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Authored by The Home Modification Information Clearinghouse

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introduction SECTION 1

1 INTRODUCTION

Welcome to the 2015/2016 Annual Report for the Home Modification Information Clearinghouse (HMinfo). Established in 2002, HMinfo is an information service tasked with collating, reviewing, developing and disseminating evidence-based home modification knowledge in order to enhance the independence and wellbeing of older people and younger people with disability; provide safe working environments for their carers and careworkers, and promote evidence-based best practice among home modification practitioners and prescribers.

In this report you will find:

- An explanation of the work we do and the online information that we provide;
- Our goals and objectives;
- An introduction to our people;
- A statement from our Director summarising the team's key achievements from the last financial year, including research output, keynote presentations, international collaborations and media involvement:
- Website Statistics: these are compiled from Google Analytics and our website's inbuilt reporting capabilities. The data is analysed to identify areas which need optimisation or changes in order to adapt to user trends, and ultimately to measure the effectiveness of our online strategy.
- A look into what the next year holds for us and what we plan to achieve.

For further information, visit the HMinfo <u>website (www.homemods.info)</u>. It is free to register as a user and you may choose to receive regular updates from us.

To get more information, discuss issues or ask for assistance from our team, please email us at: hminfo@unsw.edu.au or call us directly on 1800 305 486 (free call).

For quick updates, join us on <u>Twitter@HM_Info</u>, 'like' us on <u>Facebook</u> by entering "Home Modification Information Clearinghouse (UNSW)" into the search engine, connect with us on <u>LinkedIn</u>, or follow us on <u>Pinterest</u>.



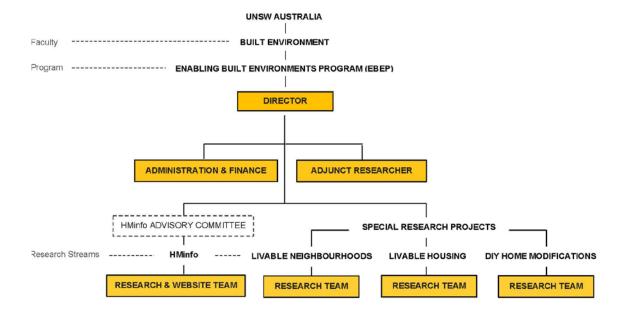
1.1 The Enabling Built Environments Program (EBEP)



The Enabling Built Environments Program (EBEP) is an initiative of the Built Environment faculty at UNSW. EBEP's research is concerned with how the built environment, from home to town centre design level, impacts human function, quality of life and health/care costs for older people, young people with disability, and carers. Funded projects range from the macro level e.g. the performance of town centres and housing supply, to the micro level e.g. temperature regulation valves, smoke detectors.

As shown in the chart below, EBEP currently comprises the Home Modification Information Clearinghouse (HMinfo) and Special Research Projects which has three research streams:

- 1. Livable Neighbourhoods
- 2. Livable Housing
- 3. DIY Home Modifications



The Special Research Projects complement and inform the work undertaken by HMinfo. The broad scope of EBEP research projects ensures that HMinfo's home modification research is suitably placed within the scope of current research and practice in the built environment for older people and people with disability.

HMinfo receives recurrent funding from the Australian Department of Social Services (DSS) under the Commonwealth Home and Community Care (HACC) Program and from the Ageing, Disability and Home Care agency of the NSW Department of Family and Community Services (FACS-ADHC) under their NSW Community Care Support Program (CCSP).

The EBEP Special Research Projects' three streams of research are funded by a range of government and non-government organisations including: the Australian Housing and Urban Research Institute (AHURI); the Australian Department of Social Services; the NSW Department of Family and Community Services; the Council of the Ageing NSW; the Australian Research Council (ARC); and industry partners such as Caroma-DORF.

With the global advent of population ageing and the ongoing transition of young people with disability to living in the community, understanding the complex transactions between the built environment and humans has become an increasingly critical factor in creating and maintaining sustainable informal and self-care systems for all nations.

EBEP benefits from its contract and casual research staff having a diverse skill set that includes: Industrial Design, Architecture, Occupational Therapy, Health Sciences, Social Sciences, Social Policy, Statistics, and Planning.

1.1.1 EBEP Objectives

Our objectives continue to be:

- to build information and knowledge capacity within the residential and public construction sectors in order to improve design standards and to provide evidence for the effectiveness of special features to better the living environments of aged and/or people with disabilities, and their carers;
- integrate diverse knowledge and cross-disciplinary research;
- develop a leading edge enabling environments research cluster that will be accessible to the full range of industry and consumer target group;
- facilitate home and community care outcomes, focusing on residential and town centre design strategies;
- promote innovative residential models for older people and people with disabilities within the building and development industry;
- develop Factsheets detailing best practice principles for assessment and the setting of priorities for planning, assessment and intervention services;
- promote the benefits and products of more enabling design to the broader community through mainstream media;
- share information at International, National, State and Regional industry forums and liaise with peak regional providers and consumers;
- ensure that there are effective links between built environment service providers and their end users.

1.1.2 EBEP Special Research Projects

EBEP Special Research Projects undertaken alongside the Home Modification Information Clearinghouse (HMinfo) during 2015-2016, spanned the three research streams. An overview of the projects in each research stream is provided below.

LIVABLE NEIGHBOURHOODS

Building Criteria, Vision and Luminance Contrast

This project examines how people with normal and impaired vision identify and assess building elements possessing various luminance and chromatic contrasts in terms of their appearance and functionality. The outcomes of the project are expected to provide descriptions regarding the recommended contrast and the preferred combinations of colours and/or materials required to provide building elements that are visually identifiable and comfortable for people with and without vision impairment. The aim of the project is to establish design criteria that can be utilised by architects and designers to apply or combine the colours and/or materials of building elements supporting visibility/ detectability and visual comfort for people with various visual functions.

The Building Criteria, Vision and Luminance Contrast project is funded by the Association of Consultants in Access Australia. It is due for completion in March, 2017.

LIVABLE HOUSING

Livable Bathrooms for Older People

The Livable Bathrooms for Older People project, that commenced in 2012, aimed to provide information and guidelines for a bathroom to better support older Australians to live in their own homes longer. Together with our industry partner, Australian leading bathroom manufacturer Caroma, we aimed to develop bathroom fixtures that were comfortable, safe, aesthetically and ergonomically sound.

Stages 1 and 2 of the project involved establishing a co-design group to understand and experience bathroom usage and design from an end-user's perspective. A nationwide survey that received over 5000 responses helped us to understand users' characteristics and usage patterns in their own home bathrooms. Then, 80 phone interviews investigated in more detail individuals' own bathroom experiences and insights.

Stage 3 of the project, conducted during 2015-2016, involved collection of experimental data for investigating the toileting environment. A laboratory study with 31 older Australians participants, collected current anthropometric and bathroom usage data. The results of the study led to the development of design tools, guidelines, and information on future care bathrooms, for designers and builders, and we are now in the process of publishing and patenting these.

The Livable Bathrooms for Older People project is supported by the Australian Research Council Linkage Programme, GWA Group Limited and UNSW Research Grants. It is due for completion in September 2016.

DIY HOME MODIFICATIONS

DIY Home Modifications: Stage 2 - Point-of-Sale resources for people with disability and their carers

Stage 1 of the DIY Home Modifications project investigated the issue of people undertaking home modifications themselves, and buying components from retail stores, catalogues and websites where they are unlikely to receive information about the suitability of the products, nor about how to install or maintain them. The research presented the perspectives of people with disability and carers who have undertaken home modifications DIY, and those of retailers, disability organisations and government departments. The Stage 1 project was completed in June 2015.

Stage 2 is the development of the recommended resources from Stage 1. Participatory action research is being used to design and develop the resources, including an App and fact sheets, for inclusion at point of sale and will cover the decision making, selection, construction and maintenance processes.

The Stage 2 project is funded by Ageing, Disability and Home Care, NSW Department of Family and Community Services. It is due for completion in June, 2017.

1.2 Home Modification Information Clearinghouse (HMinfo)

The Home Modification Information Clearinghouse (HMinfo) was established in 2002. Its mission is:

 To collate, review, develop and disseminate evidence-based home modification knowledge in order to enhance the independence and wellbeing of older people and younger people with disability, provide safe working environments for their carers and careworkers, and promote evidence-based best practice among home modification practitioners and prescribers.

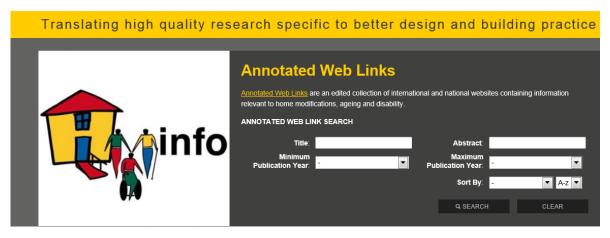
1.2.1 HMinfo Key Tasks

HMinfo's key tasks are:

- The collection and critical review of relevant national and international literature.
- The dissemination of findings in accessible and multiple formats, including knowledge translation, to the community, industry and other key stakeholders, to enable consumers and their carers to make informed choices and access evidencebased interventions.

1.2.2 HMinfo Home Modification Research Publications

HMinfo produce academically rigorous research-based documents on Home Modification policy and practice. Prior to publication, these documents are reviewed by Specialist Review Panels, comprising academic peer reviewers; expert practitioners in the fields of design, architecture, building, and occupational therapy; and consumer representatives for older people, people with disability, and carers.



The list of available online publications produced by our team includes the following:

Home Modification Evidence Based Practice Reviews

HMinfo Evidence Based Practice Reviews investigate the existing research evidence for the effectiveness of particular home modification design and building practices. Following a systematic review methodology, published literature on the design or building practice is examined. The literature search includes: databases of research studies in books and academic journals; legislation, Building Codes and Standards; Government, industry and consumer group websites; the HMinfo library collection of home modification publications and materials; grey literature documents, including industry guides and manufacturers' specifications; and anecdotal evidence from listservs, online forums, consumer peak bodies, and service providers.

Through evaluation of this published evidence, strategies most likely to achieve best practice home modification outcomes can be identified.

