

**Health Facility Planning and Procurement:
The NSW Health Infrastructure Quality Improvement Project**

Revised Final Report

8th February 2013

JBara Innovations

Randwick, NSW

First published in 2012 by JBara Innovations, Randwick, NSW 2031.

© Health Facility Planning and Procurement: The NSW Health Infrastructure Quality Improvement Project, Potter Forbes, M.; Barach, P., 2012.

This report is copyright. Apart from fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this publication may be reproduced by any process without the written permission of the copyright owners and the publisher.

National Library of Australia
Cataloguing-in-Publication data:

Report Title: Health Facility Planning and Procurement: The NSW Health Infrastructure Quality Improvement Project

Suggested citation of this report: Potter Forbes M., Barach, P. Health Facility Planning and Procurement: The NSW Health Infrastructure Quality Improvement Project. Randwick, NSW: JBara Innovations for NSW Health Infrastructure, 2012.

CONTENTS

EXECUTIVE SUMMARY	6
GUIDING PRINCIPLES	10
RECOMMENDATIONS	11
Acronyms and Definitions	16
Acronyms	16
Definitions	18
Background	19
The CONTEXT OF THE STUDY	22
Methods	23
A. Literature Review	23
B. Document Review/Case Study	24
C. Interviews	25
D. Site Visits, Walk-Throughs and Observations	27
Results	29
A. Literature Review	29
1.0 Introduction	29
2.0 Background	29
2.1 Available literature	32
3.0 Overview of findings	32
4.0 Quality of the evidence	34
5.0 Research Findings	41
5.1 Evidence Based Design (Generic)	42
5.2 Patient Centered Design	44
6.0 Evidence Based Design (Mental Health)	46
7.0 The therapeutic environment	57
7.1 Psychologically mediated effects	57
7.2 The problem of clinical practice	59
8.0 Impact of changing the built environment on patient outcomes	62
8.1 Changing the built environment and self-worth	63
8.2 Changing the built environment and violence	65
8.3 Space as an active participant in the cure of the patient	67

9.0 Benchmark practice in mental health facility design	67
10.0 Conclusions	69
B. Document Review and Case Studies	70
1.0 Case Study A: Gosford Mental Health Unit	71
Background	71
The Process	72
Change Management Strategy: implementing a new model of care.....	77
Excessive emphasis on safety and security	78
Procurement Implementation.....	82
2.0 Case Study B: Concord Mental Health Unit	85
Background	85
Process	86
Change Management	87
Responsiveness to model of care.....	88
Outcome: fitness-for-purpose.....	89
3.0 Case Study C: Orange Mental Health Unit	90
Background	90
The Process	91
Were these goals achieved?	92
Change management: implementing a new model of care	93
The Outcome: fitness-for-purpose.....	95
C. Interviews.....	97
D. Site Visits, Walk-throughs and Observations.....	98
Concluding Remarks.....	102
Bibliography	104

Appendices	108
Appendix I Structure of the Literature Review	109
Table 1: Quantitative Research Evaluation Tool	111
Table 2: Qualitative Research Evaluation Tool	112
Appendix II Literature Review	113
Table 3: Index Mental Health Facility Design	113
Table 4: Evaluation of the Mental Health Literature	121
Appendix III Health Infrastructure Risk Management Framework	175
Appendix IV Interview Thematic Analysis	185

EXECUTIVE SUMMARY

Patient safety and patient centred quality have emerged as key drivers in healthcare reform. The framework of health care delivery is shifting rapidly across Australia given growing calls for radical change and cost containment. Things have changed since early days; safety and quality benchmarks are often integrated into strategic goals and there is more focus on patient-centered care. Patients, however, still experience needless harm and often struggle to have their voices heard, processes are not as efficient as they could be, and costs continue to rise at alarming rates while quality flat lines. The systems that will thrive will focus on cost efficiency, quality of care, innovative health care delivery, and alignment of incentives with payers, patients, and other participants in the health care equation.

Australia is undergoing the largest single period of new healthcare facility procurement in its history. The combined force of the NSW Health/Australian reforms and workforce and financial pressures against a backdrop of rising demand, increasing complexity and changes in demographics, means the delivery of health care in the current configuration cannot be sustained. NSW is being "overwhelmed" by rising healthcare costs with nearly 30% of the state budget expended in the delivery of healthcare. NSW Treasury estimates that total spending over the next 20 years will exceed 55 per cent of the state budget.

A radical re-think is required to devise new ways of procuring healthcare facilities. Despite unprecedented levels of capital spending on health infrastructure, the facilities planning process and its design outcomes continue to frustrate patients, providers and communities. Without reform, NSW's ability to maintain the high level of service currently provided will be compromised.

There is a window of opportunity to change the face of NSW health care very significantly, opened by the National Health & Hospitals Reform, the Special Commission of Inquiry into Acute Care in NSW Public Hospitals (Garling Commission) and the system-wide response: Caring Together - the Health Action Plan for NSW, and strategies to address the variation in clinical services and outcomes across NSW. However, engaging and partnering with clinicians remains one of the biggest obstacles in addressing the growing implementation gap in providing cost-effective and quality care in NSW.

JBara Innovations was contracted by NSW Health Infrastructure (HI) to develop a quality improvement project that would provide coherent, evidence-based clinical input into the planning and development of healthcare facilities in NSW and inform Health Infrastructure of apparent strengths and opportunities for improvement..

The goals of the project were to:

- Identify evidence-based best practice in mental health facility design, in regard to fitness-for-purpose and effectiveness in delivering care.
- Identify the perceived role and impact of Health Infrastructure (HI) on the efficiency and effectiveness of mental healthcare facilities procurement in NSW.
- Consult with Mental Health Units in New South Wales, the NSW Ministry of Health (MOH), and planning & design professionals about their experience with Health Infrastructure.
- Examine staff attitudes and organizational policies in regard to the current planning and procurement process in NSW.
- Prepare an environmental scan of current practices to identify issues and gaps in the planning process, deficiencies in current roles and responsibilities, and options for improvement and change.

Since 2007, Health Infrastructure has been responsible for health facility project planning, direction, management and commissioning. Historically, the procurement process has not always been smooth with a growing trust gap between stakeholders and the former NSW Department of Health. HI's efforts to build trust and credibility have been complicated by the cautious attitudes held by clinicians, contractors and communities toward the Department^{1,2}. The restructure announced by the new Director General of Health, Dr Mary Foley, on 24th August 2011 acknowledged HI's core role in the planning of health facilities in the state and emphasized the need for

¹ Despite the devolution of Area Health Services into Local Health District, Area names are generally retained in this Report, as all sites visited were commissioned under the Area framework. The organizational structure of the delivery system does not alter the recommendations of the Report, although it may make responsiveness to those recommendations more feasible. Local Health Districts are referred to in the recommendations.

² Poor communication between stakeholders led to a twelve week closure of the Hornsby Mental Health Intensive Care Unit for retrofitting, at a cost of half a million dollars and negative local media: *Hornsby and Upper North Shore Advocate*: May 13, 20 2010; October 13, 14, 16 2008.

HI to “address concerns about stakeholder management, particularly clinical engagement, responsiveness and cost and budgetary transparency.”³

The challenge was to devise and implement the change. HI had been aware of the challenges, and prior to the release of the Director General’s report had commissioned JBara Innovations to identify opportunities to improve the process and engagement of stakeholders. Implementation of the ten recommendations that arise from this study will support a collegiate and productive process in the procurement of high value, safe, functional and therapeutic healthcare facilities in NSW.

This Report includes an extensive literature review, key informant interviews, site visits, a review of project documentation and reports focused on the process of mental health facility procurement in NSW. The literature suggests that the built and natural environments exert a range of impacts on patients and staff.

The data indicates that change should target both the systemic and cultural levels, with a particular emphasis on improving professional and business alignments that lead to project delays, budget overruns and political remonstrations. Effective redesign and improvement of the HI service model will involve bringing the voices of the many stakeholders into a shared dialogue with HI.

The data indicate that Health Infrastructure’s work and leadership is perceived in a positive manner, and it is particularly noted for:

- being a learning organization, actively changing procedures and methods on the basis of experience and reflection
- a strong reputation for leadership
- a recognized track record for innovation and pioneering health facility procurement techniques
- high levels of staff loyalty and pride in achievements
- a strong culture of continuous improvement and change readiness

The data also indicate some scope for HI to more effectively refine its governance model, manage its risks, and appreciate the impact of its decisions on the level and

³NSW Government. Future arrangements for governance of NSW Health: Report of the Director General. NSW Health: North Sydney. p22

type of clinical risks in the system.⁴ Upstream 'latent factors' enable, condition, or exacerbate the potential for 'active errors' and patient harm. Understanding the characteristics of a safe, resilient and high performing system requires research to optimize the relationship between people, tasks and dynamic environments.⁵ The socio-technical perspective incorporates the concept of latent conditions whereby the cascading nature of human error is understood as beginning with the decisions and actions of management; including decisions made during planning, design and procurement of health facilities. Identified risks were particularly associated with: the rapid churn in the formal membership of decision making bodies; frequently disrupted communication processes; an overly lengthy time horizon between development of the Clinical Services Plan (CSP) and Procurement Implementation (PI); fast tracking of service planning processes to meet dominant stakeholder agendas; limited health facility planning expertise inside the organization; and use of negotiated guidelines as project control tools, instead of tools to engage users and providers in a structured dialogue during planning and design.

The Report sets out the key initiatives of an integrated quality improvement strategy that HI should consider incorporating into the scheduled program of capital works, currently valued in excess of one billion dollars. Although the study focuses on mental healthcare facilities, the findings we believe are applicable to all healthcare settings in NSW. The project recommendations provide a platform to enhance the adaptability of the process of planning to particular circumstances, and to improve the design and procurement of NSW health facilities.

⁴ HI Risk Management Framework (PRC 102 – Appendix B Health Infrastructure Risk Framework)

⁵ Mohr J, Batalden P. Integrating approaches to health professional development with approaches to improving patient care. In: McLaughlin C, Kaluzny C A, editors. Continuous quality improvement in healthcare: theory, implementations and applications. 3rd ed. Boston: Jones and Bartlett; 2006. P.281-96

GUIDING PRINCIPLES

In making our recommendations our guiding principles were:

- The organisational complexity of the NSW Ministry of Health must be recognised.
- Patient-centred health services means that the patient's perspective must be central to all of Health Infrastructure's policy, planning and procurement decision making.
- Quality healthcare includes all aspects of service delivery: clinical and non-clinical.
- Patient safety must be the foundation of Health Infrastructure's service.
- Systems of care, and facilities, as well as individuals, affect the quality of healthcare.
- Learning from error, rather than seeking someone to blame, must be the priority of Health Infrastructure in order to improve safety and quality.
- Openness and transparency are crucial to the development of trust between Health Infrastructure and healthcare professionals, patients and consumers, and the wider public.

These trust-building efforts across system boundaries require devising a coherent, achievable quality improvement program of action research, to improve the value, quality and safety of healthcare facilities across the NSW.

RECOMMENDATIONS

Recommendation 1: Define, articulate and clarify the governance arrangements of procurement methodologies, with an emphasis on roles, responsibilities and decision-making protocols

District Health Services and clinicians may not have the appropriate expertise or experience to understand the timing or nature of the decisions requiring clinical and operational input. They must be made aware of contractual arrangements and project decision-making protocols. They need to be appropriately supported and trained to enable their input to be effective, timely and constructive.

Recommendation 2: Align procurement and design guidelines and incentives to support a patient-centred focus throughout the process of design development and procurement

Health facilities are procured on behalf of the users of healthcare services. Whilst Health Infrastructure has many stakeholders, its ultimate clients are the public (that is, consumer, patients and their families) of NSW. Government policy is to realign and devolve services to put the patient client/customer at the centre. This realignment applies to models of care, clinical practice and the environments in which care is delivered. Clinicians tend to act as agents for mental health service users but the client/consumer is to be encouraged to engage directly in decisions about their care, and where and how it is provided. The user's needs must be understood and they must be able to provide structured and timely input into the programming and procurement of facilities. Health Infrastructure should consider making use of dynamic and interactive social media and website tools to engage with consumers and other stakeholders.

Recommendation 3: Support comprehensive, early and ongoing change management and stakeholder consultation from initial planning

A healthcare facility is one component in an integrated healthcare delivery system that also includes primary and secondary care services. The relationship between services will change as models of care change, and the decision to pursue a built solution is the outcome of a broader services planning and consultation process.

This may involve complex organizational and clinical practice changes needing careful time and trust management. A comprehensive change management and communications strategy must accompany implementation of the Project Definition Plan, and stakeholder expectations managed through transparent and authentic communication. Facility development is a service improvement process and Health Infrastructure needs to work with facilities to ensure effective change management during Procurement Implementation. Funding for change management must be included in the project budget and not be discretionary. HI considers the NSW Health Performance Unit an appropriate partner to monitor and review the change management processes.

Recommendation 4: Develop a risk management framework which incorporates changes in practice and models of care during procurement

A recursive process of planning is required with flexibility and future proofing the key elements. The lengthy time horizon from initial determination of the scope of a project in the Project Definition Plan (PDP), through design and construct phases, and to commissioning creates the risk that any built solution will be inadequate and dated. During the Project Implementation phase, there needs to be a revisiting and review of operational and functional decisions, potentially made many years before, or service innovation will be stifled. Innovation in health care facility procurement is not necessarily about innovations in construction alone but in creating physical environments that support changing service delivery models and professional and therapeutic practice. Standing committees of cross-disciplinary super-expert panels, (communities of practice), supported by a dedicated inquiry team, are proposed as the means of ensuring robust processes at start of the procurement process.

Currently, variations from the Australasian Health Facilities Guidelines (the Guidelines, AHFG) are discouraged and need formal bureaucratic approval. A number of stakeholders perceive the Guidelines as a cost control tool, which is not responsive to innovation and the realities of local conditions. To attempt entirely rule-based development control is not an effective risk management strategy. Resilience needs to be built into the process of user engagement. In any context, flexibility and future proofing are key drivers for universal adoption of clinical standards, guidelines and mandating the reporting of outcomes. The AHFG

is a very useful guide for planning but is generic, lacks specificity and cannot accommodate the range of potential variations and site constraints that will be found at the local level. The current process for developing and updating AHFGs is also rather slow. The process needs to be streamlined and made responsive to user and community needs.

Recommendation 5: Early, frequent and ongoing clinical input is needed on all projects, including those procured under a private financing initiative

A recurring comment in the interviews was the limited health facility planning and clinical expertise inside Health Infrastructure. It is essential for HI to build the in-house expertise to support its project management teams as well as have regular access to external consultants and other healthcare experts. HI should implement a co-ordinated stakeholder management capability by formally harnessing expert opinion leaders to ensure the currency of models of care, technologies and clinical practices. Such super-expert leadership groups should be supported by a consultation function within HI, providing quality evidence-based technical information to opinion leaders and planning committees. HI must become a resource for users and a partner to consultants.

Recommendation 6: Create a human factors usability testing laboratory

In the long run, HI would benefit from a dedicated usability/human factors research capability, thereby removing the need for each facility to conduct its own ad hoc and idiosyncratic testing. The lack of such expertise has cost the state hundreds of thousands of dollars in wasted resources. To date, there has been a low cost and parochial approach to information gathering encouraging wide and unnecessary cost and product variation. Each facility reviewed undertook its own, generally inadequate, impact testing of doors, walls, locks, windows and ligature points. Activity at the local level is inefficient and unlikely to produce the most scientifically validated, cost-effective solutions.

Recommendation 7: Create and widely disseminate a New South Wales Mental Health Facility Guideline supported by a dynamic, standardized Fixtures, Fittings & Equipment database (FF&E)

The production of a process for information searching and the creation of a technical database must be another priority for HI. The current practice of users testing the quality of the building fabric and fitness of fixtures, fittings and equipment is amateurish and not cost-effective. Local redesign of FF&E items to meet specifications cannot be cost-effective. A number of the facilities visited had designed their own beds and toilet roll holders to avoid potential ligature points – and used the same suppliers. A centralized, dynamic and interactive FF&E procurement database should be developed to reduce this redundancy of effort resources, and increase the quality and value of purchasing decisions across the system. The Mental Health Facility Guideline could provide a framework for this knowledge management process.

Recommendation 8: Conduct, collate and apply rigorous operational and post-occupancy analysis using a sound research methodology

Ensure the timely completion of rigorous operational and post-occupancy evaluations and make them publicly available. NSW must create robust and scientifically valid evaluations of all projects going forward. Baseline data must be collected before the project begins. This could be incorporated into the Asset Strategic Planning process. The post-occupancy evaluation should include a comprehensive analysis of project development including the development of the masterplan and functional brief as well as the budget/costing and timetable of projects. It is important to ensure HI continues to be a learning organization.

Recommendation 9: Develop an interactive and transparent information portal to create and sustain a dialogue with the public on the planning and development of healthcare facilities in NSW

Continue and strengthen a culture of real transparency within HI. Information and communications technology solutions are urgently required to create and sustain a dialogue with the public on the planning and development of healthcare facilities in NSW, and to retain lessons from past projects in a dynamic knowledge management database. This tool would support engagement with stakeholders.

Recommendation 10: Define the model of care more eloquently and thoroughly in planning and briefing documents

The environment has a significant impact on the ability of clinicians to build trusting, therapeutic relationships. The community-based, recovery model of psychiatric care demands architectural solutions that reconcile 'security' and 'perceived openness' so that risks of violence and self harm do not overwhelm the need for a therapeutic environment. There needs to be less emphasis on the size and number of spaces by category and more on their value in supporting patient centred care. The building must support the model of care with appropriate physical, social and symbolic environments. Using the metaphor of the 'urban village', acknowledging patient fears, designing to domestic scale and subtly incorporating elements for security and safety, not to assert authority but to provide genuine security for the staff and patients, is the benchmark of mental healthcare facility design today.

ACRONYMS AND DEFINITIONS

Acronyms

AHFG	Australasian Health Facility Guideline
AHS	Area Health Service
AMHU	Acute Mental Health Unit
CSP	Clinical Services Plan
DD&C	Design Development & Construct procurement methodology
D&C	Design & Construct procurement methodology
DH	Department of Health (UK)
EOI	Expression of Interest
FF&E	Fixtures, Fittings & Equipment
GMHIU	General Mental Health Inpatient Unit
HERD	Health Environments Research and Design Journal
HI	Health Infrastructure
HDU	High Dependency Unit
IADH	International Academy for Design & Health
IIMS	Incident Information Management System
MH-CoPES	Mental Health Consumer Perceptions and Experiences of Services
MHDAO	Mental Health and Drug & Alcohol

	Office
MHICU	Mental Health Intensive Care Unit
MHPC	Mental Health Planning Council
MHU	Mental Health Unit
MOH	Ministry of Health
NHS	National Health Service
NHSIII	National Health Service Institute for Innovation and Improvement
PI	Project implementation (Stage 3 POFP)
PFI	Private Financing Initiative
PFP	Private Financed Project
PICU	Psychiatric Intensive Care Unit
POFP	NSW Health Process of Facility Planning
PPP	Public-Private Partnership
RCPsych	Royal College of Psychiatrists (UK)
SPP	Services Procurement Plan
SSDB	State-wide Services Development Branch

Definitions

Biophilia	An hypothesis proposed by E.O. Wilson that human beings have a genetic propensity to respond to other living organisms which design properties should harness
Ethnography	The study and systematic recording of what people do in their daily life using qualitative research techniques
Evaluation	Systematic examination of a policy, program or project aimed at assessing its merit, value, worth, relevance or contribution.
Patient Safety	A whole system approach to minimizing harm affecting patients; it extends the idea of 'clinical risk management'.
Triangulation	A multi-method research or evaluation design that draws from pluralist sources to illuminate a phenomenon.
Vulnerable Persons Unit	A protective environment for patients who are susceptible to physical or emotional injury or attack.
Salutogenesis	A construct conceived by Aaron Antonovsky focusing on human health and the factors underlying physical, social and emotional well-being, rather than pathogenesis.

BACKGROUND

New South Wales (NSW) Health Infrastructure (HI) commissioned *JBara Innovations* (JBI) to develop a quality improvement project aimed at facilitating more timely evidence-based clinical input into the planning, design and development of healthcare facilities. Mental healthcare facilities were the focus of phase 1, excluding specialist facilities for drug and alcohol dependent patients.

The NSW health facilities *Process of Planning* is exhaustive but it does not specify the level of consultation with clinicians considered appropriate during planning, nor the level of evidence required for design decisions. It does not require during the design process for patients/clients/customers to be consulted, or their perspective to be taken into consideration. HI has been concerned that clinical input and research evidence may be insufficient to design quality healthcare built environments.

The planning and design of a built environment typically involves a series of recursive iterations as preferences and constraints are identified and aligned. The fundamental design problem of mental health care facilities is resolution of the tension between safety and therapy, and concomitantly managing stakeholder expectations and agendas. Success is dependent upon the building and sustaining of trusting relationships with stakeholders across the system.

This study confirms a compelling need to improve the timing and quality of clinical involvement in the planning and development process in NSW. Associated with an enhanced decision making capacity is the need to consistently and effectively manage user expectations and demands. The sources of conflict between clinicians, building professionals and HI during the procurement phase of project delivery need to be identified and addressed. A number of factors may be operating, such as: an incomplete or hurried consultative process during the planning phase; out-of-date project definitions; failure to translate and incorporate care and practice models properly; unrealistic expectations on the part of users; and, a lack of effective methodologies to ensure valid, cost-effective design solutions.

Health asset procurement by HI follows the determination of health service needs by the State-wide Services Development Branch (SSDB), and in the case of mental health, the Mental Health Planning Council (MHPC). Lengthy delays between the finalisation of the Clinical Services Plan (CSP), Services Procurement Plan (SPP),

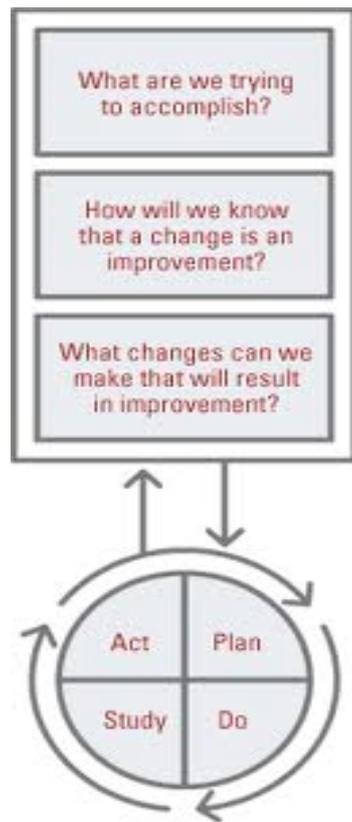
Project Definition Plan (PDP) and Procurement Implementation (PI) can mean that that PDP no longer meets current needs. The synergies between services and facilities planning need to be harnessed to increase efficiency, flexibility and effectiveness. A collaborative effort will ensure responsiveness to changing circumstances and better alignment of user expectations with departmental priorities and resources.

