to appoint an Alternate)
- two or more Independent Directors; and
- the Chief Executive Officer.

RICHARD SEALEY
AO, QC, MA (Oxon), Hon LLD (Deakin)
Independent Chairperson

Mr Searby was appointed as Chairman of the HEARing CRC Ltd in April 2007. He is a leading member of Australia’s legal profession, and has held a wide range of directorships of Australian and international corporations. Mr Searby is a Director of Times Newspapers Holdings Limited (UK).

He has advised the Australian government on various occasions and has drafted amendments to Australian and Victorian legislation. He was Chancellor of Deakin University from 1997 to 2005.

Amongst a long list of corporate activity, he was a Director of News Corporation from 1979 to 1992, and Chairman from 1981 to 1991, and a Director of Rio Tinto Ltd from 1977 to 1997. He was awarded the Order of Australia in 2006 for his services to education, as a contributor to the programs of major cultural institutions, business and the law.

ROBERT COWAN
BSc (Hons), MSc, MBA, PhD(Melb), DipAud, Gr Cert HLthEcon, Gr Dip Tech Mgt, FAudSA (CCP), GAICD, FICRA
Chief Executive Officer

Associate Professor Cowan is CEO and ex-officio Director of the HEARing CRC Ltd and its associated companies HEARworks Pty Ltd and HEAR IP Pty Ltd.

He is a Principal Research Fellow at The University of Melbourne, and has published extensively in the fields of audiology, cochlear implants, and biomedical management, and holds a number of Australian and international technology patents and trademarks.

In addition to academic qualifications, he is a graduate member of the Australian Institute of Company Directors and in 2004 was Professions Australia ‘Professional of the Year’.

He is an Executive Board member of the Cooperative Research Centres Association, and was its Deputy Chair from 2002-2005.

He advises government on hearing healthcare as a member of the Commonwealth Hearing Services Consultative Committee, and as a Federal Executive Councillor and Fellow of The Audiology Society of Australia, of which he was President 1992-1996 and 1997-2000.

In 2011, A/Prof Cowan was elected President-elect of the International Society of Audiology, and became a Fellow of the International Collegium of Rehabilitative Audiology.
MICHELE ALLAN  
BSc, PhD, GAIDC  
Independent Director

Dr Allan was appointed as a Director of the HEARing CRC Ltd in December 2009. She is Chair of William Angliss Institute and Go Grains Health and Nutrition Limited, Non Executive Director of Food Standards Australia and New Zealand, Forest and Wood Products Australia, Birchip Cropping Group, Grape and Wine Research and Development Corporation, and MG Corporation.

She is a member of the audit and risk committees of three of these organisations. Dr Allan is the Chair and a National Councillor of the Victorian Branch of AIFST. She is also an advisor to the Board of Bread Solutions Pty Ltd.

Until 2008 Dr Allan was Chief Executive Officer and Managing Director of the listed food manufacturer and marketer Patties Foods. Prior to that role she was Group General Manager Risk and Sustainability for Amcor Limited. Dr Allan has held executive roles with Kraft Foods, Bonlac Foods Limited, ICI and Nestlé.

Dr Allan has a Bachelor of Applied Science from University of Technology Sydney, Master of Management of Technology from Melbourne University, Master Commercial Law Deakin University and Doctorate from RMIT. She is a graduate of the Australian Institute of Company Directors and a fellow.

ROBIN EVANS  
BE, PhD (Newcastle)  
Nominee Director  
The University of Melbourne

Professor Evans was appointed as a Director of the HEARing CRC Ltd in April 2007. Prof Evans is a Laureate Professor in the Department of Electrical and Electronic Engineering at The University of Melbourne and is currently Director of the Victoria Research Laboratory of National ICT Australia. Prof Evans is a Director of Bionic Vision Australia.

Following postdoctoral studies at MIT in 1978, he became Professor of Computer Engineering at the University of Newcastle. Prof Evans moved to The University of Melbourne in 1992, and has at various times been Dean of Engineering and Director of the Centre for Networked Decision Systems 2000-2004.

He has extensive experience in the design and implementation of hardware and software for industrial real-time embedded microprocessor systems, and has worked extensively with industry over the past 35 years. He played a major role in the CRC for Sensor Signal and Information Processing. He has over 450 peer-reviewed publications, and is a Fellow of the Australian Academy of Science and Australian Academy of Technological Sciences and Engineering, and Institution of Engineers Australia.

KATHRYN GREINER  
AO, B Soc Work  
Nominee Director  
Australian Hearing Services

Ms Greiner was appointed as a Director of the HEARing CRC Ltd in November 2008. She has been Chair and Non-Executive Director of Australian Hearing since October 2006.

Ms Greiner is on the Advisory Council of the Salvation Army and LEK Consultants, Chairperson for Biotech Capital Pty Ltd, a Director of Bell Shakespeare Company and a Member of the Schools Funding Review Committee 2010-2014.

Ms Greiner’s professional career has involved administering early childhood services and mental health programs, both in Australia and the United States. She has extensive experience in the development of communities and their services. She has held many corporate and not-for-profit directorships, including the Salvation Army Sydney Shield appeal, Save the Children Fund, International Council of the Asia Society and the Sydney Peace Prize Foundation.

NEVILLE MITCHELL  
BComm, CA(SA), CA  
Nominee Director  
Cochlear Ltd

Mr Neville Mitchell was appointed as a director of the HEARing CRC Ltd in April 2007. Mr Mitchell has been Chief Financial Officer and Company Secretary of Cochlear Limited since its listing in 1995, and was Cochlear’s Financial Controller since joining the company in 1990.

Mr Mitchell is Governor of the Warren Centre for Advanced Engineering, a Member of the National Executive for the Group of 100, and a Member of ASIC Accounting and Auditing Standing Committee. Mr Mitchell was formerly a Senior Manager with KPMG in Johannesburg, South Africa.
GOVERNANCE AND MANAGEMENT

JIM PIPER
BSc(Hons), PhD (Otago)
Nominee Director
Macquarie University

Professor Piper was appointed as a
director of the HEARing CRC Ltd in
April 2007. He is currently Deputy
Vice Chancellor (Research) and
Professor of Physics at Macquarie
University. Prof Piper is a Director
of Environmental Biotechnology
CRC, Access MQ Ltd, APAF Ltd, and
Sydney First Marine Science Ltd.

Prof Piper has extensive expertise and
experience gained over 30 years of
research in lasers, optics and photonics,
and applications in micro fabrication.

Prof Piper received an Honorary
Doctorate from Heriot-Watt University
in 2006, a Centenary Professorship
from Carnegie Trust Universities of
Scotland (2004), the Australian Optical
Society Medal (1997), The Walter
Boas Medal of the Australian Institute
of Physics (1984) and the Pawsley
Medal of the Australian Academy of
Science (1982).

BARRY ROBERTS
FCPA, FCIS
Nominee Director:
Siemens Hearing Instruments
Pty Ltd

Mr Roberts was appointed as a Director
of the HEARing CRC Ltd in April 2007.
Mr Roberts is a Director of Arrow
Leadership Australia Limited.

Mr Roberts has been Chairman of
Siemens Hearing Instruments Pty Ltd
since 1994, having first joined the Board
in 1988. He joined Siemens Australia in
1960, and was finance director, CFO and
Deputy CEO of the Australian and New

Mr Roberts has over 40 years experience
in budgeting, financial management and
control, corporate governance, project
management and administration.

Mr Roberts is former Chairman of
JAS-ANZ and Vice President of the
Australian Electrical & Electronics
Manufacturers Association.

LISA SPRINGER
BSc, PhD, GAIDC
Independent Director

Dr Springer was appointed as a
Director of the HEARing CRC Ltd
in December 2009. Dr Springer is
currently the Principal of Maia
Partners, an independent corporate
advisory firm which assists
biotechnology and medical device
companies to outperform.

She is a Director of Neuromodics
Pty Ltd, Executive of Australian
Aphasia Association, Consumer
Representative of Cancer Australia,
Consultant to Tipa Tinnitus and a
Member of the Commonwealth R&D
Tax Concession Committee.

Dr Springer has significant investment
banking and investment analysis
experience and has also held a strategic
role at Johnson and Johnson, a
multinational pharmaceutical company.

For the past 12 years, Dr Springer has
raised several hundred million dollars
and provided corporate and strategic
advice for several Australian Life
Sciences companies enabling them to
continue to develop their drug products
and devices for the global market. She
holds a PhD in physiology and molecular
biology. She is a graduate member of
the Australian Institute of Company
Directors.

BOARD OF DIRECTORS: ALTERNATES

STEVEN GRUNDY
Managing Director,
Australian Hearing Services
(Alternate for Kathryn Greiner)

JIM PATRICK
Chief Scientist, Cochlear Ltd
(Alternate for Neville Mitchell)

JANET GREELEY
Dean of Faculty of Human
Sciences, Macquarie
University
(Alternate for Jim Piper)

DOMINIC JENKINS
Chief Financial Officer,
Siemens Hearing
Instruments Pty Ltd
(Alternate for Barry Roberts)

None appointed for
Robin Evans
HEARING CRC
BOARD OF DIRECTORS

1. RICHARD SEARBY
2. JIM PIPER
3. BARRY ROBERTS
4. ROBIN EVANS
5. NEVILLE MITCHELL
6. ROBERT COWAN
7. MICHELE ALLAN
8. LISA SPRINGER
9. KATHRYN GREINER
GOVERNANCE AND MANAGEMENT

MANAGEMENT TEAM

ROBERT COWAN
AMANDA CAMPBELL
LISA NORDEN
JANE SEWELL
GREG LAWRENCE
KATHY D’COSTA

CHIEF EXECUTIVE OFFICER (CEO) AND DIRECTOR:
A/PROF ROBERT COWAN
Responsibilities: Providing scientific and commercial leadership to the HEARing CRC; responsible to the Commonwealth and Board of Directors for the implementation and conduct of Centre research, education, commercialisation and management Programs.

EXECUTIVE ASSISTANT:
MS AMANDA CAMPBELL
Background: Amanda holds a tertiary qualification in Psychology and Market Research and has over 10 years of experience in administration. Over the last seven years, Amanda has focused on Personal / Executive assistant roles.
Responsibilities: Direct support to the CEO and Board, and broad support to the activities of the Management team.

CHIEF FINANCIAL OFFICER AND COMPANY SECRETARY:
MRS LISA NORDEN
Background: Lisa has over 20 years of financial experience in industry and not-for-profit organisations. She has spent the last eight years working with CRCs. Her qualifications include Certified Practicing Accountant, Chartered Secretaries Australia Corporate Governance Graduate Diploma and Australian Institute of Company Directors Course Diploma.

COMMUNICATION AND EDUCATION MANAGER:
DR JANE SEWELL / MR GREG LAWRENCE
Background: Jane completed a PhD and post-doctoral role in the field of Molecular Oncology. She has extensive experience in science communication and the development of scientific and clinical online and multimedia resources.
Mr Greg Lawrence took over this role during Jane’s maternity leave, Greg has tertiary qualifications in geology, environmental science, and science and technology policy, along with 10 years experience working in R&D and research related environments.
Responsibilities: External and internal communication strategies; managing the higher degree and professional education activities of the HEARing CRC, including Training Workshops. Establishment of HEARnet.

IP AND COMMERCIAL OFFICER:
MRS KATHY D’COSTA
Background: Kathy has over eight years experience in academic biomedical research and early drug discovery. She holds a Bachelor of Science (Hons) degree and a Masters in Biotechnology and Business. Kathy has also completed a Business Development Internship at the Walter and Eliza Hall Institute of Medical Research.
Responsibilities: Administration of Intellectual Property (IP) and commercial registers.
MANAGEMENT TEAM (CONT.)

DOMINIC LOU  MO BREMNER  PAM JACKSON

ADRIENNE PATERSON  SUSANNE MILLER

RESEARCH PROJECT COORDINATORS:
The Research Coordinators work with the Project Leaders and Key Scientists to ensure effective collaboration across projects, and within Member organisations.

DR DOMINIC LOU (MACQUARIE UNIVERSITY):
Dominic is an e-learning instructional designer, developer and project manager. Dominic resigned during this reporting period. MRS MO BREMNER was recruited to take up this role from August 2011. Mo has significant expertise in education, grant management and program administration.

MRS PAM JACKSON (NATIONAL ACOUSTICS LABORATORIES):
Pam has tertiary qualifications in Business and Book Editing and Publishing, with many years administrative experience across a range of industries.

DR ADRIENNE PATERSON (MELBOURNE):
Adrienne brings significant postdoctoral research and pharmaceutical industry experience to this role. DR SUSANNE MILLER was recruited to take over this role from May 2011 to cover Adrienne’s maternity leave. Susanne has a PhD and an MBA and has experience across a broad range of scientific and healthcare roles in both medical research and commercial settings.

GOVERNANCE AND MANAGEMENT

PROJECT LEADERS:
Responsible for the achievement of the aims and milestones of their specific research project. Project Leaders are employed through individual Members.