Home Modification Consumer Factsheets

HMinfo <u>Consumer Factsheets</u> translate research evidence for home modification design and building practices into concise information for consumers. This information is designed to assist older people, people with disability, and carers, when planning and undertaking home modifications.

Most Consumer Factsheets are derived from Home Modification Evidence Based Practice Reviews, Occasional Papers or Summary Bulletins. Other Consumer Factsheets are developed in direct response to the need for a concise guide to arranging home modifications, or undertaking a particular type of modification.

Home Modification Industry Factsheets and Checklists
HMinfo Industry Factsheets and Checklists translate research

evidence for home modification design and building practices into information that will assist home modification prescribers and practitioners.

Industry Factsheets and Checklists are derived from Home Modification Evidence Based Practice Reviews and Occasional Papers, or developed when concise guidance on a particular type of home modification is needed by industry.





Home Modification Occasional Research Papers

HMinfo <u>Occasional Research Papers</u> are individually commissioned research papers on existing or emerging issues in home design and home modifications for older people, for people with disability, or for carers. These policy and practice issues are identified by Government, Industry and Consumer stakeholders.

Occasional Research Papers include a systematic review of literature on the issue, and examine the policy impact and practice concerns. Many papers also report an original research study that is undertaken in response to the issue. Common types of study are design analyses, cost-benefit analyses, and consumer and industry surveys.

Home Modification Summary Bulletins

HMinfo <u>Summary Bulletins</u> provide a concise overview of the important issues relating to a particular home modification topic. These home modification topics are selected in response to an industry-identified concern or risk in home modification practices.

Summary Bulletins identify the applicable regulations, Standards, and industry and fair trading specifications and guidelines, for the home modification topic. A range of home modification approaches are then reviewed, with a comparison of their advantages and disadvantages for various housing and personal circumstances.

Summary Bulletins are intended to guide older people, people with disability, carers, and home modification prescribers and practitioners, in making home modification decisions. The information assists in determining the most appropriate home modification approach for each person, in the context of their home environment and care service mix.

1.2.3 HMinfo Home Modification Resources

HMinfo provides resources to support aged care and disability providers, and consumers. These include:

Home Modification Research Library

HMinfo edits and maintains an electronic <u>Research Library</u> database with over 3,500 online and hardcopy materials relevant to the home modification sector. The collection can be searched using our indexed lists, or by an open search using our tailored <u>search engine</u>.

Home Modification Subject Bibliographies

As a by-product of our research, HMinfo produces <u>Subject Bibliographies</u> of the best references for particular topics of interest to industry and other researchers.

Annotated Web Links

HMinfo <u>Annotated Web Links</u> are an edited collection of international and national websites containing information relevant to home modification decisions.

Block Library

The HMinfo Block Library is a collection of Computer Aided Drafting (CAD) assets developed specifically for the purpose of providing freely available Universal Design tools for both commercial and non-commercial stakeholders so that all can create spaces which take into account the size and movement restrictions of accessible mobility products. The Block Library is an essential step to facilitating the participation and social inclusion of the aged and people with disabilities in both private and public space design and redesign. These simple but significant downloadable drawings and models will provide all with the knowledge of space and other environmental requirements for the safe and effective access of a range of mobility products.

Case Study Library

The HMinfo <u>Case Study Library</u> showcases actual home modification cases submitted by website users so they can be reused for problem sensing and problem solving. The aim of sharing home modification problems and solutions, is to assist better and more effective practice outcomes.

Forums

HMinfo hosts three <u>Forums</u>: the Home Modifications Discussion Group, Home Modifications Professionals Forum, and Occupational Therapists Forum. The forums provide an opportunity for subscribers to exchange ideas and information relating to home modification for older people and people with disability, and are a useful and dynamic method for keeping up-to-date with developments in the field.

Events Calendar

HMinfo maintains an <u>Events Calendar</u> with Training and Events related to Home Modifications.

Newsletter

HMinfo produces a quarterly <u>Newsletter</u> containing information relating to home modification and maintenance issues and disability. Each publication contains an article, book review, and a website review, as well as upcoming publications, training and events.

1.2.4 HMinfo Research Projects

During 2015-2016, the four key home modification issues addressed in HMinfo research projects, were smoke alarms for home fire safety, temperature control for hot water in bathrooms, use of colour for safe movement throughout the home, and slip resistance of floor surfaces. HMinfo also continued with several usability upgrades to the website http://www.homemods.info. An overview of these projects is provided below.

Fire Safety - Smoke Alarms

This research responds to recent Australian regulatory changes for smoke alarms in dwellings, advances in smoke alarm devices, and current smoke alarm recommendations of fire authorities and researchers. Since HMinfo's previous research on Smoke Alarms and publication of the Summary Bulletin *Home Smoke Alarms: Hard Wired and Battery-Powered Systems* in 2006, more stringent smoke alarm regulations have led to increased uptake of smoke alarms in Australian homes. However, fire authorities and researchers recommend that more be done. Residents in new dwellings are safeguarded by regulations for hard-wired and interconnected smoke alarms, but residents living in older dwellings have less regulatory protection; most states and territories require a minimum of just one battery-powered smoke alarm, and some have no requirement for smoke alarms. Even when smoke alarms are installed in dwellings, many are not operational due to lack of maintenance and disconnection to avoid nuisance alarms.

The research examines the function and use of contemporary smoke alarm devices and details the applicable national and state/territory regulations for different dwelling types. Recommendations are made for smoke alarm selection, placement and maintenance, to detect fire smoke whilst avoiding nuisance alarms; alert residents of all ages and abilities when fire smoke is detected; and ensure reliable smoke alarm functioning in a fire.

The HMinfo Summary Bulletin: Fire Safety - Smoke Alarms 2nd ed. and Consumer Factsheet: Fire Safety - Smoke Alarms were published in October, 2015.

Slip Resistance

Slips and falls are a major cause of serious injury in the home. Older people are at a higher risk of falls and greater resulting injury. This research examines the role of slip resistant floor surfaces in reducing slips and falls, and identifies methods for selecting appropriate slip resistant floor surfaces, modifying existing floor surfaces to make them more slip resistant, and processes needed for keeping them slip resistant.

The research is focused on two main issues: the requirements of the Building Code of Australia (BCA) for slip resistant surfaces on stairs and ramps, and the need for slip resistant floor surfaces in other areas of the home. In recent years, the BCA has introduced 'Deemed-to-Satisfy' (D-t-S) provisions for slip resistance. In 2016, BCA's newest D-t-S slip resistance specifications for all new home ramps, had major implications for home modification providers. A lack of information available and widespread industry concern that common materials used for accessibility ramps would not meet the BCA requirements, led to urgent investigation the implications of these slip resistance requirements.

The HMinfo *Industry Factsheet: Slip Resistance of Ramps* was published in June 2016. It was accompanied by an appendix: *Slip Resistance of Ramp Materials – Examples*, listing examples of materials that have a slip resistance classification that could be applicable to the Building Code of Australia's slip resistance requirements for wet surface ramps, in the National Construction Code 2016 [NCC 2016].

The HMinfo Summary Bulletin and Consumer Factsheet on slip resistance of floor surfaces are expected to be published later in 2016.

Temperature Control of Hot Water in Bathrooms

This research is focused on the safe provision of heated water in people's bathrooms for washing and bathing, through the installation of temperature limiting devices. In the twelve years following HMinfo's prior research on Thermostatic Mixing Valves, and publication of the Summary Bulletin of the same name, there have been considerable changes and additions to relevant regulations and requirements are in place around the storage and delivery of heated water in a residential setting. The two public health concerns are: the risk of scald burns in water delivered too hot and the risk of microbial presence (particularly legionella) in heated water stored at temperatures too low. An analysis of Australian Standards and regulations will address temperature limiting device options for use in people's homes: thermo-static mixing valve, tempering valve, or a hot water system compliant with AS 3498.

An HMinfo Summary Bulletin: *Regulatory Requirements for Controlling Water Temperature in Bathrooms* 2nd ed. is expected to be published later in 2016.

Use of Colour for Safe Movement

This systematic review updates previous HMinfo research, published in the Evidence Based Practice Review: The application of colour and colour contrast in the home environment of the elderly and visually impaired individuals (2009). It examines and intends to identify what kinds of colour application effectively support safe and independent movement of older people and individuals with vision impairment in their home. The use of bright colours, colour coding and colour contrast, which had been included in the previous review; have been confirmed effective to provide better visual cues for older people and individuals with vision impairment. However, use of an aesthetically preferred colour, which was also outlined in the previous edition, had insufficient evidence supporting its effectiveness compared to other applications. This review also confirmed that colour applications improved several aspects of movement of older people and individuals with vision impairment within home environment that also had been described in the previous review. These improved aspects are: recognition of the surroundings; spatial orientation; independence and mood. Further studies are expected to inform how lightness/brightness difference and chromatic/ colour difference a commonly known part of colour applications should be used, positioned and specified when defining expected building performance outcomes and accessibility standards for people with various visual functions or vision impairments.

An HMinfo Evidence Based Practice Review is expected to be published later in 2016.









HMinfo Website Upgrades

A number of major upgrades to the HMinfo website were undertaken during 2015-2016. The main website improvements were:

- accessibility of website material for people with vision impairment;
- user management system integration of the HMinfo Occupational Therapist (OT)
 Forum with the website;
- enhanced search functions for website material; and
- integration of Google Analytics data for website statistics reporting
- a new website manual.

The website visual accessibility upgrades were completed in early 2016. The final upgrades increased the website's screen reader compatibility. These upgrades were the result of an assessment of the website by Vision Australia, and assist with HMinfo's aim of making our information accessible to all. An additional accessibility upgrade was the development of a website integrated newsletter, providing for automated conversion from the website newsletter format into an accessible PDF newsletter document.

The user management system integration of the HMinfo Occupational Therapy (OT) Forum with the HMinfo website has advantages for Forum users and HMinfo website administrators. The OT Forum subscription process was streamlined and simplified to a single step, enabling OTs to subscribe to the OT Forum and Mailing List (previously listserv) in conjunction with their registration on the HMinfo website. Website administrators can now manage OT Forum and Mailing List subscriptions and posts through the website interface, as well as produce automated 'by date' statistical reports on OT Forum membership.

