Australasian Health Facility Guidelines – embedding evidence in the development of standard design principles across Australia

Australasian Health Facility Guidelines – embedding evidence in the development of standard design principles across Australia.

Authors

Jane Carthey, BArch (RMIT), MProjMgt (UNSW)
Centre for Health Assets Australasia (CHAA), Faculty of the Built Environment, University of NSW, NSW 2052, Australia

Patrick Chu, BArch (UNSW), MFacMgt (USyd), Registered Nurse
Centre for Health Assets Australasia (CHAA), Faculty of the Built Environment, University of NSW, NSW 2052, Australia

About the Authors

Jane Carthey, Director of CHAA, is an architect and project manager with over 25 years experience in architectural practice and the last 20 years spent mainly focusing on healthcare projects. She has been a Director of three private architectural practices before moving to the University of NSW in 2002 to initiate the NSW Health Facility Guidelines project. With the establishment of CHAA in 2005, the NSW project was translated to the Australasian Health Guidelines (AusHFG) Project and Jane continued to oversee this as Program Manager. Jane became Director of the CHAA Research Centre in mid 2005 and Associate Professor of Construction Management in late 2008.

Patrick Chu, Deputy Director of CHAA and Project Manager of the AusHFG Project, originally trained as a nurse and worked in both Hong Kong and Australia before studying architecture. He has worked as an architect for over 20 years and been involved at a senior level with 16 hospital projects since 1986. Patrick thus brings clinical understanding to the briefing and design of healthcare facilities and has played a major role in the development of room briefing information, detailed design and documentation for key hospital departments. His nursing experience has proved invaluable in his understanding of detailed clinical issues and requirements

ABSTRACT

The success of a health facility can be judged by its ability to satisfy the needs of its many and diverse stakeholders. These include patients, their friends and families, clinicians, other staff members, and health service managers. Further, in considering the design, development and procurement of health facilities, the particular perspective of healthcare funders who rely on such facilities to underpin and support their business activities must also be acknowledged. Healthcare is an increasingly complex industry with increasing demands from changing demographics, increasing consumer expectations plus new developments in technology and care delivery. Designing health facilities to support such demands requires careful and structured approaches to briefing and design so that value for money is achieved, consistently high standard facilities achieved and disparities in quality reduced. Design guidelines are a tool used to enforce this rigour. This paper examines the interaction of stakeholders and 'evidence' in the governance and decision-making processes that accompany the development of evidence-based health facility guidelines for the design of hospital projects in Australia and New Zealand.

Keywords: design guidelines, health facility design, Australasian Health Facility Guidelines.

INTRODUCTION: THE NEED FOR AUSTRALASIAN HEALTH FACILITY GUIDELINES

Within the Australian health system, the provision of physical infrastructure (capital expenditure) is a relatively small, albeit substantial, component of overall health expenditure and in 2005-2006, was about AUD$5.2 billion or 6% of the total health budget of $86.9 billion. This represented 9.0% of gross domestic product (Australian Institute of Health and Welfare, 2008, 394; 425). The design of healthcare buildings occurs within a framework of exponentially expanding demand for healthcare expenditure in Australia as in most developed countries. This is caused by many factors that include an ageing population, increasing availability of

sophisticated, yet expensive, medical technology, and skill shortages in the medical and associated workforces. This is all overlaid by increasing consumer expectations for "healing" or supportive healthcare environments. Health buildings are undeniably complex, expensive to build, and must increasingly accommodate the needs of many diverse stakeholders. Yet they remain an essential requirement for the delivery of high quality healthcare. Design standards are seen as an integral approach to maximising returns on capital investment, and of ensuring equity across the Australian community by delivering a consistently high standard of built facilities in all locations whether these are urban, rural or remote.

This paper illustrates and discusses the development of Australasian Health Facility Guidelines (AusHFG) and gives an overview on the current status and future directions of this project. In particular it looks at the processes used to manage the visions, goals and interests of key project stakeholders. It also considers the various forms of evidence used in guideline development and how these are synthesised within the decision-making processes that create guidelines scope and contents. It offers lessons for similar information management and dissemination projects such as guidelines or technical standards that require high level endorsement by major government stakeholders as an essential step in the implementation of such systems into everyday use by industry practitioners.