KEY STAFF

<table>
<thead>
<tr>
<th>NAME</th>
<th>ORGANISATION</th>
<th>CRC POSITION / ROLE</th>
<th>TIME COMMITTED</th>
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<tbody>
<tr>
<td>A/Prof Rob Briggs</td>
<td>The University of Melbourne</td>
<td>Project Leader</td>
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<tr>
<td>Dr Jorg Buchholz*</td>
<td>Macquarie University</td>
<td>Project Leader</td>
<td>100%</td>
</tr>
<tr>
<td>Dr Rachel Burt</td>
<td>Walter and Eliza Hall Institute of Medical Research</td>
<td>Co-Project Leader</td>
<td>100%</td>
</tr>
<tr>
<td>Dr Peter Busby</td>
<td>Cochlear Ltd</td>
<td>Project Leader</td>
<td>10%</td>
</tr>
<tr>
<td>Dr Sharon Cameron</td>
<td>Australian Hearing</td>
<td>Project Leader</td>
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<td>A/Prof Teresa Ching</td>
<td>Australian Hearing</td>
<td>Project Leader</td>
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<td>A/Prof Henrik Dahl</td>
<td>Consultant</td>
<td>Project Leader</td>
<td>45%</td>
</tr>
<tr>
<td>Dr Shani Dettman</td>
<td>The University of Melbourne</td>
<td>Co-Project Leader</td>
<td>80%</td>
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<td>A/Prof Harvey Dillon</td>
<td>Australian Hearing</td>
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<td>60%</td>
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<td>Dr Dimity Dornan</td>
<td>Hear and Say Centre for Deaf Children</td>
<td>Co-Project Leader</td>
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<td>Project Leader</td>
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<td>Mr Michael Fisher</td>
<td>Australian Hearing</td>
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<td>Ms Helen Glyde*</td>
<td>Australian Hearing</td>
<td>Project Leader R1.1.1b</td>
<td>63%</td>
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<td>Mr Mark Harrison</td>
<td>The Bionics Institute</td>
<td>Project Leader R3.6.3</td>
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<td>Dr John Heasman</td>
<td>Cochlear Ltd</td>
<td>Project Leader R2.4</td>
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<td>Prof Louise Hickson</td>
<td>The University of Queensland</td>
<td>Project Leader R4.1.1</td>
<td>37%</td>
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<tr>
<td>Prof Doug Hilton</td>
<td>Walter and Eliza Hall Institute of Medical Research</td>
<td>Co-Project Leader R1.2.2</td>
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</tr>
<tr>
<td>Dr Blake Johnson*</td>
<td>Macquarie University</td>
<td>Project Leader R4.7.2b</td>
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<tr>
<td>Dr Gitte Keidser</td>
<td>Australian Hearing</td>
<td>Project Leader R4.3.1, R4.3.4, R4.6.7</td>
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</tr>
<tr>
<td>A/Prof Greg Leigh</td>
<td>Royal Institute for Deaf and Blind Children</td>
<td>Project Leader R4.5.2</td>
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<tr>
<td>Mr Teck Loi</td>
<td>Australian Hearing</td>
<td>Project Leader C3.1.1, C3.1.3</td>
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<td>Dr Robert Mannell</td>
<td>Macquarie University</td>
<td>Project Leader R2.3.3</td>
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<td>Dr Shehnaaz Manji*</td>
<td>The University of Melbourne</td>
<td>Project Leader R1.2.1b</td>
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<tr>
<td>Dr Jorge Meija</td>
<td>Australian Hearing</td>
<td>Project Leader R2.2.1, C2.1</td>
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<tr>
<td>Dr Catherine McMahon</td>
<td>Macquarie University</td>
<td>Project Leader R1.3.1, R4.5.1, R4.6.4, R4.7.2a</td>
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<td>Dr Carrie Newbold</td>
<td>The University of Melbourne</td>
<td>Project Leader R3.1.1, R3.2.1</td>
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</tbody>
</table>

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* These individuals joined the CRC as Project Leaders during this reporting period

** These individuals left the CRC as Project Leaders during this reporting period
“THE HEARING CRC HAS DEMONSTRATED THAT IT IS GENERALLY ON TRACK TO DELIVER ALL THE PROPOSED OUTPUTS AND OUTCOMES. THERE HAVE BEEN SOME EXCEPTIONAL WORLD CLASS SUCCESSES ARISING FROM THIS CRC AND ITS PREDECESSORS AND THERE IS STRONG EVIDENCE THAT THERE ARE OUTCOMES ON THE HORIZON THAT HAVE POTENTIAL TO DELIVER LARGE DIVIDENDS.”

CRC PROGRAM THIRD YEAR REVIEW PANEL

THE HEARING CRC MADE STEADY PROGRESS IN ADDRESSING THE TWIN CHALLENGES OF MORE EFFECTIVE PREVENTION AND IMPROVED REMEDIATION OF HEARING LOSS DURING THE 2010/11 YEAR. RESEARCH ACTIVITIES WERE EXPANDED DURING THIS PERIOD USING FUNDS DERIVED FROM COMMERCIALISATION OF RESEARCH OUTCOMES.
RESEARCH PROGRAM: R1 BIOMOLECULAR, GENETIC AND PHYSIOLOGICAL SOLUTIONS

To date, genetic studies have identified 12 novel mouse models with recessive forms of deafness. The causative gene has been identified in eight of the strains - in seven, the mutation was identified in a known deafness gene, however in one strain the mutation was in Synaptotagmin 2 (Synj2), a gene that had not previously been associated with deafness. The finding was verified by follow up experiments where mice carrying mutated Synj2 genes showed increased susceptibility to NIHL compared to those carrying the wild-type (i.e. non-mutated or normal) versions of the Synj2 gene.

In a related project, a mutagenesis screen has been developed to identify mice with hearing loss using a high-throughput, automated, acoustic startle response test. The heritability of 25 mutations has been confirmed using this approach and work is ongoing to understanding the genetic variation in each of these strains. To date, two of the 25 mutations have been mapped and eight more are underway. One of the lines is being sequenced using cutting edge ‘Next Generation Sequencing’ technology to identify causative point mutations.

To further capitalise on the rapid developments in sequencing technologies and to translate findings in mice to humans, a new international collaboration has been formed with genetic researchers in Belgium and Sweden, allowing the HEARing CRC to conduct exome sequencing on a cohort of individuals with NIHL to identify causative gene mutations.

The findings of these genetic studies, in association with physiological investigation, will hopefully lead to the identification of biochemical pathways that can be targeted for therapeutic intervention. The development of a drug that could be used to treat hearing loss would be a world-first and would have a significant impact on people at risk or with existing hearing losses.

The apoptotic (programmed cell death) pathway has already been implicated as one such potential target and medicinal chemistry screens have recently identified two series of compounds that interfere with apoptosis, which also appear to be suitable for use in the hearing pathway. These compounds will undergo further testing towards the development of a molecular therapeutic for the prevention of deafness.

Alternate approaches to identifying pharmaceutical treatments for NIHL have suggested that statins (existing pharmaceutical agents currently used to lower cholesterol) may have a protective effect in susceptible mouse strains, work is ongoing in this area.

The second element of this Program is aimed at better understanding how sound is coded by the auditory system, and how this is affected by hearing loss, CAPD and tinnitus. The HEARing CRC has a number of projects interested in CAPD, these include research into the effects of aging on CAPD, the incidence and consequence of CAPD in adults with neurodegenerative disease, and language impairments associated with CAPD.

A novel observation from this work is that spatial processing disorders (SPD) are present in almost all individuals experiencing hearing loss. This has spawned a new research project investigating the causes of SPD using the ‘Listening In Spatialised Noise – Sentences Test’ (LiSN –S) previously developed in association with the HEARing CRC and licenced to Phonak AG.

The HEARing CRC is using Macquarie University’s magnetoencephalography (MEG) imaging facilities to better understand both transmission and processing of acoustic information in the central auditory processing pathways of individuals with normal hearing, and those with different types of hearing loss.

Through the CRC, a collaboration with Macquarie University, CSIRO, Cochlear Ltd and Kanazawa Institute of Technology in Japan has successfully developed a prototype MEG facility that can be used to evaluate cochlear implant performance, a world’s first in imaging. When installed at Macquarie’s new Hearing Hub, this facility will support HEARing CRC and other researchers’ efforts to improve sound coding.

MEG imaging is also being employed to evaluate strategies for tinnitus remediation, in particular, investigating customising tinnitus remediation programs to the individual. Tinnitus affects roughly 20% of the population, sufferers experience ringing in the ears and while there is currently no cure, the condition can be managed with the appropriate support.
Intelligent Sound Processing projects focus on improving performance of intelligent hearing protection devices, hearing aids and cochlear implants through use of digital sound processing applications. These applications are aimed at providing additional acoustic information to the listener and reducing the impact of background noise for end-users.

The ability to hear sounds in both ears is critical for a listener to localise sounds in their environment and also to hear well in background noise. Normal hearing individuals can localise sounds by interpreting tiny differences in the loudness and timing of noises as they arrive at their two ears.

The HEARing CRC has a patented peak-derived-timing (PDT) sound coding strategy that aims to capture this information for bilateral cochlear implant users. This PDT strategy has recently been migrated to Cochlear Ltd’s SP15 commercial platform which will enable early clinical trials with cochlear implants users. To ensure testing is done in real-world environments, an audio visual presentation system, test materials and informational masking test paradigms have been established in our Melbourne and Sydney facilities.

To further optimise the loudness and timing cues for cochlear implant users, the HEARing CRC has now developed a psychophysical model that describes the relationship between stimulus [sound] and the actual perception of the sound by the implant user. This model has been applied to test devices and provides a good fit to observed experimental outcomes in bilateral cochlear implant users, opening the potential for ever more sophisticated bilateral coding strategies.

The HEARing CRC has developed a novel application called a ‘super-directional beamformer’ that acts as a directional microphone to significantly improve sound perception in background noise for listeners using hearing devices. The application is now being tested for commercial use in intelligent hearing protection devices and hearing aids, as well as cochlear implants.

Research in this area has now moved on to integrating the ‘super-directional beamformer’ application into devices in such a way that the user can alter or ‘train’ settings themselves. Patented products from this project already include a novel bilateral noise reduction algorithm, a novel direction of arrival estimator and a new de-reverberation processing algorithm.

A related problem in cochlear implant technology is the perception of pitch, which is important both for the enjoyment of music and in understanding voice pitch. The eTone strategy is a novel sound coding strategy developed by the HEARing CRC that enhances timing information relating to pitch for use in cochlear implants.

Voice pitch is especially important in tonal languages; a related project is investigating pitch perception in normal and hearing impaired speakers of tonal and non-tonal languages. Data collection is underway and progress is being made toward a model of pitch processing that can be implemented in the cochlear implant speech processor.

Another key area of research in this Program is the improved perception of speech when listening on the telephone, and suppression of noise for cochlear implantees when using a telecoil or FM system. These studies are progressing well with a candidate algorithm identified for pilot testing.
Integrated Bioengineering projects are developing new technology for application in hearing aids and implantable devices, as well as intelligent hearing protection for industry and call-centres/telephonics.

HEARing CRC work on cochlear implant electrode arrays is very closely aligned with industry Member, Cochlear Ltd. Studies in this area have recently extended from the physical design of the array into investigations of innovative biomaterials and surface technologies. This includes assessment of dexamethasone-coated arrays (to control the inflammatory response in the cochlear after implant electrode insertion), and investigation into the effect of immediate implant stimulation following surgery.

Other research in this area is working towards improving the safety, efficiency and efficacy of electrical stimulation at the electro-neural interface (the area where the cochlear implant sits next to nerve cells inside the cochlea).

Other project work aligned with Cochlear Ltd’s research and development includes:

- novel implant electrode designs and associated temporal bone and surgical insertion studies;
- application of polymer technology to develop an implantable sensor, a precursor to an innovative non-microphone based, totally implanted cochlear implant or improved middle ear implant;
- enhanced bone anchored hearing aids (BAHA), including trialling of a novel incision, surgical placement and a longer single-stage screw-in process; and
- improved damp proof microphones.

Development of the active noise control hearing protector [Safears™] is continuing, with testing underway to determine the effectiveness of the earmuff on speech perception in the presence of low, medium, and high noise levels.

The earmuffs have been acoustically tested in accordance with AS/NZS 1270 standards (hearing protector rating guidelines) and work is now focused on achieving the Intrinsically Safe standard for the earmuff design. Development of the Mark II prototype is progressing, which incorporates the HEARing CRC’s patented directional microphone ‘super-directional beamformer’ algorithm.

A novel Speech Reference Limiting application has been developed by the HEARing CRC to control the loudness of unwanted incoming sound signals. This has demonstrated significant potential to improve the comfort, safety and intelligibility of acoustic headsets and other listening devices. This technology has been patented internationally and commercial interest is currently being sought.

PARTICIPANTS

- Australian Hearing
- Cochlear Ltd
- Siemens Hearing Instruments Pty Ltd
- The University of Melbourne
- Acoustics Pty Ltd
- The Bionics Institute
- Hybrid Electronics Pty Ltd
- Royal Victorian Eye and Ear Hospital
- Sydney Cochlear Implant Centre
- The University of Sydney
- The University of Wollongong
I am a Senior Lecturer and Program Convener at Macquarie University, Audiology Section. I have a background in Audiology and Speech Pathology. My interest in the field of Auditory processing disorder and electrophysiology began when I was undertaking my Masters in India (1998-2000).

In 2001, I commenced my PhD at National Acoustics Laboratory (NAL) and at the same time started working as Research Audiologist on a project within CRC HEAR at NAL investigating “the role of cortical auditory evoked potentials in diagnosing hearing loss and evaluating efficacy of hearing aid fitting in babies”.

Working at NAL under CRC HEAR provided me with numerous opportunities to meet and learn from the “gurus” across the hearing industry.

In 2004, I was awarded my PhD and I moved to New Zealand to undertake a postdoctoral research position and further expanded on the research that we had commenced during my PhD candidature in the fields of electrophysiology and auditory processing disorders (diagnosis and management). In 2007, I joined Macquarie University as a Lecturer and once again became a part of the Hearing CRC which has enabled collaborations within Australia as well as internationally. These include the Universities of Auckland, Boulder, Montreal and Sydney.

The last few years have been very busy with new research developing new tests investigating spectral and temporal tasks, investigating speech perception in noise and understanding the role of attention and visual cues in listening in noisy environment. We are also assessing the influence of language processing and effect on reading in children with auditory processing disorders.

A number of our Projects are nearing completion and are showing some exciting results. These results will soon be published and follow-on projects that are currently in the pipeline will soon commence.

I began working in the field of sound processing for cochlear implant some twenty years ago in the department of Otolaryngology at The University of Melbourne and in conjunction with the Bionic Ear Institute (now The Bionics Institute) and Cochlear Ltd we established our first Cooperative Research Centre.

About 10 years ago my research interests shifted towards improving cochlear implants’ perception of music and tonal languages. Due to limitations in existing technology, we have been unable to provide implantees with the timing and frequency information that is necessary for them to hear pitch and timbre in music and tonal languages, as normal hearing listeners would.

Our research has focused on enhancing F0-pitch information within the limited temporal and frequency capacity of existing cochlear implant devices. This work has led to the development of a number of new coding strategies that have been shown to improve cochlear implant user’s ability to hear changes in pitch without adversely affecting speech recognition. Encouraged by this modest progress, I recently commenced a doctoral program which will investigate ways in which “coding” and “perception” of musical pitch can be “optimised” in existing cochlear implant technology.

This two pronged approach will see the development of strategies that optimise coding of F0-pitch information, while also training listeners to better attend this information for judging pitch.
I have been working on the implantable microphone and sensors project for more than ten years with the previous and current Hearing CRC. During this period I also completed a part-time PhD on the research of an inner ear microphone design concept.