The website search functions were enhanced on the calendar of home modification events and training. A list display for events and training was added to the existing wall-plan calendar interface, enabling searching of listed events, by date range and by preset time period. Similarly, the search function for the Frequently Asked Questions (FAQ) section of the website was enhanced, through categorisation of FAQ entries. FAQ can now be browsed and searched by category.

HMinfo's quarterly and annual reporting of website statistics was enhanced through the automated integration of Google Analytics data for website reports. This has increased the efficiency of the reporting process for HMinfo website administrators. Enabling Google Analytics Demographics and Interest Reporting assists our strategies aimed at improving the user experience for audiences who appear to have difficulties in using specific areas of the website

A new edition of the HMinfo Website Manual was produced, incorporating all recent upgrades to website functionality. This HMinfo Website Manual is a critical part of HMinfo's Quality System, ensuring all current and new HMinfo team members can use all website functions (even those that are not part of their usual work role) when required.

Following the completion of several major website upgrades in 2015-2016, a new website plan is being developed for 2016-2017.



2 OUR PEOPLE

2.1 HMinfo Team

The HMinfo team is led by Director, Associate Professor Catherine Bridge. HMinfo team members combine experience from a range of design and health disciplines, including architecture, industrial design, occupational therapy, and health science.

2.1.1 Director



Associate Professor Catherine Bridge has an international reputation in the area of research concerning housing, disability, ageing and care. Catherine directs the Enabling Built Environments Program (EBEP) within UNSW Built Environment, which comprises the Home Modification Information Clearinghouse, funded continuously since 2002 by the Home and Community Care Program, and three special research projects: Livable Neighbourhoods, Livable Housing, and DIY Home Modifications, funded by a range of government and nongovernment organisations.

In addition to her research, Catherine's teaching interests combine the areas of human abilities, health, built environment, disability, ageing and computing, so as to create a more inclusive environment for all people. She teaches inclusive design practices and research methods, and supervises postgraduate research students in the areas of design for older people, people with disabilities and carers, social sustainability and the built environment, design for wellbeing, and measurement of the built environment.

Catherine is a member of the Standards Australia ME-064 Access and Mobility Standards Committee, the Australian Network for Universal Housing Design, and the COTA NSW Policy Advisory Council, and a board member of Home Modifications Australia (MOD.A). She is an invited speaker at Australian and international conferences, and reviewer for numerous conferences, journals and research grants.

2.1.2 Research Team



Toni Adams was a consultant to the Aged and Community Care sector, including government from 2006 until June 2016. From her many years working for Commonwealth and NSW government departments, Toni has an extensive knowledge of the nongovernment and government sectors, especially in ageing, disability and community care. Toni has a particular interest in ageing in place and strata title.



Phillippa Carnemolla has a background in Industrial Design and has worked in the Home Modification Information Clearinghouse since 2009. She completed her PhD in December 2015, which investigated the impact of home modifications on caregiving and health-related quality of life. Phillippa received a Bachelor of Industrial Design from the University of Technology, Sydney in 1995 and a Masters of Design (Research) from the University of Technology, Sydney in 2002. Over the past 12 years she has been a sessional Lecturer in Industrial Design for both UNSW and UTS. She also continues to act as an expert witness for legal cases which rely on Industrial Design and Ergonomics advice.



Helmut Hoss is a website and software developer with system administration, computer hardware, security and networking skills. He has assisted the Home Modification Information Clearinghouse since 2011 by developing and maintaining the HMinfo website. An autodidact in electronics and programming since childhood, he began developing corporate IT systems during high school and training computer science interns from the University of Technology, Sydney while completing his HSC. He currently develops antivirus utilities, computer vision applications and automated financial instrument trading robots that process multimillion dollar trades.



Judy Lim (BSocSc UNSW) is the Administration Officer at the EBEP. Before this she worked at UNSW School of Materials Science and Centre for Vascular Research. Judy has a wide knowledge of financial administrative systems, including finance and budget planning. Judy also ensures smooth running of the EBEP thorough understanding of UNSW administrative and reporting requirements.



Aldyfra Lukman is currently a PhD candidate in the EBEP, Faculty of Built Environment, UNSW Australia, and working part-time for HMinfo. He has a background in architecture and worked as a lecturer and a registered architect in Indonesia. He has an interest in inclusive design, vision impairment and colour applications in architecture. His PhD thesis concerns visibility and vision-based guidelines for the built environment, and is being conducted with the assistance of the Association of Consultants in Access Australia (ACAA), Faculty of Built Environment, UNSW Australia and the School of Optometry and Vision Science, UNSW Australia.



Joanne Quinn is an industrial designer, whose experience spans product design and management, teaching in undergraduate and graduate design and architecture programs, and research on ageing, design, usability and innovation. Joanne's doctoral research on 'A home for all ages' focused on flexible and universal housing design for the ageing population. This research interest, combined with carer experience and knowledge of cost-effective implementation of designs in manufacturing and home building, inform Joanne's work as a Research Associate at HMinfo.



Phillippa Carnemolla (PhD) - Graduation Ceremony 2016

Pictured L-R: Assoc. Prof. Oya Demirbilek (supervisor); Ms Jillian Segal AM, Deputy Chancellor UNSW; Dr Phillippa Carnemolla; Assoc. Prof. Catherine Bridge (supervisor)

2.2 HMinfo Advisory Committee

The HMinfo Advisory Committee represents a wide cross-section of stakeholders, including industry, aged and disability peaks, and government. Our Advisory Committee meetings are held at the Built Environment (BE) faculty at the University of New South Wales, Kensington Campus. In 2015-2016, there were 16 members participating in the HMinfo Advisory Committee.

2.2.1 Advisory Committee Members - Industry



ASSISTIVE TECHNOLOGY AUSTRALIA

Hamish Murray has worked in the building industry for 30 years and held a Builders Contractor Licence. Since returning to the workforce, after his accident in 2002, he has worked into the field of OHS plans and audits and is currently employed as an Access Consultant at Assistive Technology Australia (formerly Independent Living Centre of New South Wales). This experience together with his building knowledge has given him a broad understanding of the way people connect with their environments.

Over the past 10 years he has worked with people recovering from catastrophic injuries, which has given him an extensive practical understanding of the needs of a person with disability in both public and private environments, and a keen interest in providing, safe more user-friendly communities.



DEPARTMENT OF VETERANS AFFAIRS NSW STATE OFFICE

Susan Dinley, Occupational Therapist, has had extensive clinical experience in many clinical areas since 1984. Within the occupational therapy profession she has received recognition for her contribution on present and future issues pertinent to the profession. Susan is an honorary committee member on many government and private enterprise working parties, providing feedback on proposed policy initiatives and the impact on occupational therapy services.



HOME MODIFICATIONS AUSTRALIA (MOD.A)

Michael Bleasdale is the CEO Home Modifications Australia (MOD.A). Prior to this he worked as Senior Policy Officer at HMinfo from September 2013 to February 2014. Michael has worked in the community sector for thirty years, working initially as a disability support practitioner and manager. Later on he was the Principal Researcher at the Disability Studies and Research Institute, before becoming an Executive Director at People with Disability Australia, and later at the Attendant Care Industry Association. He has published research on housing and support arrangements for people with disability, and written widely on issues of human rights for people with disability, and on self-determination and individualised funding. Michael has taught introduction to disability subjects at the Australian Catholic University and Charles Sturt University, and was the subject Coordinator for Habilitation at Charles Sturt in 2006. In addition he has developed and delivered training, developed competency based vocational training packages, and undertaken independent consultancy projects.



LIFETIME CARE AND SUPPORT AUTHORITY

David Gonzalez, originally a physiotherapist, is the representative from the Lifetime Care and Support Authority (LCSA). The LCSA is responsible for providing reasonable and necessary treatment, rehabilitation and care as it is needed throughout a person's life once they enter the program. David is responsible for developing and implementing Home Modification and Maintenance processes, policies and guidelines within the LCSA.



NSW HOME MODIFICATION & MAINTENANCE SERVICE 3 BRIDGES COMMUNITY

Bryan Molan is a licensed builder with over thirty years' experience in the building industry, seven of which have been in the home modification sector. He currently works for 3Bridges Community (formerly Keystone Community Solutions) as their Home Modification and Maintenance Manager which holds the level 1 and 2 funding for the South East Sydney region. He is also serving on the Home Modifications Australia (MOD.A) board and holds the position of Vice Chairperson.



NSW HOME MODIFICATION & MAINTENANCE SERVICE SCOPE ACCESS

Annette Hanly is a practicing Occupational Therapist and the Divisional Manager for OT services within the South Coast Home Modification and Maintenance Service, trading as SCOPE Access. She has worked extensively in the field of Home Modifications both in the UK and now Australia. The OT Division of SCOPE Access provides direct home modification assessments and peer support / review to external occupational therapists for over 3000 home modification referrals annually. Annette is committed to developing services that promote choice and safety for people within their preferred home environment and has a keen interest in the use of technology to streamline and customise all consultation and prescription practices.



NSW LAND & HOUSING CORPORATION

Nicholas Loder, Architect, is Senior Project Officer, NSW Land and Housing Corporation, Family and Community Services. Since 2003 he has provided design policy advice for all new construction and major refurbishments for LAHC projects, especially on access standards and Liveable Housing design features. Prior to working in state government Nicholas spent nearly twenty years in various small to medium sized architectural firms on medium density housing, commercial, heritage and industrial projects. Nicholas sits on various committees including the NSW Chapter Australasian Housing Institute, Urban Development Institute of Australia's NSW Communities Sub-Committee, and a volunteer member of various architectural associations including AAA, DOCOMOMO NSW, and the Twentieth Century Society of NSW.



NSW STATEWIDE LEVEL 3 PROJECT

Ronald Rademaker is the Business Unit Manager for NSW Statewide Home Modification, working in the metro, rural and remote regions of the state. Ronald has over 40 years' experience as a carpenter/builder, and held the position of construction manager for a large residential building company prior to working in the home modifications field. In 1999, Ronald joined a home maintenance and modification organisation, first as a builder, then taking up the role of builder/coordinator. He has been on the State Council for HMMS over a 10 year period and was involved with HMinfo as it was being established in 2002.