Continual quality improvement in NSW: the ultimate goal of HI

For over 30 years, Dr. Avedis Donabedian's structure - process - outcome model has served as a conceptual framework for healthcare quality improvement. In risky clinical processes, hazards embedded within the structure and process of care have the potential to cause harm to patients, staff and visitors. Hazards designed into the built environment, such as inappropriate surface materials, create latent conditions for these harms. The role of the built environment in enhancing health outcomes is less clear, however, but the quality improvement cycle provides the necessary framework for improving the procurement, construction and commissioning of healthcare facilities. .

The quality improvement model derives from industrial process engineering and is applicable to risk reduction strategies in planning and procurement. Latent conditions within the process and structure of planning and procurement may cause "organizational" failure during procurement work. For instance, a lack of clarity over the timing and extent of patient/client involvement in planning creates the latent conditions for conflict in which the project managers will be perceived as failing. Several factors have been linked to poor facility procurement and design outcomes, including: communication failures; an inadequate evidence base for decision making; and a lack of clinical leadership. Applying a quality cycle based on The Model for Improvement will help HI achieve its strategic goals (see Figure 1).

Figure 1. Quality Cycle – The Model for HI Process Improvement



Source: Langley G, Nolan T, and Provost L, (eds.) 2nd Ed. 2009, The improvement Guide, Jossey-Bass, San Francisco, CA

THE CONTEXT OF THE STUDY

This quality improvement project will involve establishing an expert user group to improve the quality of clinical input into the procurement process. There are three main phases in the project:

Phase I: Environmental Scan and Risk Analysis

Phase II: Position Paper for the Community of Practice

Phase III: Establish and evaluate the Community of Practice

The three-prong strategy aims to bridge the divide between services and facilities planning to improve the process of design and procurement in NSW. The phases are:

(I) an environmental scan and a risk-benefit analysis of current procurement practice;

These were completed by JBara and presented to HI as Interim Reports.

(II) a Position Paper for the use of the planned Mental Health Facility CoP, which will include HI, the Mental Health Planning Council (MHPC), NSW Health planners, building and design professionals and consumers.

This Interim Report presents the findings of the Research Study undertaken by JBara to support the Position Paper.

(III) Phase III will involve the:

- a. establishment of a governance structure to oversee the Community of Practice and to identify appropriate members;
- b. development of the Community Of Practice (CoP) super-expert user group; and,
- c. action research evaluation of the CoP as a tool for quality improvement.

Clear and agreed principles will guide the consultation process toward a shared vision. Innovation will be realised within a framework of safe systems thinking to ensure safe, fit-for-purpose buildings are procured in a transparent manner. The CoP will apply expert, tacit and explicit knowledge to procurement decision-making within the quality improvement framework. The research evidence adduced in this Study will inform CoP decision-making. The sources of information are detailed in separate Methods and Results sections below.

Methods

The methods included: literature review, case studies, interviews and site visits.

A. Literature Review

The scope of published studies on the relationship between the built environment, the therapeutic process and outcomes in mental health is very broad and drawn from multiple disciplines. Architecture and design do not have a scientific tradition of experimental research, and thus differ dramatically from the biomedical sciences in how knowledge and evidence are accrued⁶ (Devlin & Arneill 2003). Knowledge of the impact of the built environment on the care and outcomes of mental health patients must be drawn from the social sciences, including but not limited to anthropology, psychology and sociology. This review includes: research studies published in the peer-reviewed literature, including published literature reviews; conceptual papers; expert commentary and opinion pieces; technical and practice guidelines; research reports by proprietary companies; government policy documents; and, other gray literature.

The 110 articles were extracted from searches conducted between January to June 2011 on a range of architectural, building, science and medical databases including Avery, ICONDA, ABI/INFORM Global, Web of Science, Scopus, Emerald, Science Direct, Social Science Research Network, Psych Info and Medline. The search terms used in various combinations were: <mental health>, <mental health institution>, <hospital>, <planning>, <design>, <environmental design>, <behaviour>, <environmental behaviour>, <safety>, <safe design>, <risk>, <patients>, <procurement>, <psychiatric hospital>, <therapeutic environments>, <evidence based design>.

The abstracts were reviewed for relevance, and only a subset evaluated. Relevant references cited in selected articles were also extracted and reviewed in a snowballing technique. Research not available through academic databases was obtained directly from practitioners or the key not-for-profit organizations (U.S. Centre for Health Design and the European International Academy for Design and Health). Industry best practice and lead companies were identified from the range of sources.

⁶Lawson B. (3rd Ed) *How Designers Think: the design process demystified*. 1997; Architectural Press: Oxford

Government reports and other gray literature were accessed directly from government websites.

B. Document Review/Case Study

Three case studies are presented in this Report. Documentary and archival data were provided by HI for each of them. Such data was not available for three other facilities of relevance to the study, as those had been completed, or were nearing completion, before HI assumed responsibility for procurement in 2007. Data collected from those facilities was limited to interviews, site visits and material publicly available online, and were thus insufficient for constructing a meaningful case study.

The case study sites are the:

- 30 bed Gosford acute mental health unit (MHU);
- 174 bed Concord Hospital mental healthcare facility; and,
- 225 bed Bloomfield Hospital tertiary and acute mental healthcare facility at Orange.

The documents and artifacts provided by HI were supplemented from online sources and material available, and photographs taken at the sites. (Photographs were taken with permission and no patient or staff were photographed). This data were used to confirm project details; construct project timelines; and triangulate against the narratives of our key informants. The preliminary themes that emerged were explored in the interviews. The literature review was also used to prepare and structure the interview discussion guide, and interpret the three case studies.

The Gosford MHU represented a starting point for HI. It was the first procurement project entirely directed and managed by HI. It was a significant learning experience for the new organization. It was procured under a design, development and construct contract. The 85 year old Bloomfield Hospital was HI's most recent mental healthcare facility project. It was much larger than Gosford, had a long history, and was procured under a public-private partnership arrangement. It had also recorded a sentinel event a few months before the study - a voluntary patient assessed as low risk had assaulted and killed a staff member. In March 2011, Bloomfield was amalgamated with Orange Base Hospital, which had been collocated into a new building on the Bloomfield site. Concord Hospital was the new home for the

riverside Callan Park facility at Rozelle. It was completed and handed over within months of HI's establishment. There had been a long gestation period and innovations in clinical care models needed to be accommodated during the procurement process.

C. Interviews

40 key informants involved in the planning and development of mental health facilities in NSW were interviewed. The informants represented a cross section of professions involved in the planning and procurement process, including: HI project directors/managers; NSW Health statewide planners; AHS facility planners; AHS Capital Works managers; AHS facility managers; senior clinician managers; front line nursing staff; change managers; academic researchers; and, healthcare architects. The new Jellinik Clinic in Amsterdam was also toured and the clinician manager interviewed. The purpose of the interviews was to learn about the planning and development process as practiced, and in the voice of the user, versus what was recorded in documents; informants' subjective experience of that process; general attitudes towards HI; and, to identify best practices in mental healthcare facility design.

Interview Format

Key informants were interviewed in an open-ended format and invited to talk about their mental healthcare facility development projects in terms of what they thought about the process, what went well and how they thought it might be improved. The key questions framing the interviews were:

1. What was your best experience in the planning and development of a facility? Why?
2. What was your worst experience? Why?
3. What would you change about the current process?

Almost universally, the key informants exhibited a very high level of involvement in regard to the planning, design and procurement of the facilities. They were generally forthright and quite passionate about perceived problems with the process. They had much to say about how they thought the problems had impacted the effective implementation of innovation in clinical practice and facility design.

38 of the interviews were conducted face-to-face mostly at the six facilities and the remaining two by telephone. Hand written notes were made of all interviews and 39 were audio-taped (with participant consent) and transcribed. The total interview time was 36 hours, with interviews varying from 40 to 120 minutes, depending on the willingness of participants. The transcripts were loaded into NVivo data management software and the narrative coded used the thematic categories that emerged from the data.

Thematic Categories

Seven themes were identified in the data:

- Which clinical practice model – risk vs. therapy?
- Who is the client?
- Process of planning is not linear
- Poor communication destroys trust
- Governance is key – but the decision makers keep changing
- Why are the Guidelines bureaucratic rules and not flexible?
- Stop the politics; we need to plan

Narrative Analysis

A narrative analysis of the transcripts was also completed. A ‘narrative’ is not just a descriptive device to document the verbal and written responses of participants in relation to specific sets of questions. It is also an interpretive framework which allows one to chart the meaning of these personal ‘stories’ in relation to larger meta-narratives within organizations and society. Organizations act as forms of communities within which employees negotiate social as well as professional relationships, thereby formulating and developing a sense of meaning, purpose and identity. This ‘sense-making’ is most potent within professional ‘communities of practice’-- groups which come together for educational, research and development support and goals. What was striking with this dataset was the duality of the sense-making with senior clinicians and design professionals in concordance with one another, and, project managers and government planners sharing an alternate perspective.

Finally, not only is narrative analysis invaluable in charting the meanings of individuals and groups in relation to change, it also is of great predictive value.

Through narrative analysis it is possible to chart potential ways of acting as a consequence of the strength of people's attitudes, values and beliefs, as expressed in their stories about themselves in relation to their occupational group and their organization. In summary, we can predict how people will act as a function of their mental models as represented in their narrative summation about of who they are and why they are doing what they do. This is particularly valuable in predicting what people will do when confronted by the realities of organizational change, such as occurs during a redevelopment project.

The factual basis for attitudes and beliefs may be flawed but the 'social fact' of the beliefs constitute the organizational "sense making" that is key to attenuate the cognitive dissonance of organizational members. Karl Weick's (1993, 1990) studies into the human need to create sense and context in disasters showed this phenomena operating in many arenas.⁷ "Sense making" is how meanings materialize to inform and constrain identity and action⁸. A clinical example of this sense making in practice would be the failure of staff and clinicians at the Bristol Royal Infirmary in the United Kingdom to properly account for their abnormally high rate of infant mortality after paediatric cardiac surgery⁹. The poor performance was attributed to a higher proportion of 'high risk' patients and investigation of the problem was avoided, even when the "whistleblower" Dr Steve Bolsin called this to attention.¹⁰

D. Site Visits, Walk-Throughs and Observations

Six site visits were made to NSW Health facilities including: Hornsby Mental Health Intensive Care Unit (MHICU); the tertiary and acute mental health campus of Bloomfield Hospital at Orange; and the acute mental health units at Newcastle, Gosford, Concord and Lismore. Each facility demonstrated unique lessons for the organizational learning of Health Infrastructure - from the problems and antagonism inherited from the Hornsby MHICU project, through the difficulties encountered in HI's first fully managed project at Gosford, to the satisfactory process (from the

⁷Weick, K.E. The collapse of sensemaking in organisations: The Mann Gulch Disaster. *Administrative Science Quarterly*. 1993; 38(4): 628-652; Weick, K.E. The Vulnerable System: An Analysis of the Tenerife Air Disaster. *Journal of Management*. 1990; 16(3): 571-593.

⁸ Weick, K.E.; Sutcliffe, K.M.; Obstfeld, D. Organizing and the Process of Sensemaking. *Organization Science*. 2005; 16(4): 409-421

⁹ Weick, K & Sutcliffe, K.M. Hospitals as cultures of entrapment: a re-analysis of the Bristol Royal Infirmary. *California Management Review*. 2003; 45(2):73-84

¹⁰Bolsin, S.N. Professional misconduct: the Bristol case. *Med J Aust*. 1998 October 5; 169(7):369-372

user's perspective) at the recently completed Bloomfield Hospital, procured under a private-public partnership (PPP) contractual arrangement.

Efficient and seamless project management is important but the final product of a successful process must also function effectively and be "fit for purpose". The questions we sought to answer in viewing the facilities were:

1. *Did the facility meet the requirements of the users and the clinical care model?*
2. *Did the built environment help or hinder implementation of the community based 'collaborative, recovery,' model of psychiatric care?*

Did the project otherwise add value in the eyes of the key stakeholders and users?

We did not attempt to evaluate the mechanical services nor did we take a checklist approach using the Australasian Health Facility Guidelines. We evaluated what the anthropologist Edward T Hall calls 'the hidden dimension': the meanings people attribute to spaces and spatial configurations.¹¹ Key personnel involved in the planning, development and use of the facility – clinicians, facility managers and service managers - were interviewed at each site. After the interviews we walked through each facility and had operations and processes explained to us by informants, further explicating their world view ("walk through-talk through"). Problems and issues in the planning or the built solution were shown to us. Photographs were taken at each site (no patients were photographed). Field notes were transcribed and thematically analyzed using NVivo version 10.

Paul Barach 28/2/13 12:11 AM
Comment [1]: Consider reference
http://www.ida.liu.se/~nilda/Anders_Ericsson/Ericsson_protocol.pdf

¹¹Hall, E.T. *The Hidden Dimension*. 1990. Anchor Books: New York

RESULTS

“Well in our country,” said Alice, still panting a little, ‘you’d generally get somewhere else – if you ran very fast for a long time, as we’ve been doing.’
“A slow sort of country” said the Queen. “Now here, you see, it takes all the running you can do to keep in the same place.” Lewis Carroll¹²

A. Literature Review

1.0 Introduction

This Review evaluates the published research on mental health facilities design to support the planning work of the Mental Health Facilities Community of Practice. The evidence will guide analysis of the data collected in the project and can be used to critically evaluate architectural solutions to the fundamental design challenges of mental health facilities: the conflicting priorities of safety versus therapy.

2.0 Background

There has been over 200 years of arbitrage documented on the conflicting objectives in mental health facility design: care versus custody, or haven versus jail. This is currently debated in terms of risk versus therapy, although Giddens (1990) in a broader sociological analysis expresses the dichotomy in terms of security versus danger and trust versus risk.¹³ There is little evidence on the appropriate balance in the design and operation of a psychiatric facility to guide decisions.

In today’s mental healthcare delivery model, the institution is coterminous with community mental healthcare. The acute unit is supposed to be integrated with, and not separated from the community (Mahoney et al, 2009; Cleary, 2009; Curtis et al, 2007; Edington, 2003; Harding, 1987)¹⁴. Arya (2011) calls an admission a “blip” in the treatment regime. Inpatient services are available for stabilization during acute episodes and clients/patients are not expected to stay for prolonged periods (Arya,

¹²Carroll, L. Alice’s Adventures in Wonderland. 1865; Macmillan & Co: United Kingdom

¹³Giddens, A. The consequences of modernity. 1990; Stanford University Press: California

¹⁴Inquiry into health services for the psychiatrically ill and developmentally disabled: Summary of Recommendations. (Richmond Report) March 1983.

[http://www.parliament.nsw.gov.au/prod/parlament/committee.nsf/o/7909bd5e019e335fca256b3b001f05fc/\\$FILE/RichmondRecommendations.pdf](http://www.parliament.nsw.gov.au/prod/parlament/committee.nsf/o/7909bd5e019e335fca256b3b001f05fc/$FILE/RichmondRecommendations.pdf)

2011; Kearney & Dye, 2010; Curtis et al, 2009; Gilbert, 2008). Since the Richmond Report of 1983, “the highest priority in mental health services [is] community based care and rehabilitation of the seriously mentally ill.”¹⁵ This change was accompanied by a reduction (or closure) in dedicated institutions, and relocation of acute psychiatric admission services to general public hospitals.¹⁶ Patient-centredness is the new paradigm of care – even in intensive care units.¹⁷

As part of the collaborative recovery model of care, government policy is to involve patients in treatment planning and policy decisions, and to encourage autonomy, control and patient self-management (NSW Health Mental Health and Drug & Alcohol Office, 2011; Australian Government, 2010; Commonwealth of Australia, 2010; Commonwealth of Australia, 2009; DH Estates & CSIP Acute Care Programme, 2008; Pereira & Clinton, 2002)¹⁸.

The National Mental Health Plan states that a recovery model should drive service delivery.¹⁹ Recovery has been defined by NSW Health as: “a deeply personal, unique process of changing one’s attitudes, values, feelings, goals, skills and/or roles....development of new meaning and purpose in one’s life.” The recovery model avoids the deficit model implicit in the medical disease paradigm.²⁰ NSW Health has implemented a statewide approach to measuring and responding to the consumer experience of healthcare. The Mental Health Consumer Perceptions and Experiences of Services (MH-COPES) questionnaire attempts to identify what is important to consumers and what changes need to be made.²¹

The Mental Health and Drug & Alcohol Office (MDHAO) of NSW Health published a 15 item *Charter for mental health care in NSW*. It includes the United Nations sponsored requirements to respect human rights (item 1); encourage true consumer involvement at all levels of service delivery and policy development (item 6); and, to provide care in the least restrictive environment, consistent with treatment

¹⁵ibid Recommendation 3.1

¹⁶ibid Recommendation 3.13

¹⁷Freeh, R. Focusing on relationship – is there room for another paradigm in Psychiatric Intensive Care? *Journal of Psychiatric Intensive Care*. 2007; 2(2): 55-58

¹⁸New South Wales Health. A statewide approach to measuring and responding to consumer perceptions and experiences of adult mental health services: a report on stage one of the development of the MH-CoPES framework and questionnaire. 2006; NSW Department of Health: North Sydney

¹⁹Commonwealth of Australia. Fourth National Mental Health Plan – an agenda for collaborative action in mental health 2009-2014. 2009; Commonwealth of Australia: Canberra

²⁰New South Wales Health. Op cit 12 at p 38

²¹New South Wales Health. Op cit 12 at p 38

requirements (item 8).²² Seclusion rooms are to be replaced with “comfort rooms” and spaces for “sensory therapy” (Australian Government, 2009).

The National Institute for Mental Health in England emphasizes service user involvement and control in the planning and choice of care in its guide to capital investment in mental health facilities (DH Estates)²³. The NHS Institute for Innovation and Improvement identified a physical environment that is personalized, safe, therapeutic and able to deliver a wide range of interesting activities “developed with service users and using wider community links and staff skills”. This was a key characteristic in modern fit-for-purpose psychiatric *intensive* care units.

Gloucestershire Partnership NHS Foundation Trust heralded its exemplar psychiatric intensive care unit, which provides a program of trampoline exercise and line dancing, delivered by community organizations, in the Unit’s new, full size gymnasium.²⁴ In its new multi-story building, the Jellinik Clinic in Amsterdam has a full size basketball court, gymnasium, dual master-chef kitchen, and a prayer room.

In June 2011, the U.K. Royal College of Psychiatrists published its 10 standards for adult acute mental health units. The College emphasizes connections with the community and a therapeutic, patient-centred milieu, in which a patient learns to gain control of their own recovery. The recommended ward size is less than 18 beds and at no more than 85% occupancy. It is much lower for intensive care units. Standard 5 specifies an “appropriate and respectful approach” to risk and safety: “Safety also results from good relationships and interactions and the trust that is built up between these individuals” (at p. 5). The Standards are an outcome of the Accreditation for Inpatient Mental Health Services (AIMS) initiative.²⁵

The increasingly humane design solutions of today are grounded in the tacit knowledge of professionals rather than definitive research, and as such remain contestable. Thus, while innovative changes have been implemented, and are government policy, there is constant pressure to retain (or return to) more custodial models of practice (Qurashi, Johnson, Shaw, & Johnson, 2010; Lamont & Brunero, 2009; Curtis, Gesler, Priebe, & Francis, 2009; Abderhalden, Needham, Dassen,

²² Mental Health Drug and Alcohol Office. Charter for mental health care in NSW. 2011 <http://www.health.nsw.gov.au/pubs/2000/pdf/mhcharter.pdf>

²³ DH Estates & CSIP Acute Care Programme 2008. Laying the foundations for better acute mental healthcare

²⁴ NHS Institute for innovation and Improvement 2008

²⁵ Royal College of Psychiatrists (UK) Accreditation for Inpatient Mental Health Services (AIMS). Standards for Inpatient Wards – Working Age Adults. (4th Ed) January 2010; RC Psych: London

Halfens, Fischer, & Haug, 2007; Curtis et al, 2007; Wood, 2007; Stolker, Nijman, & Zwanikker, 2006; Lawoko, Soares, & Nolan, 2004; Khadivi, Patel, Atkinson, & Levine, 2004; Scull, 1975).

2.1 Available literature

The 110 papers included in this Review are organized thematically for ease of navigation as following: (i) Evidence Based Design (Generic); (ii) Evidence Based Design (Mental Health); (iii) Therapeutic Environment; (iv) Impact of the Built Environment; and, (v) Benchmark Practice in Mental Health Facility Design. A detailed table summarizes and evaluates the literature and can be found in Appendix II.

Although there are a number of published studies about the relationship between the built environment and the behaviour of mental health patients, most have significant methodological issues and none were conducted using the gold standard for medical evidence - the double blind randomized controlled trial. Governments make use of the available evidence for decision making (e.g. Australian Government, 2010, U.K. National Institute for Mental Health, 2008; Australasian Health Facility Guidelines Revision 4.0, 2010; NSW Health Process of Facility Planning v3 May 2010) but the uncertainties in the evidence mean it is not very useful in managing stakeholders during the programming and procurement of mental health facilities.

In the absence of a quality evidentiary database planning decisions must be negotiated and re-negotiated with stakeholders. Decisions hold a somewhat provisional status and are vulnerable to political and financial pressures for change. This problem is particularly acute in the complex and dynamic mental healthcare sector with its evolving models of care and churn of office holders. The membership of decision making committees is likely to change a number of times during the planning and procurement process. Such changes in an evidence poor environment are associated with demands for variations in programming, leading to delays in project delivery and an increase in project costs and completion.

3.0 Overview of findings

Patients and staff in all settings need coherent physical environments that are physiologically comfortable, safe and comprehensible; social environments that afford some degree of control and allow for privacy, distraction, and opportunities

for selective social interaction; and, symbolic environments that signify care and promote trust between clinicians, clients and fellow patients (World Health Design, 2011; Borges & Fagermoen, 2008; Curtis et al, 2007; Willis, 1980; Shattell et al, 2008; Lawson, 2002)²⁶. Patients in mental health facilities particularly need to see signifiers that denote the unit as a place of haven and refuge, not incarceration and punishment. And they need to escape boredom.

Modern mental healthcare values a collaborative, recovery orientated treatment model that works with the client/patient's trauma and promotes empowerment, self-management, dignity and reclaiming of identity *within a community context* (Turton, Wright, White, Killaspy, DEMoBinc Group,²⁷ 2010; Mahoney et al, 2009; Borge & Fagermoen, 2008; Gilbert, Rose & Slade, 2008; Devlin & Arneill, 2003; Middelboe, Schjodt, Byrstring & Gjerris, 2001).

An effective model does not demand particularly unusual technical spaces or overt security in the acute care hospital and the architecture should be non-threatening and domestic in scale.

The built environment is implicated in the psychiatric therapeutic process in three ways:

- (i) **Physical:** The provision of functional and coherent spaces for operational and clinical practice such as: sufficient and varied activity and consultation spaces; manageable circulation spaces and way finding tools; avoidance of elements that may exacerbate perceptual distortions, such as long corridors with distant vanishing points; environmental comfort and natural light; and, a safe patient and work environment. Historically the response to perceived risks has included contentious elements like security fences, closed circuit television (CCTV) surveillance, enclosed nurse stations, and 'treatment' seclusion rooms (where people exhibiting intransigent behavior are forcibly detained);
- (ii) **Social:** The provision of spaces that promote positive behaviours or the enactment of human needs: territoriality, privacy, social intimacy, productive activity, physical exercise and spiritual mindfulness. The provision of

²⁶Winkel, G.H.& Holohan, C.J. The environmental psychology of the hospital: is the cure worse than the illness? *Prevention in Human Services*. 1985; 4(1-2): 11-33.

