

NEXT GENERATION HEALTHCARE ON THE NORTHSIDE

The Prince Charles Hospital Paediatric Emergency Department Upgrade project involves the demolition of the existing Education Centre to make way for the construction of a new Paediatric Emergency Department.

MAIN CONSTRUCTION COMPANY : Baulderstone
CLIENT : Queensland Health
LOCATION : Chermanside, Queensland
TYPE OF CONTRACT: Managing Contractor - Document and Construct
PROJECT END VALUE : \$39.3 Million
COMPLETION : November 2012

The Prince Charles Hospital (TPCH) on Brisbane's Northside is one of only four hospitals in Australia which provides heart-lung transplants, and is at the forefront of cardio and pulmonary research and treatment. Baulderstone (Qld) are also leaders in their field, and as managing contractors for the \$39.3M expansion of TPCH facilities to include family-centred paediatric care, have delivered a world-class result which provides multiple benefits for the health service, patients, staff and their families.

The project scope included constructing a dedicated adult and paediatric triage, waiting area, 12 treatment bays, 20 multi-day/short stay beds, outpatient department consulting rooms, clinical administration and a new 24hour medical imaging facility. These are housed in a new three storey building constructed from prefinished CFC cladding, with a distinctive facade feature of coloured alpic around the window pods.

Other works included the building of a new education facility, renovation of the current

ED medical imaging, expansion of short term parking, refurbishment of the existing Building 14's final layout and associated external works.

A team of 12 Baulderstone QLD staff and 11 separate subcontractors worked on the project, which was completed on time, and with an unblemished safety record.

A key hurdle overcome by the Baulderstone team was extending an existing building, while also modifying services to maintain operational effectiveness. Part of the solution involved the staging, and maintaining ongoing communication with stakeholders and TPCH staff.

The Triage department was decanted into a temporary triage building constructed during stage one, so the existing triage could be demolished, and replaced by the new Paediatric Emergency Department, built as part of stage two along with the education facility. Stage three comprised the completion of refurbishment of the existing adult Emergency Department.

The external works included an external 16 car park for the Emergency Department, plus nine car spaces and four motorcycle parking bays for the education area. Underground works were also required, with a sewer diversion to First Avenue constructed.

"As First Avenue is the main thoroughfare for the emergency vehicles to access the Emergency Department, an extensive amount of communication and traffic management was required to manage this portion of the works," said Baulderstone Project Manager, Stephen Orazio.

"The new Triage was constructed in the same location as the ambulance parking bays, which were already deficient for space. Modifications were made to signage and public way-finding through the hospital precinct, to ensure that the Triage department could be easily located."

To make way for the new building, the existing diesel storage tanks and filler points required relocation, and existing stormwater, water and

electrical supplies were modified. Ground penetrating radar and vacuum excavation were used during the early stages to identify existing and unknown services.

Like all major projects, there were challenges, the primary one being the live hospital environment and need to maintain stringent levels of safety and precise organisation of teams, materials and the work sites.

"The Paediatric Emergency department is surrounded by five adjacent buildings (Emergency, Education, Administration, Mental Health and Endoscopy). We were required to structurally connect into two of these buildings. This close proximity made construction extremely difficult with limited access to external faces of the building. The project could only be accessed through the main front entry forcing the project to be constructed from the rear of the site to the front," said Stephen.

"The project was also designed to be connected directly into the Emergency Department



building. This close proximity meant that construction vehicles would be sharing the same route to site as the emergency services vehicles. The pathway to site was modified to ensure heavy/ slow construction vehicles entered the hospital grounds through a different entry, to ensure no interference with the emergency vehicles.

"Working within any live facility is difficult. It is especially difficult to work with a 24hr, 7 days per week emergency department. The construction works to be undertaken were located directly opposite and adjacent patients in critical conditions.

"Due to the close proximity of the adjacent buildings, the Jaso 300 crane was programmed with a designated lifting radius to ensure no loads were lifted over occupied buildings. Even though the project was three storeys in height, the crane sections were installed to ensure the crane could slew over the 10 storey clinical sciences building which was opposite the site.

"We also had to be extremely mindful of isolating essential services such as power, lighting, data, medical gas, mechanical ventilation, water and sewer. Baulderstone and TPCH staff underwent heavy consultation and planning to meticulously arrange services isolations, and modifications to way finding within the hospital.

"We were also required to terminate and make modifications to back up diesel generators, site wide fire services ring mains, existing chilled water supply, medical gas headers and supply, IT infrastructure, main switchboards and sewer and stormwater infrastructure. This involved extensive communication and co-ordination, to ensure minimal disruption occurred."