BACKGROUND

In 2005, the Centre for Health Assets Australasia (CHAA), a research centre within the Faculty of the Built Environment at the University of NSW, Australia was commissioned by the Australasian Health Infrastructure Alliance (AHIA), formerly known as the Health Capital Asset Managers' Consortium of Australia and New Zealand (HCAMC), to develop a free web-based health design guidelines tool for use on all public health facility projects across the Australasian region. In November 2007, the guidelines were endorsed by the participating health jurisdictions and issued for industry use and ongoing review. A second stage of the project commenced in 2008 and will be completed at the end of 2010.

The AusHFG represent a new era in guideline development and delivery. The web-based format required a departure from the long tradition of State-based paper-format health facility design guidelines that often duplicated effort, were expensive to maintain, frequently out of date, had to be purchased, and were thus only reluctantly used by many design consultants. In particular, the duplication of effort, much of the maintenance expenses and the oft-perceived lack of currency has been overcome by the move to a database format with associated web dissemination. Further, by requiring their use on all public health facility projects and offering them at no cost, the reach of the guidelines has increased greatly and most, if not all, Australasian health facility design consultants are now familiar both with their existence and content.

THE PROJECT: AUSTRALASIAN HEALTH FACILITY GUIDELINES

1. History of Guideline Development

Australia and New Zealand have created and used health facility design guidelines for many years, albeit with varying degrees of success. The use of design guidelines to assist in the briefing and design of health facilities is an approach that has been adopted by the health systems of many countries. Such documents have tended to vary in purpose, format, and the depth of detail provided. Some guidelines are paper based, others web-based; some are free to all users and some are sold to end users via subscriptions or other means of charging. For example, for many years, the National Health Service Estates of the United Kingdom published very detailed and comprehensive design guidelines (*Health Building Notes*) and charged for their use. More recently schedules of accommodation and some updated Health Building Notes have been made available via free web access (Dept of Health Estate & Facilities Division, 2008) and work continues on the update of various Health Building Notes for future staged release. The American Institute of Architects has produced the *Guidelines for Design and Construction of Health Care Facilities* since 1987 and these are updated on a four year review cycle. Introductory notes on its website claim that 'Authorities in 42 states, the Joint Commission for the Accreditation of Healthcare Organizations, and several federal agencies use the Guidelines as a reference, code, or standard when reviewing construction designs and plans and completed health care facilities' (AIA, 2006). The Netherlands is another country that has developed hospital design guidelines and these 'concern the spatial facilities for a general hospital with basis quality requirements at the level of the hospital as a

whole' (Netherlands Board for Hospital Facilities, 2002: 1). Hospitals built at the time of their release were required to comply with these guidelines.
The process of planning a hospital or other health building is of course similar to that for the design of all buildings, a process well documented by Lawson (2006), Duffy and Hutton (1998) and more particularly for healthcare buildings by others (Green, 1982; Purves, 2002; Tetreault & Passini, 2003). Although, the briefing of health facilities may be similar to that for other types of facilities, the complexity of designing modern hospitals and the sheer quantity of information to be absorbed, has resulted in the development design standards and other technical documents that assist the designer in understanding the nature of the areas needed for the delivery of healthcare without having to "start from scratch" on every project. Indeed, Tetreault & Passini (2003) make this point in their discussion of the design of aged care therapeutic environments in Canada.

Design standards are universally intended to ensure the "functionality" and hence, acceptable quality of the resulting health facilities. "Functional fit", or "fitness for purpose", is a term used to describe the suitability of a building or facility for its identified purpose. For healthcare buildings, this means that a functional space (such as a consulting room or treatment space) appropriately supports the staff, the care delivery processes and accommodates the equipment, furniture, supplies, etc, used to deliver the care to the patient. The term also implies that it is appropriate for patients to use or inhabit the room/space while receiving care and that it performs any additional purpose also identified from the project briefing process e.g. a waiting area that is comfortable and welcoming to the friends and families of patients undergoing treatment (Scher, 1996).

2. Project Plan Development

At the commencement of the AusHFG project, the primary project deliverable was the creation of a national health facility guideline endorsed, implemented and used in each HCAMC jurisdiction within an assigned time frame. The first challenge that confronted the project team was the requirement to align all stakeholders' expectations, and to design a product that would meet their needs. Stakeholders and stakeholder groups were identified and are mapped in Figure 1 with 'internal' and 'external' stakeholders shown in the concentric figures. The major 'internal' stakeholder, and project client, was HCAMC (now known as AHIA) which consists of representatives from each participating Australian and New Zealand health jurisdictions. UNSW as the organisation hosting the HCAMC (AHIA) project management team is also included as a major 'internal' stakeholder because it made available the resources for use by the project team including premises, communications and other infrastructure.