²⁷DEMoBinc Group = Development of a European Measure of Best Practice for People with Long Term Mental Illness in Institutional Care. It developed an instrument for assessing the living conditions, the quality of care, and the human rights of long-term mentally ill patients in psychiatric and social residential care. The final product of the 10 country project was a web-based toolkit- the Quality Indicators for Rehabilitation Care (QuIRC).

partitioned or single bed rooms and a range of different activity spaces reduce withdrawal behaviours, increase active social behaviours and allow the therapeutically crucial exercise of control over the nature and timing of social contact. A psychotic patient's ill-defined sense of personal boundary and distorted sense of "crowding", exacerbated by the known side effects of several medications routinely administered to mental health patients, can be accommodated within large, expansive spaces with fewer people.²⁸ Recovery benefits from access to nature, informative views and other distractions, and meaningful work is essential.

- (iii) **Symbolic:** The signaling of meanings which promote trust, refuge, recovery and respect for people and the space. The spaces need to signal 'consumer of beneficial care services', and not 'madman who is a threat to society' and must be contained and incarcerated. The symbolism of the modern unit should be in contradistinction to the symbols of domination, control and mutual fear of the "total institution"²⁹ as evoked by obvious signs of containment: high walls; barbed wires, gates & locks; enclosed nurse stations; CCTV; vision panels in bedroom doors; the absence of decorative elements; and, monochrome seclusion rooms.

4.0 Quality of the evidence

Both quantitative and qualitative research studies, including mixed methods designs, are included in the Review. Research quality is evaluated differently in the two epistemologies, although the underlying constructs are trustworthiness and generalizability of the findings.

Reliability and reproducibility are the measures of trustworthiness in a quantitative study. The reliability is determined by how well confounding variables are controlled so that potential bias and the probability of random error are kept within a known level of statistical confidence. This is generally considered in terms of 'levels of evidence' from I to V with the strongest being a meta-analysis of multiple well-designed double blind randomized controlled trials (Level I), and the lowest being

²⁸Hall, E.T. Mental health research: out of awareness cultural systems. In Nader L. & Maretzki T (Eds) Cultural illness and health: essays in human adaptation pp.97-103. Anthropological Studies No. 9 Maybury-Lewis (Ed). 1973; American Anthropological Association: Washington.

²⁹Goffman E. Asylums: Essays on the Social Situation of Mental Patients and Other Inmates. 1961. Double Day: New York, defined total institutions as places where residents were cut off from the wider society in an enclosed formally administered round of life; usually symbolized by barriers to social intercourse with the outside or departure built into the fabric of the physical plant.

expert opinion (Level V). A complete description of the framework used in the Review is provided in Appendix I, Table I.

Qualitative studies are evaluated along two dimensions: methodological and interpretive rigour. Methodological rigour is concerned with the completeness and appropriateness of the research design. Interpretive rigour involves a consideration as to whether the data collection process allows participants' voices to be heard, and whether the interpretations can reasonably be inferred from the data. The Evaluation Tool used is found in Table II of Appendix I.

4.1 Systematic reviews

Six Cochrane Collaboration Systematic Reviews relevant to mental health facility design were found but only one study met the inclusion criteria.

Tanja-Dijkstra & Pieterse (2011) did not limit selection to randomized controlled trials alone, and identified one good quality controlled before and after study, which looked at the psychologically mediated effects of the physical healthcare environment on ward staff (Christenfeld, Wagner, Pastva & Wagner, 1989).

Drahota, Stores, Ward, Galloway, Higgins & Dean (2004) devised a rigorous Cochrane Collaboration Protocol to assess the impact of the sensory environment on the health outcomes of all types of inpatients. No other relevant studies were found for this Review (Drahota, personal communication, June 2011).

Other Cochrane Collaboration Reviews addressed the model of care directly. Two sought evidence of the effectiveness and efficacy of containment strategies but found no studies (Salias & Fenton (2000; 2009) and Muralidharan & Fenton (2006). Salias & Fenton (2000; 2009) could not find *any* randomized controlled trials out of 2,155 peer-reviewed articles on the use of (i) restraint or seclusion; or, (ii) other containment strategies designed to reduce the need for restraint or seclusion in the treatment of serious mental illness. Many of the studies investigated the restraint of elderly, confused people and the prevention of wandering or falling. It was noted that some qualitative studies reported serious harm caused by the use of containment strategies in psychiatric care.

Muralidharan & Fenton (2006) identified over 4,800 papers which looked at the efficacy of containment strategies *excluding* seclusion and restraint, such as: changing observation levels; locking wards; managing staff patient ratios; using de-

escalation techniques; or behavioural contracts. No relevant randomized controlled trials were found. The authors concluded that “clinical practice is based on evidence that is not derived from trials and continued practice entirely outside of well designed, conducted and reported randomized studies is difficult to justify” (ibid at p.2).

One Cochrane review looked for studies on the effect of dedicated mother and baby units for the care of woman with post-partum depression or psychosis (a vulnerable persons unit). A single 1961 non-randomized trial was identified. It suggested some benefit but was considered inapplicable given changes in current models of care. The authors concluded that the effectiveness of such units urgently needed to be validated (Irving & Saylan, 2007).

The sixth Cochrane Systematic Review searched unsuccessfully for randomized or quasi-randomized controlled trials on the effectiveness of the use of psychiatric “scatter beds” (Hickling, Abel, & Garner, 2007). “Scatter beds” refer to the practice of placing acute mental health inpatients in general medical wards rather than specialized units or institutions. There is evidence of better outcomes and much shorter lengths of stay in Jamaica and the southern states of the United States, especially where the patient assisted in ward services during the recovery phase (Hickling, McCallum, Nooks, Rodgers-Johnson, 2000; Olfson, 1990).

4.2 Other systematic reviews

Dijkstra, Pieterse & Pruyn’s (2006) systematic review into the psychologically mediated effects of health facilities design on the health and well being of patients followed the Cochrane Collaboration’s methodology. Out of 4,000 papers and 500 potentially relevant studies, they found only 30 experimental designs with sufficient control of confounding variables for statistical confidence in the findings. Most studies were done in geriatric and dementia facilities with only two in mental health settings (Holahan & Saegert 1973; Christenfeld et al 1989). A meta-analysis could not be done because of the diversity of settings, design and methods. As noted in 4.1, the Christenfeld et al (1989) study included an evaluation of the environmental impacts on staff (Tanja-Dijkstra, & Pieterse, 2011).

The experimental study of Holahan & Saegert (1973) was a well-designed, randomized controlled trial and although there were only 25 subjects in two wards at

one site, it was of sufficient size for statistical power and is considered Level II evidence in our schema. Christenfeld's et al (1989) matched control before and after study (CBA) is considered to provide Level III evidence. According to the database APA PsycNET, the Holahan & Saegert (1973) has *only* been cited 13 times in the literature and Christenfeld et al (1989) study only 9 times. If this count is correct across all databases, it suggests that the most well designed and rigorous studies have had little impact on mental health facility design. And importantly, the study designs have not been replicated.

Nelstrop et al (2006) in a systematic review, concluded that there was insufficient evidence to determine whether seclusion and restraint were either safe or effective in the management of aggressive behaviour. The studies were done in adult psychiatric inpatient settings and emergency departments. The review included systematic reviews, controlled before and after studies (CBA), and qualitative studies. There were no randomized controlled trials, and of the 37 eligible studies all suffered from some methodological limitations. The authors concluded that in the absence of sound evidence, these treatments should be used with caution and only as a last resort.

Bower's et al (2010) systematic review on inpatient suicides identified 98 articles covering almost 15,000 suicides in the English, Dutch and German literature. The authors found too much variability in rates and demographic characteristics of patients to allow findings to be generalized. What could be concluded was that admission numbers and previous suicidal behavior were predictive of future suicide but the timing and location of successful suicide seemed to be associated with an absence of support or supervision, and the presence of family conflict.

4.3 Other methodologies

The NSW Health Centre for Mental Health³⁰ commissioned a non-systematic, targeted literature review on the effect of the built and natural environments on the mental health outcomes and the quality of life of psychiatric admissions, the staff and visitors (Coombes & Coombes, 2005). Literature was identified using google scholar and other accessible search engines; searches of targeted specialist libraries and journals, such as the Journal of Healthcare Design; and discussions with practitioners and researchers in the field, including those involved with the U.S.

³⁰a part of the Mental Health and Drug & Alcohol Office (MHDAO)

Centre for Health Design. The 46 papers selected covered the key material on evidence based design pertaining to physiological responses to design elements: gardens, nature views, quality of artificial light, sunlight and noise reduction. The authors did not include papers on patient safety or the impact of the symbolic environment on outcomes (Coombes & Coombes, 2005). Notably, the review was not published in the peer-reviewed literature.

A number of descriptive epidemiological studies were evaluated as Level IV evidence (Bowers et al, 2010; Cowman & Bowers, 2008; Brown, Chhina & Dye, 2008; Abderhalden, Needham, Dassen, Halfens, Fischer, & Haug, 2007). Some studies compared the incidence of seclusion and other containment measures across European jurisdictions (Taylor et al, 2009; Steinert et al, 2010). Only 6 articles from 12 European countries included comparable epidemiological data about the incidence of seclusion and restraint use (Steinert et al, 2010).

Other non-systematic reviews of the international literature have critically synthesized quantitative and qualitative data addressing the broader questions of environmental behaviour and outcomes (Dobrohotoff & Llewellyn-Jones, 2011; Steinert et al, 2010; Pati & Barach, 2010; van der Merwe, Bowers, Jones, Simpson, 2009; Rashid & Zimring, 2008; Ulrich et al, 2008; Wood, 2007; Joseph, 2006; Nelstrop et al, 2006; Devlin & Arneill, 2003; Ulrich & Zimring, 2004; Busch & Shore, 2000). There are a number of acceptable quasi-experimental, cross-sectional, case control and observational studies, evaluated at Level III or IV evidence in our framework (Bowers et al, 2009; Steinert et al, 2010).

One Delphi study on mental health practice and development across ten European countries was identified (Turton et al, 2010). Service users, mental health professionals, caregivers, and advocates identified eleven components of care important to recovery, including the institutional environment. It was considered important to involve patients in environmental redesign.

Since 2008 an increasing number of qualitative studies, usually ethnographic accounts or narrative analysis of interviews, have been published. The studies are of variable methodological rigour and trustworthiness, and the authenticity of interpretation has been variable. The studies explore the experience of both patients and staff, reflecting the increasing legitimacy of a patient-centred clinical discourse and collaborative models of care.

Johannsson, Skarsater & Danielson (2009) explored the conflicting meanings patients attach to living in locked wards (relief versus entrapment). Ashmore (2008) explored nurses' attitudes to the locking of wards and the prosaic, practical reasons for doing so. Frueh et al (2005) documented patient accounts of the terror they experienced during an inpatient stay, usually associated with a personal experience of assault, restraint or seclusion, or observing other patients' experience these events. A phenomenological study of a 30 bed unit in south-eastern USA by Shattell, Andes & Thomas (2008) found both staff and patients were dissatisfied with the lack of opportunity for therapeutic relationships in an understaffed, locked ward that had no outdoor spaces and limited activities.

In an interpretive descriptive analysis of interviews with 19 Swedish nurses, Bjorkdahl, Palminstierna & Hansebo (2010) found that nurses used caring approaches to build relationships and controlling, paternalistic approaches to keep wards safe.

The architectural literature is generally conceptual or comprised of expert criticism with limited published scientific research outputs (World Health Design, 2011; Forbes, 2010; Payne & May, 2009; Ulrich, 2006; Karlin & Zeiss, 2006; Lawson, 2005; 2002). There are also anecdotal reports by practitioners (World Health Design, 2011, Shaw, 2007, Willis, 1980) and technical descriptions of functional requirements for risk proofing a facility (Hunt, 2010; Hunt & Sine, 2010; Joseph & Mahbub, 2007; Gross et al, 1998). There are a number of speculative conceptual frameworks to explain environmental behaviours, such as 'salutogenesis'³¹ (focusing on the healing power of the environment rather than its pathogens) and 'biophilia', an hypothesis that human beings have a genetic propensity to respond to other living organisms which design properties should harness³² (Pati & Barach, 2010; Golembiewski, 2010; Codinhoto et al, 2009(b); Becker & Parsons, 2007; Lawson, 2005, 2002; Ulrich et al, 2008; Ulrich, 2006; Dickerman & Barach, 2005; Manoleas, 1991; Saper, 1968).

4.4 Behavioural Facility Guidelines

Facility guidelines are available in many jurisdictions. NSW was central to the development of the Australasian Health Facility Guidelines (AHFG) which is

³¹ Antonovsky, A. Unravelling the mystery of health: how people manage stress and stay well. Jossey-Bass; San Francisco

³²Wilson, E.O. 1984 Biophilia: The Human Bond with Other Species. Cambridge: Harvard University Press

generally used a project control tool, and specifies maximum briefing and design standards. The Guidelines are a consensus document based on a normative model of care and generic operational models. Variations from the Guideline need to be justified and formally approved. Their imposition tends to be strenuously resisted by the clinician and designer community.

The Guidelines do not, however, specify the most appropriate fixtures and fittings for purpose. In mental healthcare facilities design, the AHFG leaves it to the individual “client”³³, who may have to convene an inexperienced team, to produce a list of “harm-minimisation compliant hardware i.e. door furniture, coat hooks and towel rails, curtain tracks, plumbing fixtures and fittings.....” (AHFG, 2010 at 134.69.00). This adds unnecessary system variation including in cost and time, and potentially endangers patients and staff. Effectively, each facility or District must have their own dedicated staff to carry out this function, leading to unnecessary duplication and variability in the level of expertise bought to the problem. It would be more efficient to provide a mechanism for the sharing of knowledge across the system.

The United Kingdom’s Guidelines identify general good practice, but rarely specify spaces and sizes, for instance the minimum standards for secure physical environments include: “Bed numbers should preferably be 12 but no more than 15 (item 4.3.1)” and “Corridors should be wide enough to allow 3 abreast comfortably (item 4.3.9)” (Pereira & Clinton, 2002). The Royal College of Psychiatrist’s “Ten Standards for adult in-patient mental healthcare” are even more generic and patient centred. The only quantities referred to are a ward size limited to 18 beds, occupancy rates of less than 85%, and daily one-on-one contacts between staff and patients (RCPsych, 2011). The College’s Accreditation Standards for acute adult wards consist of policies and spatial categories, but do not specify bed numbers, areas or relationships. The first environmental safety standard is: “Whilst ensuring appropriate levels of security, patients are cared for in the least restrictive environment possible” (RC Psych, 2010 at 22.1 p.16)

The American solution has been to develop voluntary minimum standards, created by a collaborative of architects, engineers, doctors, nurses, regulators and facility owners, with detailed specifications for fixtures and fittings. The 4 year consensus

³³HI is the “client” in the procurement of health facilities. The inaccurate use of the term in the Guidelines reflects the general perception amongst users that they are the client.

process is fully transparent, with each recommendation available for public comment, requiring a full response and voting democratic process to make any changes in the guidelines (<http://fgiguideines.org/hgrc.php>)³⁴. For example, the Hunt & Sine (2010) Behavioural Facility Guideline based on the US Facilities Guidelines, endorsed by the National Association of Psychiatric Health Systems, provides a very detailed overview of design elements, and concise specifications for fixtures and fittings considered necessary to reduce the risk of violence and self-harm in a psychiatric facility. The Guideline presumes a risk-averse model of care (Sine 2008). Nevertheless, there is a need for appropriate architectural hardware, and such a level of detail could greatly add to the rigour, acceptance and uptake of the Australasian Health Facility Guidelines.

5.0 Research Findings

Lawson (2005) and Ulrich & Zimring (2004) estimated around 600-700 “reputable” pieces of published research on evidence-based design in all health care contexts (Pati & Barach, 2010; Codinhoto, Aouad, Tzortzopoulo, Kagioglou, 2009; Ulrich, Zimring, Zhu, DuBose, Seo, Choi, Quan, Joseph, 2008; Lawson, 2002). Collaborators from Texas A&M and Georgia Institute of Technology reviewed around 260 empirical studies on evidence based design (Ulrich et al, 2008). Although only one randomized controlled trial was identified, the authors asserted that there was a “reliable pattern of findings” about the impact of environmental factors on outcomes, especially in regard to noise, light and healing gardens. Professional practice and judgment of reliability and effectiveness may be realistic, but are not equivalent to statistical significance or rigorous qualitative study designs, so research findings may not be generalizable. Nevertheless, the studies clearly suggest that practitioners are of the view that a design will *help* or *hinder* the intended model of care, especially in mental healthcare facilities. The basic architectural precept is that form should follow function but the converse also holds: function is affected by form. Poor design will inhibit therapeutic purpose, and may negatively influence behavior. The

³⁴The US *Guidelines for Design and Construction Health Care Facilities* has a long history as a joint private public written document. The standards are revised every 4 years as needed. FGI is primarily interested in consensus methodology and in having the responsibility for overseeing the revision process. Specifically, FGI wants to make sure the Health Guidelines Revision Committee has (a) balance of representation from interest groups with expertise or jurisdiction; (b) Uses the consensus process; (c) Requests public input in the form of proposals for change and comments on proposed changes; (d) Reviews and revises the *Guidelines* on a timely basis to maintain a balance between a minimum standard and the state of the art in health care design and construction; and, (e) Operates under a formal set of bylaws governing its purpose, scope, membership, and goals to include information regarding “Duties and Responsibilities” and “Appointments, Terms and Officers.”

literature identifies a strong relationship between the environments of care and behavioural symptoms in psychiatric patients^{35,36} (Dobrohotoff & Llewellyn-Jones, 2011; Mahoney, Palyo, Napier & Giordano, 2009; Curtis, Gesler, Fabian, Francis & Priebe, 2007; Olver, Lowe, Daniel, Norman & Nicholls, 2007; Karlin & Zeiss, 2006; Dijkstra, Piertse & Pruyn, 2006; Devlin & Arneill, 2003; Kumar & Ng, 2001; Gross, Sasson, Zahry & Zohar, 1998; Flannery, Hanson & Penk, 1994; Christenfeld, Wagner, Pastva & Acrish, 1989; Whitehead, Polsky, Crookshank & Filk, 1984; Holahan & Saegert, 1973). It would seem essential for the clinical practice model to be translated into appropriate spaces and environments.

5.1 Evidence Based Design (Generic)

Evidence based design developed out of the evidence based medicine movement, and for a similar reason – to better understand tacit knowledge embedded in professional practice that was not necessarily founded on scientifically proven efficacy.

Architectural elements are combined in the design process to create forms intended to produce the physical, social and symbolic architectural patterns recognized by users as appropriate for the desired purpose³⁷ (Gesler, Bell, Curtis, Hubbard, & Francis, 2004). Human responses to built environments will be manifested physically, physiologically and psychologically but the association between stimuli and response have been inconsistently subjected to scientific scrutiny, (Codinhoto et al, 2009(a); Golembiewski, 2010).

5.1.1 Research Development

Over the last thirty years, an extensive empirical evidence about the impact of physical and physiological environments on safety, efficiency and clinical outcomes has been adduced (Pati & Barach, 2010; Codinhoto et al 2009; Ulrich et al, 2008; Becker, & Parsons, 2007; Ulrich, 1984). The impact of discrete, measurable, independent variables, such as light intensity, noise levels, lines of sight and walking distances on discrete, measurable dependent variables, such as heart rate, blood pressure and body temperature have been demonstrated (Codinhoto et al, 2009; Ulrich et al, 2008; Ulrich, 1984). More subtle psychological impacts are more challenging to study.

³⁵Winkel, G.H. & Holohan, C.J. (op cit 12)

³⁶Spivak, M. Sensory distortions in tunnels and corridors. *Psychiatric Services*. 1967; 18(1): 12-18

³⁷Alexander C, Ishikawa S, Silverstein M. *A Pattern Language: Town, Building, Construction*. 1977; Oxford University Press: Oxford

5.1.2 Direct and indirect impacts

There is now also a substantial body of evidence suggesting that the built environment has direct and indirect impacts on a general hospital patient's experience of care, satisfaction and outcomes (Dobrohotoff & Llewellyn-Jones, 2011; Forbes, 2010; Turton et al, 2010; Pati & Barach, 2010; Payne & May, 2009; Taylor et al, 2009; Codinhoto et al, 2009; Curtis et al, 2007; Dijkstra et al, 2005; Ulrich et al, 2008; Borge & Fagermoen, 2008; Curtis et al, 2007; Devlin & Arneill, 2003; Middelboe, Schjodt, Byrstring & Gerris, 2001; Christenfeld et al, 1989; Holahan & Saegert, 1975). Effects on the wellbeing and performance of staff, as measured in satisfaction, stress level, mood, absenteeism, injury, fatigue and propensity for error, have also been documented (Tanja-Dijkstra & Pieterse, 2011; Payne & May, 2009; Pati, Harvey & Barach, 2008; Anjali & Mahbub, 2007; Tyson, Lambert & Beattie, 2002; Christenfeld et al, 1989). Staff feelings of well being are essential for the delivery of quality patient care (Tyson, Lambert, & Beattie, 2002; Christenfeld et al, 1989; Dickerman & Barach, 2005).

5.1.3 Social and symbolic environments

The impact of the built environment on well being is not fully explained by physical and physiological effects, particularly in mental healthcare environments. Social and symbolic elements of spaces are central to behavioural responses and figure prominently in the elicited preferences of patients and staff (Curtis et al, 2009; Payne & May, 2009; Ulrich et al, 2008; Curtis et al, 2007; Vaaler et al, 2005; Zeisel, 2004; Devlin & Arneill, 2003; Scull, 1975).

The most important environmental elements in a therapeutic environment have been identified as: personal control, privacy, opportunities to socialize, views, natural light and ventilation, contact with nature, environmental comfort, legibility of space, and distractions (Arya, 2011; Golembewski, 2010; Mahoney et al, 2009; Codinhoto et al, 2009; Payne & May, 2009; Olver et al, 2009; Borge & Fagermoen, 2008; Ulrich et al 2008; Curtis et al, 2007; Joseph & Mahbub, 2007; Bilchik, 2002; Middelboe et al, 2001).

In a linear regression model developed by Middlebroe, Schodjt, Byrstring, & Gjerris (2001), relationships and system maintenance predicted 41% of variance in attitudes towards care environments. The perceived staff control was negatively correlated

with satisfaction. Responding appropriately to these evidence based preferences is fundamental to the achievement of *patient centred design*.

