



CRC for
Water Sensitive Cities

Queensland Children's Hospital therapeutic landscapes

Location:
South Brisbane,
QLD



Insight

Green infrastructure can do more than improve stormwater quality; it also provides healing benefits for hospital patients. This case study shows how green infrastructure can be integrated into a hospital. The project and subsequent research challenge not only how we design hospitals but also cities for health and wellbeing.

Project description

The multi-award-winning Queensland Children's Hospital is Australia's largest paediatric hospital and the largest capital investment in children's health in Queensland's history.

The state-of-the-art facility was intentionally designed 'not to feel like a hospital'. Spread across 12 levels, this 359-bed hospital includes purposefully designed public and private gardens. The 'living tree' design features a network of trunks and branches that assist wayfinding, afford views to the surrounding landscape, provide natural light where possible and lead to outdoor gardens and terraces at the end of the branches.

The garden's design harnesses the power of nature and supports the human spirit in healing and wellbeing. It benefits individual patients and the wider hospital community, as demonstrated by a post-occupancy user evaluation carried out about the gardens. The hospital gardens and community spaces represent an emblematic shift in hospital design.



- 1. LCCH Plaza
- 2. George Gregan Playground
- 3. Stanley Street Entry
- 4. Raymond Terrace Entry
- 5. Secret Garden
- 6. Adventure Garden
- 7. Green Sloping Roof
- 8. Staff Garden
- 9. CYMHS Gardens
- 10. Babies Garden
- 11. Shared Gardens
- 12. Rehab and Adolescent IPU Garden
- 13. Visual Garden

↑ Overview of Queensland Children's Hospital's various healing gardens and outdoor spaces. Source: Conrad Gargett.

What does this case study demonstrate?

Each case study has been selected to demonstrate specific solutions, benefits or enabling structures that support the creation of water sensitive cities. This case study focuses on:

Amenity and urban greening

Green roofs and walls

Rainwater and stormwater harvesting

Water sensitive homes and buildings

Case Study — Prepared by Cooperative Research Centre for Water Sensitive Cities, November 2020



Business
Cooperative Research
Centres Program

The drivers

A hospital 'not like a hospital' to deinstitutionalise the new children's hospital and enhance clinical outcomes

- A collaborative project team developed an innovative hospital design founded on health promotion and evidence-based design.
- The landscape design emphasises the benefits of nature and the importance of contextual design in supporting healing outcomes.

The innovations

Design

- The 'Normalcy in Healthcare Design' and day-to-day activities make patients and visitors feel 'normal', such as the smell of freshly cut grass, access to the sky, wind, rain and views over Southbank and the Brisbane River.
- The design acknowledges the service and needs of hospital staff by providing separate staff gardens for 'time out'.
- The building features a variety of green spaces, green monoliths and epiphyte columns, and views over the landscape.
- The design flags the hospital's green credentials to the wider community by including a green sloping roof which can be seen from afar.

Technical

- There are shared spaces for services and landscape infrastructure (irrigation, drainage and rootzone) between the building floors.
- A custom designed shallow 300 mm rootzone supports the green infrastructure and a flush finish between paving and planting allows a 'natural' garden experience.
- Six established fig trees in custom designed tree pits on the community plaza provide shade and eliminate the need for built shade structures.
- Green monoliths and epiphyte columns on roof terraces aid structural integrity of both the building and green infrastructure.
- Rainwater harvesting in a 90 kL underground tank assists with irrigation water supply and reduces dependency on mains water.

Operational

- A validated post-occupancy user survey and evaluation demonstrates the tangible benefits of therapeutic landscapes.
- The irrigation system complies with Queensland Health protocols for the safe use of water in hospitals. All garden irrigation is fully automated, programmed and operated to minimise the risk to health compromised users.
- Pavement design passively irrigates vegetation and minimises stormwater flows in the drainage system.
- Low impact landscape maintenance tasks during hospital hours provide a sense of normalcy and human interaction.






↑ Community Plaza.
Source: Christopher Frederick Jones.



↑ Variety of therapeutic gardens support a variety of activities.
Source: Christopher Frederick Jones.

The outcomes

 Cities providing ecosystem services	 Cities as water supply catchments	 Cities comprising water sensitive communities
<ul style="list-style-type: none"> • An urban hospital that provides easy access to fresh air, sunshine, views and nature: The QCH maximises green space, with only 23% of the site area covered by ‘conventional’ roof. By stepping back the façade to provide platforms for the gardens, green landscaping became a dominant feature of the hospital design, rather than an incidental outcome. 	<ul style="list-style-type: none"> • Integrated landscaping and civil engineering design that ensures the gardens are mostly self-reliant and use alternative water sources: Fully automated irrigation from harvested rainwater, complemented by passive irrigation and low impact activities undertaken by patients and staff, minimises maintenance and reticulated water costs. 	<ul style="list-style-type: none"> • Facilities that bring together people from the hospital, neighbouring schools, research facilities and the Mater Hospital: The hospital is more than just a hospital. It’s an extension of the nearby Southbank Parklands and the Grey Street entertainment precinct, with links to all forms of public transport. • Tangible health benefits promoted through green spaces, validated by post-occupancy surveys and research.