I found my research interesting and meaningful because it forms an important part of a fully implantable cochlear implant system, which is designed to be functional without any external components and in turn could provide “invisible hearing” to many cochlear implant users.

Given the multi-discipline nature of my research, I have been able to collaborate with various parties within the CRC such as Cochlear Ltd, NAL, the Royal Victorian Eye and Ear Hospital and The University of Melbourne.

I currently continue the research work from my PhD study of the inner ear microphone, which aims to pick up the hydraulic sound pressure in the fluid of the cochlea to utilize the natural functions of the outer and middle ear. The project has made good progress in the past year, although there are still some challenges to overcome.

In a new project this year I started to investigate the feasibility of a sealable microphone for the Behind-the-Ear (BTE) processor, which aims to prevent moisture or dust from getting into the microphone — a common failure mode of cochlear implants and hearing aids.

Built on my knowledge of the implantable microphones, I proposed a novel and simple design to make the microphone completely water and dust proof in the BTE. More importantly such a design does not require regular service to maintain the optimum performance over time. I am currently developing a concept demonstration prototype using micro and nano fabrication technologies.
The Clinical Tools, Services and Techniques projects are aimed at improving and individualising the management of hearing loss from identification through to remediation and habilitation. This will improve outcomes for people with a hearing loss, as well as providing greater clinical efficiencies and remote access to audiologists.

A key element of this program is a series of studies investigating human behaviour, in particular, identifying barriers to:

- the uptake of hearing rehabilitation in adults, particularly the elderly; and
- healthcare professional referral for hearing technology and rehabilitation.

Once the barriers are better understood, approaches can be developed to improve access to hearing technologies and rehabilitation.

A multi-site retrospective study investigating help-seeking behaviour of hearing impaired individuals has recently collected data from 309 participants across Brisbane and Sydney; this information is now being analysed and will again provide insight into human behaviour in this area. In addition, an investigation into the attitude of medical practitioners to hearing impairment in older adults has been published alongside another study focused on the impact of hearing loss on the use of community and informal supports.

Research is also underway looking at barriers to individuals reducing their own noise exposure. The findings of these studies will be valuable in developing appropriate messages (and modes of delivery for those messages) to increase public understanding of the risks associated with noise exposure. Some work is already underway in this field, for example, National Acoustic Laboratories (NAL) has been involved with the Queensland Mining Health Improvement and Awareness Committee, running an ongoing seminar series in Brisbane and Mount Isa to raise the profile of noise as a hearing health hazard.

In a related project, in association with Work Safe Australia, the HEARing CRC and NAL are involved in “Getting heard: effective prevention of hazardous occupational noise”. This involves the measurement of noise levels in 50 randomly-selected worksites in Sydney, Melbourne and Brisbane according to the Australian and New Zealand Standard Industrial Classification of work places and workers.

A different approach to overcoming barriers to uptake of technology and services is to create processes that can be delivered remotely. This will help to address the geographical disparity between where the bulk of service providers are (major towns and cities), and where many of those requiring clinical services are situated (rural and remote areas).

Studies include remote training and supervision of clinicians, remote assessment of hearing and remote mapping of cochlear implants. Each of these projects has demonstrated the feasibility of remote delivery, and work is now focused on developing content for identified training and up-skilling needs of clinicians, and progress towards the implementation of remote clinical processes for hearing assessment and implant mapping.
Studies aimed at developing improved practices for the fitting of hearing aids and cochlear implants have the ultimate aim of reducing clinical time as well as providing better outcomes for patients. Improved fitting will be an important development for industry partners to enable rapid expansion of commercial markets, particularly when coupled with research identifying barriers to device uptake and use.

The trainable hearing aid concept developed by the HEARing CRC has been translated into a wearable commercial device by Siemens AG. Work is also ongoing into similar automated fitting procedures for use with cochlear implants.

The NAL-NL2 prescription procedure has been licenced to 16 international hearing aid and audiological test equipment manufacturers and is now widely available for hearing aid fitting and optimisation (its predecessor, NAL-NL1, was used in fitting over half of all hearing aids worldwide). Work is progressing on the development of novel prescription procedure for hybrid devices that incorporate both acoustic and electric hearing in the same ear.

Currently the evidence base for guiding candidature and device selection in the hearing impaired is limited. To address this gap, ongoing HEARing CRC research is consolidating outcome data for cochlear implant recipients, including:

- adult cochlear implant recipients with unilateral hearing loss (hearing loss in one ear only);
- individuals who lost their hearing before they learnt to speak (prelingual);
- individuals who received an implant at an early age; and
- implantees with greater amounts of residual hearing.

In association with NAL, the Longitudinal Outcomes of Children with Hearing Impairment (LOCHI) study is systematically following 470 children from initial diagnosis of hearing loss through to age nine to assess benefits and factors associated with successful use of hearing aids and cochlear implants, as well as different modes of habilitation. The results of these studies will provide valuable evidence to guide future decision making in the field.

Other projects in this area are focused on management of young children with hearing loss. Bringing together a large group of national and international collaborators, work is progressing toward establishing consistency in children’s test measures and identifying optimal therapeutic approaches.

In addition and in collaboration with a Young Learners Project (co-project of The University of Melbourne and the University of Birmingham, UK), studies are underway into better understanding the associations between family literacy and how parents interact with their hearing impaired children.
COLLABORATION

Forty-two of the HEARing CRC’s 52 project teams include representation from two or more Core and/or Support Members; these are often at distant geographical locations. Involvement in projects ranges from personnel or infrastructure support through to provision of specialist advice or expert input.

Communication between the different Members working on a single project ensures that relevant questions are addressed in the research and that outcomes are rapidly translated.

To facilitate communication and collaboration within and between projects, Research Project Coordinators are located at The University of Melbourne, Macquarie University and Australian Hearing.

The coordinators facilitate regular research meetings as well as overseeing reporting to the Management team and Board. To further cultivate broad understanding and collaborative linkages between projects:

- Project Leaders have been introduced to collaboration tools available through the eResearch Collaborative Services; they have been encouraged to utilise these tools to facilitate cross site communications and collaborations, they include:
  - EVO (a desktop, video collaboration tool)
  - DataFabric (a data sharing tool);
- provision of travel funds aids communication between researchers across geographically-separate nodes, these can be accessed where tele- and videoconferencing is not available or insufficient to address communication needs; and
- meetings with Project Leaders are scheduled in Melbourne, Sydney, and Brisbane, to ensure that our Board, Management team and key Members have the opportunity to visit individual partners in their local environments.

The HEARing CRC, and its predecessor CRCs, have established strong, ongoing collaborative relationships with all Core and Support Members. Many of these collaborations are complex and multi-faceted, some examples include:

- hosting four-day Cochlear Implant Training Workshops (including personnel from The University of Melbourne, the Royal Victorian Eye and Ear Hospital and Cochlear Ltd);
- supporting Cochlear Ltd’s Visiting Implant Specialists to Australia (VISTA) Program and Technology Research Laboratory (involving The University of Melbourne, The Bionics Institute and the Royal Victorian Eye and Ear Hospital);
- collaboration with Australian Hearing’s, National Acoustics Laboratory on a range of projects including the development and launch of the 2010 Binge Listening report, and joint research projects such as the HEARlab and hearing protection work; and
- active engagement with The Audiology Society of Australia in provision of professional education activities, including co-sponsoring of the XXXII World Congress of Audiology to be held in Sydney in May 2014.

FROM TOP: HEARing CRC Cochlear Implant Training Workshops are run in collaboration with The University of Melbourne, The Royal Victorian Eye and Ear Hospital and Cochlear Ltd. The HEARing CRC collaborated with NAL in the publication of the Binge Listening report.
INTERNATIONAL RESEARCH COLLABORATIONS

The HEARing CRC has a number of international collaborators that are involved in specific projects. There were 27 active international collaborations during the 2010/11 year:

- ALL INDIA INSTITUTE OF SPEECH AND HEARING, India
- BEIJING LANGUAGE AND CULTURE UNIVERSITY, China
- BIOTEXTIX, USA
- FOWLER MEMORIAL LABORATORY, COLUMBIA UNIVERSITY, USA
- FRANCE TELECOM, France
- HOSPITAL PURPAN, TOULOUSE, France
- KANAZAWA INSTITUTE OF TECHNOLOGY, Japan
- MEDIZINISCHE HOCHSCHULE HANNOVER, Germany
- NEW YORK UNIVERSITY MEDICAL CENTRE, USA
- NORTH CAROLINA STATE UNIVERSITY (NC), USA
- OHIO UNIVERSITY, USA
- THE CHINESE UNIVERSITY OF HONG KONG, Hong Kong
- THE TECHNICAL UNIVERSITY OF DENMARK, Denmark
- THE UNIVERSITY OF AUCKLAND, New Zealand
- THE UNIVERSITY OF BIRMINGHAM, UK
- THE UNIVERSITY OF CALIFORNIA (IRVINE), USA
- THE UNIVERSITY OF CAMBRIDGE, UK
- THE UNIVERSITY OF FRIEBURG COCHLEAR IMPLANT CENTRE, Germany
- THE UNIVERSITY OF SEATTLE, USA
- THE UNIVERSITY OF WESTERN ONTARIO, Canada
- SOUTH-WESTERN MEDICAL CENTRE, DEPARTMENT OTOLARYNGOLOGY, UNIVERSITY OF TEXAS, USA
- WASHINGTON UNIVERSITY SCHOOL OF MEDICINE (ST LOUIS), USA
COMMERCIALISATION AND UTILISATION

“THE PANEL IS PLEASED TO SEE THE DEMONSTRATION OF REAL END-USER PULL IN A CRC. THE OUTPUTS OF THE CRC ARE HAVING AN ENORMOUS IMPACT ON THE VISIBILITY AND EFFECTIVENESS OF THE NOT-FOR-PROFIT PARTICIPANTS. SME PARTICIPANTS ARE VERY SATISFIED WITH THE RESEARCH AND THEIR ABILITY TO ACCESS THE CRC.”

Each HEARing CRC project operates under a clearly defined and regularly reviewed Project Plan. This plan incorporates an individual strategy to create impact, either through clinical application or commercialisation.

It is relevant to note that the HEARing CRC has already benefitted from the re-investment of significant revenue generated from the commercialisation of its inventions.

Active communication of research outcomes is essential in driving the clinical uptake and use of HEARing CRC findings. There are various approaches to this detailed in the Communication section of this report, these approaches often utilise our network of end-user clinical and professional Members.

If research impact is to be achieved through commercialisation, this will commonly occur through industry Members who are directly involved as project participants.

This approach ensures industry Member engagement in projects at an early stage, increasing the potential for successful commercial uptake. Many HEARing CRC innovations are provided under pre-agreed licence to Members for example to Cochlear Ltd or Siemens Hearing Instruments Pty Ltd.

This approach leads to the rapid development of commercial products with enhanced performance, new function or improved process for manufacture. Other approaches to distributing HEARing CRC technologies include:

- direct sales by HEARworks Pty Ltd;
- licensing by HEARworks Pty Ltd; and
- the involvement of third parties, often small to medium sized enterprises (such as Polaris Communications Pty Ltd).

LICENCES

A number of new license arrangements were issued in the 2010/11 year through the CRC’s commercial partner HEARworks Pty Ltd. Licences arising from HEARing CRC’s (and its predecessor’s) innovations include:

<table>
<thead>
<tr>
<th>HEARING CRC TECHNOLOGY</th>
<th>LICENSEE</th>
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<tbody>
<tr>
<td>Computer-Aided Speech and Language Assessment (CASALA) software</td>
<td>Multiple individual and group licencees</td>
</tr>
<tr>
<td>HEARLab and NAL-ACA ABR module</td>
<td>Frye Electronics</td>
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<tr>
<td>Molecular Therapeutic</td>
<td>MuriGen Pty Ltd</td>
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<tr>
<td>NAL-NL2</td>
<td>16 international hearing aid and audiological test equipment manufacturers</td>
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<tr>
<td>Sound Protection (Acoustic Shock)</td>
<td>Polaris Communications Pty Ltd</td>
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<td>Sentences used in LISN-S</td>
<td>NAL – Phonak AG</td>
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<tr>
<td>Trainable Hearing Aid</td>
<td>Siemens AG</td>
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FROM TOP:

CASALA, NAL-NL2, LISN Screening tests and A-WOMPS are software programs available for licence.

A child’s hearing is tested using HEARLab.

SoundShield is a sound protection device used in call centres around the world.
INTELLECTUAL PROPERTY MANAGEMENT

The HEARing CRC is focused on achieving maximum value and impact from its intellectual property (IP). All HEARing CRC IP is licensed and/or commercially managed by HEARworks Pty Ltd. Wherever possible, licensing has involved Australian companies, however, this is balanced with the need for worldwide marketing of technology to maximise the returns available from commercialisation.

**PATENTS**

The Management team and Project Leaders work closely with legal advisors and patent attorneys to ensure freedom to operate for all research projects, and to provide advice on IP management and patenting strategy.

All HEARing CRC IP is filed in the name of HEARip Pty Ltd, the Trustee of the HEARing CRC IP Trust. Filing of Patent Cooperation Treaty (PCT) patents is undertaken after the commercial potential of an invention is determined, in consultation with the Board, the Commercialisation Working Group and with respective industry Members.

The table to the right shows patents applied for and/or granted during 2010/11.

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<tr>
<th>PATENT TITLE</th>
<th>APPLICATION / PATENT NUMBER</th>
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<tr>
<td>A method and system for enhancing the intelligibility of sounds</td>
<td>AU 2007266255*</td>
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<tr>
<td>Acoustically transparent occlusion reduction system and method</td>
<td>AU 2005291830*</td>
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<tr>
<td>A system and method for producing a directional output signal</td>
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<td>AU 2009311276*</td>
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<td>CN 200980144004.4*</td>
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<td></td>
<td>EU 09824292.8*</td>
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<td></td>
<td>USA 13/127,933*</td>
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<td></td>
<td>JP 2011533490*</td>
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<tr>
<td>A signal processing device for use in electroencephalography and a cable system incorporating the device</td>
<td>2010904096**</td>
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<tr>
<td>Systems and methods for reducing unwanted sounds in signals received from an arrangement of microphones</td>
<td>2010905118**</td>
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<tr>
<td>Methods and systems for processing signals to reduce reverberation energy</td>
<td>2011901540**</td>
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* granted patents
** provisional patents

**TECHNICAL REPORTS**

In many cases, IP is not of a nature that can be codified into patent applications, but rather forms know-how and show-how which is provided as Technical Reports to assist research and development.