These effects indirectly impact on operational costs by influencing the length of stay, absenteeism, and the risk of physical harm to people and property. (Payne & May, 2009; Olver et al, 2009; Vaaler, Morken, & Linaker, 2005; Ulrich et al, 2008; Ulrich, 1984). Cost efficiencies can be designed into a facility by influencing behavior in a desired direction, and by improving the relationship between the patients/clients, the built space and clinicians (Gesler et al, 2004). Behaviours can be considered symptomatic of the interaction between the characteristics of people and the characteristics of the environment. Identifying and controlling environmental stressors in the design may change behaviours and reduce costs^{38, 39, 40} (Forbes, 2009; Zeisel, 2004; Gesler et al, 2004; Whittington & Richter, 2002; Brooks et al, 1994; Flannery et al, 1994).

5.2 Patient Centered Design

Historically, as with all clinical care, the physical and functional needs of clinical staff have dominated physical environment decision making in mental healthcare. This is reflected in the choice of social and symbolic design elements: large institutions; an emphasis on surveillance; and, impersonal dormitories for the ‘passive’ bodies awaiting a medical intervention.⁴¹ This clinician-centric approach is still dominant; for example, although the AHFG recommends, in line with the espoused model of care, the provision of domestic beds for psychiatric patients, compliance is made subject to the “needs of the staff who may still have to make beds” (AHFG at 134.32.00). Hospital designs need to be devised from the patient’s perspective, and address their anxieties and concerns about their illness, treatment, and well-being (Turton et al, 2010; Borge & Fagermoen, 2010; Shattell et al, 2008; Curtis et al, 2007; Lawson, 2005; Zeisel, 2004; Middelboe et al, 2001; Christenfeld et al, 1989).

Healthcare providers around the world now routinely include patients (usually former clients) in the planning and design process to ensure a patient’s perspective and experience is taken into account. The ultimate user of the facility, the one who

³⁸Winkel, G.H. & Holohan, C.J. op cit 12

³⁹Saegert, S. Environmental psychology and the world beyond the mind. The G. Stanley Hall Lecture Series. 1986; 6:133-164

⁴⁰Winkel, G.H. & Saegert, S. Environmental Psychology. Annual Review of Psychology. 1990; 41:441-77

⁴¹Foucault M. The Birth of the Clinic: An archaeology of medical perception. 1973; Routledge Classics: London (Translated by A.M. Sheridan); Discipline and Punish: the birth of the prison. 1977. Penguin Books: Middlesex, England

will live on site for 24 hours a day, possibly for a number of months, is the patient. Involving the patient in the development of policy and care programs that affect them is expected to have significant benefits (Australian Government, 2010). In the seminal Holahan & Saegert (1975) study, remodeling of the experimental ward was based on the preferences and dislikes of both patients and staff, as elicited in interviews. Such an approach has been adopted in the planning of private mental healthcare facilities, such as St John of God in Sydney, and Jellinik in Amsterdam (personal communication and site visit, 2011).

Clinician-centred design has been actively contested in a number of clinical domains in recent years, notably dementia care, paediatrics, and obstetrics, where the functional imperatives of clinicians about spatial design have been subsumed to the elicited preferences and needs of the client group.

Designs have become increasingly patient centred in the care of Alzheimer patients and others with cognitive impairments (Forbes, 2010; Zeisel, 2004; Fleming, Forbes, & Bennett, 2004). The situations and environmental relationships in which undesirable behaviours are manifested are studied, and the needed changes are implemented. This helps to address the nexus between the characteristics of the person/people and the characteristics of the environment (Curtis et al, 2007; Zeisel, 2004; Flannery, 1994).

“Before treating a symptom, it must be identified, analyzed, and assessed in order to determine what to do to reduce it. The first step is therefore essentially one of describing the symptom and assessing the context within which it occurs. Identifying a symptom and its elements means to study it closely enough to understand what might be done to reduce it.” (Zeisel, 2004, p.37).

At the Calgary Children’s Hospital in Alberta, Canada, children were actively involved in the briefing process and windows were scaled to their preferences (personal communication 2007 and <http://www.crha-health.ab.ca/ACH/>). At the San Diego Children’s Hospital in the United States, an inaugural member of the Centre for Health Design’s *‘Pebble Project’*⁴², the client was asked to evoke meanings that would inform the design and not produce a list of functions and schedules of

⁴² “Pebble Project” refers to a learning collaborative of 41 healthcare organisations to measure, document and evaluate the merits of evidence-based design. The work is aligned with the research of the Centre for Health Design. The title refers to the ripple effect of a pebble cast into water.

accommodation. The result was a building that addressed the ambient needs of patients, respected and reflected the community's ethos, while still meeting functional criteria (Bilchik, 2002)⁴³. The architectural solution produced an entirely new and transformative environment to meet the care delivery model.

Similarly, the modern birthing suite's domestic furnishings, partner accommodation and bathing options address client demand for a muting of the clinical environment during what is considered a natural, intimate and profound human experience.⁴⁴ The "Planetree Model" from the United States provides the most dramatic illustration of responsive and innovative healthcare facility design, with the use of domestic design elements and scale, and personalized interior designs, in general acute facilities.

6.0 Evidence Based Design (Mental Health)

The design challenges in mental health facilities design involves resolving the tension between therapeutic and custodial models of care (Edginton 2003; Whitehead, Ellison, Kerpen & Marshall, 1976; Scull, 1975). Safety concerns are today articulated in terms of "risk management". Patient risk is assessed from a disease or intra-personality approach in a "structured clinical judgment" model of decision-making that seeks to balance actuarial methods and clinical judgment (Lamont & Brunero, 2009; Wood, 2007). Successful identification of the intra-personality precursors of violence and self-harm has however proven problematic.

Behaviour is situational and the result of interaction between the person and their environments (NSW Health, 2004; Fleming et al, 2003; Whittington & Richter, 2002; Flannery, 1994; Brooks et al, 1994)⁴⁵. The risk management paradigm masks the issues that underlie the balance between safety and therapy, but is not entirely effective or sufficient (Moon 2006). The 2006 United Kingdom National Confidential Inquiry in Suicide and Homicide by People with Mental Illness found that *86% of successful suicides were by people considered at low or no risk.*⁴⁶ The stabbing death of an experienced 63 year old nurse at Bloomfield Hospital in Orange

⁴³Sadler B & Ridenour A. Transforming the Health Care Experience Through the Arts. 2009; Aesthetics Inc: San Diego.

⁴⁴Fourer M, Leap N, Davis D L, Forbes I F, Homer CSE. Testing the Birth Unit Design Spatial Evaluation Tool (BUDSET) in Australia: A Pilot Study. HERD. 2011; 4(2): 36-57.

⁴⁵New South Wales Health. Suicide Risk Assessment and Management Protocols: mental health inpatient unit. 2004; NSW Department of Health: North Sydney

⁴⁶New South Wales Health. Op cit 40 at 29

in January 2011 was at the hands of a *voluntary treated patient assessed as being at low risk and admitted to one of the domicile “cottages” and not the acute unit.*⁴⁷

An emphasis on risk identification, emphasizing the dangers posed by those exhibiting abnormal behaviours, can also be antithetical to the ‘recovery’ model of care (Johansson et al, 2009, Moon, 2000; Edginton, 2003, Scull, 1975). The quality of the interactions between staff and patients in the place of refuge are core to modern psychotherapy (Ayra, 2011; Strout, 2010; Taylor, 2009; Curtis et al, 2009; Mahoney et al, 2009; Curtis et al, 2007; Freeth, 2007; Middelboe et al, 2001). Taylor et al (2009 at p.78) describes the therapeutic relationship as “one of the most potent predictors of patient outcomes in psychotherapy”. It is through interactions and meaningful, trusting engagement with nurses and doctors that the traumatized patient learns to redevelop their self-esteem and competence in physical and social environments (Turton et al, 2010; Mahoney et al, 2009; Curtis et al, 2009; Borge & Fagermoen, 2008; Gesler et al, 2004; Devlin & Arneill, 2002).

There is evidence that ‘carceral’ environments may exacerbate negative feelings of self that promote ideations of depression, suicide and self-harm (Bowers et al, 2010; Muralidhadin & Fenton, 2006; Salias & Fenton, 2000). Enhanced security alone will not militate against event risk. These avoidable adverse events continue *despite intrusive surveillance measures*. The literature suggests it is the psychologically mediated effects of the social and symbolic elements that are more strongly implicated in therapeutic outcomes.

6.1 Places of Violence

Mental health units are places of interpersonal violence but incident rates are poorly recorded without agreed definitions or denominators to facilitate comparison (Bowers et al, 2010). Near misses, the cornerstone of a safety and learning culture, are mostly not recorded nor analysed (Barach & Small, 2000). Additionally there are the typical problems encountered with any surveillance system: no operational, or inconsistent, definitions; subjectivity in categorizing seriousness; and the voluntary nature of reporting. These limitations mean that studies may not be comparable; data collection will be incomplete; the extent of the incompleteness will not be

⁴⁷“Three inquiries into fatal hospital stabbing” January 7, 2011 Sydney Morning Herald

known; and, comparison of risk factors will be difficult (Steinart et al, 2009; Lamont & Brunerio, 2009; Lawoko et al, 2004; Wood, 2007).^{48, 49}

In Australia, Cleary, Hunt & Walter (2010) reported that 14% of acute patients commit some form of violence against staff. The NSW Mental Health Sentinel Events Review Committee identified three serious inpatient assaults on staff in NSW facilities in 2005 and 2006 (reported at the highest Severity Assessment Code - SAC 1). One of the incidents involved 4 staff (NSW Health, 2008). In a review of studies, Lawoko, Soares & Nolan (2004) reported that up to 70% of psychiatric staff experienced violence at work each year with 42% to 100% reporting being exposed to violence over their career. Abderhalden et al (2007) reported 760 registered incidents of aggression in a prospective, multi-centre study of 24 acute admission wards in 12 psychiatric hospitals in Switzerland. This equated to 0.6 actual attacks per 100 treatment days and an overall aggression rate of 1.83 incidents per 100 treatment days. No association was found with age or gender.

In the UK, the Royal College of Psychiatrists' 2005 National Audit of Violence reported 30% of patients, 41% of clinical staff and 80% of nursing staff experiencing violent or threatening behaviours towards them (Bowers, Allan, Simpson, Jones, & Van der Merwe, 2009). Whittington & Richter (2005) cited a National Audit Office rate of 35 incidents per 1,000 staff in 2003. Kumar & Ng (2001) reported on a 1985 study that looked at 566 psychiatric and 898 non-psychiatric beds in 16 hospitals across the United States and found a range from 2.54 assaults per bed annually in psychiatric units to 0.37 assaults in non-psychiatric units. The UK rate of damaging attack on people and property was reported as 0.65; for Belgium 1 attack per bed annually; Sweden has reported 13 attacks per occupied bed annually (Kumar & Ng, 2001).

Assault incident rates have been steadily increasing. Cowman & Bowers (2008) reported that assaults on nursing staff in Ireland increased from 8% to 17% over the five years culminating in 1999. The change was attributed to the development of a risk management ideology and improved incident reporting, rather than more aggressive patients. An alternative explanation could be the reported increase in the

⁴⁸Barach, P., Small DS. Reporting and preventing medical mishaps: Lessons from non-medical near miss reporting systems. *British Medical Journal* 2000; 320:753-763.

⁴⁹Braithwaite, J.; Travaglia, J.; Westbrook, M.T.; Jorm, C.; Hunter, C.; Carroll, K.; Iedema, R.; Ekambaraeshwar, M. Incident Information Management System in NSW: Overview of Studies. 2006; Centre for Clinical Governance Research in Health, Faculty of Medicine, UNSW: Sydney

incidence of dual diagnosis admissions, often when the patient is under the influence of an illicit substance. Improved reporting capabilities and cultures could be implicated.

Data collected over twenty years in the Massachusetts Assaulted Staff Action Program (ASAP) recorded 2,548 incidents until 2010. The average age of male assailants was 35 years with a diagnosis of schizophrenia and a history of assault and substance abuse. Female assailants were younger with personality disorders, personal victimization and substance abuse (Flannery, Farley, Tierney, & Waller, 2010). The study estimated 15% to 30% of inpatients were involved in an assault, and the prevalence ranged from 0.15 assaults per year to as high as 88.8 incidents per bed per year (Flannery et al, 2010). Flannery et al (2010) links a history of substance abuse with significantly increased risk of violence. In Flannery's et al (1994) review, no violence by women was mentioned, but in the 2010 study woman accounted for almost 50% of incidents.

In multivariate cross-sectional study conducted over six months in 136 acute units in 26 UK NHS trusts, Bowers et al (2010; 2009) found that aggressive behaviour was associated with: compulsory detention; alcohol use; locked wards; high patient turnover; staff turnover and larger numbers of staff. The positive relationship between high staffing numbers and rates is counter-intuitive and was not explained. Potential rival explanations included: that more staff meant increased surveillance, and thus increased the opportunity for more "flashpoint" situations, or more staff was indicative of greater patient acuity and thus, increased the risk was greater.

In the United Kingdom, aggressive incidents during admission are more frequent among young, psychotic males with dual diagnosis and young, inexperienced male staff, particularly when they had attempted to enforce rules (Olver et al, 2010; Bowers et al, 2010; Bowers et al, 2009; Whittington & Richter, 2005; Nolan et al, 2005).

Lawoko et al (2004), in a comparison 8 Swedish health districts and 5 Mental Health Trusts in the West Midlands of England, found that British nurses were at more risk of patient violence than their Swedish counterparts, and male nurses were at the highest risk. But environmental factors were also identified. The British facilities had comparatively poorer physical environments and the practice of team nursing was less frequent. The odds of a staff member being abused increased with

increasing age, physical strain and *their own dissatisfaction with the quality of care they were providing to patients.*

6.1.1 People-environmental interactions

The interaction between people and their environments may determine the trajectory of interpersonal encounters in any context. This applies to “normal” situations of conflict outside the institution as well as within it (Nolan, Shope, Citrome, & Volavka, 2009; Bowers et al, 2010; Whittington & Richter, 2005; Lawoko et al, 2004; NSW Health, 2004; Flannery et al, 1994; Brooks, Gilead & Daniels, 1994).^{50, 51}

Flannery et al (2003) in a retrospective analysis of five years of data from the Assaulted Staff Action Program, a program to support staff who had been victims of patient violence, found no specific pattern of patient or staff characteristics precipitated violence and emphasized that it was the unique interaction effect of person characteristics (staff & patients), the event, and the environment (organizational and material), that could cause violence. Nevertheless, the most frequently occurring precipitants were: excessive sensory stimulation (event or ward busyness), staff restrictions on patient behavior (event of control), and acute psychosis (personal state).

The disciplinary correction of patients for violating rules is the most frequently known cause of conflict with staff (van der Merwe, Bowers, Jones, Simpson, & Haglund, 2009; Cowman & Bowers, 2008; Curtis, Gesler, Fabian, Francis, & Priebe, 2007; Devlin & Arneill, 2003). Whittington & Richter (2005) found that many acts of violence followed frustration or rule imposition: “*Both patients and staff were coping with the perceived threat of the other in a context of uncertainty. The combination of misunderstanding, reciprocal anger, and need for safety underpin escalating tensions*”. Environmental elements introduced to assert or symbolize control over patients are likely to exacerbate these feelings of anger, fear and uncertainty, increasing the potential for intransigence to escalate into violence.

Nolan, Shope, Citrome & Volavka (2009) found that staff and patients had different explanations for the underlying causes of aggressive incidents, with patients attributing the conflict to external factors rather than internal states. The literature supports the notion that violence can be the outcome of poor therapy and is

⁵⁰ Winkel, G.H. & Saegert, S. op cit 23

⁵¹ Saegert, S. op cit 22

indicative of poorly managed interpersonal interactions and a failure in de-escalation techniques (Arya, 2011; Strout, 2010; Taylor, 2009; Curtis et al, 2009; Mahoney et al, 2009; Curtis et al, 2007; Freeth, 2007; Middelboe et al, 2001).

The material environment may also be assaulted. Damage has been postulated to occur when social density is perceived as too great and personal territory intruded (Hall, 1990; 1973; Goffman, 1961; Somers, 1969.). It is also associated with locked wards, restraint and seclusion (Vaaler, Morken, & Linaker, 2005).

6.1.2 Crowding and violence

Perceived crowding, associated with the social density of patient populations, has been identified as a primary risk factor for violence (Kumar & Ng, 2001). Crowding is a violation of autonomous control over social and other interactions (Kumar & Ng, 2001, Brooks et al, 1994, Somer, 1969).^{52,53} Kumar & Ng (2001) suggest that the reported increase in violence in acute wards in Australia and New Zealand may be attributable to the lack of acute beds to meet demand (because of the emphasis on community care), leading to over-crowding in the available acute units.

Self-reported stress, observed behaviours and elevated biochemical indices are associated with uncomfortable levels of social density. Kumar & Ng (2001) suggest that the high stress level precipitates violence because ward activities are misinterpreted and/or threshold tolerance levels are breached. People need space to retreat and other places to interact. People need activity spaces. The research clearly suggests that people need to control their own movements between these spaces. Perceived encroachment across boundaries into personal territory are associated with the distancing behaviours of withdrawal and violence (Whitehead et al, 1984; Holahan & Saegert, 1973).

Most episodes of violence are reported at the point of admission, particularly the index admission, when a patient's behaviour and internal state is most altered, the sense of "crowding" and threat are at its most intense, and patients are in the greatest state of distress and turmoil. Aggression may also be attributable to the perceptual distortions experienced by people in a psychotic state and under influence of illicit drugs, whereby their sense of personal territory extends to as much as four

times that needed for comfort ordinarily (Brooks, Gilead, & Daniels, 1994). The aggression is a defensive response, rather than an offensive one.

This problem of perceived crowding is recognized in the Australasian Health Facility Guidelines, with allowances for slightly larger room sizes and an extra one square metre in the observation unit's seclusion room. (Note that at 134.36.00 the Guideline refers to the NSW Health policy document "Restraint, Seclusion and Transport Guidelines for Patients with Behavioural Disturbances", which specifies seclusion rooms of 15 square metres but then an area of only 14 square metres is specified in the Schedule of Accommodation). Generous spaces are needed, especially in shared areas such as kitchen and lounges, and especially when experiencing a violent or psychotic episode.

6.2 Containment - seclusion and restraint

The Cochrane Systematic Reviews on seclusion and restraint have found no evidence of therapeutic value in their use. Salias & Fenton (2000, 2009) reported "*a shocking lack of published trials assessing the effects*", and identified several qualitative studies in which significant patient harm was reported (Busch & Shore, 2000). No other psychiatric treatments "*are so lacking in basic information about their proper use and efficacy*" (Salias & Fenton, 2000; 2009 p.3). No studies examined seclusion as a clinical intervention and few used seclusion as an outcome measure. The frequency of seclusion is extremely variable with reports of its use between 2% and 51% of inpatients (Taylor et al, 2009).

In an international multi-centred epidemiological review of restraint and seclusion usage, patient diagnosis was not considered in decisions to seclude (Steinert et al, 2010). Other published studies demonstrate a relationship between policy, perception, staff training, and gender on clinical practice and the spaces required to support clinical functions (Bowers et al, 2010; 2009). A number of multi-centre retrospective epidemiological studies found that variations in seclusion rates and reports of violence had more to do with local practice, tradition and regulatory regimes than therapeutic need (Bowers et al, 2009; Taylor et al, 2009; Cowman & Bowers, 2008). Nelstrop's et al (2006) systematic review found no evidence that containment strategies were effective or safe and concluded that these treatments should be used as a last resort.

Busch & Shore (2000) found that variation in the use of seclusion was independent of case mix, acuity or other patient characteristics. The authors concluded that the use of containment strategies was based more on exigency than evidence based medicine. After pooling retrospective data from six inpatient units, Brooks, Gilead & Daniels (1994) found a significant and strong positive relationship between the use of seclusion and overcrowding.

In the City 136 study, Bowers, Van der Merwe, Nijman, Hamilton, Noorthorn, Stewart & Muir-Cochrane (2010) found that seclusion and time-out were positively correlated in 136 (or 25%) of acute psychiatric wards in the UK. The authors considered that the therapies were not alternatives but possibly complimentary and that the use of the more coercive seclusion therapy was associated with (i) risk averse organizational cultures at the macro and ward level; (ii) staff perceptions of behavior and risk; (iii) philosophy of care; and, (iv) positively correlated with numbers of staff, particularly the numbers of male staff. *Better attitudes toward difficult patients, as measured on a standard scale, were associated with lower seclusion rates. There was no evidence of a relationship between the use of coercion and reduced aggression, self-harm and medication related conflicts.*

Reports in the literature on the attitude of patients towards seclusion are contradictory and frequently ambivalent, alternating between a sense of sanctuary, and feelings of entrapment associated with a loss of autonomy (Johannsson et al, 2009; Schjodt, Byrstring, & Gjerris, 2001). Whilst in general the feelings are ones of fear, despair and debasement, some studies have found patients who recount positive feelings towards seclusion, although negative feelings were greater overall (Johannsson et al, 2009). Positive feelings were reported in over-crowded or run-down wards with shared bedrooms and limited or no private spaces - except the seclusion room (Stolker et al, 2006). UK research confirms that that patient's perceptions of seclusion were only positive where there were few private spaces; otherwise it was considered unpalatable (Bowers et al 2010). In the Netherlands, Stolker, Nijman & Zwanikken (2006) found that 54 of 78 consecutively secluded patients held less negative views of seclusion where there was a lack of private space on the wards. They did not hold positive views, just less negative views.

In Queensland study, Roberts, Crompton, Milligan & Groves (2009) found that service users and staff held quite opposing views as to the therapeutic value and

experience of seclusion. The 12 patients in the study viewed seclusion as a punishment for non-adherence to treatment, or for failing to comply with staff directions; whereas, 54% (71) of staff *assumed* there was a therapeutically defensible calming effect on patients. Few staff viewed it as punishment. Patients described the experience as traumatic, and associated it with feelings of anger, entrapment, fear, sorrow, insecurity and aloneness. The authors reported that the existing unit was environmentally unpleasant with no private places, no outdoor space, and the cigarette smoke poorly ventilated. The seclusion rate was 12% compared to 10% nationally, and the re-seclusion rate was 76% compared to a rate of 31% nationally. 87% of seclusion episodes in the Queensland hospital were for periods longer than 4 hours, compared to 41% nationally.

6.3 Sanctuary Harm

Admission to a mental health facility is now recognized as a significant trauma in itself, known as “sanctuary harm” (Frueh et al, 2005). Patients talk of feelings of anxiety, fear and terror, and the experiences may trigger Post Traumatic Stress Disorder (PTSD) (Strout, 2010; Steinert et al, 2010; Frueh et al, 2005; Middelboe et al, 2001). A 2004 survey in the UK found that 27% of respondents rarely felt safe and 50% of recent or current inpatients reported experiencing some form of aggression against them (Bowers et al, 2009). In a randomized cross-sectional study in South Carolina, Frueh et al (2005) found high rates of lifetime trauma were associated with psychiatric settings. The 142 randomly selected participants reported traumatic events such as physical assault (31%) and witnessing traumatic events (63%). Frightening experiences included: violent patients (65%), seclusion (59%), restraint (34%) and handcuffed transport (65%).

