A VERY SUCCESSFUL OPERATION

Lady Cilento Childrens Hospital is a $1.5 billion program of works to improve children's health services in QLD, comprising 12 clinical levels and adjacent Centre for Childrens Health Research dedicated to child and adolescent health research.

DELIVERING A HEALTHY OUTCOME

MAIN CONSTRUCTION COMPANY : Lend Lease
PROJECT VALUE : $1.5 billion
OPENING DATE : December 2014
ARCHITECT : Conrad Gargett Lyons

Image Lend Lease constructed the new QLD Children's Hospital.

One thought was front and centre for the Lend Lease team on the Lady Cilento Children's Hospital project: "We are building an awesome hospital for our kids". And it is a truly awesome hospital, with its dynamic 'living tree' design, high performance facade, green roof and garden terraces, pet visiting area, helipad with direct access to the emergency department, two atriums, public artworks, 12 clinical levels with room for expansion, and 359 patient beds, most of the overnight beds in single rooms with an ensuite and a parent sleep-over bed.

The LCCH brings together all highly specialised paediatric and children's health services currently offered by the Royal Children's Hospital (Brisbane) and the Mater Children's Hospital in one location.

The facility has been designed from the outset to be welcoming, safe and environmentally sustainable, combining innovations in architecture, engineering and construction in a manner which will ensure the best possible health outcomes for patients.

With such an ambitious scope, it has been an intricate and lengthy process for Lend Lease and their team of consultants and subcontractors, as well as other stakeholders.

It has been a long road for Lend Lease, seeing it go from concept and digital images to a reality. They have a strong feeling of pride from overcoming all the challenges in order to provide such a fantastic facility.

The hospital floorplate incorporates a 'trunk and branch' design, with two large full-height atria forming the 'trunks' and wide public spaces forming the light-filled 'branches', which are oriented towards major Brisbane landmarks. This will assist with wayfinding, especially for young patients and their families, within what is a very large and complex building, and also creates places of respite for staff, visitors and patients.

The hospital also has roof garden areas and garden terraces, a play area, an on-site school for patients and their siblings, and a performance space. These elements have been incorporated into the design to ensure the experience for patients and their families is positive, life-affirming and conducive to faster recovery times. The arts program, which has been running in parallel with the construction program, is very focused on improving health outcomes through the use of art.

Lend Lease delt with the matter of getting a balance right between pure clinical capital works, and the level of amenity. Focusing on the evidence that art, music, pets and performances decreases time spent in hospital and achieves better outcomes and speeds healing.

Sustainability measures which have been implemented are also conducive to better recovery for patients, such as the use of use of natural light and ventilation, and low-VOC paints, finishes, adhesives and flooring. Carbon dioxide sensors have been installed in some spaces to adjust ventilation rates to match occupancy.

Other measures relate more to the sustainability of the hospital itself, such the tri-generation power plant which has been constructed in a dedicated facility within the precinct.. This will be capable of supplying the power, heating and cooling to the LCCH building and the adjacent Centre for Children's Health Research building. Stormwater will be harvested for irrigation and for use in the cooling towers.

The construction process itself had some remarkable aspects, with some extremely innovative thinking required to deliver the building. A good example is how Lend Lease resolved a major logistical issue with the supply of concrete to the project. More than 60,000m^3 of concrete were poured for the LCCH, at an average of over 120m^3 per day during the structure phase. However, there was no space directly adjacent to or on the site for concrete deliveries, due to the nature of the site and surrounding road network and external stakeholder requirements.

The project team came up with an innovative solution; a remote concrete pumping station was constructed on vacant land directly opposite the main LCCH building, with the concrete pumped via pipes buried under the aretial road separating the pumping station and the site, where a manifold arrangement directed the concrete to one or more of the six satellite boom pumps working on site.

Other challenges had to be managed in the construction methodology, such as the large fins incorporated in the façade design. The solution was the prefabrication of all components, final assembly on site and development of a series of launch tables to facilitate the installation of the unitised system. This avoided the need to fully scaffold the building and improved safety by minimising live edge work at heights.

In the fit-out, Lend Lease had a focus on end-user safety in every detail. An example of this is the balustrades for the atrium voids and viewing platforms, and the handrails for stairs and other areas. Lend Lease made a decision to go over and above the minimum requirements to ensure that children would be unable to climb these items, nor be able to injure themselves in other ways.