Research outcomes in the field of cochlear implants are directly provided to Cochlear Ltd for worldwide application, providing a global audience for Australian research.

Similarly, research reports relevant to the hearing aid field are provided to Siemens Hearing Instruments Pty Ltd.
A critical component of the HEARing CRCs research commercialisation and utilisation strategy is the Clinical Trials and Product Development Program, under which technologies and outcomes developed in our research projects can be clinically trialled or further developed for commercial application.

To ensure that HEARing CRC cochlear implant research is end-user focused, a strong link has been established with Cochlear Ltd’s Product Technology and Development Department and with the communication teams responsible for global guidelines and clinical recommendations. This enhances experimental design (in the research projects) as well as providing more efficient knowledge transfer and commercial application. This area of the HEARing CRC’s activity is responsible for testing novel cochlear implant devices, sound processors, sound coding strategies and electrode designs on small groups of subjects.

Results are shared directly with Cochlear Ltd and feed into larger scale trials or further research to finesse these novel approaches.

The commercial application of technologies for hearing aids and hearing protection is also under investigation in this area of HEARing CRC activity. An active occlusion reduction algorithm has been programmed into hearing aids and pilot testing has commenced. The super-directional beamformer application has been integrated into hearing device research platforms for evaluation purposes and is currently being incorporated into an in-house hearing protection device (Safears™).

HEARLab is used to perform aided cortical assessments and cortical threshold evaluation for use in hearing tests on infants. It was successfully released by licencee Frye Electronics Inc in Australia and Europe this year. Two clinical studies have recently been completed by the HEARing CRC to address the pending Food and Drug Administration (USA) submission for release of HEARLab in America.

Project work is now addressing further commercial development of HEARLab hardware and software, including an upgrade to enable hearing assessment of subjects who are fitted with cochlear implants. A patent application for this hardware extension has been filed.

Two new projects have been recently initiated under the Clinical Trials and Product Development Program, these are:

- the development of a screening version of the LiSN-S test for delivery via the internet utilising the end-user’s personal computer and headphones; and

- the development of the Auditory Working Memory and Processing Speed Test (A-WOMPS), a test aimed at identifying children who might be at risk of academic under-achievement due to auditory processing deficits. Software development has been completed, with validation underway and testing to follow. A-WOMPS will be designed to be used in schools by teachers and school counsellors, as well as by professionals such as audiologists and speech pathologists.
EDUCATION AND TRAINING


THE HEARING CRC EDUCATION PROGRAM ADDRESSES BOTH POSTGRADUATE RESEARCH AND PROFESSIONAL EDUCATION ACTIVITIES.

POSTGRADUATE EDUCATION

HEARing CRC postgraduate students have the opportunity to experience a different approach to research. Through their day to day role in HEARing CRC projects, all of our students experience research that is focused on impact, often becoming directly involved in commercial or clinical translation activities.

Many of the HEARing CRCs higher degree research students also benefit from the active involvement of supervisors from non-university CRC Members.

Non-traditional training opportunities are made available to our students, covering subject areas such as IP and project management.

Finally, the HEARing CRC’s close relationship with industry and other end-user Members in relation to research and research and utilisation naturally leads to enhanced employment opportunities for our graduate researchers.

PARTICIPANTS

→ Australian Hearing Services
→ Macquarie University
→ The University of Melbourne
→ The University of Queensland
→ The University of Sydney
→ The University of Wollongong

Jorge Meija graduated from his PhD in 2010/11. Jorge was also a finalist in the CRC Association Early Career Scientist competition.
ACTIVITIES

In October 2010, the HEARing CRC held its inaugural PhD Student Symposium. This provided the opportunity for students to present either an oral presentation or a short poster/oral pitch of their research project to peers and an expert panel (comprised of key scientists and professionals from the hearing field). Small prizes were awarded for the best presentations.

The training day held prior to the Symposium was focused on communicating research to a variety of different audiences. Students were given the opportunity to speak about their research in various different scenarios relating to commercial, academic and public audiences – and were given individual and group feedback.

This two-day event also provided an important opportunity for relationship building between students working in different areas of the HEARing CRC and for those based in different geographic locations.

Feedback was very positive and training topics for future events were discussed to ensure delivery of relevant and interesting topics in the future.

A/Prof Robert Cowan, the HEARing CRC CEO contributed to other postgraduate training activities including basic audiology training for The University of Melbourne medical students, as well as a specialised hearing technology and research lecture series for the University’s Masters in Clinical Audiology program. In addition, a series of cochlear implant lectures were delivered to the Masters in Clinical Audiology program at The University of Western Australia.

Through this broader activity, the HEARing CRC is raising awareness in the next generation of healthcare professionals, and potentially inspiring new postgraduate students.
POSTGRADUATE STUDENTS

DURING THE 2010/11 REPORTING PERIOD, THE HEARING CRC HAD:

32
PHD STUDENTS
(25 IN PROGRESS, 3 WHO SUBMITTED THESIS AND 4 GRADUATES)

7
7 PHD STUDENTS WERE RECRUITED DURING THE PERIOD

3
3 PHD STUDENTS SUBMITTED THEIR THESIS

1
1 STUDENT WHO SUBMITTED IN 2009/10, GRADUATED

34
MASTERS OF CLINIC AUDIOLOGY AND MASTERS OF ENGINEERING PROJECT STUDENTS

Details of the HEARing CRC PhD and MPhil students are shown in the table on page 33.
### EDUCATION AND TRAINING

#### CRC PROJECT NO. NAME UNIVERSITY SUPERVISOR(S) (*SUPERVISOR WITH INDUSTRY CONNECTION*) STATUS

**PHD**

<table>
<thead>
<tr>
<th>CRC PROJECT NO.</th>
<th>NAME</th>
<th>UNIVERSITY</th>
<th>SUPERVISOR(S)</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1.1.1b</td>
<td>Helen Glyde</td>
<td>Queensland</td>
<td>L Hickson, S Cameron, H Dillon*</td>
<td>IN PROGRESS (NEW 10-11)</td>
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<tr>
<td>R1.1.3</td>
<td>Dani Tomlin</td>
<td>Melbourne</td>
<td>G Rance*, R Cowan*, M Sharma</td>
<td>IN PROGRESS (NEW 08-09)</td>
</tr>
<tr>
<td>R2.2.1</td>
<td>Christos Orinos</td>
<td>Macquarie</td>
<td>H Dillon, M Sharma, B vanDun</td>
<td>IN PROGRESS (NEW 10-11)</td>
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<tr>
<td>R2.2.2</td>
<td>Christa Carey</td>
<td>Melbourne</td>
<td>S.Dettman, M Brown, B Mathieson, T Eadie</td>
<td>IN PROGRESS (NEW 09-10)</td>
</tr>
<tr>
<td>R4.6.2</td>
<td>John Newall</td>
<td>Macquarie</td>
<td>T Ching, K Demuth</td>
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<tr>
<td>R4.6.6</td>
<td>Paola Incerti</td>
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<td>R4.7.1</td>
<td>Fabrice Bardy</td>
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<td>Imran Dhamani</td>
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<td>R1.1.3</td>
<td>Margot Lochrin</td>
<td>Sydney</td>
<td>M Sharma, A Ariuli</td>
<td>IN PROGRESS (NEW 09-10)</td>
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<tr>
<td>R2.2.2</td>
<td>Aswin Wijetillake</td>
<td>Melbourne</td>
<td>R vanHoesel, R Cowan*</td>
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<tr>
<td>R2.3.1</td>
<td>Andrew Vandalii</td>
<td>Melbourne</td>
<td>R Cowan*, D Sly</td>
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</tr>
<tr>
<td>R2.3.3</td>
<td>Vijay Marimuthu</td>
<td>Macquarie</td>
<td>R Mannell*, W Thompson</td>
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<tr>
<td>R3.2.1</td>
<td>Binbin Zhang</td>
<td>Wollongong</td>
<td>G Wallace*, C Newbold, S Moulton</td>
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<td>R4.1.1</td>
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<td>R4.1.1</td>
<td>Andrea Capossoce</td>
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<td>L Hickson, C Meyer</td>
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</tr>
<tr>
<td>R4.2.2</td>
<td>Ennur Ersabi</td>
<td>Queensland</td>
<td>L Hickson, D Dornan Yanbay</td>
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</tr>
<tr>
<td>R4.6.1</td>
<td>Alexandra Rouset</td>
<td>Melbourne</td>
<td>R Dowell, H McDermott, G Rance*, D Sly</td>
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</tr>
<tr>
<td>C1.1.1</td>
<td>Kerrie Plant</td>
<td>Melbourne</td>
<td>R Cowan*</td>
<td>IN PROGRESS (NEW 09-10)</td>
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#### MPHIL

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<th>UNIVERSITY</th>
<th>SUPERVISOR(S)</th>
<th>STATUS</th>
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<td>4.5.3</td>
<td>Emma Rushbrooke</td>
<td>Queensland</td>
<td>L Hickson, B Henry</td>
<td>IN PROGRESS (NEW 07-08)</td>
</tr>
</tbody>
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* commenced during previous CRC

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*GRADUATED 10-11*  
*GRADUATED 08-09*  
*GRADUATED 07-08*  
*SUBMITTED THESIS IN 10-11*  
*IN PROGRESS (NEW 09-10)*  
*IN PROGRESS (NEW 10-11)*  
*IN PROGRESS (NEW 08-09)*  
*GRADUATED 08-09*  
*GRADUATED 07-08*  
*IN PROGRESS (NEW 07-08)*
PROFESSIONAL EDUCATION

PARTICIPANTS
- Cochlear Ltd
- The Royal Victoria Eye and Ear Hospital
- The University of Melbourne
- The Audiology Society of Australia

The HEARing CRC’s professional education activities aim to increase the clinical capacity for the hearing healthcare industry. This is achieved through provision of innovative programs and courses for healthcare professionals from Australia, Asia-Pacific and world-wide.

Our activities in this area also provide an additional avenue to support uptake of new, more efficient technology and clinical practices in the fields of cochlear implants and hearing aids, both in Australia and internationally.

The HEARing CRC is involved in a number of professional education activities, including:

SPECIALIST CERTIFICATE IN CLINICAL RESEARCH:

The HEARing CRC has continued to support The University of Melbourne’s Specialist Certificate in Biomedical Research Management, offered as part of the Master of Clinical Medicine program.

The course, conducted annually, is aimed at developing the skills required to be an effective biomedical research manager, including a framework for making management decisions for biomedical research project plans and budgets.

The course also tackles proactive management and communication of projects where uncertainty is ‘the norm’. Course assessment is built around demonstrating the ability to apply skills learned to a real work based project.

INTERNATIONAL COCHLEAR IMPLANT TRAINING WORKSHOPS:

The HEARing CRC has continued to conduct four-day Cochlear Implant Training Workshops for surgeons and clinicians from Australia and Asia Pacific regions.

The Program, started in 1992, celebrated its 3,000th attendee this year. It is an effective approach to increasing the necessary infrastructure in Australia and key developing markets, such as Asia Pacific, to promote better uptake of cochlear implant technology.

The program involves lectures and input provided by staff from the HEARing CRC and its Members Cochlear Ltd, the Royal Victorian Eye and Ear Hospital and The University of Melbourne.

Each Workshop is tailored to the needs of different target audiences and is conducted through a mix of formats including lectures, small group discussions, hands-on tutorials and an interactive video link to a live cochlear implant surgery.

Surgeons are given access to a dedicated temporal bone laboratory supported by the Royal Australasian College of Surgeons in Melbourne.

General Cochlear Implant Training Workshop is for surgeons, clinicians and other healthcare professionals seeking to gain a generalised knowledge of cochlear implant technology and management.

It also serves surgeons or clinicians embarking on new cochlear implant programs with adult patients, and experienced clinicians wishing to review procedures and management techniques or to update their knowledge of hardware and speech processing.

The optional temporal bone/surgical Workshop runs in concurrent sessions over days two and three. This program includes a hands-on temporal bone workshop, plus tutorial-format discussion of surgical technique and medical management issues with experienced surgeons.

Paediatric Cochlear Implant Training Workshop addresses specialised issues relevant to cochlear implant management in children including paediatric candidature, preoperative hearing aid optimisation, device issues and medical/surgical issues in children, techniques in paediatric habilitation and speech production and language in children.
AUDIOLOGY SOCIETY OF AUSTRALIA – CONTINUING PROFESSIONAL DEVELOPMENT (CPD)

HEARing CRC Members and individual Project Leaders contribute to the Audiology Society of Australia’s CPD events and are involved in activities that are endorsed through their established CPD Program.

VISITING IMPLANT SPECIALISTS TO AUSTRALIA (VISTA)

The VISTA Program is run in conjunction with Cochlear Ltd and provides the opportunity for ENT surgeons from around the world to receive updated information regarding research and development in the field of cochlear implants and to exchange ideas and strategies during a week long tour of Sydney and Melbourne. VISTA was held for a group of 12 Danish attendees in November 2010 and for a group of 45 Latin-American attendees in February 2011.

SPONSORSHIP

The HEARing CRC sponsored the Electromaterials symposium, hosted by HEARing CRC Member the Intelligent Polymer Research Institute at the University of Wollongong in March 2011. This supports knowledge transfer in the field as well as providing valuable opportunity for networking, building collaborations and career development.

Six Workshops were held during 2010/11, details of which are shown in the table.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TYPE</th>
<th>ATTENDANCE (NUMBERS AND ORIGIN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-15 July 2010</td>
<td>Paediatric Workshop</td>
<td>17 attendees four countries</td>
</tr>
<tr>
<td>19-22 July 2010</td>
<td>General Workshop</td>
<td>20 attendees eight countries</td>
</tr>
<tr>
<td>30 August – 2 September 2010</td>
<td>General Workshop (surgery only)</td>
<td>13 attendees three countries</td>
</tr>
<tr>
<td>8-11 November 2010</td>
<td>General Workshop</td>
<td>31 attendees six countries</td>
</tr>
<tr>
<td>6-9 June 2011</td>
<td>General Workshop</td>
<td>19 attendees seven countries</td>
</tr>
<tr>
<td>27-30 June 2011</td>
<td>Advanced Problem Solving</td>
<td>10 attendees two countries</td>
</tr>
</tbody>
</table>

The Workshop specifically addresses some of the issues relevant to the variability in outcomes across patients, and provides examples of the means for dealing with specific problem cases. Attendees are encouraged to bring their own cases for discussion.

