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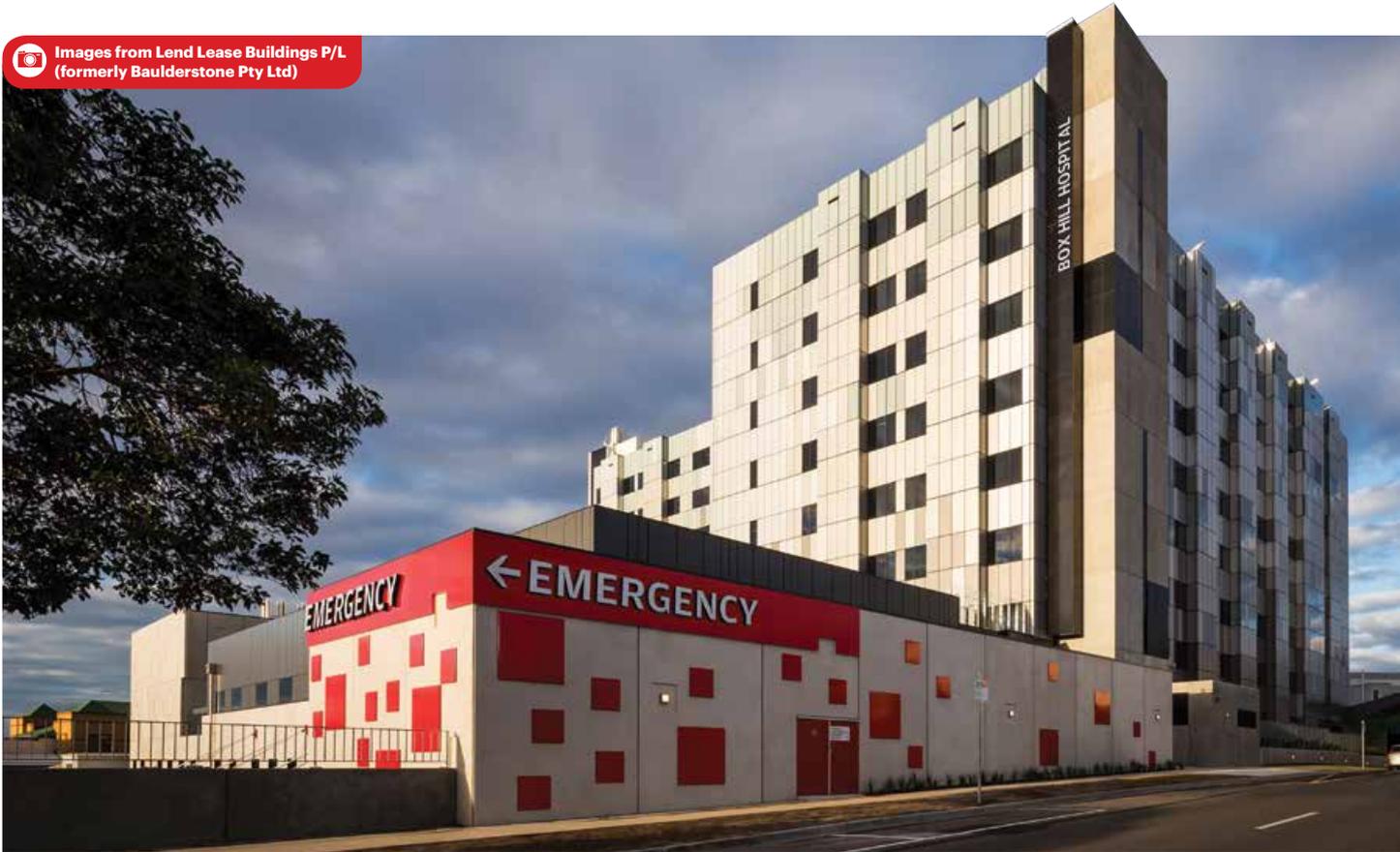


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Designing a Hospital that's Out of the Box

When the first sod of soil was turned at the site of Box Hill Hospital in Melbourne in November 2011, it marked the beginning of a \$447.5 million redevelopment project to replace and expand the existing 1950's facility to ensure it would meet the current and future needs of the local community.

The Box Hill Hospital Redevelopment project involved construction of a new 10-storey clinical services building (to be known as Building A) and refurbishment of close to 50 per cent of the existing hospital (to be known as Building B). The transfer of patients began in late September 2014, with final refurbishment works expected to be completed by late 2015.

The *Australian Hospital and Healthcare Bulletin* spoke with Project Director Liz Maddison about the Box Hill Hospital redevelopment and how it came to fruition.