Durability, health and safety in design have been a major focus for Lend Lease, as well as safety in construction, use and maintenance aspects of the hospital. Durability also incorporates cleanability and robustness.

One of the major success stories of the project from the Lend Lease perspective has been the stakeholder engagement. This included an Ambassadors Program featuring children who will be long-term users of the hospital, to put a face to the needs which the project will address and motivate staff and workers on the project.

The project has also benefitted from the inclusion of a full time community relations resource. Lend Lease had challenging conditions in the precinct which they actively managed by keeping everyone informed, and when they had issues identified by any stakeholders they responded quickly.

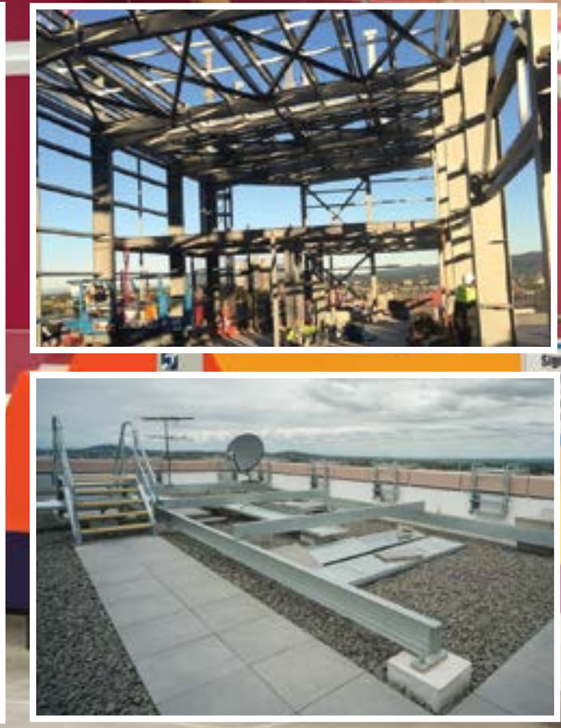
Lady Cilento Chuildren's Hospital has been a very long process. It takes a lot of stamina and talented people to deliver a project like this. For Lend Lease, looking back and seeing what they have achieved is very satisfying.

The building of this awesome hospital for kids' has been at the top of Lend Leases' values, visions and goals on this project. They have always kept in mind that it's not just a building, it is a facility which will benefit the entire state.

For more information contact Lend Lease, Level 3, 44 Musk Avenue, Kelvin Grove, QLD 4059, phone 07 3835 0555, website www.lendlease.com/australia/home.aspx

Below Hosken Site Steel provided a structural steel package for the QCH plantroom on level 13, including drafting, fabrication and erection.

Below Uni-span Australia was responsible for the total supply and delivery of scaffold for both the main QCH building and QCH Energy Plant.



With the degree of complexity involved in the Queensland Children's Hospital, having Hosken Site Steel (HSS) undertake a key structural steel works package meant Lend Lease could rely on a seamless end-to-end solution. HSS are an integrated operation with the skill and capacity to undertake the entire scope from initial design specifications and in-house shop drawing through to fabrication, transport and erection. The advantage for clients is there are no outside resources which can create complications – every facet of the steel work is overseen and undertaken by the HSS team.

At QCH, the company's scope was structural steel package for the plantroom on level 13, including drafting, fabrication and erection. For a project like this involving complex scheduling of relevant subtrades, HSS demonstrated superior skills at every stage in design resolution and steel engineering, and adeptness in matching their logistics to the broader programming of the project. HSS uses 3D drafting to model all their projects. This facilitates client communications and programming of critical path elements, and also assists with quickly identifying and resolving any buildability issues or clashes. The StruMIS fabrication management system is used to link all parts of the project team, from drafting to installation, ensuring rapid access to critical path information and delivering enhanced traceability through the supply chain. Having highly experienced and skilled senior steel detailers in-house working with the fabrication and erection aspects of the business means clients and their projects have the highest possible level of quality assurance, and immediate expertise available to successfully navigate any complexity, whether design-based or a challenging installation. HSS also has the capacity to accommodate any required finishing schedule, including hot dip galvanising and specialised paint systems. Every item is produced to the relevant Australian standard and ready for delivery to site for the safety-conscious and qualified HSS erection team to install.