Advanced Problem Solving Workshop caters for the needs of experienced surgeons and clinicians looking for more detailed information and expertise relevant to the management of the more difficult patient, including those with cochlear abnormalities, complex ENT/medical problems, programming problems or issues requiring individual or specialised management, rehabilitation or evaluation.
COMMUNICATION

GIVEN OUR DIVERSE STAKEHOLDER GROUP, COMMUNICATION IS FUNDAMENTAL TO THE ACHIEVEMENT OF OUTCOMES AND IMPACT OF THE HEARING CRC’S RESEARCH.

INTERNAL COMMUNICATIONS

Given the geographical separation of our Member organisations and some of our project team members, communication infrastructure is recognised as critical in supporting collaboration, keeping HEARing CRC staff abreast of the organisation’s activities and achievements, and helping to generate a broader community feel.

Activities which maximise communication and collaboration within the HEARing CRC include:

➤ an Annual General Meeting to which all Members are invited;
➤ an annual Support Members meeting; and
➤ efforts to ensure that meetings are scheduled in both Melbourne and Sydney, to allow for Board and Management to visit individual Members in their home environments.

EXTERNAL COMMUNICATIONS

The HEARing CRC recognises that many of its projects require appropriate communication of research findings and outcomes in order to achieve impact.

Sharing knowledge with a wider audience of researchers, clinicians and other health professionals, government decision makers and the general public is necessary to increase awareness and drive changes in behaviour in relation to hearing health. Our communication strategy currently employs a range of approaches to target these different audiences, these include:

➤ conference presentations and invited keynote addresses at Australian and international scientific meetings;
➤ publication of peer-reviewed journal articles and conference proceedings;
➤ contribution to Member’s internal research communications, for example:
  → results of clinical studies in relation to cochlear implants are distributed to clinical specialists, product managers and marketing staff within Cochlear Ltd via Technical Reports, these are distributed for training purposes and to address product related issues;
  → outcomes of hearing aid research and clinical activities are widely disseminated through Australian Hearing’s clinical services and through The Audiology Society of Australia [the professional association of audiologists] – this grey literature communication reaches clinicians working with end-users of hearing rehabilitation technology and services;
➤ regular contribution to end-user clinical and professional Member’s communications, including websites, newsletters and magazines;
➤ media activity and comment where possible and appropriate;
➤ application for prominent awards and prizes;
➤ involvement in Government Activities – for example the Senate Enquiry into Hearing Health in Australia in 2009-10; and
➤ involvement in public activities, such as, Better Hearing Australia, National Hearing Week and Science Week.

In addition, the HEARing CRC has developed direct links with clinicians in the fields of cochlear implants and hearing aids through its Professional Education Program (Cochlear Implant Training Workshops, VISTA, contribution to Member’s CPD programs). Providing commercial and professional input into the teaching program for surgeons, clinicians and other healthcare professionals is a fundamental element of both our communication and education activities.
HEARnet

The HEARing CRC made significant progress during 2010/11 towards the development of the Hearing Education and Research Network (HEARnet) as a means to expand the impact of its research. This novel and exciting resource will be launched in mid 2012.

Using new social media applications, HEARnet aims to:

- enhance the translation of research outcomes into clinical practice; and
- provide online information about hearing mitigation technologies to adults, children and families affected by hearing loss.

HEARnet will also focus on improving community knowledge about the risks of noise-induced hearing loss, and will establish an online network that links the HEARing CRC with other organisations and researchers with common interests in hearing technologies and hearing-loss prevention.

HEARnet will be closely associated with the existing HEARing CRC website.

SELECTED HIGHLIGHTS FROM 2010/11

CALENDER OF ACTIVITIES

AUGUST 2010

A/Prof Robert Cowan, the HEARing CRC CEO launched the Deafness Forum’s Hearing Awareness Week 2010 in Brisbane. The theme for the week was “Access All Ages”.

SEPTEMBER 2010

Prof Graeme Clark, one of the pioneers of the cochlear implant, celebrated his 75th birthday with friends and colleagues from the early days of the implant development. Many of these individuals still work at the HEARing CRC or with our Members.

OCTOBER 2010

Several members of the HEARing CRC gave presentations at the 64th National Better Hearing Conference in Melbourne. A/Prof Cowan was an invited speaker who highlighted HEARing CRC research and its potential benefit to consumers.

A/Prof Robert Cowan was invited to speak about Managing IP In Collaborative Research Projects at the 5th Annual IP Management, Commercialisation and Protection meeting in Sydney.
A microfocus X-ray image by Dr Jin Xu was published in John Wiley and Sons textbook: *Science Quest 8, Australian Curriculum Edition*. It was featured in a section dedicated to the bionic ear in part of the publication focused on Australian Scientists as creative inventors and explorers.

Early analysis of trends showed that HEARing CRC articles were four of the five most cited articles in the International Journal of Audiology in 2010.

The HEARing CRC and many of its Members contributed to the Commonwealth Government’s Inquiry into Hearing Health in Australia. The enquiry panel released its findings in a document called ‘Hear Us’ in mid May 2011, the Government provided a generally positive response to its recommendations.

The HEARing CRC had two articles featured in the CRC Program’s Special Summer Edition Newsletter - Success through Innovation. Articles outlined the HEARing CRCs significant contribution to the development of next generation cochlear implants and also the high standard of training provided through our Cochlear Implant Workshops.

Jorge Meija was a finalist in the CRC Association Early Career Scientist awards, our congratulations go to him for reaching this final stage of the competition.

HEARlab was launched at the National Acoustic Laboratories in Sydney with the Commonwealth Minister for Human Services, Tanya Plibersek. HEARLab is used to perform aided cortical assessments and cortical threshold evaluation; it was released by licensee Frye Electronics Inc.

The HEARing CRC produced a brochure *Hear Now, Hear Tomorrow*? which explained the hearing loss risks of noisy environments and the measures that can be taken to manage them. This was provided to delegates of the CRC Association Conference in Brisbane along with a set of hearing plugs. It was also included in an edition of Audiology Now, The Audiology Society of Australia’s quarterly magazine.
## Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>A-WOMPS</td>
<td>Auditory Working Memory and Processing Speed test</td>
</tr>
<tr>
<td>ABN/ACN</td>
<td>Australian Business Number / Australian Company Number</td>
</tr>
<tr>
<td>AICD</td>
<td>Australian Institute of Company Directors</td>
</tr>
<tr>
<td>AO</td>
<td>Officer of the Order of Australia</td>
</tr>
<tr>
<td>ASX</td>
<td>Australian Securities Exchange</td>
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<tr>
<td>BAHA</td>
<td>Bone Anchored Hearing Aid</td>
</tr>
<tr>
<td>BTE</td>
<td>Behind-the-Ear processor</td>
</tr>
<tr>
<td>CAPD</td>
<td>Central Auditory Processing Disorders</td>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFO</td>
<td>Chief Financial Officer</td>
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<td>CPD</td>
<td>Continuing Professional Development</td>
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<td>CRC</td>
<td>Cooperative Research Centre</td>
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<td>DSP</td>
<td>Digital Signal Processing</td>
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<td>ENT</td>
<td>Ear, Nose and Throat</td>
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<tr>
<td>F&amp;A Committee</td>
<td>Finance and Audit Committee</td>
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<tr>
<td>FTIH</td>
<td>First-Time In-Human</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>HEARnet</td>
<td>Hearing Education and Research Network</td>
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<tr>
<td>IP</td>
<td>Intellectual Property</td>
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<tr>
<td>LISN-S</td>
<td>Listening in Spatialized Noise - Sentences Test</td>
</tr>
<tr>
<td>LOCHI</td>
<td>Longitudinal Outcomes of Children with Hearing Impairment</td>
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<tr>
<td>MBA</td>
<td>Master of Business Administration</td>
</tr>
<tr>
<td>M Clin Aud / M Eng</td>
<td>Masters of Clinical Audiology / Masters of Engineering</td>
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<tr>
<td>MEG</td>
<td>Magnetoencephalographic</td>
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<tr>
<td>MPhil</td>
<td>Master of Philosophy</td>
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<td>Nominations and Appointments Committee</td>
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<td>NAL</td>
<td>National Acoustics Laboratory</td>
</tr>
<tr>
<td>PCT</td>
<td>Patent Cooperation Treaty</td>
</tr>
<tr>
<td>PDT</td>
<td>Peak Derived Timing</td>
</tr>
<tr>
<td>PhD</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>QC</td>
<td>Queens Counsel</td>
</tr>
<tr>
<td>SME</td>
<td>Small to Medium Sized Enterprise</td>
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<tr>
<td>SPD</td>
<td>Spatial Processing Disorder</td>
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<tr>
<td>SRL</td>
<td>Speech Reference Limiting</td>
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<tr>
<td>VISTA</td>
<td>Visiting Implant Specialists to Australia</td>
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</table>


CONFERENCE PRESENTATIONS


16: Ching TYC, Crowe K, Martin V, Day J, Mahler-Thompson N, et al. Longitudinal outcomes of children from birth through 5 years: Interim findings of the LOCHI study.


23: Dahl HHM, Hutchison WM, Wiersma M, Ching TYC. The contribution of congenital CMV infection and mutations in the GJB2, SLC26A4, and mtDNA 12S rRNA genes to hearing loss in Australian children (the LOCHI study). The 8th Australasian Mutation Detection Meeting, Tasmania, August 2010.


29: Dillon H. A glimpse at the future through the lens of NAL research. Video presentation to the British Academy of Audiology, November 2010.


32: Dillon H. Signal processing features in hearing aids and super-hearing aids of the (very near) future. The 12th Asia-Oceania Otolaryngology Head & Neck Congress, Auckland, NZ, March 2011. [INVITED PRESENTATION]


41: Gardner-Berry K, Purdy SC and Dillon H. Auditory neuropathy spectrum disorder (ANSD) in infants: The use of cortical auditory evoked potentials helps us to better manage this population during the first 12 months of life. The XXII Biennial Symposium of the International Evoked Response Audiometry Study Group, Moscow, Russia, June 2011.

42: Gardner-Berry K, Purdy SC and Dillon H. Auditory neuropathy spectrum disorder (ANSD) in infants: The use of cortical auditory evoked potentials helps us to better manage this population during the first 12 months of life. The 6th Australian Newborn Hearing Screening Conference, Fremantle, Australia, April 2011.


60: Psarros C. Redefining the clinical model for cochlear implantation in the future. CIGICON 2010, Chandigarh India, November 2010.


63: Rance G. Auditory function in individuals with mitochondrial disease. FARA National Research Meeting, Melbourne, November 2010. [INVITED PRESENTATION]


66: Rance G. Auditory neuropathy: Diagnosis and management. Australian Association of Audiologists in Private Practice, Sydney, August 2010. [INVITED PRESENTATION]


75: Sharma M. Auditory processing disorders: Current test battery and new practices. Oticon Education Camp, Fraser Island, July 2010. [INVITED PRESENTATION]


78: Souter MA, Briggs RJ, Wright CG, Roland PS. Round window insertion of the cochlea contour advance array: How successful is it? William House Cochlear Implant Study Group, Boston, October 2010.


90: Williams, W. The shape of entertainment noise. 12th Asia-Oceania Otolaryngology Congress, Auckland, New Zealand, March 2011. [INVITED PRESENTATION]


CONFERENCES PROCEEDINGS (PUBLISHED)


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<td>13: AUDITOR’S INDEPENDENCE DECLARATION</td>
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</tr>
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<thead>
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</thead>
</table>

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<td>11: DEFERRED INCOME</td>
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</table>

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1: DIRECTORS

The HEARing CRC Ltd was established for the purposes of managing and conducting the activities of the HEARing Cooperative Research Centre, established and funded under the Commonwealth of Australia Cooperative Research Centres Program.

The HEARing CRC Ltd is established and operates under its Constitution, and a Members’ Agreement amongst its five Core Members and 21 Support Members. Under the terms of this Agreement, the composition of the Board includes the Chairman, one nominee director from each of the five Core Members (namely Australian Hearing, Cochlear Limited, Macquarie University, Siemens Hearing Instruments Pty Ltd, and The University of Melbourne), the CEO and a number of independent directors.

In addition, each of the five nominee directors have rights to appoint an Alternate to the Board.

The directors of the Company at any time during or since the end of the reporting period are:

**RICHARD SEARBY**
A0 QC MA(Oxon) HonLLD(Deakin)
Chairman
Independent

**ROBERT COWAN**
BSc (Hons) MBA PhD(Melb) DipAud Gr Cert Hlth Econ Gr Dip Tech Mgt FAudSA (CCP) GAICD
Director and Chief Executive Officer

**MICHELE ALLAN**
BSc PhD GAICD FAICD
Director
Independent

**ROBIN EVANS**
BE PhD(Newcastle)
Director
Nominee Director
(The University of Melbourne)

**KATHRYN GREINER**
A0, BSoCWork
Director
Nominee Director
(Australian Hearing)

**NEVILLE MITCHELL**
BComm CA(SA) CA
Director
Nominee Director
(Cochlear Limited)

**JIM PIPER**
BSc(Hons) PhD(Otago)
Director
Nominee Director
(Macquarie University)

**BARRY ROBERTS**
FCPA FCIS
Director
Nominee Director
(Siemens Hearing Instruments Pty Ltd)

**LISA SPRINGER**
BSc PhD GAICD
Director
Independent

**DOMINIC JENKINS**
Bachelor of Economics
Alternate Director
(for Mr Barry Roberts)

**JIM PATRICK**
BSc MSc MIE(AUST) CPE(Biomed) FTSE
Alternate Director
(for Mr Neville Mitchell)

**STEVEN GRUNDY**
DIP(MaritimeStudies) DIP(BusAdmin)
Alternate Director
(for Ms Kathryn Greiner)

**JANET GREELEY**
BSc(Hons) MA PhD
Alternate Director
(for Prof Jim Piper)

**RICHARD DOWELL**
BSc DipAud MSc PhD
Alternate Director
(for Prof Robin Evans)

*Note: the biographies of Directors, included in the Annual Report and forming part of this report, have been provided on pages 9-11 of this report.*
2: COMPANY SECRETARY

The Company Secretary as at 30 June 2011 was Mrs Lisa Norden, who also acts as Chief Financial Officer (CFO) of the Company.

Mrs Norden has 20 years of financial experience in industry and not-for-profit organisations. Her qualifications include Certified Practicing Accountant (CPA), Chartered Secretaries Australia Corporate Governance Graduate Diploma and Australian Institute of Company Directors Course Diploma.