Needs analysis was undertaken with each participating jurisdiction in order to define the project, including its vision and scope. One of the key questions used during this consultation period was: "How will the AusHFG be used in your jurisdiction?" As a result, it was identified that each jurisdiction had different intentions regarding their specific use of the AusHFG. In particular, this related to their use in either a mandatory or purely advisory capacity. A further distinction was made regarding the use of the AusHFG for only public health facilities or for private facilities as well. These two major distinctions (in intention and applicability) led to different implications for guideline development and their anticipated use for these different purposes. The needs analysis confirmed the original decision to create the AusHFG as a clearly structured technical document that could be implemented for both advisory and mandatory purposes.

The needs analysis process was completed in 2006 with confirmation of the objectives and scope of the project. The processes for project implementation were then developed as the next task. In ongoing consultation with the major project stakeholders, the following issues were addressed and controlled the subsequent conduct and delivery of the project:

- a clear governance structure was endorsed by all jurisdictions that met the requirements of their political sponsors (see Figure 3)
- an overall structure of the guidelines was defined and agreed so that some parts could be mandated whilst other parts remained advisory only
- a realistic guidelines review and release program was approved
- A representative working group (PCWC) was constituted to implement the agreed strategies
- An 'AusHFG Project Communication Plan' was produced to enable smooth adoption of the guidelines by

industry users and health service stakeholders

- An 'AusHFG Development and Review Process' was developed to consider ongoing issues in maintaining the currency of the guidelines
- The 'AusHFG Standard Components Revision Process' was defined
- The 'AusHFG Website Adoption and Revision Issue' procedures were implemented
- An 'AusHFG Enquiry and Clarification Communication Process' was proposed to streamline use of the guidelines once launched and in use by industry.