The company's team of 80 dedicated and professional staff have produced exemplary results for a range of recent major projects, including a $2.6 million steel contract for the UQ Advanced Engineering Building for Watpac; the Wintergarden project for Brookfield Multiplex; Rockhampton's Air Traffic Control Tower for Badge Constructions; a range of works at Curtis Island LNG for John Holland; Gasworks, Newstead with FKP and recently completed $12M contract for the redevelopment of Indooroopilly Shopping Centre for Brookfield Multiplex. The company's current contracts; redevelopment of the Garden City & Pacific Fair shopping centres for Westfield Construction; Centre for Children's Health Research with Lend Lease; Aldi Distribution Centre, Brendale, Cockram Construction.

For more information contact Hosken Site Steel Pty Ltd, 228b Lavarack Ave, Pinkenba, QLD 4008, phone 07 3260 2084, fax 07 3260 2806, email info@hoskensteel.com.au, website www.hoskensteel.com.au

Safety is at the core of everything Uni-Span do, and with the Queensland Children's Hospital, ensuring safety for everyone was crucial, given the intricacies of the structure and the sensitivity of the locality. Uni-Span has been responsible for the supply and delivery of scaffold for both the main QCH building and QCH Energy Plant.

The package amounted to supplying and erecting around 40,000m^2 of edge protection and scaffolding for the duration of the 130 week program. Over 40 Uni-Span personnel worked at the QCH site, including skilled scaffolding labour, supervisors, engineers, draftsmen, contract administrators, WHS personnel and contract managers. Uni-span also dedicated a WPHS representative to the project, who undertook safety audits in conjunction with the client and Uni-Span Site Supervisor to ensure contracted requirements, due diligence requirements and applicable safety standards were met. "The Branches are an architectural feature and unique in design and construction. Solving the access to these work fronts, with a safe, smart and accurate design, was a major and exciting undertaking," said Uni-Span Design Estimating Manager, André de Villiers. "There were other complex design solutions presented and actioned, such as the helideck, QCHEP Cantilevered eastern façade and Core 3 suspended special bracket scaffold, supported by a Uni-span Formwork Solutions proprietary MK Waler wall bracket system, displaying the versatility of not only our product range but also the smart thinking and solution driven team of in-house designers and engineers. Another challenge was co-ordination of scaffolding to satisfy trades needing access to the work face within the design and also within the location constraints, due to the site's proximity to the Mater Special School, Stanley Street and Raymond Terrace."

Uni-Span has specialised in-house engineers and designers in both our Scaffolding and Formwork divisions, enabling them to provide design solutions to construction challenges. Uni-Span has also assisted with the development of mobile logistic and control applications, Bizsync and Bizforms, which gives companies a mobile means of managing logistical processes for projects via smart mobile devices. In 2013, the Bizforms application was an Australian National Finalist in the mobile awards category for Project management, Line of business and in–field services. Other major hospital projects in Queensland that Uni-span has been involved in include Townsville Hospital Expansion, Cairns Base Hospital redevelopment, Robina Hospital, Mackay Base Hospital, Prince Charles Hospital, Rockhampton Hospital Expansion, Royal Brisbane and Women's Hospital, Ipswich Hospital Multi Level Car park, Gold Coast University Hospital & Sunshine Coast University Hospital.

For more information contact Uni-span, 28 Computer Road, Yatala, QLD 4207, phone 1300 882 825, fax 07 3807 0546, email info@uni-span.com.au, website www.uni-span.com.au

Below Questek Australia supplied and installed nurse call and patient information systems at the QLD Children's Hospital.

Below Aircom Systems installed the Sumetzberger Pneumatic Tube System for the QLD Children's Hospital project.

100% Australian owned, and with 30 years in the industry, Questek Australia engineer a comprehensive integrated and innovative range of healthcare communications solutions. Market leaders, Questek systems can be found in over 650 aged care facilities and more than 80 hospitals. And they were the nominated supplier and installer for nurse call and patient information systems at the QLD Children's Hospital, with the new information system a first of its kind in the industry. A team of ten fulltime employees, together with four extra monthly contracted personnel worked on the project.