Mrs Norden was appointed Company Secretary on 10 April 2009.

3: DIRECTORS’ MEETINGS

The number of directors’ meetings (including meetings of Board committees of directors) and number of meetings attended by each of the directors of the Company during the financial reporting period are as shown in the following table:

<table>
<thead>
<tr>
<th>DIRECTOR</th>
<th>BOARD MEETINGS</th>
<th>FINANCE &amp; AUDIT COMMITTEE MEETINGS</th>
<th>NOMINATIONS &amp; APPOINTMENTS COMMITTEE MEETINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Richard Searby – Chairman</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Robert Cowan</td>
<td>4</td>
<td>4</td>
<td>4*</td>
</tr>
<tr>
<td>Michele Allan</td>
<td>4</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>Robin Evans</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Kathryn Greiner</td>
<td>4</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>Neville Mitchell</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Jim Piper</td>
<td>1</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>Barry Roberts</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Lisa Springer</td>
<td>4</td>
<td>4</td>
<td>n/a</td>
</tr>
<tr>
<td>Dominic Jenkins (Alternate for Barry Roberts)</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Steven Grundy (Alternate for Kathryn Greiner)</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Jim Patrick (Alternate for Neville Mitchell)</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
<tr>
<td>Janet Greeley (Alternate for Jim Piper)</td>
<td>2</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>Richard Dowell (Alternate for Robin Evans)</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
</tbody>
</table>

A Number of meetings attended
B Number of meetings held during the time the director held office during the year

* Whilst the CEO is not a member of the Finance & Audit Committee, it is Company practice for the CEO and CFO to be in attendance at all F&A meetings.
4: CORPORATE GOVERNANCE

The Board of Directors is accountable to the Commonwealth Government and to the Members for the governance, management and control of the activities, business and affairs of the Company.

Currently the Board comprise an independent chair, nominee Directors for each of the five Core Members of the HEARing CRC (Australian Hearing Services, Cochlear Limited, Siemens Hearing Instruments Pty Ltd, Macquarie University and The University of Melbourne), two independent non-executive directors and its Chief Executive Officer (CEO).

The HEARing CRC Ltd Constitution allows for the appointment of alternate directors for the five nominee directors, consistent with the terms of the HEARing CRC Member’s Agreement.

The HEARing CRC operates under the terms and guiding doctrines of: its Constitution, the Member’s Agreement for the establishment and operation of the HEARing Cooperative Research Centre, an agreement amongst each of the individual Members and the HEARing CRC Ltd; and the agreement between the Commonwealth of Australia and the HEARing CRC Ltd (Commonwealth Agreement). The HEARing CRC follows good practice as recommended by ASX corporate governance practices.

To assist the Board in fulfilling it duties, it has established two committees: (1) Finance and Audit; and (2) Nominations and Appointments.

Details of each of these committees are stated below.

The Board has also established a Science Advisory Group and a Commercial Working Group to provide specific advice on matters relevant to research and commercial activities. Details of the each of these working groups are stated below. The day-to-day management of the Company has been delegated to the CEO and through him, to the Management Team.

The HEARing CRC has agreements and deeds in place to manage its intellectual property trusts and commercial activities. HEARworks Pty Ltd manages commercial activities in regards to the commercialisation of intellectual property held in both the CRC HEAR Intellectual Property Trust and the HEARing CRC Intellectual Property Trust and other activities as delegated by the HEARing CRC Board.

HEARworks Pty Ltd is the Trustee for the CRC HEAR Intellectual Property Trust, which owns intellectual property created in the prior CRC and is referred to as Trust 1. HEAR IP Pty Ltd is the Trustee for the HEARing CRC’s intellectual property referred to as Trust 2.

4.1: FINANCE AND AUDIT COMMITTEE

The Finance and Audit Committee assists the Board by providing oversight of the financial operations and affairs of the Company. This Committee also oversees the relationship with the external auditor, and the process of identification and management of business, commercial and financial risks. For the reporting period this committee met four times and the members’ attendance record is disclosed in the table of meetings.

The members of the Finance & Audit Committee during the period were:
- Mr Barry Roberts (Chair)
- Mr Richard Searby (ex officio)
- Prof Robin Evans
- Mr Neville Mitchell

It is Company practice that the CEO and CFO are in attendance for all meetings of this Committee.

4.2: NOMINATIONS AND APPOINTMENTS COMMITTEE

The Nominations and Appointments Committee assists the Board by making recommendations on the appointment and remuneration of directors of the HEARing CRC and HEARworks Pty Ltd. If required, this Committee also assists in the appointment of a Chairman, or CEO, and in making recommendations on the remuneration of these officers.

For the reporting period this Committee met two times and the members’ attendance record is disclosed in the table of meetings.

The members of the Nominations and Appointments Committee during the year were:
- Kathryn Greiner (Chair)
- Mr Barry Roberts
- Mr Richard Searby (ex officio)

It is Company practice that the CEO attends meetings of this Committee.

4.3: RISK MANAGEMENT

Oversight of the risk management system

The Board oversees the establishment, implementation and annual review of the Company’s Risk Management System, coordinated through the Finance and Audit Committee.

The Chief Executive Officer manages a risk database established and developed by the Board in consultation with the Company’s insurers. The Board receives a regular Risk Management Report on incident reports, activities and exceptions.
4.4: SCIENCE ADVISORY GROUP

The Science Advisory Group provides independent scientific advice to the Board and management. Membership includes: Professor Robert Patuzzi (Chair); Professor Bronya Keats (independent genetics expert); and key scientists drawn from across the Members including: Professor Doug Hilton, Professor Richard Dowell, Professor Louise Hickson, Adjunct Professor Harvey Dillon, Associate Professor Jim Patrick, Dr Catherine McMahon, and the CEO. The group meets annually to conduct the Annual Project Review process, and as required to address specific issues.

4.5: COMMERCIAL WORKING GROUP

The Commercial Working Group provides expertise and assistance to management in commercialisation activities.

Membership of this group includes: the CEO; two independent Directors with commercial experience, Dr Springer & Dr Allan; legal counsel Ms Jenni Lightowlers; and IP management staff. The group meets as and when required.

4.6: COMMUNICATION WITH MEMBERS

During the reporting period the Company’s members met on one occasion at the November 2010 AGM to review the Company’s activities.

Informal communication with Members occurs on a regular basis by means of an integrated email network, and by regular face-to-face meetings with the CEO, management team members and project leaders. A travel budget for this activity has been provided. Internal news is provided to the Members by email on a semi-regular basis, and a full annual report of activities is provided to the Members annually.

In addition, the “HEARing Education and Research Network of Australia” (HEARnet), has been established to enhance communication amongst the Members, and with other research agencies and the public who have an interest in HEARing research.

This is a primary technology transfer activity which will assist in ensuring that the wider community is informed of developments of HEARing CRC research, and increases the potential that clinical developments will achieve widespread uptake and use.

5: PRINCIPAL ACTIVITIES

The principal activities of the HEARing CRC are to undertake collaborative research into hearing loss prevention and mitigation leading to innovative products, processes and services that address the economic impact of hearing loss on the Australian economy.

Through education and commercialisation of research findings, the HEARing CRC and its Members aim to reduce the incidence of hearing loss and increase the effectiveness of treatments for hearing loss and associated disorders.

The research portfolio comprises a range of collaborative research projects nominally grouped in the following areas:

1: Biomolecular/Genetic/Physiological solutions to hearing loss;
2: Intelligent Sound Processing;
3: Integrated Bio-engineering; and
4: Clinical Tools, Services and Techniques.

The HEARing CRC is recognised as a health promotion charity by the Australian Taxation Office.

6: REGISTERED OFFICE

550 Swanston Street
Audiology, Hearing and Speech Sciences
The University of Melbourne
Victoria 3010

7: OPERATING AND FINANCIAL REVIEW

Total income for the year was $25,534,048 (2010: $24,708,032), which is matched by expenditure, resulting in a nil result for the year. The income for the period includes all cash and in-kind contributions of the Members to the HEARing CRC and we take this opportunity to thank these Members.
8: ENVIRONMENTAL REGULATIONS

As a clinical research entity, the HEARing CRC is subject to clinical regulatory requirements and legislation governing such activity in Australia. As such, the Company is aware of and abides by National Health and Medical Research Council (NH&MRC) guidelines, Australian Research Council (ARC) guidelines and Australian Research Ethics Committee (AREC) guidelines, and is compliant with Good Clinical Practice procedures.

The Company’s operations are not subject to any significant environmental regulation under either Commonwealth or State legislation. However, the Board believes that the Company has adequate systems in place for the management of its environmental obligations and requirements, and is not aware of any breach of those requirements as they apply to the Company.

9: DIVIDENDS

The HEARing CRC is limited by guarantee and has no share capital. The directors of the HEARing CRC are precluded by the Company’s Constitution from declaring a dividend. If the company is wound up each Member will be required to contribute a maximum of $100 towards meeting any outstanding obligations of the company.

There were 26 Members of the company as at 30 June 2011.

10: EVENTS SUBSEQUENT TO REPORTING DATE

The directors are not aware of any matters or circumstance, subsequent to the reporting period that has significantly affected the activities of the Company, its performance and state of affairs.

11: LIKELY DEVELOPMENTS

It is not foreseen that the Company will undertake any change in its general direction during the coming year. The Company will continue to operate as detailed earlier in the report.

Further information about likely developments in the operation of the Company and the expected results of those operations in future financial years have not been included in this report because disclosures of the information would be likely to result in unreasonable prejudice to the Company.

12: INDEMNIFICATION AND INSURANCE OF OFFICERS

The HEARing CRC had and continues to hold directors’ and officers’ insurance in respect to these persons whilst legitimately performing their duties.

The Company indemnifies its directors and officers against any liability incurred during the course of executing their duties on behalf of the Company with the exception if the director or officer is found to be in breach of his/her obligations under the Corporations Law.

During and since the end of the financial year, the company has paid a premium under a contract insuring the past or present directors and certain officers of the company against liabilities incurred in those capacities except where the liability arises out of a wrongful act as defined by the policy. Particulars of the directors & officers insurance cannot be disclosed without the permission of the insurer.

13: AUDITOR’S INDEPENDENCE DECLARATION

The auditor’s independence declaration is set out on page 68 and forms part of the directors’ report for reporting year ended 30 June 2011.

This report is made with a resolution of the directors of the Company:

MR RICHARD SEARBY, AO, QC
CHAIRMAN

Dated at Melbourne this 13th day of October 2011.
## STATEMENT OF COMPREHENSIVE INCOME

FOR THE YEAR ENDED 30 JUNE 2011

<table>
<thead>
<tr>
<th>NOTE</th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REVENUE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6a</td>
<td>25,372,082</td>
<td>24,563,045</td>
</tr>
<tr>
<td><strong>EXPENDITURE</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONTRIBUTIONS – IN-KIND BY MEMBERS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3(h)</td>
<td>(17,754,554)</td>
<td>(17,744,000)</td>
</tr>
<tr>
<td>CONTRACTOR EXPENSES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6d</td>
<td>(5,233,026)</td>
<td>(4,524,383)</td>
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<tr>
<td>EMPLOYEE EXPENSES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(589,000)</td>
<td>(505,000)</td>
</tr>
<tr>
<td>RESEARCH CONSUMABLE EXPENSES</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(520,268)</td>
<td>(569,691)</td>
</tr>
<tr>
<td>RENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(196,540)</td>
<td>(174,857)</td>
</tr>
<tr>
<td>DEPRECIATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(96,000)</td>
<td>(96,000)</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6c</td>
<td>(1,144,660)</td>
<td>(1,094,101)</td>
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<tr>
<td><strong>LOSS FROM OPERATING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(161,966)</td>
<td>(144,987)</td>
</tr>
<tr>
<td><strong>FINANCE INCOME</strong></td>
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<td></td>
</tr>
<tr>
<td>6b</td>
<td>161,966</td>
<td>144,987</td>
</tr>
<tr>
<td><strong>NET FINANCE INCOME</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>161,966</td>
<td>144,987</td>
</tr>
<tr>
<td><strong>PROFIT BEFORE INCOME TAX</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>INCOME TAX EXPENSE</strong></td>
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</tr>
<tr>
<td>3(a)</td>
<td>--</td>
<td>--</td>
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<tr>
<td><strong>PROFIT FOR THE PERIOD</strong></td>
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</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>OTHER COMPREHENSIVE INCOME</strong></td>
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<td></td>
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<tr>
<td></td>
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<td>--</td>
</tr>
<tr>
<td><strong>OTHER COMPREHENSIVE INCOME</strong></td>
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</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The statement of comprehensive income is to be read in conjunction with the notes to the financial statements from pages 57 to 65.
<table>
<thead>
<tr>
<th>ASSETS</th>
<th>NOTE</th>
<th>2011 $</th>
<th>2010 $</th>
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<tbody>
<tr>
<td>CURRENT ASSETS</td>
<td></td>
<td></td>
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<tr>
<td>CASH AND CASH EQUIVALENTS</td>
<td>8</td>
<td>2,727,458</td>
<td>3,783,119</td>
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<tr>
<td>TRADE AND OTHER RECEIVABLES</td>
<td>7</td>
<td>307,729</td>
<td>184,675</td>
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<tr>
<td>TOTAL CURRENT ASSETS</td>
<td></td>
<td>3,035,187</td>
<td>3,967,794</td>
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<tr>
<td>NON-CURRENT ASSETS</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PLANT AND EQUIPMENT</td>
<td>9</td>
<td>408,000</td>
<td>384,000</td>
</tr>
<tr>
<td>TOTAL NON-CURRENT ASSETS</td>
<td></td>
<td>408,000</td>
<td>384,000</td>
</tr>
<tr>
<td>TOTAL ASSETS</td>
<td></td>
<td>3,443,187</td>
<td>4,351,794</td>
</tr>
<tr>
<td>LIABILITIES</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CURRENT LIABILITIES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRADE AND OTHER PAYABLES</td>
<td>12</td>
<td>1,954,097</td>
<td>1,567,907</td>
</tr>
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<td>DEFERRED INCOME</td>
<td>11</td>
<td>774,281</td>
<td>1,775,710</td>
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<td>EMPLOYEE BENEFITS</td>
<td>13</td>
<td>14,809</td>
<td>8,177</td>
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<tr>
<td>TOTAL CURRENT LIABILITIES</td>
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<td>2,743,187</td>
<td>3,351,794</td>
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<td>NON-CURRENT LIABILITIES</td>
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<td>DEFERRED INCOME</td>
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<td>700,000</td>
<td>1,000,000</td>
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<tr>
<td>TOTAL NON-CURRENT LIABILITIES</td>
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<td>700,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>TOTAL LIABILITIES</td>
<td></td>
<td>3,443,187</td>
<td>4,351,794</td>
</tr>
<tr>
<td>NET ASSETS</td>
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<tr>
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<td>--</td>
</tr>
<tr>
<td>RETAINED EARNINGS</td>
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<td>--</td>
</tr>
<tr>
<td>TOTAL EQUITY</td>
<td></td>
<td>--</td>
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</tr>
</tbody>
</table>