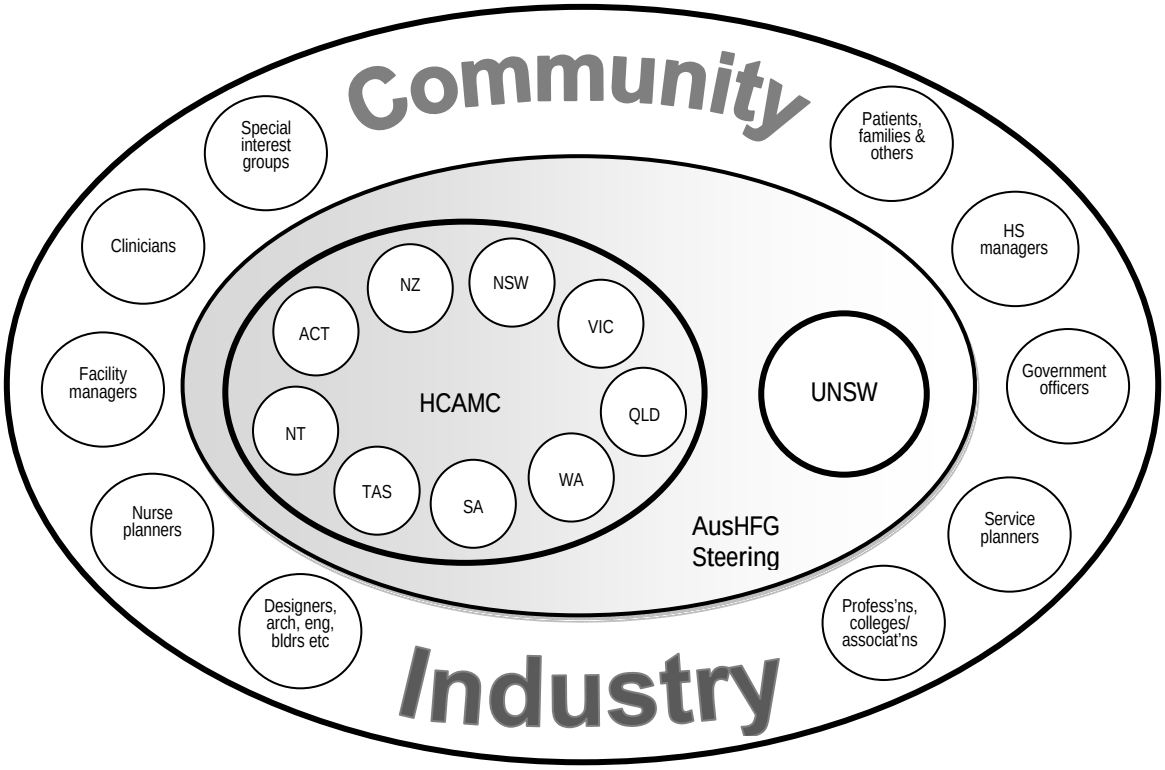

Figure 1: AusHFG Stakeholders

3. Project Plan Execution

In order to ensure that project deadlines were met a number of strategies were adopted that included the engagement of external contractors to assist in particularly busy periods, in-house website and data management, and the streamlining and allocation of internal resources as required. Cost control was maintained and the project adequately resourced in the face of university-sector and wider industry skill shortages. Special skills are indeed required for the production of the AusHFG and the supply of such staff is limited. The work is truly cross disciplinary and requires an appreciation of clinical issues, design issues, management issues and building procurement issues. The ability to network with high level representatives from government and the health services is also very important. Project staff comes from a range of backgrounds including clinical, clinical/architectural design, architecture/construction, information technology, university research, health service planning and management. The project was delivered on time and on budget and in accordance with the work plan and schedule developed with the high level Steering Committee and implemented via a Project Coordination Working Committee (PCWC).

Figure 2 below is a diagram of the process followed for guideline development showing the input by project stakeholders to the development and review phases of the project. Industry reviewers were invited to formally register their interest in reviewing guideline components but were also able to comment on guideline use with respect to current project experience. Other reviewers were invited to participate in guideline review in accordance with a set of criteria agreed with the AusHFG Steering Committee. It was a requirement that all commentary was submitted using a standard commentary template and, on receipt, was formally recorded in a ledger. Following review of received commentary by the project team, all responses and actions subsequently taken were also recorded in the ledger. This document is thus an auditable trail of user input to

guideline development and will be available to answer questions regarding this in the future.