In qualitative studies, patients speak of their fear of both the nurses and other patients; and, they speak of the terror of witnessing, or being the victim of violence, during an admission (Frueh et al, 2005). Others speak of their anger with rules and directions. Patient and staff interpretations of the underlying causes of conflict have been shown to differ (Nolan et al, 2009). In a cross-sectional investigation into the relationship between the patient’s perceptions of real and ideal wards, 45% of variance was explained by the Support, Order & Organisation and Autonomy factors. These factors were the most valuable in creating a therapeutic milieu. Notably, being

under the control of the staff was very negatively correlated with satisfaction (Middelboe et al, 2001).

6.4 Places of Self-harm

Self-harm in mental healthcare facilities is of major concern to clinicians and families. Submissions to the 2008 *Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals (the Garling Inquiry)* led to the recommendation that mental healthcare units be accommodated solely on ground floors, and that ligature points must be designed out of facilities. NSW Health has mandated the use of the risk management tool, *Access to Means of Suicide and Deliberate Self-Harm Facility Checklist*, to identify and control risks. The tool emphasizes ligature risks such as: door handles; fixed shower rails; hand basin fittings; wardrobe rails; non-weight bearing rails; and potential hanging points in courtyards.^{54, 55}

The NSW Mental Health Sentinel Events Review Committee noted that inpatient suicides were infrequent and trending downwards. Annually there are 25,000 overnight mental health admissions and 3 to 4 inpatient suicides⁵⁶. All deaths have been by hanging. Between 1999 and 2006 there were 13 inpatient deaths, a further 8 while on unauthorized leave, and 22 while on authorized leave. Most events took place in community settings and *not in acute care units*.⁵⁷ Gournay (2006) reported that only 4% of suicides in the United Kingdom occurred in psychiatric inpatient facilities, although up to a quarter of people had had some interaction with the health services prior to their death⁵⁸. Of the 200 inpatient cases in the UK, deaths on the wards were most commonly by hanging (74%), with suicide by jumping from a height only being reported outside hospital grounds.

The NSW coroner has held NSW Health responsible for the prevention of patient suicides.⁵⁹ Root cause analyses (RCA) have found that failures in “care planning” overwhelmingly contributed to the suicide deaths. The failures arose in risk

⁵⁴New South Wales Health. NSW Government’s Final Response: tracking tragedy. 4th Report of the Mental Health Sentennial Events Committee. http://www.health.nsw.gov.au/pubs/2009/final_response.html

⁵⁵New South Wales Health. 2004; op cit 38

⁵⁶New South Wales Health. Op cit 40 at v and 13

⁵⁷Clinical Excellence Commission. Clinical Incident Monitoring in the NSW Public Hospital System: looking, learning, acting. July-December 2009. http://www.cec.health.nsw.gov.au/__data/assets/pdf_file/0017/154250/Incident_Report_2009_Jul-Dec.pdf

⁵⁸University of Manchester. 2010. National Confidential Inquiry into Suicide and Homicide by people with mental illness. www.doh.gov.uk/mentalhealth/safetyfirst

⁵⁹Justice & Attorney General. Coroner’s Recommendations and Government Responses – June 2010 to December 2010. Findings in the deaths of ‘AK’; ‘AM’; Suppressed #2; White M.

assessment, discharge planning, continuity of care, and in creating rapport with carers.⁶⁰

In a systematic review of 98 articles covering 15,000 inpatient suicides in Europe, Bowers, Banda & Nijman (2010) found significant variability in rates and demographic characteristics. The incidence of suicide per 1,000 admissions varied from 0.06 in one German region to 5.66 in the United States. Pooling of 20 year old data from 14 studies gave an inpatient suicide rate per 100,000, or a range of 0.28 to 2.8 annually. The pooling of data from 5 recent studies estimated that the rate as a proportion of all suicides was anywhere from between 0.01 to 0.15. The highest risk was occurred early in an admission, as number of admissions over the period, and with previous suicidal behaviour. Given the variability, Bowers, Banda & Nijman (2010) concluded that inpatient suicide was strongly determined by the service organization and social factors, rather than the intrinsic patient factors (at p.316). The timing and location of suicides was associated with an absence of support, supervision, and the presence of family conflict.

6.5 Places of Boredom

Boredom is rarely mentioned in the literature but is identified as a persistent problem by patients (Arya, 2011, Curtis et al, 2007; Shattell et al, 2008; Ulrich et al, 2008; Christenfeld et al, 1989).

In a phenomenological study at a southeastern US facility, where there were no outdoor spaces and no occupational therapy program, staff and patients were asked: “What stands out about this facility?” Patients reported boredom whilst nurses felt pressure and chaos. Nurses felt caged-in by the enclosed Nurse Station and patients felt the same way about the locked ward. The lack of activity and stimulation for the patients meant they dwelt on the frustrations of being locked-in.

Patients experienced feelings of powerlessness, intimidation, harassment, suffocation and lack of control. Patients felt imprisoned and yearned for access to outside spaces. Administrative pressures impeded nurse-patient relationships. Nurses felt intimidated by the management. Patients who did not comply with rules were intimidated, overpowered and forcibly medicated. Therapeutic relationships with staff were almost entirely missing. Patients only experienced care in

⁶⁰Ibid p 18

interactions with other patients. One nurse commented on the impact of the unit's design on relationships as follows:

“If you are separated to such a degree that you're not even....able to visualize each other, know what's going on, then 'out of sight, out of mind'. Your reality becomes what you see in front of your eyes...staff starts reacting with each other more than they interact with patients. Because that's who you're seeing. That's who's in your world.”

7.0 The therapeutic environment

7.1 *Psychologically mediated effects*

Psychologically mediated effects are difficult to measure and understand. There are few controlled trials, studies in naturalistic settings are rarely replicated, the many confounding variables cannot be controlled, and the context of qualitative studies may be too unique to be relevant to other settings (Dijkstra et al, 2006).

Tanja-Dijkstra & Peitersen's (2011) Cochrane Collaboration Systematic Review on the psychological effects of a new psychiatric ward environment on the performance and well-being of staff found only 1 study out of the 851 retrieved from the database that met inclusion criteria, despite allowing for non-randomized study designs. The outcomes measures in the Christenfeld et al (1989) study included job satisfaction, satisfaction with the physical environment, quality of life, quality of care as well as objective measures, such as absenteeism.

Studies have reported positive behavioural responses when patients are moved to more appealing environments - and the mood and perspective of staff has also been affected by an improved working environment, so the direction of causation is impossible to establish. The staff could simply be more tolerant and less intent on enforcing rules in the nicer environment (Tyson et al, 2002; Christenfeld, 1989; Maslow, 1956). Staff are clearly affected by their physical working environment:

“It's new, and it's tidy and it's neat, and for me that's important because it reflects...what you think of people, and what you think of the service users you're helping.” (Curtis et al, 2007; staff member at 599)

A British clinician in a new inpatient unit in East London (built as a private finance initiative) bemoaned the inclusion of vision panels in bedroom doors:

“They create a prison-like atmosphere....they shift focus from engagement, therapy and trust to disengagement and mistrust” (Curtis et al, 2007 at p.600)

Another clinician at the same East London facility observed:

“And the doors are unlocked and that’s made a huge difference....the amount of violence I saw there [at a previous mental health centre]...and aggression, hostility, and sort of bad relationships between clients and staff....it’s very, very different” (Curtis et al, 2007 at p.600).

A nurse explained the symbolic significance of locked doors to staff and patients. Custodial elements are associated with the exercise of power and domination:

“..it’s much less custodial, I think our feeling of power as nurses, and those things we experienced, having an unlocked door was quite un-nerving, but actually its worked very, very, very well and I wouldn’t want to work on a key ward that’s got a locked door now....You can’t walk into a ward; there is controlled access, but you can leave without unlocking the door, it’s totally different.” (Curtis et al, 2009 at p.344)

The spatial and functional requirements for safe and efficient care, such as appropriate lighting, contained noise levels and single bedrooms, are relevant to patient-centred care. However, the “person-environment fit” in terms of social and symbolic environments is also important to therapeutic outcomes. These can be neglected in health facilities planning processes, where briefing can be narrowly focused on ‘schedules of accommodation’ and technical functionality, such as hardiness of the building fabric and absence of ligature points (Hunt & Sine, 2010; Mahoney et al, 2009; Hunt & Sine, 2009; Lawson, 2002; Gesler et al, 2004; Devlin & Arneill, 2003).

Over-specification of functional preferences to accommodate all levels of risk aversion amongst clinicians and service providers, rather than consideration of the broader therapeutic purpose of the space, can lead to symbolic assertions of domination over patients that is inimical to good patient outcomes (Qurashi et al, 2010; Payne & Day, 2009; Hignett, 2009; Muralidharan & Fenton, 2006; Frueh et al, 2005; Gesler et al, 2004; Middelboe et al, 2001).

'Salutogenic' or healing architectural forms and elements have been repeated across multiple sites and are associated with similar, positive patient outcomes (Ulrich et al, 2008). Ethnographic studies and the narrative accounts of patients and staff provide further evidence that the salutogenic environmental elements used in practice are strongly associated with health and well-being (Curtis et al, 2009; Borge & Fagermoen, 2008; Middelboe et al, 2001). Both patients and staff have reported that the most prized, yet frequently absent, part of an admission were positive therapeutic interactions (Gilburt, Rose & Slade, 2008; Curtis et al, 2007). Shattell et al (2004) found that both administrative policies and the physical environment were implicated in preventing the building of these relationships. Patients have commented on the lack of dedicated, reflective spaces for prayer and spiritual meditation in units (Curtis et al, 2007).

The surveillance, control and domination model of mental health care is an artifact of the origin of the psychiatric institution as a warehouse for the subjugation and control of those perceived as dangerous to themselves and to society (Strout, 2010; Curtis, 2009; Edington, 2003; Hickling, McCallum, Nooks & Rodgers-Johnson, 2000; Harding, 1987; Christenfel et al, d 1989). The environmental manifestations of the custodial model symbolize the *in situ* relational dynamic and include: locked wards; seclusion rooms; overt, high perimeter walls; keyed central access; enclosed nurse stations and close-circuit television (CCTV) (Curtis et al, 2007; Whittington & Richter, 2005; Edington, 2003; Willis, 1980).

7.2 The problem of clinical practice

Custodial practice norms have proven very resilient over time. It is very difficult to change clinical practices, particularly when professional training has occurred in environments with inappropriate social or symbolic elements structuring relational dynamics and expectations (Bowers et al, 2010; Ashmore, 2008; Whittington & Richter, 2005). Plexi-glassed, closed nurse stations are not conducive to the building of trusting relationship between staff and patients (Shattell, Andes & Thomas, 2008; Curtis et al, 2007). Dreary, damaged spaces are not conducive to energized social participation (Christenfeld et al, 1989; Holahan & Saegert, 1975). The mental models held about security and safety by stakeholders who have been trained in therapeutically impoverished environments are brought to the health facility briefing

process. That tacit knowledge can lead to the inclusion of inimical design elements that reflect the “ghosts of the past”.

7.2.1 Variation in clinical practice

A snapshot across systems and jurisdictions demonstrates a wide variation in clinical practice owing more to arbitrary compromises between priorities, local culture and history, perceptions of risk, expediency and local human rights legislation, than any documented evidence of effectiveness or efficacy (Ashmore, 2010; Bowers, van der Merwe, Nijman, Hamilton, Noorthorn, Stewart, & Muir-Cochrane, 2010; Qurashi, Johnson, Shaw, & Johnson, 2010; Steinert, Lepping, & Bernhardsgrutter, 2010; Bowers, Allan, Simpson, Jones, van der Merwe, & Jeffrey, 2009; Taylor et al, 2009; Dye, Brown, & Chhina, 2009; Roberts, Crompton, Milligan, & Groves, 2009; Cowman & Bowers, 2008; Abderhalden et al, 2007; Haglund, van der Meiden, von Knorring, & von Essen, 2007; Irving & Saylan 2007; Niveau 2004; Busch & Shore 2000).

The Process of Planning requires a coordinated change management strategy during the procurement phase, so that clinical practice changes may be beneficially implemented. However, sufficient funding is not always provided in development budgets, and change activities may not be started earlier enough, that is, during the development of the Services Procurement Plan, before any decision on a built solution is agreed.

7.2.2 Scatter beds

The policy of concentrating people with behavioural disorders in one institution is itself not evidence based. It is historical. The latest version of the Australasian Health Facility Guideline provides for the possibility of annexing a few patient beds to a general acute unit. Studies into “scattering” mental health patients amongst the general medical ward population have shown a reduced length of stay and better re-absorption into the community, but there are few studies and cases were self-assigned to the nearest facility and not randomized (Hickling et al, 2007; Hickling et al, 2000; Olfson, 1990). Clinical practice notes provide evidence of the efficacy and effectiveness of these “scatter beds” (Hickling et al, 2000; Olfson, 1990). In a well-designed but non-random prospective cohort study in Jamaica, Hickling et al (2000) found that people admitted to general wards, where they assisted on the ward once past the immediate acute phase, had much lower lengths of stay: 17.3 days as

compared to 27.9 and 90.9 respectively. Patient outcomes in terms of employment and relapse status were much better for those who had been treated in the general wards. In a retrospective chart review in nine facilities in the US, Olfson (1990) found that those in scatter beds presented with somatic conditions more frequently, were less likely to be placed on anti-depressants and had shorter overall stays.

A Cochrane Systematic Review into 'scatter beds' could not find any randomized or pseudo-randomized controlled trials. There is no Level I evidence that compares outcomes for those admitted to general medical wards, specialized psychiatric units or dedicated free-standing units (Hickling et al, 2007).

Currently in the United States, 6.8% of discharges with a principal psychiatric code diagnosis were for patients treated in scatter beds with the remainder treated in specialized psychiatric units (Mark, Vandivort-Warren, Owens, Buck, Levit, Coffey, & Stocks, 2009). Those in scatter beds tended to be older; have shorter lengths of stay; and almost 80% were *not* transferred to other facilities. The ones in scatter beds were more likely to have somatic conditions but half as likely to have a substance abuse problem. 40% had a diagnosis of schizophrenia, episodic mood disorder or depression. 30% were admitted via Emergency Departments.

7.2.3 The “Concord Model”

The former NSW Health directed Concord Hospital to accommodate patients by levels of acuity or 'streaming', rather than geography, as had been done when the facility had been located at Rozelle (Cleary et al, 2009). Whilst the concept accords with current 'lean' thinking in healthcare, the so-called “Concord Phase of Illness Model” differs to that followed in the integrative community mental healthcare model, and is considered confusing and fragmenting (Arya, 2011; Kearney, 2010; Cleary et al, 2009; Curtis et al, 2009). At Bloomfield in Orange, patients are to be also streamed by symptomology, with the acute psychotic patients treated in the intensive care unit separately from those in a depressed state under observation in the High Dependency Unit.

Kearney & Dye (2010) describes the application of lean thinking to psychiatric intensive care but notes that although the UK Institute for Innovation and Improvement developed the psychiatric intensive care pathway, it cautioned that the approach may be problematic in mental health as:

“...adequately describing the process of care for acute mental illness is more problematic. There are identifiable stages between referral for care and discharge but the pathway metaphor....does not fully reflect the complexities of inpatient psychiatric care.” (at p. 60).

8.0 Impact of changing the built environment on patient outcomes

The evidence supports Whittington & Richter’s (2005) theory that normalizing the environment will induce normalized behaviours. The corollary is of course, that abnormal institutional environments will induce abnormal, institutional including violent behaviours (Edgerton, 2003; Scull, 1975). Holahan & Saegert (1973) attributed the depressed withdrawn behaviours of subjects to the overcrowded, barren, dirty, dark and neglected environment in which patients were accommodated. Despair and withdrawal can be understood as a ‘normal’ response to a dingy, ugly environment (Whitehead, Ellison, Kerpen, & Marshall, 1976). In an early series of psychological studies, Maslow (1956) found that the characteristics and ambience of an environment significantly affected interpretations of facial expressions and intentions.

Similarly, aggression and violence on a ward can be considered a ‘normalised deviant’ response to incarceration and the resistance of an autonomous being to appalling conditions and/or rules perceived as arbitrary (Nolan et al, 2009; Bowers et al, 2009; Olver et al, 2009; Whittington & Richter, 2005; Christenfeld et al, 1989). A 2004 post-occupancy evaluation of the new, spacious, multi-storied and light filled New York Psychiatric Institute in New York City found a 99% reduction in the use of restraint and reduced emotional stress in the patients.⁶¹ The Garling Commission found that a number of facilities, such as the James Fletcher Hospital in Newcastle, were old, substandard and totally inappropriate for accommodation. Staff from the Bloomfield Mental Health Service at Orange reported that a patient who had 36 admissions for seclusion when in the old, dormitory style ward had not been secluded once since moving to the new purpose built space where he had his own room. Staff at the replacement facility at Mater Newcastle reported anecdotally fundamentally changed behavioural responses to the environment and reductions in the incidence of aggression.

⁶¹Merkel, J. Post-occupancy 2004. New York Psychiatric Institute, New York City. Architectural Record. 2004; (4 Suppl): 22-3.

Stressors that have been implicated in unwanted behavioural symptoms include: perceived crowding, lack of private space for withdrawal, inadequate spaces for socializing and productive activity, a lack of views and contact with nature, and an impoverished visual and tactile environment.

Certain physical design elements can also aggravate the perceptual distortions experienced by people in psychotic states and should be avoided: long corridors with distant vanishing points, lack of orienting décor, vibrant colours, or ambiguous elements, such as glass doors that look like a windows, or abstract art (Golembiewski, 2010; Forbes, 2010; Ulrich et al, 2008). Under the salutogenic theory, environments need to have coherence, that is, to be comprehensible, manageable and meaningful (Golembiewski, 2010).⁶²

8.1 Changing the built environment and self-worth

Research has found significant improvements in patient affect, behaviour and satisfaction, as well as staff mood, performance and attendance at work, when the built environment is improved. Introducing natural light, colour, textures, and variety in spatial configuration to provide choice of privacy or social activity at the discretion of the patient, dramatically improves patient engagement, morale and the sense of self-worth. In Holohan & Saegert's (1973) seminal study, trained observers found that more thoughtful environments invited fewer withdrawal behaviours, an increased personalization of private space, and more social interactions between patients and between patients and staff.

Whitehead, Polsky, Crookshank, & Fik (2004) found that environmental redesign of a thirty bed unit correlated with behavioral changes in clinically desirable directions. The design solutions were labeled "social organizers" as they encouraged social interaction and participation in ward activities. The objective measurement of change in the study used the Behavioral Environment Assessment Technique, a behavioral mapping taxonomy. Attitudes were measured using an instrument developed heuristically by the researchers, the Sepulveda Psycho-environmental Assessment Record.

⁶²Antonovsky, A. op cit p26

Holahan & Saegert (1973) redesigned a very drab and dour ward in a municipal psychiatric facility in New York after eliciting patient and staff preferences and identifying the sources of dissatisfaction. The existing ward was dull tan in colour with deteriorating finishes, dirty and peeling paint, and graffiti. The new modeled ward was painted a light colour with blue skirting; doors and one wall in each room were painted a primary colour; all the dormitories were subdivided into two bed spaces; new furnishings and brightly coloured bedspreads were added, and a lounge was created. New activity spaces were created in the general area and games equipment introduced. Patient affect and satisfaction were significantly improved.

Major confounding variables in the study were the implementation of an activity program and introduction of new games equipment at the same time as the refurbishment. Patients had few distractions in the old ward. Patient behaviours changed positively after moving into the remodeled ward. Bedroom spaces in the experimental wards were personalized. The wards were treated with more care by patients. Staff also treated the new space with more respect. They were observed removing the now infrequent graffiti as soon as it appeared, rather than leaving it untouched as was the norm in the old ward (Holahan & Saegert, 1979).

In Christenfeld's et al (1989) mixed methods study significant changes were found in the self-image of severely regressed patients. Staff mood was also elevated within eight months of moving into the renovated space, when compared to four equivalent control wards. The design elements that were changed in the experimental suite included: lowered ceilings; shaded lighting; soothing tones or brighter spaces depending upon purpose; smaller and quieter spaces around the unit; dayroom carpeted and curtained as a retreat; archways marked the bedrooms which had seating areas and wall hangings; in the bathroom there were ornamental ceramic tiles, vanity style sinks and full length mirrors (as well as non-weight supporting shower heads), private dressing rooms were attached, wood covered cabinets concealed dirty laundry; and the nurse station was centralized. The smoking porch was ventilated and all patient areas were decorated with paintings, posters and hanging baskets of flowers and plants. Patients were particularly satisfied with the remodeled Day Room activity space, where they spent much of their time. Their self-image improved. Objective measures of satisfaction also demonstrated improvement with staff absenteeism down and violent incidents reduced by 50%.

Staff attitudes changed over the period from “skepticism and apprehension” to “relief and gratification” (p.261):

“It’s a lot easier to take care of...I haven’t noticed any wetting on the rug. We put the wetters in the bedrooms nearest the bathroom. The patients are trying too...It’s a lot quieter. There is no echo from the rowdy patients, which spreads...The clients keep the place cleaner. They’re not so rough and ragged...It’s more relaxing.” (Staff member)

8.2 Changing the built environment and violence

Violence and self-harm in institutions are considered a result of stress induced by incomprehensible environments; domineering models of control; insufficient psychological space; and a lack of care (Johannson, Skarster, & Danielson, 2009; Stolker, Nijman, & Zwanikken, 2006; Edington, 2002; Kumar & Ng, 2002; Brooks, Gilead, Daniels, 1994; Whitehead et al, 1976). Patient stories of traumatic experiences in institutions may have actually exacerbated pre-existing psychic damage, and even precipitated post-traumatic stress disorder (Dobrohotoff & Llewellyn-Jones, 2011; Turton et al, 2010; Strout, 2010; Frueh et al, 2005; Kumar, Guite, & Thorncroft, 2001). Patients are well able to articulate their fears and anxieties about being admitted (Frueh et al, 2005; Middelboe et al, 2001).

The evidence suggests that environmental stressors affect people’s internal states, and the trajectory of interactions between the patients and staff. The incidence of violence and use of seclusion has decreased by as much as 50-70% in new model wards that draw on the evidence base of healing environments (Brooks et al, 1994; Christenfeld et al, 1989). Inpatient wards where there were no changes to the physical space, de-escalation training produced no significant reduction in episodes of violence (Khadivi et al, 2004).

The incidence of violence had reduced by as much as 50% when patients had been moved into new and renovated wards with more personal space, more activity space and/or more spaces for quiet social exchanges (Christenfeld et al, 1989). Lawson (2005) reports reductions in the use of seclusion in the UK of up to 70% in new model wards. Curiously, seclusion, and the violence that justifies its use, were not mentioned in the Holahan & Saegert (1973) study. The researchers, however, were more concerned with symptoms of withdrawal.

Qurashi et al (2010) found in a retrospective case note review a 60% reduction in seclusions over the 5 years (2002-2007) following introduction of a seclusion reduction program. There was no increase in assaults over the same period. The program included environmental changes, drawing on patient preferences. Commitment and adequate resourcing by the organization was considered critical to effective implementation and quality outcomes.