Improving the overall energy efficiency performance of TPCH was tackled in an innovative manner. The major efficiency

measure is a design and fitout which allows for multi-use of the isolation rooms and Paediatric Ambulatory zone, which comprise a large area, with the rooms running at low energy cost in normal mode and stepping up in isolation mode.

"The mechanical design of the isolation rooms and group containment areas is unique compared to typical designs in current healthcare projects. It differs from the traditional designs by taking a multi-mode solution approach," said Stephen.

"Desiccant equipment was utilised to process high quantities of fresh air in key areas, reducing the overall energy intensity of the project. HEPA filtered exhaust systems from isolation room and group containment areas were also used."

The desiccant equipment used pre-treats outside air for the education precinct, saving up to 40% of energy use compared to other systems. The equipment is also installed for all isolation areas, supplying 100% fresh air. Thermofusers (variable air flow registers) have been used throughout the new and refurbished areas, to minimise energy use and maintain comfort conditions.

With more than 80 years of experience constructing essential public assets, Baulderstone have completed major hospital and health research facility projects in every mainland state of Australia. Their recent projects include the multi-award winning Robina Hospital, completed in 2012, the Macquarie University Private Hospital in Sydney, and the Pharmacy Australia Centre of Excellence (PACE) in Brisbane. They are currently undertaking the final stages of work on the Mackay Base Hospital Redevelopment, bringing to that project the same drive for innovation and excellence which has shaped success stories like TPCH.

For more information contact Baulderstone Qld Pty Ltd, phone 07 3835 0555, fax 07 3832 0269



PRINCE CHARLES HOSPITAL UPGRADE - FACT SHEET

The Prince Charles Hospital provides health services to residents living in the northern suburbs of Brisbane and specialist services to the broader Queensland and northern New South Wales population.

In order to provide a world class children's hospital for Queensland, Queensland Health together with the Northside Health Service District has committed to the development of dedicated Paediatric Emergency Department facilities and associated services at The Prince Charles Hospital.

The Prince Charles Hospital Paediatric Emergency Department Upgrade project involves the demolition of the existing Education Centre to make way for the construction of a new Paediatric Emergency Department.



The new Paediatric Emergency Department will consist of:

- Dedicated Adult and Paediatric triage and waiting
- 12 treatment bays
- 20 multi-day/short stay beds
- 8 OPD consulting rooms
- Clinical administration
- New 24 hour medical imaging

Other works include:

- New Education Centre replacing demolished facility
- Renovation of current ED medical imaging into tutorial spaces
- Ancillary alterations within existing Adult ED
- Expansion of short term carparking and drop off areas
- Refurbishment of Building 14
- Associated external works including landscaping and footpaths.



ASHBURNER FRANCIS' INNOVATIVE ENVIRONMENT

Ashburner Francis is a multi-disciplinary engineering consultancy specialising in the design of environmentally-sound and sustainable engineering solutions for buildings and urban developments for today's world and into the future.

Established in 1976 and with 55 employees, Ashburner Francis has offices in Brisbane, Townsville, Toowoomba, Darwin and Perth. The company prides itself on being flexible enough to deliver landmark projects regardless of a project being green field or brown field, and are health and age care experts.

The company is currently working on the upgrade development at The Prince Charles Hospital Paediatric Emergency Department in Brisbane. The upgrade involves the demolition of the existing Education Centre to make way for the construction of a new paediatric emergency department. Other works include a new clinical administration, 12 treatment bays, 8 OPD consulting rooms, 24 hour medical imaging plus much more refurbishment and expansion work.

Ashburner Francis' involvement in the project included designing the air conditioning, ventilation systems, smoke hazard management systems, wet sprinkler protection systems and electrical/data/security throughout the new building extension. In addition, the AF team made changes to the existing building's systems to 'dove tail' into the new extension seamlessly.

Peter Logovik, senior mechanical engineer at Ashburner Francis personally developed the mechanical design for much of the project, and oversaw the construction phases. "I developed user-friendly isolation rooms and specialist containment area (for groups of infectious patients)," says Logovik, "and I modified the generator room cooling system to allow existing power generation systems to remain operational."

"The mechanical design of the isolation rooms and group containment areas is unique compared to typical designs in current healthcare projects. It differs from the traditional designs by taking a multi-mode solution approach." To this end desiccant equipment was utilised to process high quantities of fresh air in key areas, reducing the overall energy intensity of the project. HEPA filtered exhaust systems from isolation rooms and group containment areas were also used.

A challenge overcome by the AF team was extending an existing building where its services needed to be modified to maintain operational effectiveness. The building services engineering consultancy is also currently working on projects including Coles Shopping Centre developments throughout Queensland and Griffith University new Business School building on the Gold Coast.

For more information contact Ashburner Francis, 977 Stanley Street East Brisbane QLD 4169, phone 07 3510 8888, website: www.ashburnerfrancis.com.au