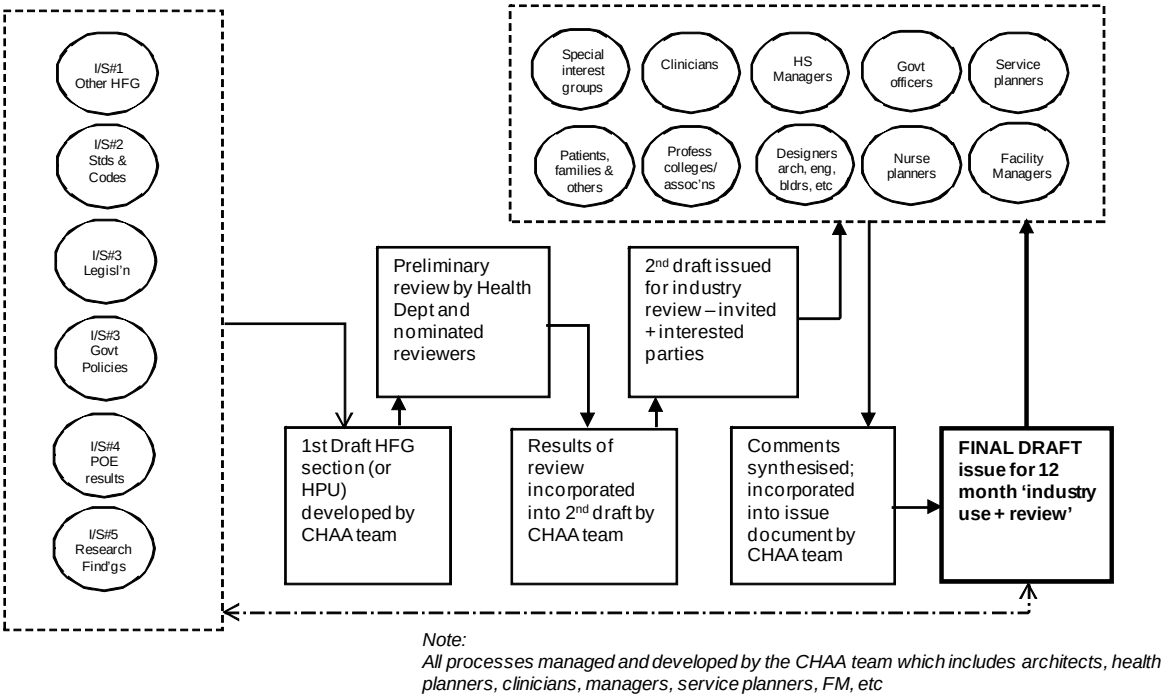

Figure 2: AusHFG Development Process

4. Project Governance

The project was initially overseen only by a Steering Committee which comprised high level membership from all the funding jurisdictions (see Figure 3). In early 2006, a PCWC was also formed to implement the AusHFG Development and Review Process. This Committee continues to meet at least once per month, and more often as necessary, and is where most of the 'real work' and discussions occurs. Working with the project manager, the jurisdiction-nominated members of the PCWC are the conduit between the project team and each jurisdiction specific working committee where these have been convened. The PCWC was formed to assist with the implementation of a robust review process for the guidelines that would meet the needs of the product end users – the 'external' stakeholders. The project manager maintains records of all meetings and as discussed above, creates registers of all enquiries and queries to ensure that all reviewers' comments are traceable for future reference and audit purposes.

Clear lines of governance and communication have been absolutely critical to the success of this project. Lessons learnt included the need to make stakeholder management the highest priority and to constantly remind stakeholders of the need to communicate with the project team and with each other outside of project steering meetings. For a multi-stakeholder project there is a high level of time commitment required from stakeholder representatives and this should be recognised and acknowledged from commencement.