The statement of financial position is to be read in conjunction with the notes to the financial statements from pages 57 to 65.
## STATEMENT OF CHANGES IN EQUITY

FOR THE YEAR ENDED 30 JUNE 2011

### ATTRIBUTABLE TO EQUITY HOLDERS OF THE COMPANY

<table>
<thead>
<tr>
<th>SHARE CAPITAL $</th>
<th>RETAINED EARNINGS $</th>
<th>TOTAL EQUITY $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BALANCE AT 1 JULY 2009</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOSS FOR THE YEAR</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>OTHER COMPREHENSIVE INCOME FOR THE YEAR</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TRANSACTIONS WITH OWNERS, RECORDED DIRECTLY IN EQUITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISSUANCE OF SHARES</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL TRANSACTIONS WITH OWNERS</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>BALANCE AT 30 JUNE 2010</strong></td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

### ATTRIBUTABLE TO EQUITY HOLDERS OF THE COMPANY

<table>
<thead>
<tr>
<th>SHARE CAPITAL $</th>
<th>RETAINED EARNINGS $</th>
<th>TOTAL EQUITY $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BALANCE AT 1 JULY 2010</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOSS FOR THE YEAR</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>OTHER COMPREHENSIVE INCOME FOR THE YEAR</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TRANSACTIONS WITH OWNERS, RECORDED DIRECTLY IN EQUITY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISSUANCE OF SHARES</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL TRANSACTIONS WITH OWNERS</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>BALANCE AT 30 JUNE 2011</strong></td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The statement of changes in equity is to be read in conjunction with the notes to the financial statements from pages 57 to 65.
**STATEMENT OF CASH FLOWS**

FOR THE YEAR ENDED 30 JUNE 2011

<table>
<thead>
<tr>
<th>NOTE</th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CASH FLOWS FROM OPERATING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash receipts from members and government</td>
<td>6,784,701</td>
<td>6,270,000</td>
</tr>
<tr>
<td>Cash paid to suppliers and employees</td>
<td>(7,882,328)</td>
<td>(7,421,000)</td>
</tr>
<tr>
<td>Interest received</td>
<td>161,966</td>
<td>145,000</td>
</tr>
<tr>
<td><strong>NET CASH USED IN OPERATING ACTIVITIES</strong></td>
<td>(935,661)</td>
<td>(1,006,000)</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM INVESTING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition of property, plant and equipment</td>
<td>(120,000)</td>
<td>(180,000)</td>
</tr>
<tr>
<td><strong>NET CASH USED IN INVESTING ACTIVITIES</strong></td>
<td>(120,000)</td>
<td>(180,000)</td>
</tr>
<tr>
<td><strong>CASH FLOWS FROM FINANCING ACTIVITIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repayment of loans</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>NET CASH FROM/ (USED IN) FINANCING ACTIVITIES</strong></td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>NET INCREASE IN CASH AND CASH EQUIVALENTS</strong></td>
<td>(1,055,661)</td>
<td>(1,186,000)</td>
</tr>
<tr>
<td>Cash and cash equivalents at the beginning of the period</td>
<td>3,783,119</td>
<td>4,969,119</td>
</tr>
<tr>
<td><strong>CASH AND CASH EQUIVALENTS AT 30 JUNE</strong></td>
<td>8</td>
<td>2,727,458</td>
</tr>
</tbody>
</table>

*The statement of cash flows is to be read in conjunction with the notes to the financial statements from pages 57 to 65.*
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2011

1: REPORTING ENTITY
The financial report covers HEARing CRC Limited as an individual entity. The Company is limited by guarantee, incorporated and domiciled in Australia. The HEARing CRC Limited is recognised by the ATO as a health promotion charity and is therefore income tax exempt.

The financial statements were approved by resolution of the Board of Directors on 13th October 2011.

2: BASIS OF PREPARATION

(A) STATEMENT OF COMPLIANCE
The company early adopted AASB 1053 Application of Tiers of Accounting Standards and AASB 2010-2 Amendments to Australian Standards arising from Reduced Disclosure Requirements for the financial year beginning 1 July 2010 to prepare Tier 2 general purpose financial statements.

The financial report of the Company are Tier 2 general purpose financial statements which have been prepared in accordance with Australian Accounting Standards – Reduced Disclosure Requirements [AASB-RDRs] (including Australian interpretations) adopted by the Australian Accounting Standards Board ("AASB") and the Corporations Act 2001.

(B) BASIS OF MEASUREMENT
The financial statements have been prepared on the historical cost basis except for the following:

➤ financial instruments at fair value through profit or loss are measured at fair value.

The methods used to measure fair values are discussed further in note 4.

(C) FUNCTIONAL AND PRESENTATION CURRENCY
These financial statements are presented in Australian dollars, which is the Company’s functional currency.

(D) USE OF ESTIMATES AND JUDGEMENTS
The preparation of financial statements requires management to make judgements, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expenses. Actual results may differ from these estimates.

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimate is revised and in any future periods affected.

(E) FINANCIAL PERIOD
The current financial period is the 12 months ended 30 June 2011.

(F) CHANGES IN ACCOUNTING POLICIES
Starting as of 1 January 2010, the Company has changed its accounting policies by early adopting AASB 1053 Application of Tiers of Accounting Standards and AASB 2010-2 amendments to Australian Standards arising from Reduced Disclosure Requirements to prepare Tier 2 general purpose financial statements. The impact of this change in accounting policy is discussed at Note 3(l).

3: SIGNIFICANT ACCOUNTING POLICIES
The accounting policies set out below have been applied consistently to all periods presented in these financial statements. Certain comparative amounts have been reclassified to conform with the current year’s presentation.

(A) INCOME TAX
The Company has been approved for tax exemption status under Division 50-B of the Income Tax Assessment Act 1997 as a not-for-profit entity.

(B) FOREIGN CURRENCY TRANSACTIONS
Transactions in foreign currencies are translated to the respective functional currencies of the Company at exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency at the foreign exchange rate at that date.

The foreign currency gain or loss on monetary items is the difference between amortised cost in the functional currency at the beginning of the period, adjusted for effective interest and payments during the period, and the amortised cost in foreign currency translated at the exchange rate at the end of the period.

Foreign currency differences arising on retranslation are recognised in the Statement of comprehensive income.
(C) FINANCIAL INSTRUMENTS

Non-derivative financial instruments

Non-derivative financial instruments comprise trade and other receivables, cash and cash equivalents, deferred income and trade and other payables. A financial instrument is recognised if the Company becomes a party to the contractual provisions of the instrument. Financial assets are derecognised if the Company’s contractual rights to the cash flows from the financial assets expire or if the Company transfers the financial asset to another party without retaining control or substantially all risks and rewards of the asset.

Purchases and sales of financial assets are accounted for at trade date, i.e., the date that the Company commits itself to purchase or sell the asset. Financial liabilities are derecognised if the Company’s obligations specified in the contract expire or are discharged or cancelled.

Non-derivative financial instruments are initially measured at cost on trade date, which includes transaction costs, when the related contractual rights or obligations exist. Subsequent to initial recognition these financial instruments are measured as described below.

Loans and receivables are financial assets with fixed or determinable payments that are not quoted in an active market. Such assets are recognised initially at fair value plus any directly attributable transaction costs. Subsequent to initial recognition loans and receivables are measured at amortised cost using the effective interest method, less any impairment losses.

Loans and receivables comprise trade and other receivables.

Cash and cash equivalents comprise cash balances and call deposits. Accounting for finance income is discussed in note 3[k].

Other non-derivative financial instruments are measured at amortised cost using the effective interest method, less any impairment losses.

(D) PROPERTY, PLANT AND EQUIPMENT

(i) Recognition and measurement

Items of property, plant and equipment are measured at cost less accumulated depreciation and accumulated impairment losses.

Cost includes expenditure that is directly attributable to the acquisition of the asset. Borrowing costs related to the acquisition, construction or production of qualifying assets are recognised in profit or loss as incurred.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Gains and losses on disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount of property, plant and equipment and are recognised net within “other income” in profit or loss. When revalued assets are sold, the amounts included in the revaluation reserve are transferred to retained earnings.

(ii) Subsequent costs

The costs of replacing part of an item of property, plant and equipment is recognised in the carrying amount of the item if it is probable that the future economic benefits embodied within the part will flow to the Company and its cost can be measured reliably.

The carrying amount of the replaced part is derecognised. The costs of the day-to-day servicing of property, plant and equipment are recognised in profit and loss as incurred.

(iii) Depreciation

Depreciation is recognised in profit or loss on a straight-line basis over the life of the CRC.

The estimated useful life for the current and comparative periods is as follows:

(a) Fixtures and fittings – 5 years

Depreciation methods, useful life and residual values are reviewed at each reporting date.

(E) IMPAIRMENT OF ASSETS

A financial asset is assessed at each reporting date to determine whether there is any objective evidence that it is impaired. A financial asset is considered to be impaired if objective evidence indicates that one or more events have had a negative effect on the estimated future cash flows of that asset.

An impairment loss in respect of a financial asset measured at amortised cost is calculated as the difference between its carrying amount, and the present value of the estimated future cash flows discounted at the original effective interest rate. An impairment loss in respect of an available-for-sale financial asset is calculated by reference to its fair value.

Individually significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics.
All impairment losses are recognised in profit or loss. Any cumulative loss in respect of an available-for-sale financial asset recognised previously in equity is transferred to profit or loss.

An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognised.

For financial assets measured at amortised cost and available-for-sale financial assets that are debt securities, the reversal is recognised in profit or loss. For available-for-sale financial assets that are equity securities, the reversal is recognised directly in equity.

**[G] EMPLOYEE BENEFITS**

**Short-term benefits**
Short-term employee benefit obligations are measured on an undiscounted basis and are expensed as the related service is provided.

A liability is recognised for the amount expected to be paid under short-term cash bonus or profit-sharing plans if the Company has a present legal or constructive obligation to pay this amount as a result of past service provided by the employee and the obligation can be estimated reliably.

**[H] REVENUE**
Revenue from services rendered is recognised in proportion to the stage of completion of the transaction at the reporting date.

**Interest income**
Interest income and other sundry income are brought to account when the Company controls a right relating to the consideration payable.

**Cash contributions received from the members**
Income arising from cash contributions received from the members is recognised when the Company is in control of or has the right to receive the contributions.

**Government grants**
Government grants are recognised as revenue when the entity obtains control over the assets comprising the contribution. Where the Company considers the funds to be reciprocal in nature, the grant is treated as deferred income. This income is tied to specific research and other activities. All government grants are initially recorded as deferred income until which time the Company complies with the conditions associated with the grants.

**In-kind contributions**
In-kind contributions from Members are brought to account as revenue and expenditure incurred in accordance with AASB 1004. These in-kind contributions are measured at fair value based on the dollar value provided by each Member in their reporting to the Company consistent with the valuation principles agreed under the terms of the HEARing CRC Member’s Agreement.

**[I] LEASE PAYMENTS**
Payments made under operating leases are recognised in profit or loss on a straight-line basis over the term of the lease. Lease incentives received are recognised as an integral part of the total lease expense, over the term of the lease.

**[J] GOODS AND SERVICES TAX**
Revenue, expenses and assets are recognised net of the amount of goods and services tax (GST), except where the amount of GST incurred is not recoverable from the taxation authority. In these circumstances, the GST is recognised as part of the cost of acquisition of the asset or as part of the expense.

Receivables and payables are stated with the amount of GST included. The net amount of GST recoverable from, or payable to, the ATO is included as a current asset or liability in the Statement of financial position.

Cash flows are included in the Statement of cash flows on a gross basis. The GST components of cash flows arising from investing and financing activities which are recoverable from, or payable to, the ATO are classified as operating cash flows.
(K) Finance Income and Expenses
Finance income comprises interest income on funds invested. Interest income is recognised as it accrues in the Statement of comprehensive income.

(L) Presentation of Financial Statements and Reduced Disclosures
The Company early adopted AASB 1053 Application of Tiers of Accounting Standards and AASB 2010-2 amendments to Australian Standards arising from Reduced Disclosure Requirements.

This has resulted in a reduction of disclosures for items such as financial instruments, share based payments, defined benefit superannuation plans, equity accounted investments and business combinations.

Comparative information has been re-presented or removed so that it also conforms to the new disclosure requirements. Since the change in accounting policy only impacts presentation aspects, there is no impact on comprehensive income.

(M) New Standards and Interpretations Not Yet Adopted
A number of new standards, amendments to standards and interpretations are effective for annual periods beginning after 1 July 2010, and have not been applied in preparing these financial statements.

None of these is expected to have a significant effect on the financial statements of the Company, except for AASB 9 Financial Instruments, which becomes mandatory for the Company’s 2014 financial statements and could change the classification and measurement of financial assets.

The Company does not plan to adopt this standard early and the extent of the impact has not been determined.

4: Determination of Fair Values
A number of the Company’s accounting policies and disclosures require the determination of fair value, for both financial and non-financial assets and liabilities. Fair values have been determined for measurement and / or disclosure purposes based on the following methods.

Where applicable, further information about the assumptions made in determining fair values is disclosed in the notes specific to that asset or liability.

(A) Property, Plant and Equipment
The market value of property is the estimated amount for which a property could be exchanged on the date of valuation between a willing buyer and a willing seller in an arm’s length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion.

The market value of items of plant, equipment, fixtures and fittings is based on the quoted market prices for similar items.

(B) Trade and Other Receivables
The fair value of trade and other receivables is estimated as the present value of future cash flows, discounted at the market rate of interest at the reporting date.

(C) In-Kind Contributions
The fair value of in-kind contributions is as per the terms of the Member’s Agreement.