To ensure deadline was met, Questek expedited the overseas vendor equipment via air to guarantee a timely supply. Questek's business relationship and cooperation with Allied Technologies ensure targets and deadlines are met accordingly. Further projects Questek are currently supplying are Blacktown Hospital, Campbelltown Hospital, BUPA Aged Care, Catholic Aged Care, Uniting Aged Care and ARV Aged Care.

Questek can tailor a complete solution to meet all the elements of efficiency and effectiveness for daily facility activities. Integrated into one central, seamless platform, all their products can fully manage all calls and communication.

As well as designing and manufacturing nurse call systems, Questek specialise in the following leading communication systems:

- IP Nurse Call and Wi-Fi Nurse Call
- Dementia Monitoring
- Wandering Residents
- DECT Telephony and Wi-Fi Telephony
- Positional Duress
- RTLS Position Location
- Access Control
- CCTV and MATV
- Paging and Video/Audio Intercoms
- Vocera Communication
- PABX
- Wi-Fi Infrastructure

With over 150 years collective experience in providing superior healthcare integrated solutions, including system design, supply & installations, project management, after sales support and services, Questek Australia are the single point of contact for all your technology needs.

For more information contact Questek Australia Head Office, 102–104 Beaconsfield Street, Silverwater, NSW 2128, phone 1300 364 829, email sales@questek.com.au, website www.questek.com.au

Aircom Systems provide technical solutions in the field of Pneumatic Tube Systems for the Australian Healthcare sector. They are the Australian distributors for Sumetzberger GmBh and specialise in hospital construction projects nationally.

At the Queensland Children's Hospital, Aircom Systems were contracted to install a 160mm Sumetzberger Pneumatic Tube System to provide a fast and efficient mode of transport for the delivery of pathology samples and pharmaceutical supplies. Over four kilometres of 160mm UPVC tube, curves and carrier diverter units, link the 38 Pneumatic Tube Stations located in nominated locations throughout the QCH complex.

The hub of the system is the high performance Power Transfer interchange unit where carriers are transferred seamlessly from one zone of the hospital to another. The hospital is divided into 8 specific zones and it is imperative that carriers are transferred quickly and efficiently to maintain the integrity of the samples. Operating theatres, PICU and ED were identified as high dependent stations therefore 3 independent zones were installed providing a critical path between the high dependent stations and pathology.

With the Pathology department in a separate building (ARF), a service tunnel was constructed by ABI Group under Stanley Street to link the QCH and ARF buildings. Aircom built two giant "manifolds" at each end of the tunnel to transform the 8 x 160mm tubes from a horizontal plane in the QCH, to a vertical plane through the tunnel and then revert back to a horizontal plane on exiting the tunnel.

With 80% of the total systems transactions, approx. 1,500 transactions per day, being processed via the pathology department, Aircom Systems installed the latest Ergonomic Pathology Workstation (EPW) incorporating 8 x Multi Send Stations and 8 x Multi Receive Stations to alleviate the bottle necks associated in processing the high workflow. Aircom also utilised the Automatic Carrier Return feature where radio frequency identification (RFID) was installed to automate the return of empty carriers to their home stations.

Aircom Systems are the Australian distributors for the following hospital products: Sumetzberger Pneumatic Tube Systems, MLR Automated Guided Vehicles (AGV) and Sesto bed movers.

For more information contact Brett Gilbert at Aircom Systems, phone 02 8814 8033, email brett.gilbert@aircomsystems.com.au, website www.aircom.com.au

Below Secom Technical Services designed and installed the electronic security services for the Queensland Children's Hospital.

Below Yuanda Australia fabricated and manufactured the curtain wall system for the QLD Childrens Hospital.

Secom Technical Services are a specialist provider of security services, and operate across twelve countries with 30,000 employees worldwide, over 500 of which are based in Australia.

Providing security services Australia-wide, Secom was involved with the provision of Electronic Security Services for the new Queensland Children's Hospital.

Managing the project from their Brisbane office, Secom had a total of 28 staff involved in the design, installation and support of the Queensland Children's Hospital project works.