PARAQUAD

Max Bosotti is the Chief Executive Officer of the Paraplegic and Quadriplegic Association of NSW (ParaQuad NSW), a community organisation that supports people with a spinal cord injury (SCI) across NSW. Prior to joining ParaQuad in 2006 Max has 36 years' experience in senior line positions in the petroleum, investment banking and high technology industries. Max is passionate about helping people with SCI live as valued and respected members of their communities. A major focus has been the provision of suitable accommodation for people with SCI and the deployment of the specialist Clinical Programs team enabling people to live better lives at home.

2.2.2 Advisory Committee Members – Aged & Disability Peaks



COUNCIL ON THE AGEING NSW

Lisa Langley is Policy Manager, Council on the Ageing NSW. Lisa has worked for over a decade in social policy and research and held senior policy and management positions at major NGOs, including the Asthma Foundation and Alzheimer's Australia NSW. Lisa is also an expert in consumer engagement methodologies and is an experienced facilitator. She has a Master's degree in Policy Studies from the University of New South Wales.



NATIONAL SENIORS AUSTRALIA

Jan Herbert is a gerontologist with extensive experience in aged care, public administration and health care. Her professional interests fall into the broad area of health, housing, economic and policy issues as they relate to older people. As an invited speaker Jan has addressed many National and International conferences and has published papers related to ageing.



PHYSICAL DISABILITY COUNCIL OF NSW

Jordana Goodman is the Policy Officer of the Physical Disability Council of NSW (PDCN), which is the peak body responsible for representing persons with physical disabilities across New South Wales. Jordana provides feedback to Local Councils, and State and Commonwealth Government Departments, on government initiatives and campaigns that impact on the daily lives of people with physical disability. Her particular focus is in the areas of accessible public transport and accommodation for all people with physical disability.



SPINAL CORD INJURIES AUSTRALIA (SCIA)

Greg Killeen has been working at Spinal Cord Injuries Australia (SCIA), since July 1991. Greg was an SCIA Information Officer providing information and referral to people with disability, their families, friends, carers, professionals and the general community, including people working in related disciplines who required information on home modifications and maintenance, access to buildings and the built environment, travel, transport, holidays and travel, health and medical support services, as well as assistive technology etc. Greg was recruited to work as the SCIA Senior Policy and Advocacy Officer and predominantly works on systemic advocacy as well as individual advocacy when required. He is also an active member on various government, non-government and community committees and organisations.

2.2.3 Advisory Committee Members – Government



DEPARTMENT OF FAMILY & COMMUNITY SERVICES

Teresa Petric is the Manager Policy and Projects in Ageing, Disability and Home Care, Department of Family and Community Services. In this role Teresa manages operational policy and program requirements for the NSW Community Care Support Program (CCSP). The CCSP provides funding for the provision of community care services to younger people with disability (people under 65 years of age or under 50 years of age for Aboriginal and Torres Strait Islander People).



DEPARTMENT OF HEALTH

Charles Gwyn is the Department Representative of the Australian Government Department of Health



NATIONAL DISABILITY INSURANCE AUTHORITY (NDIA)

Lee Davids is Director, Design Authority at the National Disability Insurance Authority (NDIA).

2.3 HMinfo Specialist Review Panels

The Specialist Review Panels provide HMinfo with the expertise for a comprehensive review process for their published documents. The review aims to fulfil the function of a traditional academic peer review of HMinfo documents by researchers in the same field. However, the review also contributes the valuable knowledge of experts in other fields, including design, building and healthcare, as well as the experiences of people with a wide range of disabilities.

The Specialist Review Panels are comprised of three regular panels of four to seven members: the Consumer Panel, Industry Panel, and Research Panel. These panels provide specialist advice and represent the viewpoint of a wide range of stakeholders. Accordingly, panel membership aims to include members with various backgrounds and experiences. At times, publications may require the co-opting of people with a specific specialty or expertise, as guest expert reviewers.

HMinfo would like to acknowledge and thank all the participants listed below for their involvement during 2015-2016.

2.3.1 Research Panel Members

Prof. Satoshi Kose Shizuoka University of Art and Culture

Dr Hamish MacLennan University of NSW (Guest Expert)

Kay Saville-Smith Centre of Research, Evaluation and Social Assessment (CRESA)

2.3.2 Industry Panel Members

Tim Fisher Plumbing Product Industry Group (Guest Expert)

Daniel Dillenbeck AllValves (Guest Expert)

Nicholas Loder Land and Housing Corporation (Guest Expert)

Dragan Music GWA (Guest Expert)

2.3.3 Consumer Panel Members

Greg Killeen Spinal Cord Injuries Australia



3 DIRECTOR'S REPORT

3.1 Executive Summary

The buildings we live and work in have an impact on us all and growing older is something we all aspire to even when it is linearly associated with some level of impairment. Therefore, it is critical that we design, develop and manage our built environment in a more informed and socially sustainable manner. Buildings and their construction are among the largest contributors to global resource use. Further, renovation, adaptive reuse and environmental modification are critical concerns particularly in public spaces and housing as annual new build, even in Australia, is less than 2%¹, meaning that the vast majority of buildings already exist and will require some degree of retrofit over time to meet our dynamic societal, function, safety and inclusion demands.

On a more pragmatic level, the 2015/2016 year has presented a variety of challenges and opportunities. The Advisory Committee met four times, with a major challenge being the management of the HACC and NDIS transition and management processes to ensure our activities remain aligned with our overall research objectives, and those of our industry and consumer partners. There have also been numerous opportunities with a number of external organisations such as the Centre for Excellence in Universal Design (Ireland); Kulliyyah of Architecture and Environmental Design (KAED) (Malaysia); IDEA (Center for Inclusive Design and Environmental Access)(SUNY at Buffalo); Centre for Research, Evaluation & Social Assessment (CRESA) (New Zealand); and the International Association of Universal Design (Japan).

I am very pleased and proud to report that the Home Modification Information Clearinghouse was successful in receiving monies from Family and Community Services, Ageing Disability and Home Care NSW to address the lack of information around DIY home modification products and issues in communicating the needs of a disabled person to tradespeople. The new resources are being developed using participatory action research and we anticipate them being available at 'Point of Sale' by June next year.

I need to say a very big thank you to my very dedicated and hardworking HMinfo team, our Advisory Committee and volunteers. It is the outstanding collaboration that allows us to produce such high quality evidence-based materials, field inquiries from professionals and consumers alike, and maintain our website. Without you all it couldn't happen!

Associate Professor Catherine Bridge,

Home Modification Information Clearinghouse Director

¹ National Housing Supply Council. (2010) 2nd State of Supply Report, Department of Families, Housing Community Services and Indigenous Affairs Canberra.

3.2 HMinfo Workplan 2015/2016

The HMinfo Strategic Planning meeting for 2015-2017 was held on August 6, 2015. At the meeting, the HMinfo Advisory Committee, and the HMinfo Director and team members, reflected on the HMinfo website and activities, and discussed the impact of environmental changes and challenges on HMinfo. Through identification of HMinfo strategic priorities and performance indicators for the following two years, the HMinfo 2015-2017 Strategic Plan was developed.

From the HMinfo 2015-2017 Strategic Plan, HMinfo developed a Commonwealth Home Support Programme activity workplan for the 2015-2016 year. The *Activity Work Plan Community Care Support Program (CCSP) Workplan 1 July 2015 to 30 June 2016* is shown on the following page, with the reported measures of success for the year.

Activity Work Plan Community Care Support Program (CCSP) Workplan 1 July 2015 to 30 June 2016

COMMONWEALTH HOME SUPPORT PROGRAMME & AGEING, DISABILITY AND HOME CARE (ADHC) (77%), DEPARTMENT OF FAMILY AND COMMUNITY SERVICES NSW (23%).

ACTIVITY DETAILS		
Activity Requirement:	 The objectives of the Home Modification Information Clearinghouse Activity Build the capacity of Commonwealth Home Support Programme provider Provide guidance to stakeholders consistent with the Commonwealth Home Service providers and access to aged care services 	rs to deliver entry-level community aged care services.
Activity Work Plan period:	Activity Work Plan Start Date 01/11/2015 Activity Work	k Plan End Date 30/06/2016

ACTIVITY DELIVERABLES				
Objective	Deliverable	Timeframes	Measures of success	
Build the capacity of Commonwealth Home Support Programme	DoH endorses CHSP Activity Workplan 2015-2017	3 months	CHSP Activity Workplan 2015-17 signed off by the Department of Social Services on the 25 th October 2016.	
providers to deliver entry-level community aged care services.	Update and review evidence published on HMinfo website which reflects current good practice and the developing home modifications evidence base so as to support older people and their carers	Ongoing	Active research projects during 2015-2016: • Fire Safety – smoke alarms • Slip Resistance • Temperature control of hot water in bathrooms • Use of colour for safe movement HMinfo Research publications 2015 – 2016: • Summary Bulletin: Fire safety – smoke alarms • Consumer Factsheet: Fire safety - smoke alarms • Industry Factsheet: Slip resistance of ramps	

Home Modification Information Clearinghouse

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ACTIVITY DELIVERABLES				
Objective	Deliverable	Timeframes	Measures of success	
	Maintain HMinfo website to current standards	Ongoing	HMinfo website available 24/7 -10.79646017% Y1 Y2 2014-15 2015-16	
			% decrease in website visits: -10% (2014-15 = 70060; 2015-16 = 62496)	
	Maintain HMinfo website to current standards	Ongoing	2014-15 2015-16 % increase in total page views: 0.6% (2014-15 = 22275; 2015-16 = 22419)	

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ACTIVITY DELIVERABLES				
Objective	Deliverable	Timeframes	Measures of success	
	Maintain HMinfo website to current standards	Ongoing	444.4444444%	
			2014-15 2015-16	
			% increase in new website registrations: 444% (2014-15 = 99; 2015-16 = 539)	
	Maintain HMinfo website to current standards	Ongoing	% increase in contacts from social media by type	
			 LinkedIn – 447 connections; 	
			 Facebook - 68 connections; 	
			 Twitter – 983 tweets; 194 followers 	
			Pinterest – 8 boards; 45 pins;	
			 uTube – 6 videos uploaded. 	
	Publish new and updated research relevant to home modifications and enabling environments for older people	Ongoing	HMinfo publication plan for 2016-2017 reviewed, and approved by Advisory Committee at the June 2016 Advisory Committee meeting.	

