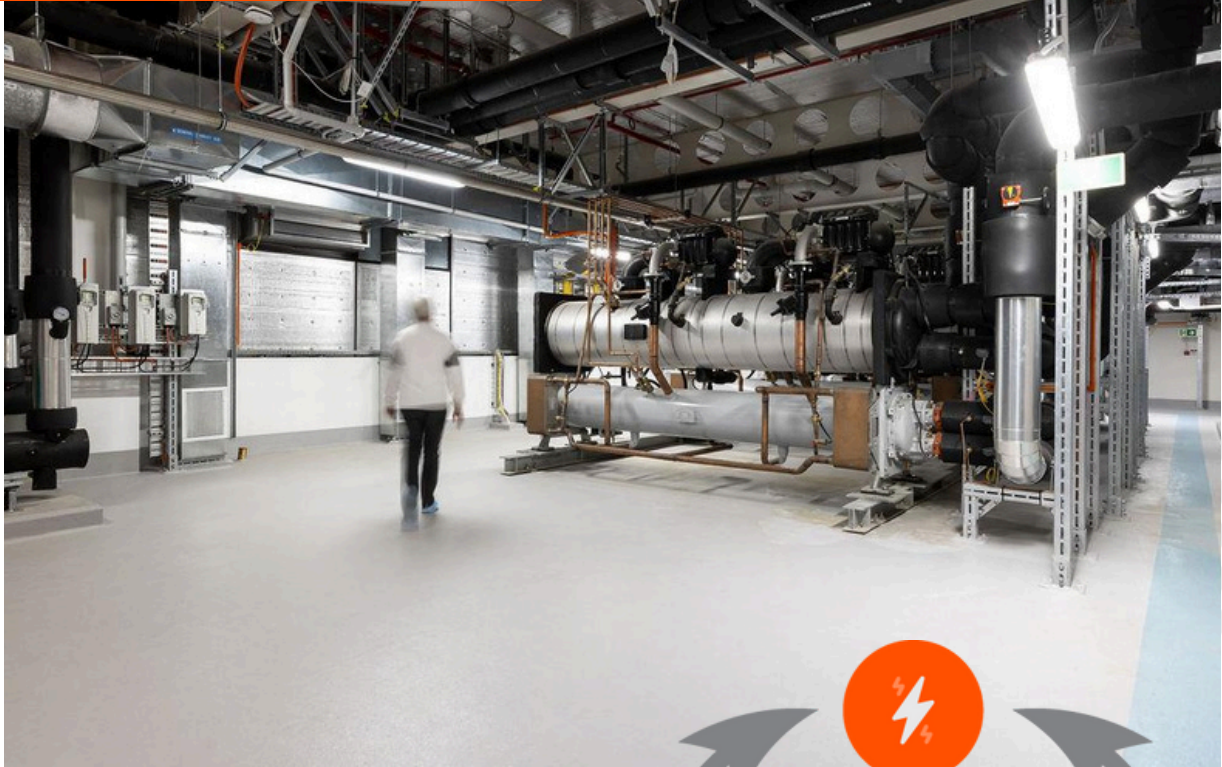




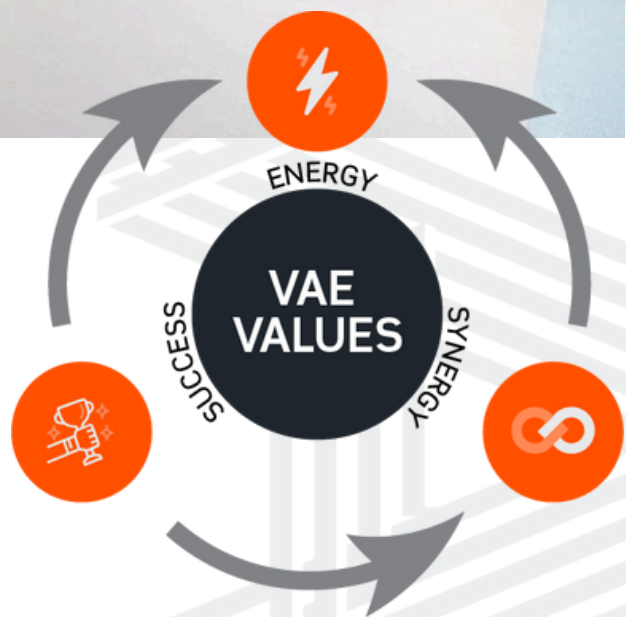
ABOUT VAE



VAE Group is a leading provider of Heating, Ventilation, Air Conditioning (HVAC), and Building Technology solutions, with a history dating back to 1997. Today, we employ over 400 professionals across 12 office locations in Australia, New Zealand, and Papua New Guinea.