Can you tell us a little about Box Hill Hospital’s history; how it started and how it came to be the major referral centre for people living in the eastern region of Melbourne?

The need for a hospital was identified by the local community in the late 1930s with construction undertaken from 1949 to 1956 as a consequence of local fundraising and strong community involvement.

Like many community hospitals, as demand for its services grew, additional wings and extensions were added including a maternity block, a larger emergency department and a mental health facility. In the late 1980s, Box Hill Hospital was transformed from a community hospital to a major regional teaching hospital affiliated with Monash University.

Who has been responsible for the design and construction of the project?

The Box Hill Hospital Redevelopment has been undertaken by a very strong team that included:

- Architect - Silver Thomas Hanley Daryl Jackson
- Services Engineer- WSP Building Services
- Structural Engineer – Meinhardt Pty Ltd
- Environment Sustainability Adviser – Cundell Pty Ltd
- Quantity Surveyor - Donald Cant Watts Corke
- Managing Contractor – Lend Lease Buildings (formerly Baulderstone Pty Ltd)

The client organisations of Eastern Health and the Victorian Department of Health were heavily involved with the consultant and contractor teams in the specification and design of the facility. In particular, attention to the detail

“Planning new hospitals is very complex but this hospital has had a highly professional one-team approach which has meant that problems are identified, analysed and resolved in a collegiate atmosphere.”

of process and workflow by the hospital staff so that the operations of the hospital would be most efficient was fundamental to achieving the desired outcome.

What are the new facilities at the hospital?

On completion, the capacity of the new facility will include a much larger emergency department, 10 new operating theatres (with an 11th for future expansion), a new 18 bed intensive care unit (and 2 additional for expansion), improved women’s health services and expanded services for cardiology, cancer and renal patients. It will include a total capacity of 621 beds (an increase of more than 200) and more than 200 additional public car parking spaces. There are 40 day medical and day cancer treatment spaces as well as approximately 30 additional consulting rooms when the project is completed.

Will there be an increase in staff?

Many of the new facilities are designated for future growth and will be commissioned and staffed as demand increases and new activity is funded. There will need to be more staff to manage an increase in presentations and admissions into the future. →



→ **Is there any new, innovative medical equipment being installed?**

Yes, although it may not seem awfully sexy. One example is that we are very excited by the fact that every bed in the hospital is a high tech falls prevention bed. These beds are constructed with alarms which send a signal to the nurse team if a patient at risk tries to get out of bed. The nurse can then (through our high tech nurse communications system), call the patient and ask if they want to get out of bed and reassure the patient that the nurse is on the way. This means the patient is more likely to wait for the nurse to arrive and less likely to try to get out of bed without assistance – increasing falls risks.

How has technology been integrated and will it improve administration and management?

Building A is a technologically advanced building incorporating a number of new information technologies, as well as a robust wireless and cabled network. Some of the key technology components in Building A include:

- *Spectralink* wireless telephones for voice and text paging
- A range of Cisco fixed telephones
- The Messenger paging system that can send text messages to wireless and fixed telephones, PCs, radio pagers and most smart phones.
- The *Responder 5* Nurse Call system integrated with the *Messenger* system, including Bed Exit alerts
- Building Management system integrated with the *Messenger* system

“As part of the redevelopment, there will be some quite significant refurbishment of the existing hospital to increase its consulting and support capacity.”

- Proximity card based security and access system integrated with the *Messenger* system
- The Patient Entertainment System from Rauland, which can later be extended for clinical purposes
- The advanced Medical Monitoring system from Philips
- *Omnicell* automated drug dispensing cabinets in the emergency department
- Tracking of assets through the Radio Tracking Location System (RTLS)
- Advanced audio-visual facilities in theatres and meeting rooms
- A Room Booking system integrated with MS Outlook
- (practically) all new PC and printer fleet, including multi function devices with the capability for fax integration with MS Outlook;
- The *Intellidesk* telephony system to support the new Business Services Centre and code calls

Has the project involved landscaping, and if so, was healthy living considered in its design?

While studies indicate that there are healing benefits of nature, fresh air, gardens and sunshine etc, it is challenging for hospitals with strict infectious disease prevention and controls. The new hospital is a multi-storey building and views to the outsides are maximised as much as possible for staff as well as patients. We also have a number of rooftop courtyards and while the infection and prevention control advisers mandate against gardens, we have been able to create an external environment with artificial elements including sculptures, where patients can sit outside and enjoy the environment.

How will/has the transferral of patients been planned and managed?