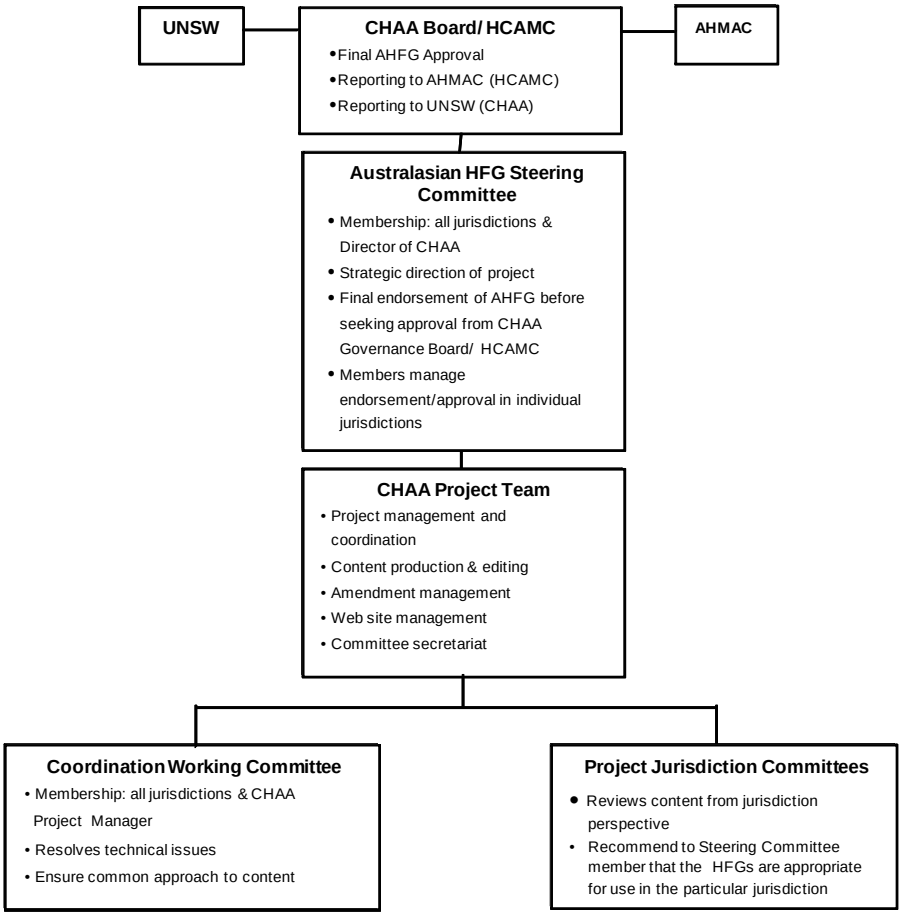

Figure 3: AusHFG Project Governance Structure

5. Embedding evidence in the creation of guidelines content

The AusHFG reflect a range of inputs that include evidence from 'research' and other sources. Hamilton et al. (2008) and others such as Ulrich and his colleagues (Ulrich et al., 2005; Ulrich & Zimring, 2005; Ulrich et al., 2008) all note that there are many sources of evidence that can impact on the design of health buildings. However, there is often only a very small amount of research evidence derived from traditional or scientifically conducted research studies available for this purpose. Further, much of this derives from relatively small studies with limited study samples. This suggests the need for a more nuanced consideration of the interaction between research derived 'evidence' and the requirements of those using it, plus the need to consider other types of research evidence that may be practice-based or deliberately conducted at a very small or intimate scale. Interpreting it may require consideration of organizational culture and other important system-related issues that inevitably guide the decisions being made for specific projects, communities or health systems (Becker & Carthey, 2007; Hamilton et al., 2008).

Research from other disciplines such as health service management, psychology, or even clinical studies may produce evidence that could be considered in designing a health facility. For example, studies undertaken on the use of corridor space for communication by multi-disciplinary care teams in delivering high quality care, such as those by Iedema and colleagues (Iedema et al., 2006; Long et al., in press; Carthey, 2008), could impact on the design of corridor spaces. Outcomes of this input may be the review (or even increase) of the allocated facility floor space or the addition of specific design features to provide spaces for team-based informal communication. These requirements would be additional to the commonly agreed and primary role for a hospital corridor, i.e. efficiently allowing the passage of goods and of people.

The gathering of information for development of design guidelines inevitably taps into many sources including evidence derived from research whatever its form, yet other resources are also available to the facility designer. In real life, design practitioners use many sources of information to inform their projects with an

emphasis on information provided by their clients or from previous projects (Mackinder & Marvin, 1982; Tetreault & Passini, 2003; Carthey et al., 2006). Health design guidelines are also used in a similar manner to other standards and technical guides for checking basic design requirements and other technical issues are addressed or perhaps, more relevantly, that nothing important has been missed.

6. Lessons Learnt

The AusHFG is a web based information tool, freely and publically accessible via the internet. The widespread availability of user-friendly database programs and webpage production software enabled the Guidelines development team to produce web-based guidelines in house in an easily updated format for use by all those involved in health facility projects. Their development required management of multiple stakeholders and clear definition of their needs, goals and objectives. The successful completion of the project resulted in the identification of some specific lessons learnt. These lessons included:

- Needs analysis at the earliest planning stages is an essential step in aligning stakeholders' expectations and objectives.
- Clearly defining expectations and outcomes to confirm the agreed objectives greatly contributes to project success.
- Early establishment of clear lines of communication and project governance is important to gain stakeholder confidence and support.
- Establishing stakeholders' project ownership derived from inviting their participation in the development of project implementation processes and regularly reporting progress to them.
- Project risks should be identified early and effective control strategies implemented to ensure project stakeholder confidence in the achievement of project outcomes.

The final close-out of the project occurred in late 2007 when the project was declared complete with the endorsement of the AusHFG website and its component documents by the HCAMC jurisdictions. This was celebrated with an official launch of the AusHFG for Australasia-wide use in November 2007 and project stakeholders were subsequently notified by newsletter and email of the guidelines availability for use (UNSW & HCAMC, 2007). A second phase of the project commenced in early 2008 and will conclude at the end of 2010.

CONCLUSION

The AusHFG are essential to the successful briefing and design of Australasian publicly funded health facilities and are widely used on most Australian health projects. Health buildings are invariably complex, expensive to build and have many stakeholders. Therefore, the AusHFG impact on many industry and community stakeholders that include building professionals, clinicians, health service managers, and of course, the general tax-paying and health facility-using wider community.

To manage the visions, goals and interests of key project stakeholders, the development of AusHFG has required the CHAA team to work within a clearly defined governance structure and policy framework, and with agreed and documented work processes and procedures. Various forms of evidence have been used in guideline development and these are synthesised within the decision-making processes that create guidelines scope and contents. The lessons learnt can be applied to other complex multi-stakeholder projects conducted within similarly politically sensitive environments.

ACKNOWLEDGEMENTS

The authors acknowledge the Australasian Health Infrastructure Alliance (AHIA) as the major supporter of the AusHFG Project and CHAA.