Home Modification Information Clearinghouse

ACTIVITY DELIVERABLES				
Objective	Deliverable	Timeframes	Measures of success	
Provide guidance to stakeholders consistent with the Commonwealth Home Support Programme to support the transition of service	Continue requesting that HMinfo be listed on MyAgedCare to facilitate access to evidence-based information on home modifications for RAS assessors and CHSP service providers	6 months	HMinfo relisted on MyAgedCare (request sent on 1 September 2015, followed up on the 7 October 2015, and 9th of December 2015 but no response to date) No of referrals to/from MyAgedCare: 44	
providers and access to aged care services	Publish HMinfo quarterly newsletters	Ongoing	Quarterly newsletters published on time: 4 No of downloads of newsletter from website: 185	
	Work with MOD.A, OT Australia and ILCA to promote crosslinks between websites and facilitate access to home modifications evidence-base	Ongoing	Maintain MOU with MOD.A, no current MOU with OTA.	
			Maintain liaison with ATA and other individual ILCA members until they have a national body.	
	Enhance knowledge of home modifications for Home Modification Group Forums for allied health and building practitioners.	Ongoing	Maintain Forums: 3	
			 Total Traffic: 183 Total Threads Generated: 114 Total Threads Maintained: 117 	
			 New Website Registrations: 539 	
			 Total Website Registrations: 1703 	
			 Total Content Downloads: 27289 	
			 Total Content Reads: 518265 	
			 Number of registered individual OTs (listserv): 599 	
	Ensure government, industry and consumer stakeholders on HMinfo Advisory Committee reflect a national focus	Ongoing	DoH nominate a relevant representative to the HMinfo Advisory Committee to ensure that a Commonwealth government perspective is incorporated into all HMinfo considerations	
			HMinfo Advisory Committee is broadly representative of industry and consumer stakeholders.	

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ACTIVITY DELIVERABLES				
Objective	Deliverable	Timeframes	Measures of success	
	Maintain existing links with research stakeholders and develop new ones as appropriate		10 papers/seminars/posters etc. delivered at 7 conferences/seminars/forums	
			 1 paper at Design4Health 2015, July 2015, Sheffield UK. 	
			 3 papers for the National Disability Authority, July 2015, Ireland 	
			 1 paper for the ICED15 The 20th International Conference on Engineering Design, July 2015, Milan Italy. 	
			 1 paper Creating Connections: NSW Community Stroke Forum - 15th September 2015 	
			 1 paper at the International Conference on Claiming Full Citizenship: Self Determination, Personalization and Individualized Funding – October 2015 in Vancouver, BC. 	
			 1 keynote and 1 paper for MODA conference, Canberra, April 2016. 	
			 1 seminar presentation to Nanshan Group, June 2016 	

STAKEHOLDERS		
Stakeholder	Interest or Impact	Engagement Strategy
RAS Assessors	· · · · · · · · · · · · · · · · · · ·	Continued to ask DoH for access to the contact list for RAS Assessors so that HMinfo can work with them to identify their information needs and ensure that HMinfo is responding to them.
	restore independence and self care.	RAS Assessors unaware of the information that is available to support informed decision making around home modification.
MyAgedCare	HMinfo Needs to be relisted on the MyAgedCare database so that RAS assessors, OTs, home modification providers and other relevant parties can access information about HMinfo and the information and support it can provide	Continued to ask DoH for HMinfo to be reposted on MyAgedCare so that service providers and others can find HMinfo and use its services.
Home modification providers	Home modification providers require access to evidence- based home modification information in order to support clients to make informed decisions about home modifications to maintain or restore independence and self care.	Continued working with MOD.A, the industry body for home modification providers.
		Maintained reciprocal weblinks with MOD.A
		Maintained building practitioners Forum on HMinfo website
Occupational therapists	Home modification providers require access to evidence- based home modification information in order to support	Unable to establish reciprocal weblinks with OTA: Link from HMinfo to OTA but no link from OTA to HMinfo.
	clients to make informed decisions about home modifications to maintain or restore independence and self care.	Maintained OT Forum on HMinfo website
Other researchers in how home environments impact independence, self care and ongoing care costs of older people	Work with other researchers in the area of home modifications and how they support older people to maintain/restore independence and self care and reduce ongoing care costs	Maintained links with relevant researchers national and internationally: See research panel list at http://www.homemods.info/about-us/specialist-review-panels Present HMinfo and related research at relevant conferences and seminars: 7

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3.3 HMinfo Activities 2015/2016

3.3.1 Research & Publications

HMinfo Publications

- Bridge, C., Maalsen, S., Zmudzki, F., O'Neil, S. and Carnemolla, P. (2016). DIY Home Modifications: What information is required at point of sale? Final Report. Sydney: Home Modification Information Clearinghouse, University of New South Wales. (March) [online]. Available from www.homemods.info
- Home Modification Information Clearinghouse (2015). Annual report for the period 2014-2015. Sydney: Home Modification Information Clearinghouse, University of New South Wales. December [online]. Available from www.homemods.info
- **Quinn, J.** (2015) *Consumer Factsheet: Fire Safety Smoke Alarms* Sydney: Home Modification Information Clearinghouse, UNSW Australia. (October) [online]. Available from www.homemods.info.
- Quinn, J. (2015) Summary Bulletin: Fire Safety Smoke Alarms 2nd ed. Sydney: Home Modification Information Clearinghouse, UNSW Australia. (October) [online]. Available from www.homemods.info.
- **Quinn, J.** and **Bridge, C.** (2016) *Industry Factsheet: Slip Resistance of Ramps.*Sydney: Home Modification Information Clearinghouse, UNSW Australia. (June) [online]. Available from www.homemods.info.

Book Chapters

Bridge, C. & Carnemolla P. (in press) 'Effective home modification practice'.

Chapter 45 in M. Curtin & M. Molineaux (Eds.), Occupational Therapy for People Experiencing Illness, Injury or Impairment: Enabling occupation, promoting participation (7 ed.) pp. 677-700

Journal Articles

- **Bridge C**, Demirbilek O, Mintzes A. (2016) 'Transforming inclusion: Designing in the experience of greater technological possibility'. *Studies in Health Technology and Informatics* 229:143-152 01 Jan 2016
- **Bridge CE**, Mintzes A, and Demirbilek O (2015) 'Older Australian out and about in the global context: Their bathroom preferences and what this means for standards development and accessible tourism'. *Journal of Universal Design In The Built Environment*, 1(1),15-23. <u>URL</u>

Carnemolla, P. and Bridge C. (2016). 'Accessible Housing and Health- Related Quality Of Life: Measurements of wellbeing outcomes following home modifications' *International Journal of Architectural Research: ArchNet-IJAR*, 10 (2), 38-51.

Research Reports

- Mintzes A, Demirbilek OR, Sweatman P, Davey S, **Bridge C.** (2015) *Co-Design Report, Livable Bathrooms for Older People* 18 Aug 2015. Blurb Books, Sydney. ii-126
- Wiesel, I., Laragy, C., Gendera, S., Fisher, K., Jenkinson, S., Hill, T., Finch, K., Shaw, W. and **Bridge, C.** (2015) *Moving to my home: housing aspirations, transitions and outcomes of people with disability*, AHURI Final Report No. 246, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/final-reports/246.
- Wiesel, I., Gendera, S., Fisher, K.R., Hill, T., Shaw, W., Bridge, C., Laragy, C., Jenkinson, S., Finch, K. (2015) *Addressing the housing needs of participants is critical to NDIS success*, AHURI Research and Policy Bulletin No. 205, Australian Housing and Urban Research Institute Limited, Melbourne, http://www.ahuri.edu.au/research/research-and-policy-bulletins/205.

Conference Papers and Presentations

- **Bridge, C.**, (2015) Housing Choices, Decision Tools and Their Importance for the Ageing Population. Older Peoples Housing Summit, Wellington, New Zealand. September 5, 2015
- **Bridge, CE.** (2016) *Inclusion by design: A vision for choice, control and agency in Home Modifications*. Home Modifications Australia' (MOD.A) National Conference, Canberra, 28-29 April, 2016.
- Bridge, C., Demirbilek, O. & Mintzes, A. (2016) Transforming Inclusion: Designing in the experience of greater technological possibility. Universal Design 2016: Learning from the past, designing for the future. Proceedings of the 3rd International Conference on Universal Design (UD 2016), York, United Kingdom, August 21–24, 2016. Edited by Petrie, H., et al. IOS Press, doi:10.3233/978-1-61499-684-2-143. pp. 143-152
- Bridge, C. Shuk, T & Sweatman, P. (2016) Asymmetric transfer force in sit to stand of healthy older people at different toilet heights. Proceedings of the *Expert Scientific Meeting on Load Distribution Measurement* July 27-30, 2016, University of Lisbon, Portugal p 45.