The patient move is a very important and significant step in the commissioning of the new building. The entire relocation was a co-ordinated and staged process over a six-week period



to minimise risk and disruption and to ensure patients and staff relocate safely into the new facility.

Preparing the new building for occupation includes a thorough clean, air sampling and testing, and stocking with equipment and consumables. There are almost 100 new clinical and non-clinical systems installed in the new building which need to be commissioned and tested in a live environment by Eastern Health staff during this period. We also have approximately 3,000 staff and volunteers who require orientation and training by our M (Move) people and trainers before we can safely move patients into the new, much larger and very different environment.

The Project Team has engaged the services of Smooth Hospital Move consultant Julie Collette who has managed a number of successful hospital moves including The Royal Children's Hospital in Melbourne. Individual move plans have been developed and will continue to evolve as details are finalised.

What were some of the biggest challenges in delivering the hospital to the point it is now?

Planning new hospitals is very complex but this hospital has had a highly professional one team approach which has meant that problems are identified, analysed and resolved in a collegiate atmosphere. As with all contemporary hospital, the information and communication technology is the most challenging aspect of all of the project elements.

Constructing the new building next door to an operating hospital and connecting into its main services such as power and water has its own challenges. The project team has worked closely with the hospital's management and engineering staff and have jointly identified processes which means there is a framework to deal with any problems that arise.

Completion isn't expected until 2015. What remains to be done?

As part of the redevelopment, there will be some quite significant refurbishment of the existing hospital to increase its consulting and support capacity. Some of this work has begun already with the renovation of the former Children's ward to provide additional Pathology space. Immediately following relocation to Building A, the refurbishment program will ramp up with work starting on the ground and first floor, which includes creating a new food court and retail space.

 Images from Lend Lease Buildings P/L (formerly Baulderstone Pty Ltd)



Box Hill Hospital Redevelopment

“The success of this transformational project illustrates how a carefully developed roadmap to the future can revitalize an aging hospital campus, to deliver contemporary best practice health care to the community it serves.”

The Box Hill Hospital redevelopment provides new operating theatres, wards and specialist clinical facilities.

The main entry lobby and central atrium is the heart of the hospital that links the old and the new Hospital buildings. The atrium is a key wayfinding element in directing and orientating visitors within the Hospital. An oversized canopy into the atrium clearly identifies the entry point and visibly leads visitors directly to the reception or lifts connecting the upper floors.

The central atrium also signifies a contemporary calming environment. Visitors are greeted by soaring ceilings, flooded with natural light, inspiring a sense of optimism and hope. ‘Bunjil’ the eagle stands sentinel at 2.8metres tall commanding the atrium; an impressive sculpture, carved by indigenous artist, Glenn Romanis, from a sugar gum tree removed for the new building site.

Bold exterior colour is used to great effect. A strong green to the façade surrounding the inner courtyard contrasts dramatically to fractured grey tones on the outer façade of the Hospital. The green colour references the original homestead and gardens on the Hospital site donated to provide for the original Hospital in the 1950s. Green is also the official colour adopted by Box Hill Council.

An innovative bedroom design maximises staff vision into the room and also the patient's view out of the building. This is achieved via a combined inboard and outbound ensuite layout with carefully positioned bedhead to ensure a calming external view is achieved. Many of the bedrooms have a day bed located at the window to maximise the connection with the exterior environment.

The staff have been a focus in the design because of their importance in providing improved health care delivery. A key design inclusion is the positioning of staff rooms away from public zones and capturing external outlook to nature to achieve a calming breakout environment.

A connection to nature is promoted through the provision of a variety of courtyards suited to different needs and users who benefit greatly from the ability to 'escape' outdoors. The paediatric courtyard is a fun and colourful space for children. The oncology courtyard has imposing sculptural 'trees' that frame beautiful views from its fourth floor location. The central staff courtyard features a striking black and white tiled 'break out' area surrounded by a multi-patterned green façade.

The emphasis on green spaces at the Hospital resulted in a tree design for the project logo which developed into the Hospital logo. The tree design also features in Hospital signage, decorative timber panels, sculpture and other artworks.

A fun graphic design element is Rebok the Cat who became the Project Team's mascot after he decided to move into the onsite project office. After adoption by one of the Project members, he became embodied in the Hospital graphics. Along the path of the Hospital's education tour for school children, STH Interiors incorporated 8 ginger, 1 grey and 2 meerkat cats incorporated into the graphics.

The project was undertaken by the architects Silver Thomas Hanley (STH) in a partnership with Jackson Architecture.



STHDJ

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For more information visit
www.sth.com.au www.jacksonarchitecture.com.au
Photography - www.paolocappelli.com.au