The lessons

- A clearly articulated and rational explanation of design intent and demonstrated benefits (in this case, green spaces promoting healing outcomes) were critical to sustain the project aspiration during the value management stages.
- It was important to adapt quickly to scope and design changes without losing sight of the project’s identity, its intent, and end users.
- ‘Big picture’ urban design challenges such as car parking could have benefited from pedestrianising the streets and hospital plaza. Unfortunately, this innovative idea succumbed to time pressure, risk management and capital cost.
- Involving the landscape architects during different design processes would have increased their understanding of functional and maintenance requirements, which would have improved outcomes. Nevertheless, engaging the landscape team early meant the design included substantial healing gardens and community spaces. These healing gardens drew on evidence-based research from multiple disciplines.
- Understanding suitable ‘local’ plants, their growing needs and suitability for the constrained rootzone was vital. Technical challenges included a 300 mm growing media depth for roof gardens and green walls, understanding how to make epiphyte columns work, and how to successfully install six 30-year old fig trees for shade. Custom planters were installed for the fig trees.



↑ The Adventure Garden.
Source: Conrad Gargett.



↑ Views over the river to Brisbane's CBD.
Source: Christopher Frederick Jones.



↑ The Child Youth Health Services Gardens.
Source: Christopher Frederick Jones.



↑ The George Gregan Playground.
Source: Christopher Frederick Jones.

Business case

- Increasing health costs in Australia is putting pressure on all areas of health spending. Innovation and improved efficiencies will help manage the health budget.
- Maintenance and irrigation costs of greenery can be minimised by encouraging water sensitive design through integrated landscape and civil engineering design.
- Research shows the significance of nature and the built environment on health and wellbeing and the potential for reduced hospital stays.
- Well-designed hospitals incorporating significant amounts of nature have the potential to benefit patients, their families and hospital budgets. It can help reduce stress and anxiety for patients, staff and families and assist in making the visitor experience more comfortable.
- The QCH therapeutic landscapes won many national and international awards and the thinking, design and user feedback is well documented in the publications below.

Transferability

The design thinking, engagement process, implementation and post-occupancy evaluation of the QCH gardens can be transferred to other health care projects in different locations and at different scales.

This project also highlights the need for more design excellence and research collaborations to demonstrate the benefits of integrated and innovative design for people and planetary health.

Project collaborators

- Queensland Health
- Conrad Gargett
- Aurecon
- Lend Lease
- Landscape Solutions
- Dig-It Landscapes
- Cardno
- AECOM
- Dotdash
- Asset Horticulture and Landplan
- Irrigation Design Australia



↑ The Secret Garden.
Source: Christopher Frederick Jones.

Awards

- 2019 AILA National Landscape Architecture Award, Research, Policy and Communication – Collaboration towards Cities that Thrive – Communicating the role of Healing Gardens
- 2019 AILA Queensland Landscape Architecture Award, Research, Policy and Communication – Collaboration towards Cities that Thrive – Communicating the role of Healing Gardens
- 2017 Highly Commended Research Award for Normalcy in Healthcare Design (Conference Paper), European Healthcare Design Congress, London
- 2016 AILA National Excellence Award, Design – Lady Cilento Children's Hospital (recently renamed Queensland Children's Hospital)
- 2015 AILA Queensland Landscape Architecture Award, Design – Lady Cilento Children's Hospital (recently renamed Queensland Children's Hospital)
- 2015 Salutogenic Design Award, Lady Cilento Children's Hospital (recently renamed Queensland Children's Hospital) by the World Congress for Design and Health, Hong Kong

Additional information

[The efficacy of healing gardens – integrating landscape architecture for health](#)

[Healing gardens in children's hospitals: reflections on benefits, preferences and design from visitors' books](#)

[Nature that nurtures: a holistic approach for 21st century healthcare design](#)

[Normalcy in healthcare design: An extension of the natural and built environment](#)

[Working in partnership to mainstream green spaces in healthcare settings: Case study of Conrad Gargett \(Brisbane, Australia\)](#)

[Designing gardens for healing and health](#)

[Healing gardens: Hospital design using nature to heal and soothe](#)

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