- Demirbilek OR, **Bridge C**, Mintzes A, Sweatman P. (2015) Integrating the voice of older people in the development of bathroom design research methods through the use of participatory co-design. D4H15 3rd European Conference on Design4Health, Sheffield, 13 Jul 2015 16 Jul 2015. Proceedings editors: Christer K. *Proceedings of the Third European Conference on Design4Health 2015*. 12 Jul 2015 <u>URL</u>
- Judd B, Liu E, Easthope H, **Bridge C.** (2015) Retirement Village or the General Community? Downsizing Choices of Older Australians. State of Australian Cities Conference 2015, Gold Coast, 09 Dec 2015 11 Dec 2015. Proceedings editors: Burton P, Shearer H. *State of Australian Cities Conference 2015: Refereed Proceedings.* State of Australian Cities Research Network. 11 Dec 2015. URL
- Lukman, A., Bridge, C., Dain, S., Boon, M. Y. (2015, October). Determining Colour Combinations based on Contrast, Visibility, Comfort and Aesthetics. Oral Presentation at ACAA 2015 National Conference & Trade Expo - 'Universal Design – A Better Way', Melbourne.
- Mintzes A, **Bridge C**, Demirbilek O. (2015) Development of a national survey on aging and the domestic bathroom: the livable bathrooms survey, 20th International Conference on Engineering Design (ICED), Milan, Italy, 27 Jul 2015 31 Jul 2015. Proceedings editors: Weber C, Husung S, Cascini G, Cantamessa M, Marjanovic D, Bordegoni M. DS 80-1 *Proceedings of the 20th International Conference on Engineering Design (ICED 15) Vol 1: Design for Life. Design Society.* 9 pages. 01 Jan 2015 URL

3.3.2 Reviewer & Assessor Roles

Assoc. Prof. Catherine Bridge

- Abstract reviewer for the 21st IAGG World Congress of Gerontology and Geriatrics, July 23-27, 2017, San Francisco, California.
- Full scientific paper reviewer for the 6th International Conference for Universal Design in Nagoya, December 2016.
- Scientific reviewer for the Journal Universal Design Built Environment, Volume 2, Issue 2, 2016.
- Reviewer Australian Research Council Discovery awards, commencing 2016
- Reviewer Australian Research Council DECRA awards, commencing 2016
- Reviewer for an application submitted to the Research Foundation Flanders (Fonds Wetenschappelijk Onderzoek - Vlaanderen, FWO) for a Marie Sklodowska-Curie Fellowship 2015

- Juror for the Universal Design Grand Challenge, Centre for Excellence in Universal Design, National Disability Authority Ireland 2015/2016
- Juror for the World Cerebral Palsy Day 'Sponge House' design competition 2015 https://worldcpday.org/about-us/invent-it/ability-homes/
- Juror for the Henry Halloran Trust Blue Sky pitch off, part of the Urban Research Festival 2015

3.3.3 Teaching - Convened Courses

Assoc. Prof. Catherine Bridge

- 2016 ARCH1481-Critical Review of Literature
- 2015 ARCH1482-Research Methods (previously BENV1384)
- 2015 ARCH 1496 Honours Research Thesis 2

3.3.4 Research Student Supervision

Assoc. Prof. Catherine Bridge

Primary Supervisor:

- 2011-2016: Phillippa Carnemolla, candidate for PhD (UNSW) Built Environment
- 2012-present: Peter Sweatman, candidate for PhD (UNSW) Built Environment
- 2013-present: Aldyfra Lukman, candidate for PhD (UNSW) Built Environment

Associate Supervisor:

2012-present: Alicia Mintzes, candidate for PhD (UNSW) Built Environment

3.3.5 FBE & UNSW Committees & Roles

Assoc. Prof. Catherine Bridge

- Invited member of the UNSW Disability Advisory Champions Group.
- Foundational member of the UNSW Strategic Initiative for a Disability Studies
 Institute (DSI). This initiative is designed to position UNSW as an international
 leader in driving innovation and systemic change informed by people with disability
 and their supporters.
- Mentor for the Built Environment & Art+Design Mentoring Program
- Reviewer for the BE Faculty Research Grants Program (FRGP)/Early Career
 Researcher (ECR) Grants Program applications for 2016

- BE Faculty Research Grants Program (FRGP) Grants Program applications for 2015
- Member of the BE Faculty Research Committee
- BE Faculty representative for the UNSW 2016 Associate Professor Promotion Round.

3.3.6 External Committees & Roles

Assoc. Prof. Catherine Bridge

- Board Member, Home Modifications Australia (MOD.A)
- Invited member NSW Council of the Ageing Policy Advisory Council
- Research Leader 'Engaged Communities' part of the Cooperative Research Centre for Low Carbon Living's research leadership group
- Member of the Clinical academic stream on Ageing, a part of the NSW Academic Health Science Partnership Program.
- Steering Committee member for the Low Carbon Built Environment Knowledge Hub project in partnership with Australian Policy Online (APO) and the Global Building Performance Network (GBPN).
- Invited to collaborate and advise on the 'Programme of Actions for Smart Ageing'
 that has been developed by the office of An Taoiseach (Prime Minister) and being
 lead out of the Republic of Ireland's of the Dept. of Environment.
- Member of the Expert Advisory Group for the NZ Ageing Well National Science Challenge on 'Life When Renting' which explores the rising impact of the dominance of renting for older people and their wellbeing and independent living.
- Collaborator on the NZ 'Should I move or should I stay decision tool' part of the
 Finding the Best Fit Downsizing and Older People funded by the NZ Ministry for
 Business, Innovation and Employment (MBIE)
- Member of the Standards Australia ME-064 Access and Mobility Suite of Standards Committee, active role including Fixtures and Fittings (AS 1428.2); Wayfinding (AS 1428.4.2) and Adaptable Housing (AS4299)
- Invited participant Productivity Commission Roundtable on Housing decisions of older Australians

3.3.7 In the Media

2015

- Heaton, A (Jul 06) Are We Genuinely Engaging with Senior Australians in Urban
 Design? https://sourceable.net/genuinely-engaging-senior-australians-urban-design/
- Coopes, A (Sept 8), Home to stay http://newsroom.unsw.edu.au/news/art-architecture-design/home-stay

2016

- Carnemolla, P. (March 31) Home modifications produce large payback. On the ABC Science Show presented by Robyn Williams PhD findings.
 http://www.abc.net.au/radionational/programs/scienceshow/home-modifications-produce-large-payback/7266976
- Bridge, C. (Apr 13) Modify or Move' among many housing options. Freedom2live on April 13, 2016 http://www.freedom2live.com.au/2016/04/13/modify-or-move-among-many-housing-options/#.WAhPOXrBWuo
- Strachan, F. (Apr 21) Ageing and disabled Australians spark a DIY revolution,
 21 April 2016 http://newsroom.unsw.edu.au/news/art-architecture-design/ageing-and-disabled-australians-spark-diy-revolution



Assoc. Prof. Catherine Bridge presenting to the Nanshan Group at UNSW



4 WEBSITE STATISTICS

4.1 Website Overview 2015-2016

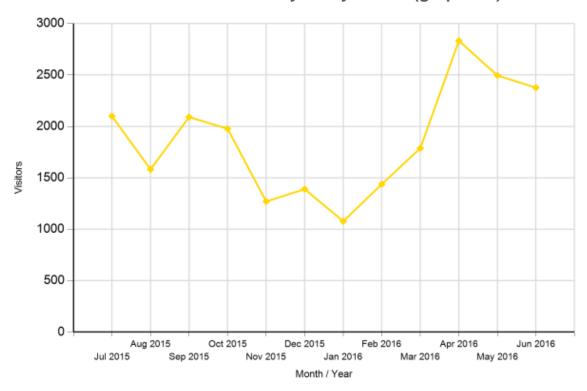
Total Page Views: 62,496

Total Visitors: 22,419

Total New Website Registrations: 539

4.2 Webstats and Google Analytics Reports

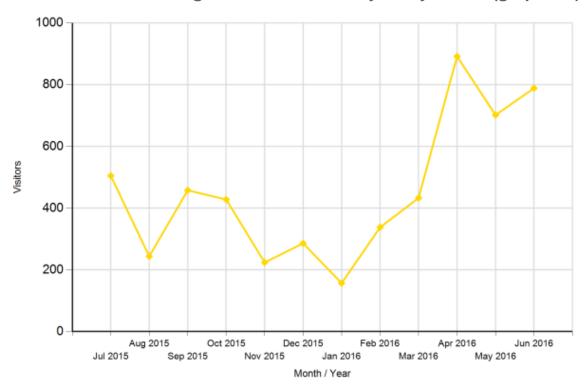
4.2.1 Visitors in the last financial year by month (graphical)



4.2.2 Visitors in the last financial year by month (table)

Month (year)	Visitors	Page views
July 2015	2100	7157
August 2015	1582	4780
September 2015	2091	5325
October 2015	1977	5756
November 2015	1270	4022
December 2015	1390	3651
January 2016	1078	3048
February 2016	1438	3764
March 2016	1788	5546
April 2016	2833	6875
May 2016	2495	6394
June 2016	2377	6178
Total	22,419	62,496

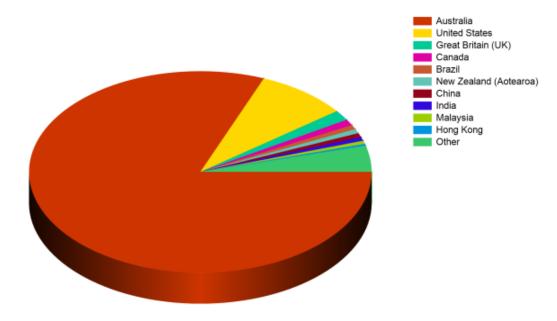
4.2.3 Visitors returning in the last financial year by month (graphical)



4.2.4 Visitors returning in the last financial year by month (table)

Month (year)	Number of returning visitors	% of Total returning visitors
July 2015	505	9.26
August 2015	244	4.47
September 2015	458	8.39
October 2015	428	7.84
November 2015	224	4.11
December 2015	286	5.24
January 2016	157	2.88
February 2016	338	6.20
March 2016	433	7.94
April 2016	892	16.35
May 2016	702	12.87
June 2016	789	14.45
Total	5,456	100.00

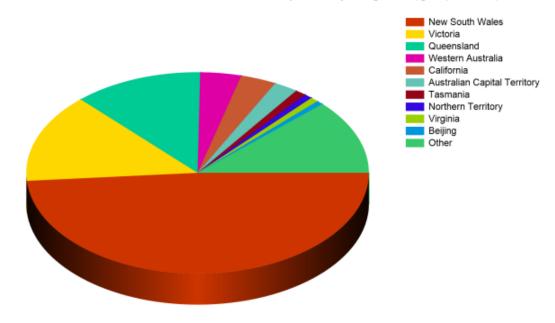
4.2.5 Visitors since last financial year by country (graphical)