The mood of staff has also improved in remodeled wards and staff have exhibited more tolerance in physical environments that 'respect' them as well as the patients. Their mood is elevated and fewer interactions with patients are defined as 'aggressive'. Tyson et al (2002) found that after moving to a new ward, staff satisfaction improved, the reported incidence of violence dropped, the use of seclusion was down, and the amount of time staff were observed interacting with went up from 14% in the old, dingy ward to 97%. However, the much greater interaction time increased staff turnover and burnout (Tyson et al, 2002). Adequate staffing is needed to deliver the appropriate level of therapeutic care.

In a recent UK study into the impact of remodeling of an old institution, Payne & May (2009) also found that both staff absenteeism and assaults on staff decreased - but the use of seclusion increased, where it had not been used before the refurbishment. There had not been a seclusion room before the refurbishment.

Olver et al, (2009), using a non-randomized case control before and after naturalistic design, found similar results three months after 25 long term patients were transferred from a cramped, poorly lit, locked ward with shared rooms to a new, brightly lit, purpose built space with recreation areas, garden spaces for socializing and sporting activities and private rooms. Amongst the 15 patients who continued in the study until completion, the use of seclusion was down, but the reported number of aggressive incidents was not. The small sample size does not allow for generalization and the study design was also subject to other operational constraints and the confounding variables were not well controlled. The findings do accord with the "general pattern" (Ulrich et al, 2008) but like many of the studies included as evidence of the pattern, it was scientifically inadequate. Further, the level of aggression was not explained. The ward remained a locked unit. Most staff in the study refused to be interviewed.

8.3 Space as an active participant in the cure of the patient

Holahan & Saegert (1975) and Christenfeld et al (1989) reported that patients treated the refurbished and new spaces with more respect, that there was less graffiti, and there were fewer assaults upon the building fabric. Payne & May (2009) also found that patients did not damage the new environment. The effect of environmental changes on behaviour toward the physical space was incidentally observed in a Norwegian quasi-experimental study, in which one of two seclusion rooms was decorated as an ordinary domestic room to see if patient outcomes improved (Vaaler, Morken, & Linaker, 2005). No relationship was found between room type and patient outcome, although females preferred the domestic room, but two years and 200 patients later, the decorated room had never been damaged whereas the 'standard' seclusion room had been damaged and required repairs many times. Although the observation was reported in the paper, no data on the characteristics of those using the room during those two years, such as diagnosis and gender, was provided. Vaaler et al (2005) have not published anything further on this phenomenon (personal communication, 2011).

9.0 Benchmark practice in mental health facility design

The interdependency, and what Curtis et al (2009) calls the "permeability", between the components of today's delivery care model should be reflected in the architectural symbolism of mental health buildings. Abiding by old understandings of functions could encourage practices from the 'carceral', rather than humanistic and therapeutic interactions with client/patients (Curtis et al, 2009; Mahoney et al, 2009; Curtis et al, 2007; Whittington & Richter, 2005; Harding, 1987; Scull, 1975). Preservation of a design language signifying the institution as a bounded site of incarceration, rather than one of respect, respite and stabilization *within the community*, is counterproductive (Curtis et al, 2009; Middelboe et al, 2001). Experienced architects now recommend units be designed to be open but lockable and with embedded security, leading to an architecture that isn't "subsumed behind fences and obvious signs of containment." (World Health Design, 2011, p44-45)

When a patient centred care approach is adopted metaphors of domesticity and nurture dominate design solutions (World Health Design, 2011; Scull, 1975). The latest metaphor from this perspective is the "urban village", with any required

security elements adaptable and hidden from patient view, to avoid detracting from the therapeutic symbolism of home, hearth and community (World Health Design, 2011, Zeisel, 2005). Safety is created by drawing on the principles of environmental psychology and working with the patients' perceptual distortions to control behavior, as done in the care of patients with Alzheimer's patients (Golembiewski, 2010; Zeisel, 2005; Willis, 1965). The designer needs to know what things in the environment will cue symptoms of anxiety, distress and aggression. The environment is used to controlling the behavioural symptoms of mental distress, and needs to avoid exacerbating them.

A number of new mental healthcare facilities have attempted to move away from building designs evocative of a custodial model of care. Rather, they attempt to apply evidence based design (EBD) and salutogenic principles to create patient centred therapeutic spaces for healing damaged minds. Cutting-edge architectural solutions now attempt to reconcile 'security' and 'perceived openness' so that risks of violence and self harm do not overwhelm the need for a therapeutic environment. The architecture of the 21st century's acute care mental health facility is the architecture of community living spaces and healing environments (Dobrohotoff & Llewellyn-Jones, 2011; World Health Design, 2011, Curtis et al, 2009; Payne & May, 2009; Codinhoto, Tzortzopoulos, Kagioglou & Aouad, 2009; Mahoney et al, 2009; Dijkstra et al, 2005; Lawson, 2005; 2002; Gesler, Bell, Curtis, Hubbard & Francis, 2004; Devlin & Arneill, 2003; Gross et al, 1998; Willis, 1980; Mental Health Facilities Conference, 1978).

An early example is found at Highcroft in the UK, and more recently in the design of the Wandsworth Recovery Centre, also in the UK (winner of the 2010 International Academy for Design & Health for Best Mental Health Design); the Centre for Addiction and Mental Health in Toronto, Canada (winner of the 2009 International Academy Design and Health award); and the Ballarat Acute Mental Health Facility in Victoria (winner of the 2011 Design and Health Academy for Best Mental Health Design). The four facilities demonstrate thoughtful application of healing environment design principles for psychiatric care. Using the metaphor of the 'urban village', acknowledging fearfulness on arrival, designing to domestic, human scale and creating an ambience for holistic human needs, whilst subtly incorporating elements for security and safety, not to assert authority but to provide genuine

security for the staff and patients, provides a new direction for institutional design. This direction accommodates the contrary fears of patients and staff so that both therapy and safety can be assured in these ‘safe havens’.

10.0 Conclusions

The literature in this review has drawn on a broad range of sources from 1796 through to 2011. *The arbitrage between safety and therapy and what should a mental health institution be doing is over two hundred years old.* Unlike the general acute care setting, where most evidence based design research has been conducted, the relationship between the delivery of mental healthcare and its setting is tightly coupled and rarely studied. Patients are generally physically well and may spend months living in the facility, as is the case in other special purpose units, for example, with Alzheimer’s care or a spinal rehabilitation unit. Even with our current delivery model, in which the mental health facility is the last line of care intended for short-term crises stabilization only, patients may spend a number of months in a facility. And with the recent “re-birth of the clinic” and the associated move toward closed and locked wards, physically well and able people can spend 24 hours a day for perhaps six months effectively in detention.

In the absence of valid and promulgated evidence base to guide design it is possible that environments built to meet old practice models may re-introduce additional stressors that exacerbate patient well-being. There is an urgent need to demonstrate the psychologically mediated effects of the healthcare built environment on the process of care and outcomes for people stricken with mental health crises. An evidence base is needed to demonstrate the efficacy or otherwise of the changes being driven by clinicians and experienced design professionals.

B. Document Review and Case Studies

In this section three case studies are presented. HI has not been responsible for many projects in this domain so our sample is chosen to demonstrate the different challenges that HI inherited on its establishment. The response to the risks identified in the HI Risk Management Framework is provided in Appendix III.

A number of policy documents were used in structuring the Case Studies:

- NHS Institute for Innovation and Improvement. Focus on Psychiatric Intensive Care Units
- NSW Health Infrastructure Procedure: PRC 102 – Project Risk Management
- NSW Health Infrastructure Procedure: PRC 102 – Project Risk Management – Appendix B Health Infrastructure Risk Framework
- NSW Health Process of Facility Planning: guidelines for projects valued \$10 million and above. 26 May 2010.
- NSW Government Procurement System for Construction: procurement practice guide. Contracts used for construction projects. July 2008.
- Pereira, S. & Clinton, C. National Minimum Standards for Adult Services in Psychiatric Intensive Care Units (PICU) and Low Secure Units. 2002; Department of Health (UK) Mental Health Policy Implementation Guide: London
- Royal College of Psychiatrists (UK) Do the right thing: how to judge a good ward. Ten standards for adult in-patient mental healthcare. Occasional Paper No.9. June 2011; Royal College of Psychiatrists: London
- Royal College of Psychiatrists (UK) Accreditation for Inpatient Mental Health Services (AIMS). Standards for Inpatient Wards – Working Age Adults. 4th Ed. January 2010

1.0 Case Study A: Gosford Mental Health Unit

The documentation made available included:

- GMHU Change Management Committee minutes – 29th May, 26th June and 24th July 2009.
- Gosford Mental Health Centre Operations Manual – MH/D&A CCH (4th August 2010).
- Gosford Mental Health Centre – Project Planning Procedures Manual: preconstruction & construction phase of project.
- Gosford Mental Health Centre – Economic Appraisal 2007.
- IIMS Reports 1 Jan 2007 to 31 December 2009 (various).
- Letter from Acting Director NSCC MHDA to Health Infrastructure. 9th October 2008.
- Priority One Variation List as at 25th June 2009: issues arising from user group meetings for resolution (29th October, 13th November, 27th November and 11th December 2008).
- Report of the Gosford Mental Health Unit Business Case Gateway Review. 30th October 2007.
- Report of the Gosford Mental Health Unit GC21 Close Out Workshop. Final Version 3.0. 14th May 2010; Gosford Golf and Function Centre.

Background

The Gosford Mental Health Unit was the first mental health Project Implementation (PI) managed entirely by Health Infrastructure. The architects were Sutera Architects, the project manager, Blue Visions Management and the contractor, Lahey Constructions. The facility was procured under a design development & construct (DD&C) contract with an approved budget of \$12.6 million. The planning was completed by NSW Health prior to the formation of Health Infrastructure. The site works and the building were completed under two separate contracts using two different firms.⁶³

The 30 bed facility replaced the existing 25 bed *Mandala Psychiatric Unit*, built in the 1980's and situated on a site opposite the Gosford General Hospital campus. The

⁶³As reported by interviewee 270111_CC012Gos

new building is now collocated on the campus and is adjacent to the Emergency Department in accordance with NSW Health policy on the mainstreaming of mental healthcare. The Unit consists of 24 adult acute beds, a 4 bed “Vulnerable Persons Unit” and a 6 bed High Dependency Unit. The Unit provides acute inpatient treatment and management for mental health consumers who require intensive therapeutic intervention when less restrictive options have been deemed unsuitable or unavailable. Its target population includes patients requiring assessment and/or involuntary admission under the Mental Health Act 2007 (NSW).⁶⁴ The new building also houses the acute home-based treatment/outpatient team and the Mental Health 24 hour Telephone Access Line (MHTAL).

The redundant 1980s *Mandala* building was not visited and no information was provided on its condition or the rationale for a new build rather than refurbishment, apart from the policy of collocation. (Reportedly, *Mandala* had been refurbished in 2001 and the bed numbers were reduced to 25 from 30, pursuant to a Coroner’s Report on the death of one patient at the hands of another).⁶⁵

The Process

The Project Definition Plan (PDP) specified a collaborative, recovery model of care and was completed in 2006.⁶⁶ The facility was officially opened by the Minister for Health on 17th May 2010. Apparently none of those involved in development of the PDP were involved in the PI. The clinician responsible for developing the model of care was on a 12 months leave of absence during the design development. This was perceived to have serious repercussions for the process, as decisions were made that compromised the ability of the building to support the proposed model of care. A revolving circus of project participants kept varying the model of care, and different priorities led to 62 ‘Priority 1’ and 29 ‘Priority 2’ variations. This also led to the Contingency Allowance being fully expended.

There was an absence of clinical leadership during much of the PI process. The design development was led by AHS concerns with risk management and safety:⁶⁷

“The people I had most dealings with in the area were the Director of Capital Works, the Facility Planner, and the Acting Operations Health Drug

⁶⁴Operations Manual p7

⁶⁵As reported by interviewee 270111_CC009Gos

⁶⁶As reported by interviewee 270111_CC010 Gos

⁶⁷As reported by interviewee 270111_CC011Gos and 081110_HI001Gos_Pt2

*& Alcohol.**There were no clinical people that I dealt with** or that ever spoke to me..... If Security says this is what we must have for OH&S then they just say that's what we must have. Even when we had the meeting talking about where the access control points were to go there were people from Security there leading the way.” <project manager>*

Problems of violence were attributed to substance abuse issues and not organic mental illness per se. This was not confirmed but the belief does go some way to explain the obsession with controlling concrete hazards and protecting staff.

“It is very much about the model of care and how the staff interact. I'm anti a lot of what Mental Health does but it's not my call. Take the staff station, for example – a huge new facility is being done in Victoria and they have no enclosed staff stations. But our staff experience is that they've had staff physically attacked and that's been the area they've been able to come back to as a safe haven, so therefore we have standard Lexan on our staff stations. And we have a lot of CCTVs...

My argument is why do we need all that CCTV because why aren't you out interacting with your patients. Why does the staff station need to be so big, you come and go out of it, it's not where you sit and manage your patients, you're supposed to be out there.”<planner>

Both the AHS and HI reported significant problems in communication because of the project management, which was neither timely nor adequate:

“When I became involved the difficulties I had, being frank, were around communication, getting information from the project management, about what was actually happening, where things were at, all that sort of stuff. – continually promised that we'd get a copy of the plans, every time we had a project meeting – This went on for months and months and months and months. We got the room data sheets before we got the plans. It was very unsatisfactory The process was not real good.”<clinician>

“The contract was with us, but they ...didn't report to us. They were engaged by us but they were directed by the PDPR. At one stage whenI had the audacity to actually ask the PDC for something because we weren't getting it from the PDPR they actually lodged a complaint because ...had the

audacity to go directly to the PDC and ask them questions., when they did his performance review they actually scored him poorly on communication because he had the audacity to respond to the actual people who contracted him and subsequently paid him.” <project manager>

The history and integrity of the project was lost over time and misinformation and storytelling –Weick’s “sense making” – confused the process. This is a significant potential problem in all projects, as the risk of project team membership changing over the lengthy time of a project is very high, and not only will documentation potentially be lost, but goodwill as well.

“I think they’re trying to find out who actually signed-off on the plans. I’d say good luck to them because I don’t think anyone did, to be honest.....I did attend a couple of PCG meetings because they wanted a mental health expert there for the discussion, but as I said, those meetings were quite heated. There was a lot of conflict between [project management firm] and HI and stuff like that.” <clinician>

Mistrust grew rapidly throughout the project leading to industrial action. HI inherited the negative outfall from the project at the Hornsby Mental Health Intensive Care Unit, a project completed before HI was established. The problems had resulted in a three month closure; repairs of \$500,000; and widespread negative publicity. The same AHS wanted to avoid a similar event with the Gosford project and wanted a secure, facility, but some elements exceeded what was being provided in a genuine forensic facility so HI was opposed to a number of the requested variations. The \$300,000 security budget had been removed from the project at some unspecified time for an unknown reason, and the AHS blamed HI.

Throughout the process the AHS felt ignored and when that sensibility was aligned with a limited expertise in visualizing the built space from drawings. This led to a negative trajectory for interactions with HI was set. Changes in layout made to accommodate site conditions and the special needs of high dependency patients lead to conflict over the staffing of the facility and, ultimately, to industrial action by the NSW Nurses Association.

The mistrust between HI and the AHS became so intense that there is no shared recollection of some of events during design development. According to the AHS:

I suppose the door issue is probably one of the biggest issues that will be replicated across all projects, and multiples of them, not just the one bedroom door. If they had listened and we'd had a standard cat-and-kitten door, no pivots, large leaf opens in, small leaf opens out, security issues, bed access – no problems. But would they listen? No.”<planner>

Health Infrastructure has an entirely different recollection as to which party refused to use ‘cat-and-kitten’ doors:

“They had the option of having the cat-and-kitten door or the one door with the pivot, and they chose the one door with the pivot. That’s how the issue arose with the door hinges. If they’d gone the cat-and-kitten option there apparently wouldn’t have been an issue. But they knew – this is what was really frustrating – they knew the issues they’d already had at the MHICU with the doors, then they said they needed the one wide door, not the cat-and-kitten door and that was documented early in the process because it was one of the things the contractor wanted to know. So then as we went through this whole frustrating process, obviously their memories were not as long as others, because they then turned around and said well, if you’d given us cat-and-kitten doors we wouldn’t have this problem. I looked at the PDPR and he looked at me, and I’m thinking you actually remember that too dot you, because I sure as heck remember it. We left the meeting and he said that didn’t happen and I said yes, I’m pretty bloody sure that’s documented somewhere. And it was. So it didn’t matter what we did. It had nothing to do with us, they were provided the opportunity and they chose the single door. So I also think that’s also something that needs to be honed down – what is the best door for the bedrooms.”<project manager>

There was an absence of clarity about roles, responsibilities and delegated authorities. The frustrations were felt by *both* AHS personnel and HI managers.

“What I found difficult, for example, was that there were some various changes in the senior management team in Mental Health, so throughout the project I had difficulties in terms of how many times I had different personalities to deal with. I found that quite difficult from my perspective. I felt that it probably would have run a little bit better from my perspective if they had a position that I actually reported to the whole way through. I

reported tobut I dealt a lot with the, which is position, but that position changed about four times during the project.....which I found quite difficult because I felt that the had a very close relationship with the staff, was very focused on things that the staff may have wanted rather than needs, for example. Obviously with projects we have a certain amount of money, certain things we're allowed to do, a certain scope which I was working within and I found that that relationship was very difficult..."<project manager>

The AHS was unfamiliar with the DD&C method of procurement and this lack of induction into the process contributed to the confusion and resulting frustration and antagonistic behaviours.

"I hadn't been here very long and all of a sudden it was 'see attached variation for a smoke alarm' or something somewhere, and I've gone oh yeah, I don't remember doing anything on that. So I made a phone call – oh you know, we were directed. I'm like no, no, no, your contract is with us, HI gives you the direction through the project director.....So that was a bit of a learning curve for them, that no longer were they to take direction from the AHS. If the AHS wanted a change it was to come through HI, through the PDPR to HI and if it was going to be a change then it would go back that way. Then the AHS would be told whether it did or did not happen or was or was not going to occur."<project manager>

This problem was identified on a number of occasions. The importance of implementing appropriate training at the beginning of a project cannot be underestimated. Informants also spoke of AHS and clinicians needing this training:

"...my vision would be that HI hold quarterly seminar nights or something and tonight it's ICUs the next month is something else and that's what they do. They bring together users, architects, whatever" ...<planner>

More fundamentally, the roles and responsibilities were unclear and the direction seemed arbitrary to participants:

"It was things like that which I feel, if the process was a lot more rigorous at the start, if there weren't as many players all saying we need, we need, we need – due to operational and OH&S issues – that a lot of these could have

been overcome with logic and time. But because we were building, a lot of it was just do it..... So there has to be an identified methodology, so when somebody, a clinician or anybody in the Area comes to us and says we need this, this and this – even if it's some form of template that says what's the situation that occurred, how would this improve that situation, and to be signed-off by the relevant person it should be signed-off by, and then assessed, probably the PCG would be an appropriate place. But we just can't have people sitting in a user group process spilling out all these things, the PDC takes down this great big list and then this great big list goes through to the Director PH&P who says hey Joe, we need all these things – which is essentially what happened. There was no one to go back to them and say provide justification because we were pushed into a corner because of the time constraint.....”<project manager>

The project was unique in that the levels of inexperience of all front line parties involved in the delivery of the contract accentuated the underlying problems with the process. Those involved on the user side can be expected to be inexperienced in most projects and need to be managed along the way. Few in HI staff had experience in the health sector and delivering a healthcare facility is not just about constructing a building. The experienced team members were the project director and the architect but the procurement method limited the opportunities for direct communication and a role in managing communications and user expectations.

“....you do have a lot of people who don't have health experience and.....Health has articulate, well educated, passionate users....You're not going to find that when you're building roads, trains or other things.....”<planner>

Change Management Strategy: implementing a new model of care

The change management process was left until late in the project. It was treated by the AHS as a component of the Commissioning Plan rather than a core, integrating function needed by the AHS to manage and engage user expectations, and prepare its clinical staff for planned changes in the practice model. A coordinator was only appointed in April 2009, and without a clinical counterpart. The first meeting of the Change Management Committee was not held until 26th May 2009. All this despite the NSW Process of Planning identifies the Change Management Strategy as a “key

requirement across all POFP stages [from Services Procurement Plan] to ensure that the changes arising from a project are clearly documented, understood..., and processes are implemented to facilitate change.”⁶⁸

According to the NSW Process of Planning, the change management strategy should link directly to the pre-POFP Clinical Services Plan and the other project strategies: Communication & Consultation, Workforce Development, and the Project Completion Plan:

*“Right, the health planning process is an excellent process, but the key to achieving the outcome is all of those steps being followed properly. The key step in all of **that is the service plan at the front, and if that’s put together by one individual quickly in a week and a half – the rest of the project follows suit and suffers. So it needs to be a well thought through and that service plan needs to be based on and staff have, accompanying that, a change management process.** So the two go hand in hand, and the change management process needs to start day one from concept. As soon as someone has the light bulb go on, the change management process needs to start.”*<project director>

Excessive emphasis on safety and security

Policies and procedures in the new facility were comprehensively documented in an Operations Manual as part of the Commissioning Process. The documentation reflected a custodial practice model. The emphasis shifted from the PDP’s collaborative, recovery model in a safe environment and the principles of privacy, dignity and least restrictive care “need to be balanced against the patient’s risk status at all times”, to a policy of ensuring a ‘safe environment’, and protection from self-harm and aggression. The approach was based on the generic NSW Health policy of “..zero tolerance of all forms of violence on health services premises...” which does not take into account of the unique challenges of mental healthcare.

The building of two seclusion rooms and the policy on the use of restraint would seem to contravene Commonwealth government policy, NSW Mental Health and Drug & Alcohol Office policy, and the recommendations of several professional bodies about the practice of seclusion. The CCTVs were introduced throughout the

⁶⁸ NSW Health Process of Facility Planning: guidelines for projects valued \$10 million and above. 26 May 2010. p10

facility and two were built into the seclusion room. Despite the many technologies of surveillance, one patient escaped from the seclusion room unobserved. The literature is inconclusive, but does suggest that the use of containment strategies without active provider presence and directed observations are ineffective in preventing people absconding or harming themselves or others (Muralidharan & Fenton, 2006; Bowers et al, 2010).

“I think the more technology we put in is taking away that personal observation from nurses and the wider the gap and I think that’s a dangerous and slippery slope.”<clinician>

But it is quite contrary to the original vision and plan:

“[The plan]. had the patient firmly centred in the middle with a number of multi-disciplinary staff responsible for their daily careif we’d vigorously followed that model of care the patient would have been occupied for most of the day and redirected away from thoughts of perhaps self-harm, perhaps thoughts of absconding and those sorts of things that patients have and can do when the level of personal observation or contact is limited.”<clinician>

The change in the envisaged model of care also had repercussions for the staffing model:

“I guess it suffered because the actual end design of the building changed the model of care. So the initial allocation of funding for staffing, recurrent funding, was inadequate for the new model of care because of the change in the design of the building.”<clinician>

Adding to the social construction and labeling of the patient as dangerous were policies of patient search and seizure. Patients are searched, valuables and mobile phones confiscated into safe custody and other belongings sent to a ‘patient store’. Whilst these practices may accord with NSW Health *Suicide Risk Assessment and Management Protocols* they also conflict with any number of other government policies on therapeutic care. The balance between care and custody needs to be adjusted to be appropriate to the level of risk. In a low risk facility with voluntary admissions, application of rules devised for secure facilities seems excessive. The

literature would suggest such dominating strategies are contrary to therapeutic needs in all cases, and may actually act as incitements to aggression and disobedience.