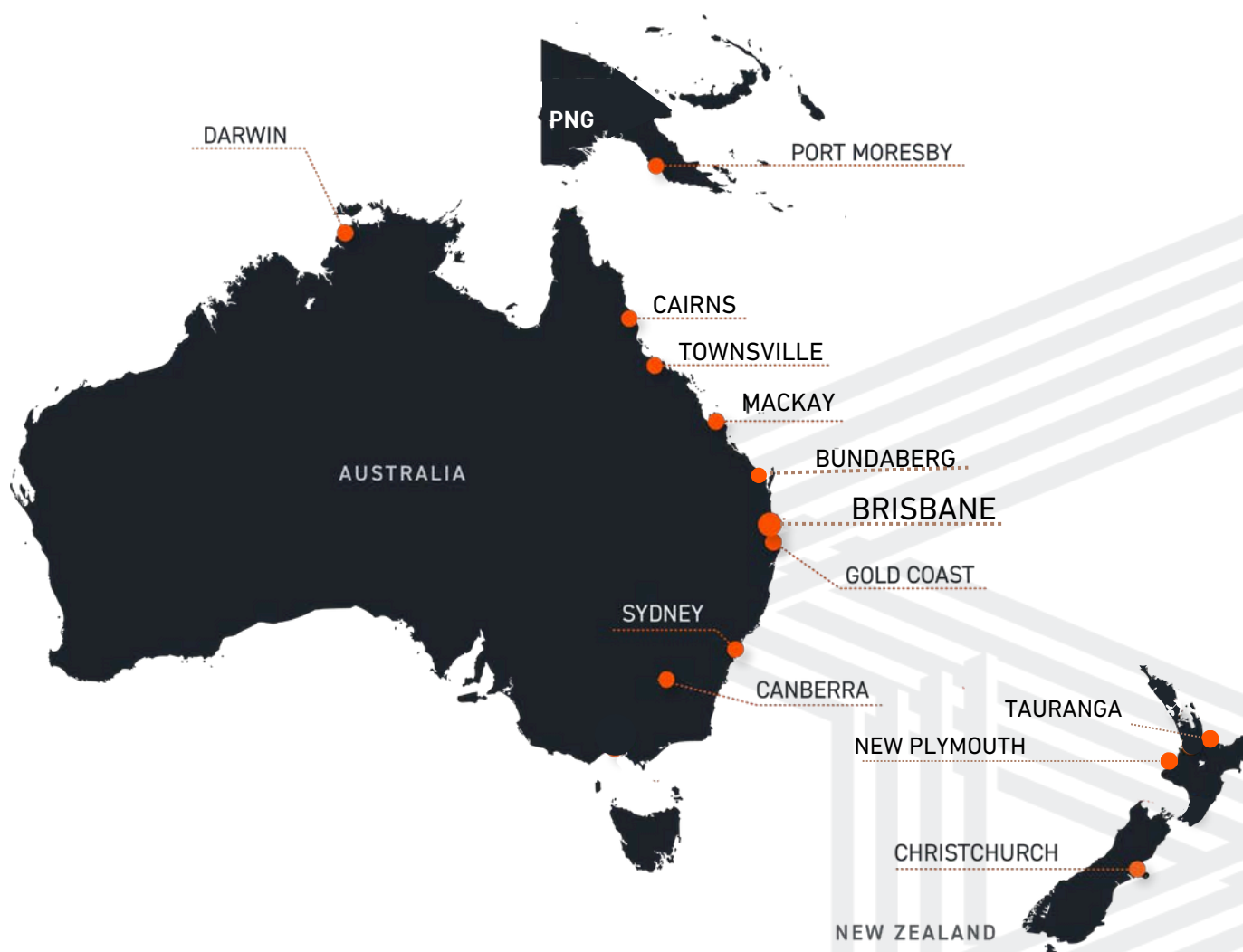
As a Tier 1 building solutions company, we are committed to upholding the highest standards of trust and integrity. We collaborate closely with our clients to develop customized solutions that meet their specific project requirements. Our expert staff are driven by a genuine passion for delivering outstanding results. This energy fosters innovative thinking, promotes efficient performance, and cultivates positive relationships.