4.2.6 Visitors since last financial year by country (top 10)

Country	Visits	% of Total Visitors
Australia	20,058	81.05
United States	2,136	8.63
Great Britain (UK)	410	1.66
Canada	237	0.96
Brazil	179	0.72
New Zealand (Aotearoa)	173	0.70
China	161	0.65
India	154	0.62
Malaysia	128	0.52
Hong Kong	72	0.29

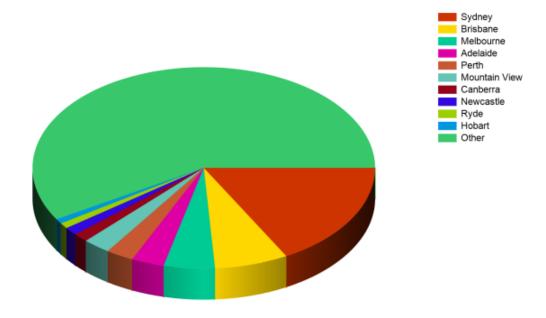
4.2.7 Visitors since last financial year by region (graphical)



4.2.8 Visitors since last financial year by region (top 10)

Region	Visits	% of Total Visitors
New South Wales	11,735	48.73
Victoria	3,443	14.30
Queensland	2,941	12.21
Western Australia	932	3.87
California	814	3.38
Australian Capital Territory	550	2.28
Tasmania	251	1.04
Northern Territory	187	0.78
Virginia	184	0.76
Beijing	151	0.63

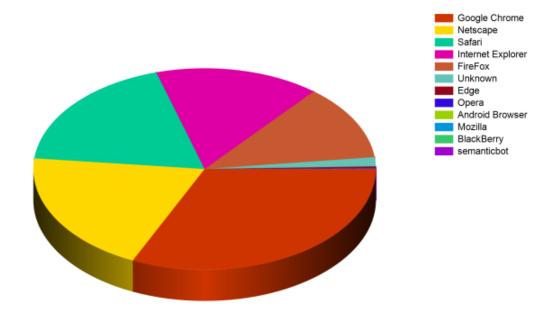
4.2.9 Visitors in the last financial year by city (graphical)



4.2.10 Visitors in the last financial year by city (top 10)

City	Visits	% of Total
Sydney	3,971	17.00
Brisbane	1,623	6.95
Melbourne	1,127	4.83
Adelaide	722	3.09
Perth	613	2.62
Mountain View	608	2.60
Canberra	332	1.42
Newcastle	300	1.28
Ryde	211	0.90
Hobart	177	0.76

4.2.11 Top Browsers used in the last financial year (graphical)

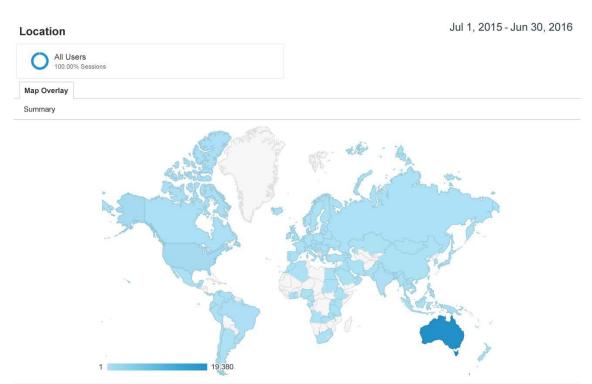


4.2.12 Top Browsers used in the last financial year (table)

Browser	Visits	% of Total
Google Chrome	7,906	31.89
Netscape	4,910	19.81
Safari	4,647	18.75
Internet Explorer	3,854	15.55
Firefox	3,004	12.12
Unknown	363	1.46
Edge	55	0.22
Opera	32	0.13
Android Browser	10	0.04
Mozilla	7	0.03
BlackBerry	1	0.00
semanticbot	1	0.00

4.2.13 Google Analytics visits by country

Google Analytics



₩		Acquisition			Behavior			Conversions		
Cou	ntry	Sessions % New Sessions		New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value
		22,943 % of Total: 100.00% (22,943)	64.14% Avg for View: 64.06% (0.12%)	14,715 % of Total: 100.12% (14,697)	62.73% Avg for View: 62.73% (0.00%)	2.44 Avg for View: 2.44 (0.00%)	00:02:04 Avg for View: 00:02:04 (0.00%)	0.00% Avg for View: 0.00% (0.00%)	0 % of Total: 0.00% (0)	\$0.00 % o Tota 0.009 (\$0.00
1.	Australia	19,380 (84.47%)	59.98%	11,625 (79.00%)	59.23%	2.60	00:02:18	0.00%	0 (0.00%)	\$0.0 (0.00%
2.	United States	1,103 (4.81%)	89.21%	984 (6.69%)	78.97%	1.58	00:00:47	0.00%	0 (0.00%)	\$0.0 (0.00%
3.	United Kingdom	391 (1.70%)	91.05%	356 (2.42%)	83.12%	1.44	00:00:35	0.00%	0 (0.00%)	\$0.0 (0.00%
4.	Canada	226 (0.99%)	84.96%	192 (1.30%)	74.78%	2.86	00:02:06	0.00%	0 (0.00%)	\$0.0 (0.00%
5.	New Zealand	163 (0.71%)	63.19%	103 (0.70%)	70.55%	2.19	00:01:44	0.00%	0 (0.00%)	\$0.0 (0.00%
6.	India	157 (0.68%)	91.72%	144 (0.98%)	74.52%	1.53	00:00:55	0.00%	0 (0.00%)	\$0.0 (0.00%
7.	Brazil	153 (0.67%)	97.39%	149 (1.01%)	95.42%	1.09	00:00:04	0.00%	0 (0.00%)	\$0.0 (0.00%
8.	Malaysia	116 (0.51%)	92.24%	107 (0.73%)	85.34%	1.22	00:00:27	0.00%	0 (0.00%)	\$0.0 (0.00%
9.	(not set)	101 (0.44%)	94.06%	95 (0.65%)	98.02%	1.06	00:00:06	0.00%	0 (0.00%)	\$0.0 (0.00%
10.	Russia	81 (0.35%)	12.35%	10 (0.07%)	90.12%	1.15	00:01:36	0.00%	(0.00%)	\$0.0

Rows 1 - 10 of 118

4.2.14 Google Analytics visits by city





	Acquisition	Acquisition			Behavior			Conversions		
City	Sessions	% New Sessions	New Users	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value	
	22,943 % of Total: 100.00% (22,943)	64.14% Avg for View: 64.06% (0.12%)	14,715 % of Total: 100.12% (14,697)	62.73% Avg for View: 62.73% (0.00%)	2.44 Avg for View: 2.44 (0.00%)	00:02:04 Avg for View: 00:02:04 (0.00%)	0.00% Avg for View. 0.00% (0.00%)	0 % of Total: 0.00% (0)	\$0.00 % o Total 0.00% (\$0.00	
1. Sydney	9,004 (39.25%)	59.40%	5,348 (36.34%)	55.86%	2.54	00:02:20	0.00%	0 (0.00%)	\$0.00 (0.00%	
2. Melbourne	2,915 (12.71%)	65.90%	1,921 (13.05%)	64.19%	2.44	00:02:00	0.00%	0 (0.00%)	\$0.00	
3. Brisbane	2,470 (10.77%)	60.40%	1,492 (10.14%)	65.06%	2.54	00:02:07	0.00%	0 (0.00%)	\$0.00 (0.00%	
4. Adelaide	878 (3.83%)	61.28%	538 (3.66%)	64.69%	2.62	00:02:11	0.00%	0 (0.00%)	\$0.00 (0.00%	
5. Perth	822 (3.58%)	59.12%	486 (3.30%)	60.83%	2.77	00:02:21	0.00%	0 (0.00%)	\$0.00	
6. Newcastle	609 (2.65%)	50.41%	307 (2.09%)	56.81%	2.70	00:02:10	0.00%	0 (0.00%)	\$0.00 (0.00%	
7. Canberra	555 (2.42%)	58.92%	327 (2.22%)	54.59%	3.21	00:03:11	0.00%	0 (0.00%)	\$0.00 (0.00%	
8. (not set)	450 (1.96%)	83.33%	375 (2.55%)	81.78%	1.86	00:01:13	0.00%	(0.00%)	\$0.00 (0.00%	
9. Wollongong	243 (1.06%)	46.91%	114 (0.77%)	55.56%	2.56	00:02:15	0.00%	0 (0.00%)	\$0.00 (0.00%	
10. Hobart	150 (0.65%)	56.67%	85 (0.58%)	54.67%	2.51	00:02:14	0.00%	(0.00%)	\$0.00%	

Rows 1 - 10 of 1370

4.2.15 Top 10 HMinfo Publication Reads for 2015-2016

Rank	Publication Title	Reads
1	Consumer Factsheet: Arranging Home Modifications	2724
2	Summary Bulletin: Environmental Assessment & Modification for Australian Occupational Therapists	1778
3	Basic biomechanical and anatomical principles underpinning grabrail prescription for sit-to-stand transfers	1744
4	Orientation: Evidence Based Research: Effectiveness of Grabrail Orientations During the Sit-to-Stand Transfer	1567
5	Caring for the Carer: Home design and modification for carers of young people with disability	1521
6	Landscape Modification: an alternative to residential access ramps and lifts	1489
7	DIY Home Modifications: Point-of-Sale Support for People with Disability and their Carers Positioning Paper	1487
8	Summary Bulletin: Electrical Safety in Bathrooms 2nd ed.	1415
9	Consumer Bulletin: Showering over the bathroom floor drain	1378
10	The Effectiveness of Ceiling Hoists in Transferring People with Disabilities - A systematic review	1336

4.2.16 Top 10 Publication Downloads for 2015-2016

Rank	Publication Title	Downloads
1	Summary Bulletin: Electrical Safety in Bathrooms 2nd ed.	1812
2	The Effectiveness of Ceiling Hoists in Transferring People with Disabilities - A systematic review	1006
3	Consumer Factsheet: Arranging Home Modifications	684
4	Summary Bulletin: Environmental Assessment & Modification for Australian Occupational Therapists	661
5	Orientation: Evidence Based Research: Effectiveness of Grabrail Orientations During the Sit-to-Stand Transfer	529
6	Summary Bulletin: Fire Safety - Smoke Alarms 2nd ed.	473
7	Cost-benefit Analysis of Ramps versus Lifts	462
8	DIY Home Modifications: Point-of-Sale Support for People with Disability and their Carers Positioning Paper	453
9	Caring for the Carer: Home design and modification for carers of young people with disability	446
10	Basic biomechanical and anatomical principles underpinning grabrail prescription for sit-to-stand transfers During the Sit-to-Stand Transfer	445



5 FINANCE REPORT

5.1 DSS-DoH Financial Acquittal for the 2015-2016 period

DSS Financial Acquittal for the 2015/16 period



Financial Acquittal for the 2015/16 period

Date: 17 October 2016

This is the acquittal statement for Grant funds received from the Department of Social Services (DSS) under the Home and Community Care (HACC) Program.