Personalized spaces in the new facility are kept to an absolute minimum, contrary to all therapy guidelines. Therapeutic spaces, including gardens and activity spaces, are only to be used by patients when under direct supervision and otherwise “kept locked at all times”. When considered in conjunction with a “treatment regime” that includes only 2.5 hours of active therapy per weekday and nothing on weekends, the potential for boredom and irritation that could escalate to aggression would seem to be quite high. The programmed amount of “free time”, “medication time” and “meals” represents 12 hours of the day.⁶⁹

Insufficient distractions to alleviate boredom are identified in the literature as a major problem in mental healthcare units. A best-practice gymnasium had been originally planned, but this was reduced to a single treadmill in the combined living and dining room—the room was dominated by a television and overlooked by a long, plexi-glassed nurse station. The surveillance model of care implemented at Gosford means there are few places available to which a patient might retreat when feeling stressed by the social world. The bedroom doors have staff controlled vision panels and an elaborate modification to gain access to a room “if locked or barricaded”. There was an outdoor area, but it was dominated by a high security wall – and the ubiquitous CCTV cameras. The safety of the excessively high walls was of great concern to many clinicians and planners. The following type of comment was repeated by many informants:

“...and so you think what kind of injury? Are we going for an orthopaedic injury? That’s it. Do you want them just to fall a little bit or a long way? What harm minimization are we doing and what assessment is appropriate for the expected use?”<planner>

The impact of a level of security at the forensic standard may be reflected in a reported increase in the number of incidents of aggression at the facility. Reported incidents had been falling in *Mandala* before the move to the new facility, coinciding with changes in the care regime to a collaborative model. The number of incidents fell from 73 in 2007 to 51 incidents in 2008, and to 41 until August 2009. A further

⁶⁹ Operations Manual op cit *Inpatients Daily Schedule* at p 29

34 incidents recorded against “contractors” over the period 1st August 2008 to 31st August 2009 may also have been aggression. Incidents of aggression leading to harm also fell from 6 in 2007 and 2008 to 1 up until August 2009.⁷⁰ Post-move the incident data was not collected but nursing staff thought that the seclusion rate had increased at the new facility:

“The seclusion rate has certainly increased since we moved over here. I think that’s because the old unit only had four high-dependency beds. So what we normally did was anyone who was particularly aggressive we’d transfer them up to Wyong Hospital where we’ve got a ten-bed high-dependency unit. Now of course we have a six-bed high-dependency unit here that’s fully staffed, we tend to keep more of the aggressive people here. So that has increased the seclusion rates.”<clinician>

If the rate has gone up, an alternative explanation might be that the surveillance model of care has negatively impacted on relationships. Bowers et al (2010) demonstrated a relationship between staffing and incidents of reported aggression leading to the use of seclusion or other containment strategies. Moving to improved environments has tended to be associated with a reduction in aggressive incidents, not an increase. But as reported in the literature, increased surveillance does not reduce the incidence of absconding or self-harm:

“Certainly since we’ve opened, which is quite strange, there have been two incidences of absconding, and one was fairly questionable. One person climbed up onto the sail and was able to escape via the roof. You’d think with the amount of technology and CCTV that should have been picked up long before that – he walked out with a sheet which he ripped up and tied in knots to make it like a rope. The latest incident was ... where clearly there is CCTV within – a man escaped from seclusion. pop the top off the seclusion air intake vents and move air intake equipment out of the way and escape through the roof space – all with two or three cameras all lined up at him and a staffing ratio of two to one. Where’s the close observation? This is what I’m trying to impart...”<clinician>

We observed the consequences of an over-securitized facility for a low risk patient population during the walk-through. The large and dominating plexi-glassed nurse

⁷⁰IIMS Reports 1 Jan 2007 to 31 December 2009 (various).

station housed a bank of monitors. The nursing staff were not watching the monitors but were busy with other tasks. None of the staff seemed engaged with patients, contrary to the requirements of the espoused model of care. All but two of the patients were watching the television that dominated the living/dining/'gymnasium' space.

Procurement Implementation

The GC21 Close Out Workshop identified a number of areas for significant improvement. The key recommendations of the Workshop are listed below with our comments underlined:⁷¹

1. Communications and Governance
 - a. Projects should not commence until the governance structure and responsibilities have been clearly defined and agreed. All those involved in the process need to be fully aware of the governance arrangements, including those participating in user group meetings
 - b. Better management of contractor interfaces is needed and the risks associated with multiple contracts evaluated.
 - c. A formal checklist procedure for the handover of drawing documentation to ensure information is not lost is needed. This would be similar to that adopted in clinical risk management.
 - d. Stakeholders need to be kept informed of staging and progress. Users and other stakeholders must be kept informed. Change Management Strategies need to be started earlier and not treated it as part of the commissioning process. Effective management of user, client and community expectations is critical to a smooth, effective process and acceptance of the facility.
 - e. GC21 monthly review meetings must be done as per the contract and should include all key stakeholders
2. Pre-contract and Tender
 - a. Need to ensure the level of documentation and the time required to develop it is sufficient for the purpose The tendency to fast track the planning process is setting the PI up for controversy and dispute. Unless the planning is done properly, costly variations and much unhappiness will

⁷¹ Note: as a learning organization, Health Infrastructure addressed these failures in later projects over which it had full control. Case Study 2 and 3 shows the dynamism of the organisation.

ensure. Outdated PDP's must be rectified with full user consultation before HI enters into contractual relations.

- b. More detailed facility standards and specifications are needed. *The AHFG was very general for mental health facilities, and all AHFG avoid specifying FF&E].*
 - c. Program development should more fully consider the complexities of the Project. *Implementation is complex and requires clinical expertise as well as experienced design teams to achieve.*
 - d. Processes should be introduced to test the currency of information and documentation prior to the tender process; especially where there is a significant time lapse between service planning, design development, tender documentation, and tender. *The Process of Planning indicates a recursive process but it must be effectively implemented. Political decisions to proceed to PI without time for revisions to the PDP must be avoided. Confirmation of scope, budget and program is essential.*
 - e. Fundamental project requirements should be followed and associated budget impacts verified and accounted for.
3. Design development and documentation
 - a. Forward planning should take account of time required to review design documentation
 4. Construction
 - a. Site management engagement in the construction planning and delivery process is critical.
 - b. Clear processes must be established for the timely escalation and resolution of identified issues.
 5. Completion planning
 - a. Completion planning should begin earlier and be more closely integrated with pre-commissioning planning
 6. Post-completion process

The Outcome: fitness-for-purpose

A senior staff member called the final *building* “stunning” but did not think it could support delivery of the collaborative model of care originally intended. The quality of the built solution and its construction is excellent but an over-emphasis on security

and safety expresses an outmoded custodial model of care, and interferes with the staff's ability to interact with the patients and clients appropriately. The number of beds exceeds that recommended by the Royal College of Psychiatrists - no more than 18 beds in an adult acute facility. A pod structure does not comply with the therapeutic model where the shared spaces, such as dining rooms, are being used by more than 18 people at one time.

The variations that changed the original intent were due to a number of factors, most significantly a lack of leadership when the clinician driving clinical practice change went on 12 months leave.

*“... .. but in terms of the model of care – no.....you will have seen the level of security, it's like a high-level prison quite frankly – and I'm not so sure we got that part of it right. I think there could have been significant savings, for example, in reducing the number of CCTVs. My professional point of view is you limit CCTV to those areas that could potentially be a black spot within the unit....there's nothing that beats personal and close observation rather than looking at a TV screen... **so I would caution any future developments to limit that high level of security** because I'm sure it doesn't make the patient feel 100 percent comfortable.” <clinician>*

The change management process was left until late in the development process and then treated as a component of the commissioning rather than a core, integrating function needed to manage user expectations, and prepare staff for planned changes in practice and the model of care. This helps to alienate clinicians and disengage them from the process.

The concerns of users focused on elements of the built environment that had failed elsewhere, including the under-specified Intensive Care Unit at Hornsby, ad hoc usability testing of the building fabric and fixtures, and bespoke design of tap ware and beds. More fundamentally, it is questionable whether any practice change was effected with this project and whether the collaborative, recovery model of care can still be implemented:

“The take-home message is that a broader education based on good modern clinical methods of care and units that look beautiful like Gosford does-- all set the scene.”<clinician>

2.0 Case Study B: Concord Mental Health Unit

Background

The Concord Mental Health precinct was developed by the Department of Health (DOH) as part of the AHS' \$390 million Resource Transition Program. Planning, design development and procurement were done entirely with the DOH. All documentation was held with DOH. Construction of the facility began on 25th July 2006, prior to the establishment of HI in July 2007. The development was handed over in March 2008 and opened in May 2008. Capital Insight was the project manager after preparing the feasibility study. Reed Constructions Australia was responsible for facility construction including roadways, infrastructure and landscaping.

Concord is a 174 bed mental health precinct located on the 5.4 hectare Concord Repatriation General Hospital overlooking the Parramatta River. It relocated from Rozelle Hospital (an amalgamation of Callan Park and Broughton Hall psychiatric hospitals), a gardened and waterfront property of nineteenth century buildings in poor condition on a 61 hectare site. The approved budget was \$58 million. The development represented the last component of the Concord Repatriation General Hospital Redevelopment project.

The facility was described as “state of the art” to deliver a “phase of illness” model of care in 12 separate buildings and increase integration with community mental healthcare teams. The “phase of illness” model refers to specialist units catering to the needs of people at “different levels of recovery”: recent onset; relapsing; treatment resistant; and recovery for those with persistent and enduring illness.

The relocation of the Rozelle Hospital to the Concord site was a decision made by NSW Health independently of the recommendation of the Legislative Council's Select Committee on Mental Health, which had recommended redeveloping the Rozelle site for long term rehabilitation care.⁷² The maintenance of such a large institution adjacent, but not integrated with a general hospital, does not accord with the spirit of the 1983 Richmond Report recommendation to focus care in the community and to break down large institutions and absorb them into general hospitals. Unfortunately it is physically not integrated with the surrounding community.

⁷²Legislative Council 2002 op cit at 59

The Concord precinct includes:

- Acute adult unit – 60 beds
- Acute adult Intensive care unit – 20 beds
- Acute psycho-geriatric unit – 30 beds
- Extended care units – 29 units
- Rehabilitation and recovery ward/hostel – 27 beds
- Rehabilitation cottages – 8 beds
- Rehabilitation Unit
- Outdoor pool
- Volley ball court
- Outdoor Amphitheatre

The Minister announced: “The result of the planning consultation process is a facility designed to provide greater respect for patients and medical staff. New buildings will offer more privacy for patients with single story patient areas and single room accommodation. There will also be ready access to courtyards, sunlight and fresh air in all areas, along with improved comfort and safety features.”⁷³

Process

Planning for the facility had a long genesis of 12 or 13 years but documentation for the development of the Concord site was not as detailed as would usually have been expected because of an “anomalous” procurement methodology. It was part of an AHS wide resource transition plan and its planning was left until quite late with the revised Clinical Services Plan completed within a very short period of time:

“..when the planning began for this set of facilities, the idea of an acute recovery unit was not in the mix at all, so it was once the building was built, they sort of thought okay, how can we organize services given that we’re moving a whole lot of services from Rozelle to here, and they moved away from a geographically organized set of units....” <clinician>

Being a part of the bigger Resource Transition Plan increased the uncertainties associated with the development:

⁷³NSW Health press release 25 July 2006

“...the budget for building the mental health is linked to some other developments, and so it appears to us that they sort of robbed Paul to pay Peter sometimes.” <clinician>

The model of care practiced did not however, reflect the generic model incorporated in the guidelines available at the time, the DS-26 Acute Mental Health Facilities 2002, and difficulties arose as clinicians pushed for what were considered evidence based design ideas. The guideline was considered “inadequate”, for instance, air conditioning for mental health units was not specified - and so none was installed in patient areas, where air flow is limited as windows cannot be opened. The AHS has had to retrofit air conditioning given the humid and inclement weather.

Change Management

The development and move of the hospital from Rozelle was part of an AHS focused strategy. Those interviewed did not talk of any change management strategy but rather they reported staff dissatisfaction with changes in the model of care of which they did not approve. The facility became a locked unit after the move. Most units allowed patients to leave but only staff controlled the doors.

“..a higher level of patients were absent without leave than we do now....Whether we are delivering a better service to those contained patients is questionable at times, and I do think that mental health....needs to think about what it is doing in electing to lock all the units in order to manage the risk of people absconding and perhaps either self-harming or harming others.”<clinician>

The rehabilitation cottages were planned to replicate the small group houses on the Rozelle site, as DOH prohibited such residential units on a hospital site. The spaces were then incorporated into the rehabilitation ward in a very ad hoc way. The result is very unsatisfactory.

“..a decision was made at the Department of Health level to change the rehab unit from cottage-style living to a 35 bed unit, and that’s probably caused the most dissatisfaction..... It has lasting effects on how service is delivered there.”<clinician>

Concord was directed by MOH to implement the new ‘phase of illness’ model of care was ordered by the DOH but commitment to it is not strong. It was:

“..not a model that at the clinical level that people particularly understood or brought with them. It was being declared and it’s complex to break up a psychotic person’s life experience of their illness into a phased model....”<planner>

Clinicians are very uncertain about the benefits of the model and it would actually seem to go against the spirit of the 1983 Richmond Report and the 2002 NSW Parliamentary Select Committee’s recommendations about Mental Health Services.

“One of the issues that comes up in the Concord model is this idea of the phase model, and how that relates, but in the surveys of staff one of the things that seemed to emerge was that this compartmentalization to these various units has hampered relationships with the community, and has undermined the larger philosophy of building it on community based services.”<clinician>

Responsiveness to model of care

The model of care that the unit sought to maintain was a recovery, collaborative one and this was reflected in a number of the physical spaces. Nurse stations in the general acute wards were high benched but open. There was no barrier. Patients had ready access to telephones. The seclusion room was the least threatening of those we saw: it was located near the nurse station; it had light; no CCTV just a convex corner mirror; a clock could be seen. The facility used colour and structure to provide orientation. The disorientation caused by vanishing points at the end of corridors was overcome by breaking up the corridor at points and using primary colours to define the end wall. Interestingly, the patients in the acute ward were friendly and engaged. They were playing basketball together, staff were actively engaged with the patients – and the patients voluntarily came up and introduced themselves. The ambience was entirely unlike any other facility visited.

The ethos of care at Concord reflects the institution’s history as an open facility embedded within an urban community. The clinicians were as involved as possible in the planning and attempted to ensure the building meet their needs, for instance, patient rooms were smaller than usual, so that more activity and quiet spaces could be introduced. Informants considered ample space essential.

The adolescent unit had appropriately heightened ceilings and a spacious eating area. The dining spaces in the adult intensive care unit were, however, considered too small:

“..in somewhere like an intensive psychiatric unit that space is paramount. Certainly, within our PICU here the dining area is way too small, and I think that from a design perspective the risk of escalation or agitation by people around sort of food times is really important, and I think that we are designing our dining rooms way too small.....if there’s time where people are going to agitate it will be when they’re in a confined space being served food at the same time,hungry and wanting to eat, but agitated.” <clinician>

An interesting analogy was made to eating at one of the mall food courts:

“...it would be like going into Westfield, into one of the food courts, and being obliged to share a dining table with somebody you don’t know in a confined space.” <clinician>

Outcome: fitness-for-purpose

The new facility reflects a quantum improvement in accommodation from the old spaces at Rozelle. Although staff are not happy about the locking of the ward and the imposed “phase of illness model of care”, the design elements introduced would seem to be firmly grounded on the salutogenic and biophilia principles of healing architecture. It is an excellent job but the acute units have too few beds, and were reportedly well over 85% occupancy on the day we visited. The number and kind of activity spaces were limited in all except the adolescent unit but the pool and amphitheatre were positive additions. The value of concentrating units on one site does however remain questionable, and does not accord with the community based model of care. Smaller units spread across multiple general facilities would seem to implement government policy more appropriately.

The fitness of the open rehabilitation ward and “cottages” is questionable. The building’s intention was compromised. It is perhaps the most institutional of all the buildings in the complex and holds too many residents to facilitate the final step back into community living. Staff are very unhappy with the prohibition on rehabilitation cottages on hospital sites, and attribute the decision to political frailty and fear of community backlash from the collocation of the facility in a more suburban area.

3.0 Case Study C: Orange Mental Health Unit

The documentation made available included:

- NSW Health – Invitation for Expressions of Interest – Orange and associated health services PPP Project – DOH 06/23 – July 2006 http://www.wwg.nsw.gov.au/NSW_Projects/bathurst_orange_and_associated_health_services
- NSW Health Infrastructure – Orange and Associated Health Services Public Private Partnership. Updated Summary of Contracts as at 30 June 2010
- NSW Government. Department of Planning. Orange Bloomfield Hospital Redevelopment (Orange Base Hospital) Modification MPO6_0111 Mod 1. September 2008
- Redevelopment of Bathurst, Orange Bloomfield Health Service. Design Briefs – Orange Health Campus
- Bloomfield Hospital: an introduction 5/7/73
- “The first patients at Bloomfield lived in a tent town” *The Orange Leader* Saturday Nov 28, 1987
- Pinnacle Healthcare. Orange-Bloomfield Hospital Redevelopment. Part 3A – Preferred Project Report. 11 August 2008
- Department of Planning. Modification of Major Project Approval. MP 06_0111 Mod 1

Background

In July 2006 Expressions of Interest (EOI) were called to finance, design, build, maintain and partially operate a new general acute health facility and tertiary mental health facility at Orange. The original Procurement Feasibility Plan was prepared in 2003. The Public-Private Partnership EOI included maintenance and partial operation of the acute care facility at Bathurst, constructed by others under a design & construct contract managed by NSW Health (not HI). The project is known as ReBOB. The total cost of the Orange development on 71 hectares of parkland at the existing Bloomfield Psychiatric Hospital was \$262 million. The cost of the tertiary mental health facility was \$34 million. Both facilities were visited.

Pinnacle Healthcare consortium was awarded the tender from a short list of 3 consortia: the financier and consortium leader was Babcock & Brown (later, International Public Partnerships), Hansen Yuncken Pty Ltd was responsible for

design and construction, and the Spotless Group were the facilities management group. The architects involved in the development were Silver Thomas Hanley (STH) and Design Inc. Design Inc. was responsible for the tertiary facility and STH for the adolescent unit in the new Base Hospital. Pinnacle was the preferred tenderer but their proposal was still considered deficient by the Evaluation Panel. They were permitted to amend the deficiencies. The proposal was approved on 20th December 2007 and the contract was executed on 21st December 2007.

The originating EOI included relocation of the Base Hospital and redevelopment of sub-acute mental health facilities at Bloomfield. The inclusion of a new tertiary mental health unit was still under consideration when the EOI was called: “The provision of tertiary mental health services at the Bloomfield site is currently being assessed. Subject to government approval, a new tertiary mental health may be included within the Orange PPP project”.⁷⁴ The contract signed in December 2006 included the tertiary unit. Issuing an EOI of uncertain scope marked a tender process that seems to have been precipitously begun without any review of the currency of the PDP. The Scope of Work was underspecified for a Level 5 tertiary service and significant revision in the PDP lead to a major contractual variation (Variation 8) that added significantly to the cost and reduced the estimated savings of the procurement method to only a couple of million dollars. HI became involved in the project during the negotiation of Variation 8.

The Process

During 2008 it became apparent that the programming of the Base Hospital was flawed and would be unable to deliver treatment at the requisite level of service. NSW Health conducted a planning review to ensure the facility could fulfill its delineated role. The Scope of Work needed to be significantly varied and extended, and contractual terms re-negotiated. HI became a member of the Project Executive Committee and the Chief Executive was from then on involved in the negotiations. The amended Deed became effective on 30th June 2010.

The original EO called for delivery of mental health care in comprehensive, integrated, *mainstreamed* mental health services.

⁷⁴NSW Health Invitation for Expressions of Interest: Orange and associated health services PPP project. Issue Reference No: DOH 06/23at p 11

Were these goals achieved?

The tertiary mental health facility consists of 2 new buildings housing a 145 bed acute unit and 80 tertiary mental health beds - 20 forensic beds, 8 intensive care, 12 specialist beds for older persons and 40 non-acute rehabilitation beds. Two existing heritage buildings are being refurbished. The Bloomfield Hospital has a state-wide catchment. A 10 bed acute child and adolescent unit (CAMHS) is included in the new Level 5 general hospital and not at Bloomfield itself. The new construction was completed in March 2011 and the entire project was completed in November 2011.

The Clinical Services Plan was reportedly prepared over six weeks, and the PDP was also a rushed and incomplete document. It was reported that:

“...the room design sheets that they included in the original, in the PDP which again was changed later on, that’s where some of the issues happened, but they were very good. They actually reflected clinical operations so they were very clear about who needed to be with who, near where, why, who it involved and everything. It disappeared completely.....You get a schedule of accommodation which is a spreadsheet. You can’t tell anything from that.....reading a schedule of accommodation that says you have 20 units of 20 square metres and circulation of 35 metres means nothing....”<project manager>

The AHS appointed a change manager and a project manager liaison officer and they gave extremely positive feedback about the process and outcome of the project. There were none of the issues that arose in some other projects inherited by HI. The success was attributed to the excellent working relationship that had been established between the contractor and AHS clinician project manager and the clinician change manager.