Our team is comprised of in-house project managers, mechanical design engineers, and automation engineers. We have in-house drafting, and commissioning capability, as well as full mechanical and automation maintenance servicing capability.



At VAE Group, we stand behind our promise to provide **"Built in Certainty"** for all clients and stakeholders. With a strong track record of delivering high-quality and innovative projects, we strive to deliver solutions that offer lasting value. VAE is committed to providing the highest level of service and delivering solutions that exceed our clients' expectations.

LOCATIONS



LOCATIONS

VAE Group provides services across Australia, New Zealand, throughout the Torres Strait and Papua New Guinea. With over 450 staff based across 12 branches, our company has the capacity to support national and regional clients and a range of site sizes and facilities.

SECTORS

VAE Group work across a range of sectors including:

- Aged Care
- Airports
- Commercial Buildings
- Corrections
- Data Centres
- Defence
- Education & Universities
- Health Care & Allied Services
- Hotels and Resorts
- Industrial
- Infrastructure
- High density Residential
- Sporting & Public Venues
- Local and State Government.

PEOPLE

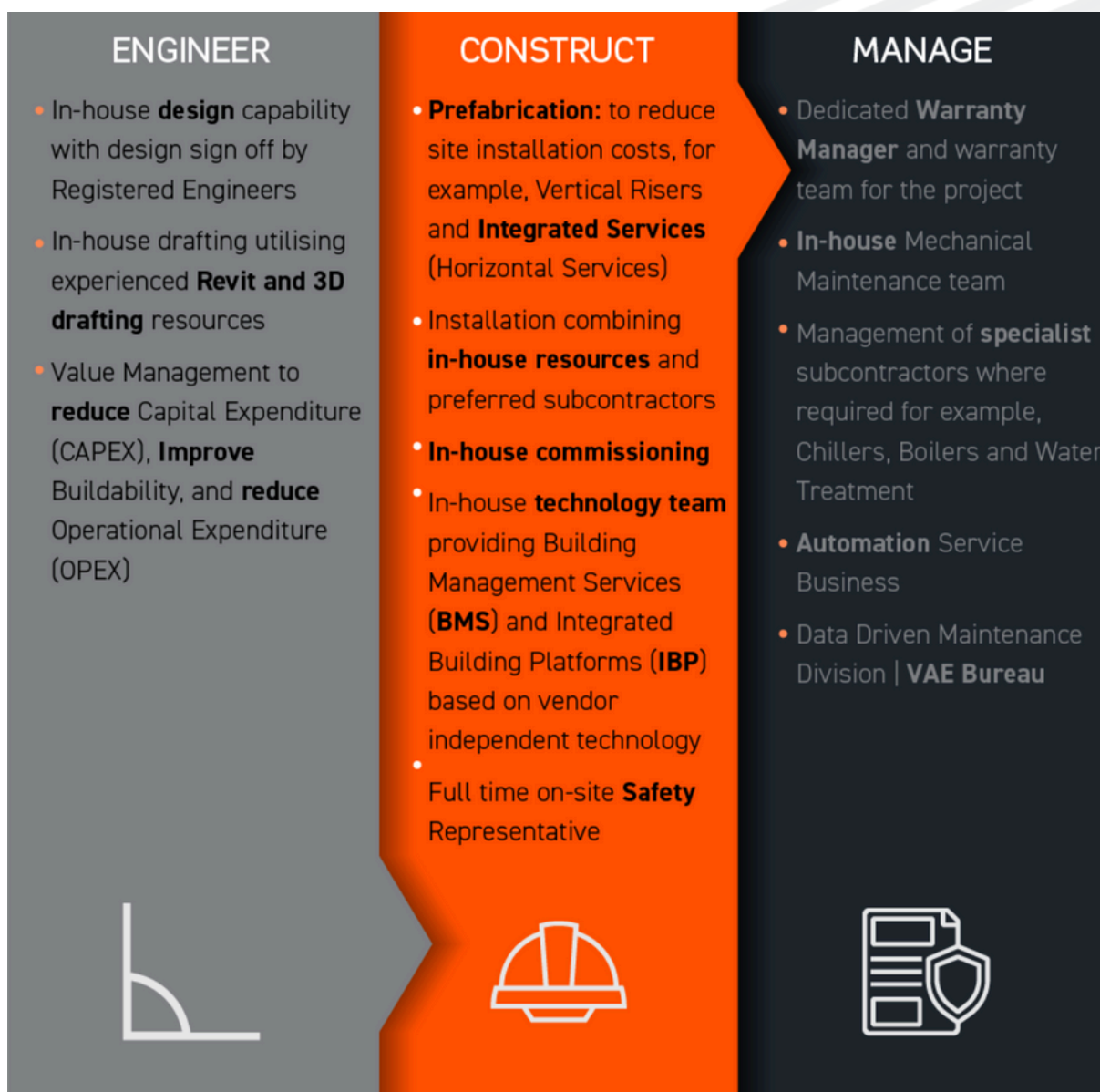
Our people are our strength and we firmly believe in developing our own in-house talent, empowering our employees to fulfill their potential. Our team are mentored, trained and respected, and we provide everyone with career and personal development opportunities.