The disclosures in this section have been taken from the UNSW financial system and DSS e-FAR system.

DSS Schedule ID HN-2-12-00580-01-02 (RG123649)

Income: the Home Modification Information Clearinghouse (Activity ID 9733) received recurrent funding of \$62,732.33 for the financial year 2015/16.

Expenditure: the funds were spent on salaries for research associated staff and other direct research expenses including salaries for website maintenance, updates and improvements. The grant was fully expended in the financial year 2015/16.

DSS Activity ID 4-1VSCH5T (RG123649-A)

Income: the Home Modification Information Clearinghouse received one-off funding of \$15,000 for Service System Development during the 2015/16 financial year.

Expenditure: the funds were spent on salaries for research associated staff. The grant was fully expended in the financial year 2015/16.

I certify that accounting records are maintained in accordance with the University's accounting policy and procedures, the Australian Accounting Standards, and the FP&A Act and requirements.

Name: Marie Saparamadu CPA, ACMA, CGMA

aparamadu

Title: Associate Director, Research Finance Office

The University of New South Wales

DoH Financial Acquittal for the 2015/16 period



Financial Acquittal for the 2015/16 period

Date: 26 October 2016

This is the acquittal statement for Grant funds received from the Department of Health (DoH) under the Commonwealth Home Support Programme (CHSP).

The disclosures in this section have been taken from the UNSW financial system.

DoH Schedule ID 4-20VWZKS (RG152759)

Income: the Home Modification Information Clearinghouse (Activity 4-225MU6D) received recurrent funding of \$125,464.83 for the financial year 2015/16.

Expenditure: the funds were spent on salaries for research associated staff and other direct research expenses including salaries for website maintenance, updates and improvements. The grant was fully expended in the financial year 2015/16.

I certify that accounting records are maintained in accordance with the University's accounting policy and procedures, the Australian Accounting Standards, and the FP&A Act and requirements.

Name: Marie Saparamadu CPA, ACMA, CGMA

Title: Associate Director, Research Finance Office

The University of New South Wales

5.2 ADHC Financial Acquittal for the 2015-2016 period

ADHC Financial Acquittal for the 2015/16 period



Financial Acquittal for the 2015/16 period

Date: 27 October 2016

The disclosures in this section have been taken from the UNSW financial system and ADHC's acquittal summary statement.

Dofs/A ID17483 (RG152265)

Income: the Home Modification Clearing project (ID 17483) was granted recurrent funding of \$56,438 for the financial year 2015/16.

Expenditure: The funds were spent on salaries for research associated staff and consumables. The grant was fully expended in the financial year 2015/16.

Dofs/A ID34704 (RG152265-A)

Income: the Home Modification Clearing project (ID 34704) was granted one-off funding of \$270,000 in the financial year 2015/16.

Expenditure: Funds amounting to \$19,538 were spent on salaries for research associated staff and general overheads in the financial year 2015/16. The remaining funds of \$250,462 will be carried forward to financial year 2016/17.

I certify that accounting records are maintained in accordance with the University's accounting policy and procedures, the Australian Accounting Standards, and the FP&A Act and requirements.

Name: Marie Saparamadu CPA, ACMA, CGMA

Title: Associate Director, Research Finance Office

The University of New South Wales



6 WHAT DOES THE FUTURE HOLD?

HMinfo will continue to undertake research and disseminate it to facilitate ageing in place, the cornerstone of both the aged and national disability policy reforms. More specifically, we are endeavoring to address emerging issues for home modification services across Australia. In particular, four key issues are on our agenda for the future. These include: building an evidence base for home modifications, Home Modification workforce development, further development of the Building Information Management (BIM) Block Library, and further development of HMinfo website.

Building an evidence base for home modifications

Continued exploration of how home modification impacts non-shelter or health related effects remains critical. Understanding the strength of effects in multiple themes helps policy makers assess the true value of a home modification intervention, value to both the recipient and value to health support providers. Recent research by HMinfo for Home Modifications Australia (MOD.A) revealed sizable gaps in home modification knowledge. For example, while a number of multifactorial studies exist their ability to inform effectiveness is undermined by differing definitions of home modifications. It is therefore important that any calls for further research on home modifications emphasise the importance of a clear definition of home modifications and a single factor intervention for measurement. As policy makers in health, aged care and housing tackle the complex problems associated with ageing populations and limited health budgets, understanding the metrics of how home modifications substitute or support for caregiving and improve wellbeing. The multi-disciplinary nature of the home modification and health relationship reaffirms the importance of broader focus in policy making.

It is important that we continue to understand the broader impacts of home modifications. For instance, the ability for home modifications to increase feelings of safety and confidence in the home could indicate the role home modifications play in preventing falls in the home for older people. Original research undertaken by Carnemolla in her PhD thesis² indicated that increased independence, increased mobility throughout the home and supporting caregiving would also reduce the need for care by improving the ability for a person to self-care and increasing social participation. The social aspect of health and wellbeing is increasingly identified as an important contributor to overall health as a more integrative model of health is recognised globally and this role of home modifications warrants further study, measurement and analysis.

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² Carnemolla, P.K (2016). The Value of Home Modifications: Understanding and measuring home modification outcomes (doctoral dissertation). University of New South Wales, Australia.

In measuring wellbeing outcomes following home modifications³, we found that home modifications have the potential to improve health-related quality of life scores by 40%. The results of this study indicate housing and health pathways are multifactorial and future research needs to better consider four key factors. First, concurrent collection of primary housing and health data. Second, building domain data needs to be prioritised as many previous studies have assumed this is unifactoral. Third, building lifespan needs to include history or retrofit over time. Last, attention needs to be paid to the broader health consequences of regulatory and performance-based building codes, especially as they relate to vulnerable people.

Home Modification workforce development

It is important that strategies to build capacity to develop the workforce around the value and impact of home modifications, are funded. This is especially so in use of technology in home support workforce practices. For instance, providing appropriate support devices, thermoregulation devices, lifting devices, and bidets can vastly improve carer satisfaction and reduce the cost of care.

Workforce development in rural and remote areas by the use of innovative training packages around capturing building measurements and materials could make the cost of home modification assessment and building estimation much more efficient. Sustainable and effective housing and public amenity are essential for the current disability and ageing reforms to succeed and to maximise person-centred autonomy and social participation. Access to appropriate home modification and maintenance information, as provided by HMinfo, is a key piece of the puzzle as the built form determines to a large extent who is included and who is excluded in our society. HMinfo seeks to continue to further develop networks and relationships with key industry partners, such as the Australian Building Codes Board [ABCB] for the National Construction Code [NCC], Australian Standards, and industry partners, both manufacturers and wholesalers, including Caroma, Bunnings, Home Modification Services, Local Government and Housing Agencies.

Further development of the Building Information Management (BIM) Block Library

BIM is a process and production system for building simulation. Simulation is frequently used in architectural applications, allowing users to explore and communicate complex ideas cost effectively. In other words, designers and consumers can visualize and manipulate outcomes prior to incurring cost of construction. BIM makes use of

³ Carnemolla, P. & Bridge, C. (2016) Accessible housing and health-related quality of life: Measurements of wellbeing outcomes following home modifications, International Journal of Architectural Research, 10(2), 38-51

component libraries in a smart and integrated manner and allows for the holistic assessment of a building project including specific aspects such as sustainability, cost-efficiency and social inclusion. All design outcomes rely on the individual components within BIM.

HMinfo previously received a grant to develop the original HMinfo Enabling Block Library, available at: www.homemods.info/hminfo-libraries/block-library.

The Enabling Block Library currently has three products available to download, in REVIT, DWG and SKP format, with linked metadata:

- the A90 manual wheelchair,
- a NSW ambulance trolley, and
- a bathing trolley modelled on the Miranti by Arjo Huntleigh.

HMinfo has been working with architectural studios across Australia, to build additional blocks, for instance, companion blocks for assistance and companion animal are needed and University of Melbourne has offered to collaborate on their development, in partnership with us.

Further development of HMinfo website

HMinfo are developing a new website plan for 2016-2017. Priority areas for website development include:

- improvement of Service Directory data;
- improved site navigation feedback for users;
- development of the Design and Building Professionals Forum with a Mailing List to provide better peer support for industry decision making for home modifications;
- new information on NDIS;
- new information for regional assessment service providers (RAS); and
- mobile device responsive website design with more intuitive user interface.

HMinfo are also currently pursuing partnerships with other knowledge base organisations to develop more efficient indexing, searching, peer review management, and digital equity tools. We are investigating the potential for an Australian Research Council (ARC) Linkage Infrastructure Equipment and Facilities (LIEF) grant to this end.



7 GLOSSARY

ADHC Ageing, Disability & Home Care

CCSP NSW Community Care Supports Program

CHSP Commonwealth Home Support Program

DOH Department of Health

DSRC Disability Studies Research Centre, UNSW

DSS Department of Social Services

DVA Department of Veteran's Affairs

EBEP Enabling Built Environments Program

FACS NSW Department of Family and Community Services

HACC Home & Community Care Program

HMinfo Home Modification Information Clearinghouse

MOD.A Home Modifications Australia

NDIA National Disability Insurance Agency

NDIS National Disability Insurance Scheme

OT Occupational Therapist

SPRC Social Policy Research Centre, UNSW





Home Modification Information Clearinghouse

Built Environment University of New South Wales Level 4, Red Centre (West Wing) UNSW Sydney NSW 2052 AUSTRALIA

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