5: Capital Management
There were no changes in the Company’s approach to capital management during the year.
### 6: REVENUE AND EXPENSES

#### 6(A): REVENUE

<table>
<thead>
<tr>
<th>Description</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMONWEALTH GOVERNMENT - CRC PROGRAM GRANTS</td>
<td>5,728,392</td>
<td>5,219,498</td>
</tr>
<tr>
<td>CONTRIBUTIONS FROM MEMBERS – CASH CONTRIBUTIONS</td>
<td>1,245,000</td>
<td>1,095,000</td>
</tr>
<tr>
<td>CONTRIBUTIONS FROM MEMBERS – IN-KIND CONTRIBUTIONS</td>
<td>17,754,554</td>
<td>17,744,000</td>
</tr>
<tr>
<td>OTHER INCOME</td>
<td>644,136</td>
<td>504,547</td>
</tr>
<tr>
<td><strong>TOTAL REVENUE</strong></td>
<td>25,372,082</td>
<td>24,563,045</td>
</tr>
</tbody>
</table>

#### 6(B): FINANCE INCOME

<table>
<thead>
<tr>
<th>Description</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTEREST INCOME ON CASH AND CASH EQUIVALENTS</td>
<td>161,966</td>
<td>144,987</td>
</tr>
</tbody>
</table>

#### 6(C): OTHER EXPENSES

<table>
<thead>
<tr>
<th>Description</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEGAL</td>
<td>2,792</td>
<td>18,932</td>
</tr>
<tr>
<td>ANIMAL COST</td>
<td>257,534</td>
<td>329,153</td>
</tr>
<tr>
<td>PATENTS &amp; LICENSING</td>
<td>-</td>
<td>80,106</td>
</tr>
<tr>
<td>TRAVEL</td>
<td>91,252</td>
<td>106,129</td>
</tr>
<tr>
<td>AUDIT</td>
<td>28,028</td>
<td>37,000</td>
</tr>
<tr>
<td>OTHER</td>
<td>765,054</td>
<td>522,781</td>
</tr>
<tr>
<td><strong>TOTAL OTHER EXPENSES</strong></td>
<td>1,144,660</td>
<td>1,094,101</td>
</tr>
</tbody>
</table>

#### 6(D): CONTRACTOR EXPENSES

Contractor expenses represent wages and salaries of employees of member entities during the reporting period.

<table>
<thead>
<tr>
<th>Description</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTRACTOR EXPENSES REPRESENT WAGES AND SALARIES OF MEMBER ENTITIES</td>
<td>5,233,026</td>
<td>4,524,383</td>
</tr>
</tbody>
</table>
# Notes to the Financial Statements

## 7: Trade and Other Receivables

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receivables due from related parties</td>
<td>60,781</td>
<td>137,832</td>
</tr>
<tr>
<td>Other receivables</td>
<td>58,781</td>
<td>46,844</td>
</tr>
<tr>
<td>Accrued income from related entities</td>
<td>188,167</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Receivables</strong></td>
<td>307,729</td>
<td>184,675</td>
</tr>
</tbody>
</table>

## 8: Cash and Cash Equivalents

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bank Balances</strong></td>
<td>40,975</td>
<td>43,995</td>
</tr>
<tr>
<td><strong>Call Deposits</strong></td>
<td>2,686,683</td>
<td>3,827,114</td>
</tr>
<tr>
<td><strong>Cash and Cash Equivalents in the Statement of Cash Flows</strong></td>
<td>2,727,658</td>
<td>3,783,119</td>
</tr>
</tbody>
</table>

## 9: Plant and Equipment

### Furniture and Fittings

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening balance</td>
<td>480,000</td>
<td>300,000</td>
</tr>
<tr>
<td>Net additions/disposals</td>
<td>120,000</td>
<td>180,000</td>
</tr>
<tr>
<td>Closing balance</td>
<td>600,000</td>
<td>480,000</td>
</tr>
<tr>
<td><strong>Accumulated Depreciation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening balance</td>
<td>(96,000)</td>
<td>--</td>
</tr>
<tr>
<td>Depreciation for the year</td>
<td>(96,000)</td>
<td>(96,000)</td>
</tr>
<tr>
<td>Closing balance</td>
<td>(192,000)</td>
<td>(96,000)</td>
</tr>
<tr>
<td><strong>Net Book Value</strong></td>
<td>408,000</td>
<td>384,000</td>
</tr>
</tbody>
</table>

### Total Plant and Equipment

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>600,000</td>
<td>480,000</td>
</tr>
<tr>
<td><strong>Accumulated Depreciation</strong></td>
<td>(192,000)</td>
<td>(96,000)</td>
</tr>
<tr>
<td><strong>Total Written Down Amount</strong></td>
<td>408,000</td>
<td>384,000</td>
</tr>
</tbody>
</table>
10: CAPITAL AND RESERVES

SHARE CAPITAL

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON ISSUE AT 30 JUNE 2010 AND 30 JUNE 2011</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The Company is a public company limited by guarantee. If the company is wound up each Member may be required to contribute a maximum of $100 towards meeting any outstanding obligations of the company. There were 26 Members of the company as at 30 June 2011.

The Company has been approved for tax exemption status under Division 50-B of the Income Tax Assessment Act 1997 as a not-for-profit entity. Hence the franking account balance is nil.

11: DEFERRED INCOME

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GOVERNMENT GRANTS</td>
<td>474,281</td>
<td>1,475,710</td>
</tr>
<tr>
<td>FUNDS IN ADVANCE</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td></td>
<td>774,281</td>
<td>1,775,710</td>
</tr>
<tr>
<td>NON-CURRENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FUNDS IN ADVANCE</td>
<td>700,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td></td>
<td>700,000</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

The Company has utilised revenue from the Members’ cash contributions and from bank interest to fund activities as agreed under the HEARing CRC Member’s Agreement and initial Operational Plan. Commonwealth CRC Program grants have been applied to the activities as agreed under the HEARing CRC Commonwealth Agreement (and its associated Schedules), and the unexpended government grants represent activities not yet undertaken.

Hearworks Pty Ltd paid its seven years commitment in 2009. Unexpended funds represent activities not yet undertaken.
NOTES TO THE FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2011

12: TRADE AND OTHER PAYABLES

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRADE PAYABLES</td>
<td>281,887</td>
<td>495,860</td>
</tr>
<tr>
<td>OTHER PAYABLES</td>
<td>56,000</td>
<td>122,000</td>
</tr>
<tr>
<td>OTHER PAYABLES OWED TO RELATED PARTIES</td>
<td>1,616,210</td>
<td>950,047</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1,954,097</td>
<td>1,567,907</td>
</tr>
</tbody>
</table>

13: EMPLOYEE BENEFITS

<table>
<thead>
<tr>
<th>EMPLOYEE ENTITLEMENTS FOR ANNUAL LEAVE</th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14,809</td>
<td>8,177</td>
</tr>
</tbody>
</table>

14: RELATED PARTIES

14(A): INDIVIDUAL DIRECTORS AND EXECUTIVES COMPENSATION DISCLOSURES

During the reporting period, the following were key governance and management personnel of the Company.

Non-Executive directors:
- Mr Richard Searby AO, QC
- Dr Michele Allan
- Mr Barry Roberts
- Mr Dominic Jenkins (Alternate)
- Professor Rob Evans
- Ms Kathryn Greiner
- Mr Steven Grundy (Alternate)
- Mr Neville Mitchell
- Associate Professor Jim Patrick (Alternate)
- Professor Jim Piper
- Professor Janet Greeley (Alternate)
- Dr Lisa Springer

Executive directors:
- Associate Professor Robert Cowan
Compensation paid to individual directors and executives was as follows:

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short term employee benefits</td>
<td>361,000</td>
<td>260,000</td>
</tr>
<tr>
<td>Total</td>
<td>361,000</td>
<td>260,000</td>
</tr>
</tbody>
</table>

Key management personnel costs are listed under “employee expenses” and “contributions to members for salaries” in the Statement of comprehensive income.

Apart from the details disclosed in this note, no director has entered into a material contract with the Company for this financial period and there were no material contracts involving directors’ interests existing at the end of the financial reporting period. Nominee directors and their alternates do not receive compensation.

14(B): ASSOCIATES - HEARWORKS PTY LTD

During the year ended 30 June 2011, all related parties' transactions were made at market prices and in commercial terms. Outstanding balances at year-end were unsecured, interest free and settlement occurs in cash. No guarantees were provided or received for any related party receivable or payable.

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income – Cash contribution from Hearworks Pty Ltd [refer Note 6 “other income”]</td>
<td>644,136</td>
<td>432,047</td>
</tr>
<tr>
<td>Trade receivables – Owing [refer note 7]</td>
<td>17,798</td>
<td>--</td>
</tr>
<tr>
<td>Accrued income from related entities [refer Note 7]</td>
<td>188,167</td>
<td></td>
</tr>
<tr>
<td>Trade payables – Owed [refer Note 12]</td>
<td>--</td>
<td>80,106</td>
</tr>
</tbody>
</table>

15: SUBSEQUENT EVENTS

No matters or circumstances have arisen since the end of the financial period which significantly affected or may significantly affect the operations of the company, the results of those operations, or the state of affairs of the company in future financial years.

16: OPERATING LEASES

<table>
<thead>
<tr>
<th></th>
<th>2011 $</th>
<th>2010 $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one year</td>
<td>200,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Between one and five years</td>
<td>400,000</td>
<td>600,000</td>
</tr>
<tr>
<td>Total</td>
<td>800,000</td>
<td>800,000</td>
</tr>
</tbody>
</table>

17: ECONOMIC DEPENDENCY

The Company relies on its associate Hearworks Pty Ltd for marketing and commercialisation of Intellectual Property and support from Commonwealth of Australia for funding as per the Cooperative Research Centre Programme.
DIRECTORS’ DECLARATION
FOR THE YEAR ENDED 30 JUNE 2011

1 IN THE OPINION OF THE DIRECTORS OF HEARING CRC LTD (‘THE COMPANY’):

(a) the financial statements and notes set out on pages 57 to 65, are in accordance with the Corporations Act 2001, including:

(i) giving a true and fair view of the Company’s financial position as at 30 June 2011 and of its performance, for the financial year ended on that date; and

(ii) complying with Australian Accounting Standards – Reduced Disclosure Requirements and the Corporations Regulations 2001; and

(b) there are reasonable grounds to believe that the Company will be able to pay its debts as and when they become due and payable.

Signed in accordance with a resolution of the directors:

MR RICHARD SEARBY, AO, QC
CHAIRMAN

Dated at Melbourne this 13th day of October 2011.
INDEPENDENT AUDITOR’S REPORT TO THE MEMBERS OF HEARING CRC LIMITED

REPORT ON THE FINANCIAL REPORT

We have audited the accompanying financial report of HEARing CRC Limited (the Company), which comprises
the statement of financial position as at 30 June 2011, and the statement of comprehensive income, statement
of changes in equity and statement of cash flows for the year ended on that date, a summary of significant
accounting policies and other explanatory notes 1 to 17 and the directors’ declaration.

Directors’ responsibility for the financial report

The directors of the Company are responsible for the preparation of the financial report that gives a true and
fair view in accordance with Australian Accounting Standards – Reduced Disclosure Requirements and the
Corporations Act 2001 and for such internal control as the directors determine is necessary to enable the
preparation of the financial report that is free from material misstatement whether due to fraud or error.

Auditor’s responsibility

Our responsibility is to express an opinion on the financial report based on our audit. We conducted our audit in accordance
with Australian Auditing Standards. These Auditing Standards require that we comply with relevant ethical requirements
relating to audit engagements and plan and perform the audit to obtain reasonable assurance, whether the financial report is
free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report.
The procedures selected depend on the auditor’s judgement, including the assessment of the risks of material
misstatement of the financial report, whether due to fraud or error.

In making those risk assessments, the auditor considers internal control relevant to the entity’s preparation of the financial
report that gives a true and fair view in order to design audit procedures that are appropriate in the circumstances,
but not for the purpose of expressing an opinion on the effectiveness of the entity’s internal control.

An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates
made by the directors, as well as evaluating the overall presentation of the financial report.

We performed the procedures to assess whether in all material respects the financial report presents fairly, in accordance
with the Corporations Act 2001 and Australian Accounting Standards – Reduced Disclosure Requirements, a true
and fair view which is consistent with our understanding of the Company’s financial position and of its performance.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Independence

In conducting our audit, we have complied with the independence requirements of the Corporations Act 2001.

Auditor’s opinion

In our opinion the financial report of HEARing CRC Limited is in accordance with the Corporations Act 2001, including:

(i) giving a true and fair view of the Company’s financial position as at 30 June 2011 and of its performance
for the year ended on that date; and

(i) complying with Australian Accounting Standards – Reduced Disclosure Requirements and the Corporations Regulations 2001.

Dated at Melbourne this 13th day of October 2011.

Director’s responsibility for the financial report

The directors of the Company are responsible for the preparation of the financial report that gives a true and
fair view in accordance with Australian Accounting Standards – Reduced Disclosure Requirements and the
Corporations Act 2001 and for such internal control as the directors determine is necessary to enable the
preparation of the financial report that is free from material misstatement whether due to fraud or error.

KPMG

ANTONI CINANNI
PARTNER
AUDITOR’S INDEPENDENCE DECLARATION UNDER SECTION 307C OF THE CORPORATIONS ACT 2001

TO: THE DIRECTORS OF HEARING CRC LIMITED

I declare that, to the best of my knowledge and belief, in relation to the audit for the financial year ended 30 June 2011 there have been:

✓ no contraventions of the auditor independence requirements as set out in the Corporations Act 2001 in relation to the audit; and
✓ no contraventions of any applicable code of professional conduct in relation to the audit.

KPMG

ANTONI CINANNI
PARTNER

Dated at Melbourne this 13th day of October 2011.
HEARING CRC LTD (ABN 94 123 522 725):

is a company limited by guarantee, established to manage the activities of the HEARing Cooperative Research Centre.

HEARWORKS PTY LTD (ABN 37 089 900 676):

is a proprietary company limited by shares, created by the Members, for the purposes of acting as Trustee for IP (created by the previous CRC HEAR) and undertaking commercialisation of research outcomes. HEARworks operates under a Management Deed and Trust Deed with the HEARing CRC Limited and its Members.

HEAR IP PTY LTD (ABN 75 299 348 104):

incorporated in November 2008 as a trustee company, was created for the purposes of acting as Trustee for IP created by the HEARing CRC.