The AHS managers were very careful to frame their needs as problems to be solved, rather than demand a particular solution, as they understood the procurement methodology. The concern was not over the size of areas but on the intent of a space:

“..it goes back to the design and construct thing and that is that we would be saying: we need to make sure people can’t get out. You’re the builders. You’re the architect. You design it so that they can’t.....in many ways, the

way they built the building was overkill....But they also know the building is going to be fine. [the facilities management firm] won't be suing them as part of their little partnership."<project manager>

Change management: implementing a new model of care

The Director of the service had placed a great deal of importance on active stakeholder management throughout the project and an appropriate budget had been allocated for the two full time project staff. One clinician dealt with the contractor on a daily basis and the other managed the expectations of clinical staff in a coordinated change management process. The commitment of top management to commencement of the change management process from the start of the project was notable and set this project onto a successful journey. The attitude is reflective of the effective change management strategy in Hunter New England AHS when the psychiatric service was collocated on the Mater Hospital site.⁷⁵ It was also a PPP procurement methodology but more importantly, the project succeeded because of the integrated change management strategy and engagement with staff and the community. One key informant told us:

"..we needed to do some big picture things. One of those was around the change management process for our guys and probably the key part of the change management was actually bringing clinical groups from old environments which weren't....functional in a way, to a new environment where we could actually change some of the culture around how we worked.....and actually got the whole campus thinking about: well, I mightn't be moving but here's the opportunity to think about what I can change."<project manager>

The challenge for the clinician change manager was to support conceptualization of the plans by other clinicians. The open relationship with the builder made it possible to educate the users about the process and support their "ownership" of the building:

"..aren't people who are not trained...to look at plans and to think about how big a room is and – they're clinicians and the health service managers are not necessarily having project management skills....no facility planning...I needed to get people to understand the physical environment

⁷⁵ NSW Health. Change Management Framework: Newcastle Strategy. July 2007. Hunter New England Area Health Service

we were talking about building from the plans so that they could make strategic decisions about how it works....So I took a tape measure down to the courtyard they were in and actually mapped out what ten metres is and they were terrified. Well, we can't operate with that. Well, that's what's been on the plans, and they had no idea..." <project manager>

The bed definition rationale was not always clear to the clinicians; for instance, the signed off plans included five forensic assessment beds, but the team had difficulty working out how to use them:

"no one I've found in the state yet who can tell me what they are for.."
<project manager>

But the relationship with the builder was very smooth and that made the change management process much easier from the perspective of those responsible. The contractor "wanted us to find anything". The PPP followed on from the Bathurst D&C project may have increased the contractor's tendency to maintain active consultation and engagement with the hospital. Two full size and fully finished mock-up rooms were provided for the staff "to play" and they gave regular feedback. Hundreds of staff went through the rooms, testing and commenting upon them. As with other facilities, we found a high level of informal usability testing:

"...the way they'd mounted the anti-ligature correction taps on the hand basins weren't anti-ligature....me and one of the builders taking our belts off and literally trying to hang our weight off it....We've got a couple of funny photos of one of our nurses with a sledge hammer, putting holes in walls."<project manager>

Over 300 staff toured the emerging facility and the level of engagement was very high and left a lasting impression that translated to much goodwill throughout the project. Everyone one was watching something tangible emerge:

"...it really helped our change management process along because people went: right, this isn't something that's happening in ten years time. I can't keep putting it off. It's time to get engaged and it's something to get engaged with, not just a plan on the desk."<change manager>

The staff were also given access to the building over a three week period just prior to completion to test the new operational procedures. 500 staff spent 8 hours in

the building. They could leave comments on whiteboards left in the rooms. The builder wanted to get it right. The Change Management clinician implemented programs to engage with the local community and a marketing expert was brought onto the team. The local community was also able to tour the facility: two hour tours, three times a fortnight, and their feedback was actively sought.

This led to rich social interactions which planted seeds of active social engagement and a shared sojourn for the hospital and the community.

The Outcome: fitness-for-purpose

Bloomfield had been a mental health institution for over 85 years and has a long history of practices and expectations. It is a tertiary referral centre that houses treatment resistant people undergoing intensive rehabilitation, as well as older persons who are effectively 'in care'. And it was allocated forensic beds. Although the change management strategy deliberately tried to encourage openness and a recovery model of care, the staff demanded changes addressing their sense of safety. Given the unexpected killing of a nurse by a low risk patient in January 2011, there was a hesitancy to embrace a less custodial model of care. Effectively, Bloomfield was continuing its traditional role as a long term residential facility with a statewide catchment.

The two open care wards had a heightened reach barrier at the staff station but all other units had glass installed. But the development gave an opportunity to introduce operational procedures that enabled and required the staff to be on the unit with the patients. There were some environmental changes to provide greater privacy and autonomy, such as staff only vision panels in doors, but as the patients were coming from dormitory accommodation the quality of the change was immense. Seclusion rooms were installed but the hospital reports very low seclusion rates (second lowest in the state) and a very rigorous protocol of five minute active observations. It was reported that one patient, who had been in seclusion 36 times prior to moving to the new purpose built space, had not been secluded since moving. Although there was no change in seclusion protocols, there was an observed change in the way staff were able to interact with the patients and the environment.

As we found with the Newcastle Mental Health Unit, the quality of the finishes and the integration of the change management strategy with Procurement

Implementation seemed excellent. The question of whether the building achieved the objectives of the model of care and clinical practice desired is not as certain. The main buildings did not seem to fully embrace salutogenic principles, especially in terms of colours, orientation and way finding, but the layout was very accommodating of staff practices. The new Child & Adolescent & Mental Health Unit (CAMHU) at the Base Hospital was very innovative in its interior design; using bright colours, and cubicle seating arrangements to create intimacy. But as it was located on the first floor of the new building, the only outdoor space was a very small and “caged” courtyard.

C. Interviews

The interview data is presented in a table in Appendix IV; and, it includes relevant quotes and themes. There was a large amount of data from the 40 interviews and the table format helps to give a personal ‘voice’ to issues at both operational and cultural levels. The major themes with respect to the continuous improvement agenda include:

- Which clinical practice model – risk vs. therapy?
- Who is the client?
- Process of planning is not linear
- Poor communication destroys trust
- Governance is key – but the decision makers keep changing
- Why are the Guidelines bureaucratic rules and not flexible?
- Stop the politics; we need to plan

D. Site Visits, Walk-throughs and Observations

Site visits were conducted at six mental health campuses: Gosford, Hornsby, Concord, Lismore, Orange, and Mater-Newcastle. We drew on our generic framework for the evaluation of care environments: physical, social and symbolic environments. We conducted the semi-structured interviews with staff, and were then escorted through the buildings by a senior staff member. There was plenty opportunity to discuss the new building, how it was used, and how it might be made better; as well as to briefly observe the manner of practice at the facilities. We approached the visits with the following question in mind: *Does this environment support or hinder the delivery of the collaborative, recovery model of community based mental health?*

Our observations from the site visits suggest:

1. Much of the current programming of mental health facilities is not evidence based but historical and founded on clinical practices and cultural world views that are unique to each institution.
 - a. Gosford is driven by the safety fears of ward staff and the risk management concerns of senior management, without consideration of the implications for innovations in therapy.
 - b. Concord struggles to maintain what staff consider to be a progressive, recovery orientated model of care in the face of government policies, such as prohibiting transitional cottages on the site, and the mandated the locking of all wards.
 - c. Bloomfield implemented a far reaching change management, but traditional practices would seem to have been embedded into the new buildings.

A method to introduce evidence based planning into the process is urgently needed. The suggested mental health facilities design Community of Practice could fill this gap.

2. The lag between the initial development of a Clinical Services Plan and procurement is well known but the central importance of a current CSP and

PDP is often ignored when a project is given the go ahead. The planning must be right before the procurement contract is executed.

- a. At Gosford, HI felt it was held to ransom by the demands of those involved in the design development process because the construction contracts had been signed.
 - b. Concord had been in the planning for many years but the final model of care was reportedly dictated by the Department of Health, without genuine consideration for existing practices or the expert knowledge of clinicians. Some viewed the final product as regressive and inimical to the recovery community-oriented care model. All units apart from the rehabilitation unit are locked, and although requests to leave are generally not refused, there are few places to go at the end of the Concord Peninsula.
3. The Australasian Health Facility Guideline as a project control tool causes a great deal of conflict and dissatisfaction. If it were a broader tool to inform design and a guideline of minimum standards, as in the US and the UK, it would be acceptable. Both the Concord and Bloomfield facilities have had difficulty providing a physiologically comfortable environment for their patients. Air conditioning was not specified in the Guideline used at the time, and despite the advocacy of senior clinicians, has not been provided in mental healthcare facilities, where body temperature control is an issue, but it is provided in offices and non-psychiatric wards. Concord retrofitted air conditioning in 2011 at great cost. Bloomfield has extremes in temperature and had not resolved the issue at the time of the site visit. It had been overlooked because exhaust was provided but not air conditioning.
4. Users are not necessarily well-informed as to the evidence and need support and informed guidance from people that can be trusted. Clinicians need to be supported in their decision making with the current literature on evidence-based design ; facility planning expertise; and, education and training on the roles and responsibilities in a development project.
- a. The acrimony at Gosford may have been avoided if there had been more clarity and mentorship from the beginning.
 - b. HI would find it valuable to include clinical facility planners on its staff.

- c. Ongoing workshops on health facility design would also be of value, either run by HI or an educational group.

The collaborative process at Bloomfield deserves to be promoted as a model for future projects.

5. All facilities performed their own tests on building resilience and fixtures and fittings. Gosford designed its own toilet roll holder and other items. It worked with a bed company to design a ligature 'retardant' bed. Belts, ropes and sledgehammers were used to test the building fabric. Each site worked on designing their own 'safe beds', often in partnership with the same company who charged each one and duplicated the world. Sites had been engaged in the same questions at the same time. Information needs to be sourced more reliably and disseminated more certainly to ensure adequate absorption of information and normative practices emerging.

HI should consider implementing a centralized FF&E database so that knowledge is shared and no longer lost from the system. HI as a matter of priority, should establish a scientific usability testing capability, and the results of the tests should be published in a knowledge management system so that lessons may be spread more readily. Associated with the usability testing and KMS HI should consider implementing a centralized FF&E database so that knowledge is shared and no longer lost from the system.

6. The units are generally larger than recommended in the literature and despite the policies of integrated community care and de-stigmatization of mental illness by incorporating facilities into general hospitals. Concord and Bloomfield retained their existing client group, and had extra acute and/or forensic beds added. The hospitals are not so much integrated as adjacent and separate.
7. Boredom and a lack of distraction are recognized as major problems for psychiatric inpatients. Concord provided the most opportunities for engagement with large gardens, basketball hoops, a swimming pool and amphitheatre. Gosford, the low acuity site, had reduced its planned gymnasium to one treadmill. This does not compare to the full size basketball courts and well equipped gymnasiums of the UK and Europe. Lismore was another of the facilities visited and it had the most well resourced gymnasium

but the equipment was cramped into a standard sized treatment room. There was no purpose built space. Both Lismore and Concord had a range of activities and Lismore's gardens and art works were inspirational. The CAMHS at both facilities addressed the needs of the client group as suggested in the literature.

The Unit at Concord was very large, and like the adult acute ward, met many of the design criteria. There were quiet rooms, music and art room, a large garden and barbeque area, a cafeteria style server (not pre-plated); and the central activity space was large with high ceilings.

CAHMS in the new Orange Base Hospital on the Bloomfield campus was very 'cool' and allowed for complete visual and acoustic privacy in patient rooms. There were no vision holes for staff to check on patients without their knowledge. At Bloomfield, patients would attach towels and other things to viewing panels to obtain some privacy. The adult unit had magnet controlled blinds, but the CAMHS did not. The limitation of the CAMHS was the size and aspect of the garden area, which was small and wire fenced, because of its first floor location. The patients were kept entirely within the general hospital area but their outside space opportunities were limited, which compromised the otherwise thoughtful design scheme.

CONCLUDING REMARKS

The current program of mental health facility procurement is long overdue. The Garling Commission found that a number of facilities, such as the James Fletcher Hospital in Newcastle, were old, substandard and totally inappropriate for patients as accommodation. The new building reportedly made the staff feel more respected and appreciated. Morale had increased significantly, and staff were more tolerant of their patients. The incidence of aggression and seclusion had reportedly fallen but the baseline data was inadequate to verify if this was the case. The built environment at Concord most overtly tried to apply modern mental health care design principles but certain government policies compromised these intentions.

Despite some reservations, and given the very poor quality of the older facilities, the quality of the solutions in this program of work must be applauded. It is to be hoped that lessons learned will inform future building works. There is evidence in the literature that the built environment is a significant agent in the creation of a therapeutic environment and the utmost needs to be done to procure environments of care appropriate to the therapeutic purpose.

The Community of Practice: futures planning on common ground

The challenge for HI is a process management one and the proposed Community of Practice (CoP) provides a mechanism to enhance consultation and learning that will simultaneously build trust between stakeholders, incorporate tacit knowledge about clinical practices, develop a sound evidence base, and manage expectations. It is a method of futures planning founded on an extensive literature. The aim of developing a CoP is to improve the relationships among the stakeholders, and be productive of superior, informed and dynamic health building standards/guidelines for safer and better patient outcomes.

Clinician-user involvement can be captured by super-expert user groups, wherein service needs and the implications for facility design may be considered holistically, and new knowledge fed back into the planning process. The groups would meet regularly, develop trust, and become an ongoing and integral part of the planning process, guiding and providing expert advice for the development of best practice standards and guidelines across NSW. Such groups could ensure timely adaptation to facility guidelines in response to the changing clinical environments, service

models and anticipated changes in clinical practice. The CoP would incorporate clinical knowledge and future needs proactively into masterplanning and briefing processes. They would build and offer a reservoir of trust between Ministry of Health, clinicians and institutional providers. A collaborative approach facilitates implementation of the Donabedian structure-process-outcome evaluation model, incorporating evidence and measurable activities in a cycle of continuous quality improvement to ensure a recursive process of learning across disciplines and functions.

BIBLIOGRAPHY⁷⁶

- Alexander, C.; Ishikawa, S.; Silverstein, M. *A Pattern Language: Town, Building, Construction*. 1977; Oxford University Press: Oxford.
- Antonovsky, A. *Unraveling the mystery of health: how people manage stress and stay well*. 1987; Jossey-Bass: San Francisco.
- AHMAC National Mental Health Working Group. (2004) *Key Performance Indicators for Australian Public Mental Health Services: Working Paper*. Canberra: Commonwealth of Australia.
- Barach, P.; Small, D.S. Reporting and preventing medical mishaps: Lessons from non-medical near miss reporting systems. *British Medical Journal* 2000; 320:753-763.
- Bodje, D.M. *Narrative Methods for Organisational and Communications Research*. 2001; Sage Publications: London.
- Bolsin, S.N. Professional misconduct: the Bristol case. *Medical Journal of Australia* 1998 October 5; 169(7):369-372
- Braithwaite, J.; Travaglia, J.; Westbrook, M.T.; Jorm, C.; Hunter, C.; Carroll, K.; Iedema, R.; Ekambaraeswar, M. *Incident Information Management System in NSW: Overview of Studies*. 2006; Centre for Clinical Governance Research in Health, Faculty of Medicine, UNSW: Sydney.
- Carroll, L. *Alice's Adventures in Wonderland*. 1865; Macmillan & Co: United Kingdom.
- Clinical Excellence Commission. *Clinical Incident Monitoring in the NSW Public Hospital System: looking, learning, acting*. July-December 2009.
- Coughlan, M.; Cronin, P.; Ryan, F. Step-by-Step guide to critiquing research. Part 1: quantitative research. *British Journal of Nursing* 2007 16(11): 658-663.
- Commonwealth of Australia. (2010). *National Standards for Mental Health Services*. Canberra: Commonwealth of Australia.
- Commonwealth of Australia. *Fourth National Mental Health Plan – an agenda for collaborative action in mental health 2009-2014*. 2009; Commonwealth of Australia: Canberra.
- Facilities Guidelines Institute. 2010. *Guidelines for Design and Construction Health Care Facilities*. FGI: Chicago.
- Freeth, R. Focusing on relationship – is there room for another paradigm in Psychiatric Intensive Care? *Journal of Psychiatric Intensive Care*. 2007; 2(2): 55-58.
- Fossey, E.; Harvey, C.; McDermott, F.; Davidson, L. Understanding and evaluating qualitative research. *Australian and New Zealand Journal of Psychiatry* 2002 36:717-732
- Foucault, M. *The Birth of the Clinic: An archaeology of medical perception*. 1973; Routledge Classics: London (Translated by A.M. Sheridan); *Discipline and Punish: the birth of the prison*. 1977. Penguin Books: Middlesex, England
- Fourer, M.; Leap, N.; Davis, D. L.; Forbes, I. F.; Homer, C.S.E. Testing the Birth Unit Design Spatial Evaluation Tool (BUDSET) in Australia: A Pilot Study. *HERD*. 2011; 4(2): 36-57.

⁷⁶This is a list of peer-reviewed articles, books, government policy documents and newspaper reports that were used in the Report but were not evaluated as part of the evidence for mental healthcare facilities procurement. They were cited in the text of the Report but are not included in the Literature Review.

Giddens, A. *The consequences of modernity*. 1990; Stanford University Press: California

Goffman, E. *Asylums: Essays on the Social Situation of Mental Patients and Other Inmates*. 1961. Double Day: New York

Hall, E.T. *The Hidden Dimension*. 1990. Anchor Books: New York

Hall, E.T. *Mental health research: out of awareness cultural systems*. In Nader L. & Maretzki T (Eds) *Cultural illness and health: essays in human adaptation* pp.97-103. *Anthropological Studies* No. 9 Maybury-Lewis (Ed). 1973; American Anthropological Association: Washington.

Health Infrastructure Risk Management Framework (PRC 102 – Appendix B Health Infrastructure Risk Framework)

Inquiry into health services for the psychiatrically ill and developmentally disabled: Summary or Recommendations. (Richmond Report) March 1983.
[http://www.parliament.nsw.gov.au/prod/parlament/committee.nsf/o/7909bd5e019e335fca256b3b001f05fc/\\$FILE/RichmondRecommendations.pdf](http://www.parliament.nsw.gov.au/prod/parlament/committee.nsf/o/7909bd5e019e335fca256b3b001f05fc/$FILE/RichmondRecommendations.pdf)

Justice & Attorney General. *Coroner's Recommendations and Government Responses – June 2010 to December 2010*. Findings in the deaths of 'AK'; 'AM'; Suppressed #2; White M.

Kreiswirth, M. "Trusting the Tale: The Narrativist Turn in the Human Sciences". *New Literary History*. Summer 1992; 23: 629-657

Langley, G.; Nolan, T.; and Provost, L.; (eds.) 2nd Ed. 2009, *The improvement Guide*, Jossey-Bass, San Francisco, CA

Lawson, B. (3rd Ed) *How Designers Think: the design process demystified*. 1997; Architectural Press: Oxford

Lieblich, A.; Tuval- Mashiach, Z. T. *Narrative Research*. 1998; Sage Publications: London.

Maslow, A.H.; & Mintz, N.L. (1956) *Effects of esthetic surroundings: I. Initial effects of three esthetic conditions upon perceiving energy and well-being in faces*. *Journal of Psychology*; 41(8).

Mental Health Drug and Alcohol Office. *Charter for mental health care in NSW*. 2011
<http://www.health.nsw.gov.au/pubs/2000/pdf/mhcharter.pdf>

Merkel, J. *Post-occupancy 2004*. New York Psychiatric Institute, New York City. *Architectural Record*. 2004; (4 Suppl): 22-3.

Mitchell, W.J.T. (ed.) *On Narrative*. 1981; University of Chicago Press: Chicago

NSW Government. *Future arrangements for governance of NSW Health: Report of the Director General*. 23rd August 2011; NSW Health: North Sydney

NSW Health *Process of Facility Planning: guidelines for projects valued \$10 million and above*. 26 May 2010

New South Wales Health. *NSW Government's Final Response: tracking tragedy*. 4th Report of the Mental Health Sentennial Events Committee.
http://www.health.nsw.gov.au/pubs/2009/final_response.html

NSW Government Procurement System for Construction: *procurement practice guide*. Contracts used for construction projects. July 2008

NSW Health Infrastructure Procedure: PRC 102 – Project Risk Management

NSW Health Infrastructure Procedure: PRC 102 – Project Risk Management – Appendix B Health Infrastructure Risk Framework

- New South Wales Health. Implementation of NSW Government Inquiry into Mental Health Services in New South Wales. Status Report – May 2007
http://www.health.nsw.gov.au/pubs/2007/mh_inquiry_report.html
- New South Wales Health. A statewide approach to measuring and responding to consumer perceptions and experiences of adult mental health services: a report on stage one of the development of the MH-CoPES framework and questionnaire. 2006; NSW Department of Health: North Sydney.
- New South Wales Health. Suicide Risk Assessment and Management Protocols: mental health inpatient unit. 2004; NSW Department of Health: North Sydney.
- New South Wales Health. Select Committee on Mental Health: mental health services in New South Wales: Final Report. December 2002. Legislative Council: NSW Parliament.
- NSW Mental Health and Drug and Alcohol Office. (2012). PD2012_035: Aggression, Seclusion & Restraint in Mental Health Facilities in NSW. NSW Ministry of Health: North Sydney.
- Pereira, S. & Clinton, C. National Minimum Standards for Adult Services in Psychiatric Intensive Care Units (PICU) and Low Secure Units. 2002; Department of Health (UK) Mental Health Policy Implementation Guide: London.
- Preiser, W.F.E. (1983). The habitability framework: a conceptual approach towards linking human behavior and physical environment. *Design Studios*; 4(2): 84-91
- Royal Melbourne Hospital. Evidence Direct – Levels of Evidence.
http://mh1.mh.org.au/library/eds/levels_of_evidence2.htm Accessed 1/02/2011
- Sadler, B & Ridenour, A. Transforming the Health Care Experience Through the Arts. 2009; Aesthetics Inc: San Diego.
- Saegert, S. Environmental psychology and the world beyond the mind. *The G. Stanley Hall Lecture Series*. 1986; 6:133-164
- Sommers, M. “The Narrative Constitution of Identity: A Relational and Network Approach”. *Theory and Society*. 23: 605-649. (1994)
- Sommer, R. *Personal Space: The Behavioral Basis of Design*. Prentice-Hall Inc: Englewood Cliffs, N.J.
- Spivak, M. Sensory distortions in tunnels and corridors. *Psychiatric Services*. 1967; 18(1): 12-18
- Tanja-Dijkstra, K. & Pieterse, M.E. (2011). The psychological effects of the physical environment on healthcare personnel. *Canadian Journal of Dental Hygiene*; 45(4)
- Teichert, D. “Narrative, Identity and the Self”. *Journal of Consciousness Studies*, 11, No. 10-11, (2004), pp. 175-91
- Travaglia, J.; Braithwaite, J.; Debono, D. Protocol for the Rapid Assessment, conceptualization and timely, concise analysis of the literature [PRACTICAL] 2008 Centre for Clinical Governance Research in Health, Faculty of Medicine, University of New South Wales.
- University of Manchester. 2010. National Confidential Inquiry into Suicide and Homicide by people with mental illness. www.doh.gov.uk/mentalhealth/safetyfirst.
- Weick, K.E.; Sutcliffe, K.M.; Obstfeld, D. Organizing and the Process of Sensemaking. *Organization Science*. 2005; 16(4): 409-421.
- Weick, K. & Sutcliffe, K.M. Hospitals as cultures of entrapment: a re-analysis of the Bristol Royal Infirmary. *California Management Review*. 2003; 45(2):73-84.

Weick, K.E. The collapse of sensemaking in organisations: The Mann Gulch Disaster. *Administrative Science Quarterly*. 1993; 38(4): 628-652.

Weick, K.E. The Vulnerable System: An Analysis of the Tenerife Air Disaster. *Journal of Management*. 1990; 16(3): 571-593.

Winkel, G.H.; Holohan, C.J. The environmental psychology of the hospital: is the cure worse than the illness? *Prevention in Human Services*. 1985; 4(1-2): 11-33.

Winkel, G.H.; Saegert, S. Environmental Psychology. *Annual Review of Psychology*. 1990; 41:441-77.

Newspaper articles

Hornsby and Upper North Shore Advocate: May 13, 20 2010; October 13, 14, 16 2008
Sydney Morning Herald "Three inquiries into fatal hospital stabbing" Jan 7, 2011