REFERENCES

AIA (2006) "Guidelines for Design and Construction of Health Care Facilities". Available at: http://www.aia.org/aah_gd_hospcons, [Accessed on 14 March 2008].

AUSTRALIAN INSTITUTE OF HEALTH AND WELFARE (2008) *Australia's Health 2008,* Canberra, AIHW.

BECKER, F. & CARTHEY, J. (2007) Evidence-based Design: Key Issues in a Collaborative Process. *W092: Interdisciplinarity in the Built Environment Procurement Conference.* Newcastle, Australia, (in press).

Carthey, J. (2008) "Re-interpreting the Hospital Corridor: "Wasted Space" or Essential for Quality Multidisciplinary Clinical Care?" *Health Environments Research & Design Journal,* 2: 1, p.17-29. Fall 2008

CARTHEY, J., et al. (2006) "Report into Healthcare Designers". Available at: http://www.fbe.unsw.edu.au/chaa/downloads/Papers_Presentations/2006_Carthey,Chandra&Colanzi_RAIAReport.pdf, [Accessed on 3 July 2008].

DEPT OF HEALTH ESTATE & FACILITIES DIVISION (2008) [online]. Available at: http://195.92.246.148/nhsestates/knowledge/knowledge_content/home/home.asp, [Accessed 2 July 2008].

DUFFY, F. & HUTTON, L. (1998) *Architectural knowledge: the idea of a profession,* London; New York, E & FN Spon.

GREEN, J. R. B. (1982) Design, evaluation and information feedback in the health facility planning process.

HAMILTON, D. K., et al. (2008) Organizational Transformation: A Model for Joint Optimization of Culture Change and Evidence-Based Design. *Health Environments Research & Design Journal,* 1:3, p.40-60. Spring 2008.

IEDEMA, R., et al. (2006) Corridor work: how liminal space becomes a resource for handling complexities of multi-disciplinary health care. *Asia-Pacific Researchers in Organization Studies, 11th International Collequium.* Melbourne, Australia RMIT Publishing.

LAWSON, B. (2006) *How designers think: the design process demystified,* Oxford, Architectural Press.

LONG, D., et al. (in press) Attempting clinical democracy: Enhancing multivocality in a multidisciplinary clinical team. IN CALDAS-COULTHARD, C. R. & IEDEMA, R. (Eds.) *Identity Trouble: Critical Discourse and Contested Identities.* Basingstoke, Palgrave McMillan.

MACKINDER, M. & MARVIN, H. (1982) *Design decision making in architectural practice : a report on a research project supported by the Building Research Establishment, Department of the Environment, examining the roles of information, experience, and other influences during the design process,* [York, North Yorkshire], Institute of Advanced Architectural Studies University of York.

NETHERLANDS BOARD FOR HOSPITAL FACILITIES (2002) "The General Hospital: Building Guidelines for New Buildings". Available at: http://www.bouwcollege.nl/Pdf/CBZ%20Website/English/Full%20Reports/english_general_hospital.pdf, [Accessed on 2 July 2008].

PURVES, G. (2002) *Healthy Living Centres: a guide to primary health care design,* Oxford, Architectural Press.

SCHER, P. (1996) *Patient-Focused Architecture for Health Care,* Manchester, The Faculty of Arts and Design - The Manchester Metropolitan University.

TETREAULT, M.-H. & PASSINI, R. (2003) Architects' use of information in designing therapeutic environments. *Journal of Architectural and Planning Research,* 20:1, p.48.

ULRICH, R., et al. (2005) The Role of the Physical Environment in the Hospital of the 21st Century: A Once-in-a-Lifetime Opportunity, The Center for Health Design. Available at: http://www.healthdesign.org/research/reports/physical_environ.php [Accessed on 12 May 2009]

ULRICH, R. & ZIMRING, C. (2005) Rethinking Healthcare Design. *Interiors & Sources (2004),* 12:4, p.2.

ULRICH, R., et al. (2008) A Review of the Research Literature on Evidence-Based Healthcare Design. *Health Environments Research & Design Journal,* 1:3, p.61-125. Spring 2008.

University of New South Wales & Health Capital and Asset Management Consortium (2007) *Australasian Health Facility Guidelines*. UNSW & HCAMC. Retrieved 14 March, 2008, from the World Wide Web: *http://www.healthfacilityguidelines.com.au*