The security systems provided include Security Management System; Access Control System; CCTV System; Intercom System; Duress System; and Network Connection Hardware.

All systems were designed and installed to meet requirements of the new Disability Standards, resulting in improved access for all hospital users. This approach of improving social outcomes for all of society is a key objective of Secom's ethos worldwide.

As with any major construction project, information management and maintaining workflows to correspond with changing construction needs, are key challenges. In order to create an open management environment that supports effective decision-making, Secom ensured open communication was maintained between contractors and project managers.

Secom continues to deliver projects nationally, with current major projects underway in Queensland, New South Wales, Victoria, and Australian Capital Territory, involving the Health, Defence, Education and Retail sectors.

Secom's service philosophy is improve and assist society to be a safer place. From its unique postion as a specialist security services provider, Secom is able to deliver a wide range of security solutions in support of this philosophy.

For more information contact Secom Technical Services, email sales@secomts.com, website www.secomts.com

Yuanda Australia came to fruition in 2007, trading under Chinese parent company Shenyang Yuanda Aluminium Engineering, which itself has been operating for over twenty years. They have grown to become one of the top curtain wall companies in the world.

Collectively, the Yuanda group's portfolio includes prestigious projects such as the COCOON Tower in Japan—the most complex curtain wall project in the world; the Business Bay project in Dubai—the single contract with the largest area of curtain wall; the Abu Dhabi Investment Headquarter Tower—the world's most difficult project in curtain manufacture and fabrication; and in Australia the SA Health and Medical Research Institute; the new Royal Adelaide Hospital; the ANZ Headquarters in Melbourne Docklands; Brisbane Supreme Court; and Myer headquarters in Melbourne. Yuanda have also been awarded the largest single façade sub-contract in Australian history to design, supply and install the façade systems for International Towers at Barangaroo South in Sydney

Yuanda were the specialist façade sub-contractor to the main contractor Abigroup (now Lend Lease) for the QLD Children's Hospital development. Yuanda carried out detailed design to develop bespoke façade systems for the project which incorporated extensive projecting shading elements which are a significant external feature of the building, and enhanced acoustic performance measures to meet stringent project requirements. Systems were performance tested to confirm compliance prior to fabrication, assembly and installation onto the building.

Abigroup had no technical knowledge or experience with the curtain wall system, which slowed the process down. To overcome this, Yuanda disclosed detailed technical information for most aspects of their work for Abigroup's edification.

Yuanda Australia have recently completed or are completing nine healthcare facilities including the New Children's Hospital Perth, Gold Coast University Hospital, Chris O'Brien Lifehouse Sydney and the New Royal Adelaide Hospital. Further projects Yuanda are currently working on include 1 William Street Brisbane, 480 Queen Street Brisbane, 699 Bourke Street Melbourne.

Yuanda's strong position within the global market as a leading façade contractor, coupled with their experienced personnel both on the design and delivery sides of the business, ensure their clients are provided with the most innovative and cost-effective façade.

For more information, please contact Yuanda Australia, 3/40 Brookes Street, Bowen Hills, QLD 4006, phone 07 3251 6100, fax 07 3251 6150, website www.yuanda.com.au

Below Otis Elevators provided and installed the GeN2TM elevator.

Otis Elevator Company is proud to have our flag ship products installed in the Queensland Children's Hospital allowing for the safe and efficient transportation of medical staff, patients and visitors throughout the hospital.

Product installed include; 7 GeN2TM elevators, 19 low-speed large duty gearless elevators and 2 escalators. The GeN2TM elevator system is a state of the art elevator that does not require a machine room. All mechanical and electrical components of the elevator are housed within the shaft.

A key feature of the GeN2TM system are the polyurethane coated steel belts. Unlike traditional elevator systems that use steel ropes for hoisting the elevator car, the GeN2TM system uses a flat coated steel belt. Steel ropes require regular lubrication whereas the belt on the GeN2TM does not. Additionally, sealed bearings in the hoisting machine also do not require regular lubrication. And finally, the use of regenerative drives can reduce overall energy demand by up to 75%.

All this and more makes GeN2TM a safe, reliable and efficient system that's friendly to the environment as well.

For more information contact Otis Elevators, Luke Anderson, phone 07 3842 1111, email luke.anderson@otis.com