VAE EXPERTISE

VAE Group have an exceptional portfolio of successfully completed Projects in complex critical environments, including Hospitals, Biomedical Facilities, Airports, and mission critical projects. We understand the challenges of working in these environments, and the intrinsic risks in delivering these projects.

Our focus to provide “Built-in Certainty” which relies on detailed pre-planning, construction management and rigorous engineering. For upgrade and retrofit projects, our goal is to minimise disruption and provide solutions that enable the effective maintenance of operational service standards. We have comprehensive experience in the successfully delivering projects that must continue to operate in critical applications for the lifecycle of the plant. These projects include:

- Major Private and Public Hospitals
- Civil and Defence Air Traffic Control Centres
- Biomedical Centres
- Positive containment facilities to PC3 level
- Research and Laboratory Projects



INNOVATION AND SAFETY



VAE Group is recognised as a leader in safety within our industry. We place the highest priority on the safety and well-being of our employees and subcontractors and take every measure to minimize their exposure to unnecessary risk. Our comprehensive approach to safety, which is a cornerstone of our company culture, is known as ...

"Safe at Work | Safe at Home | Mental Health,"

Technology

We specialise in delivering Integrated Building Platforms (IBP), which seamlessly integrate all building services into a single user interface. Our solutions improve overall communication and coordination between different building systems, resulting in greater energy efficiency, improved occupant comfort, and reduced operating costs. By providing a holistic view of building operations, we enable building owners and operators to make informed decisions and optimise the overall performance of their buildings.

Training

We invest heavily in the training, equipment, and competencies of our employees to ensure they can identify and mitigate risks before they arise. We recognize that the safety of our employees extends beyond the workplace, and we are committed to ensuring they arrive at and return home from work safely. To this end, we place a strong emphasis on vehicle maintenance, proper licensing, and ensuring our staff are fit and capable, no matter their location.

Certification

Our safety philosophy continues throughout the business and have implemented an accredited Occupational Health and Safety Management System that complies with ISO 45001. This system is audited by SAI Global and is integrated with our Quality Management System (ISO 9001 accredited) to ensure policy consistency and a culture of continuous improvement. Our Environmental Management System has been developed against the requirements of ISO14001 to improve our customers environmental performance and demonstrate commitment to sustainability.



BIM Management & Capabilities

VAE have comprehensive experience with projects providing Building Information Modelling (BIM) and 3D Drafting deliverables, as well as full services coordination. Drafting is carried out by our in-house VAE Drafting team within the REVIT 3D environment as our standard.

We are able to provide the following level of detail (LOD): -

- a) Traditional commercial deliverable standards to LOD 400
- b) More complex deliverable standards to achieve LOD 500, including: -
 - LOD 500 As-Built
 - BIM data embedded in Models
 - Additional Identity Attributes to enable integration into Asset Management systems e.g.

Value Engineering / Design Innovation

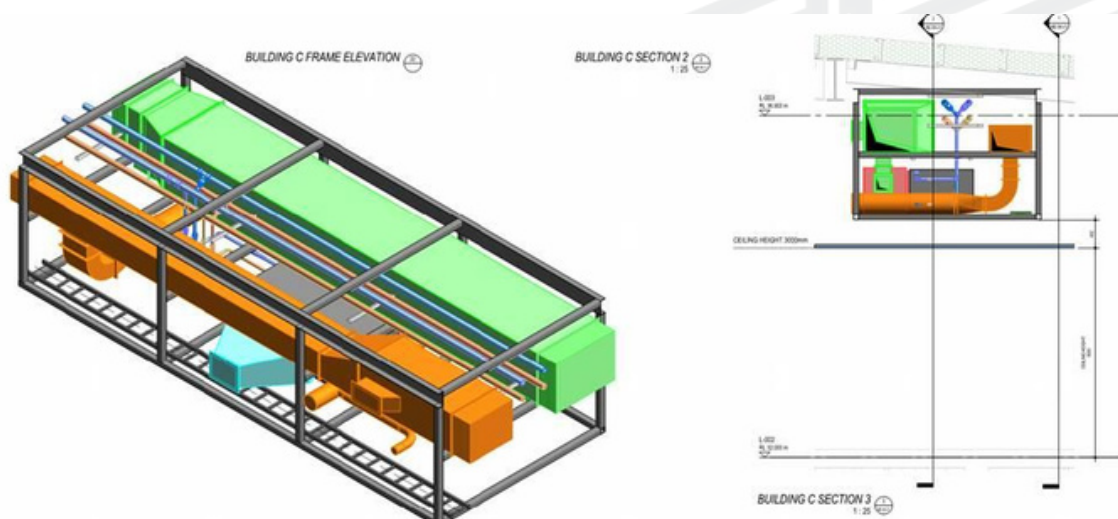
With a team of 40+ engineers and draftpersons, VAE's extensive inhouse engineering capabilities are able to provide significant value engineering and design innovation aimed at reducing the initial project capital expenditure (CAPEX) as well as optimising long term Operation Expenditure (OPEX) following project completion. To compliment this is our in-house capability for full 3D drafting, including scanning capability, to provide as-installed documentation. We have the capability to scan existing facilities, plant areas and installations to provide up to date 3D drawings for older facilities where documentation may be outdated or non-existent. Specialist subcontractor partners are used for pipe installation, pipe and duct insulation, mechanical, electrical and Building Management Systems (BMS).

Some examples of the innovation we have provided to projects include: -

Integrated Service Modules (Horizontal Modularisation)

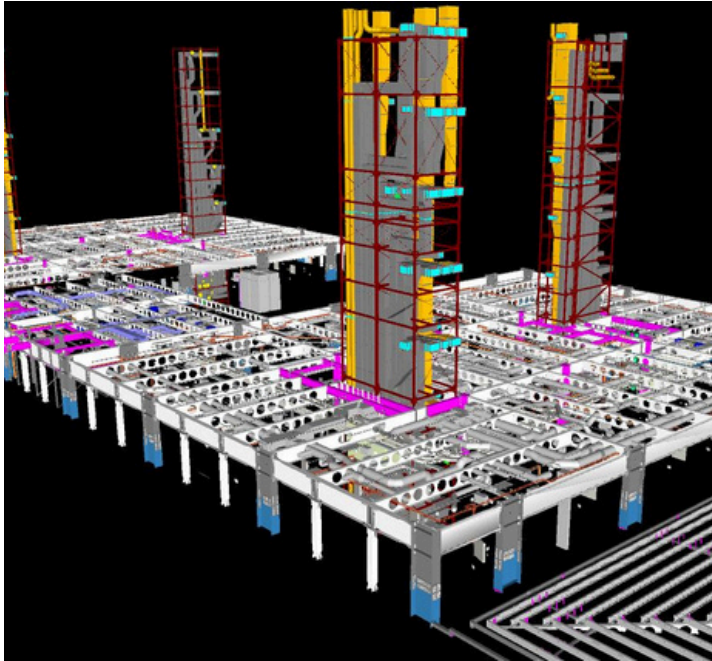
Horizontal modularisation may be utilized in intensive services zones to provide installation productivity improvements and spatial optimisation. The extent to these modules has no limit if a combined service approach is used to justify the capital cost of the framing systems through reduction of on-site labour.

The below sketches indicate the approach taken for a Healthcare research project with the objective to manage intensive services zones, condensing the construction program and providing seismic compliance.



Vertical Modularisation of Risers

Although now this technology is quite common, the application for the Christchurch Hospital was significant due to the stringent seismic requirements for the project. The productivity and safety advantages of this approach provided significant benefits to the project in reduction of site labour and construction programme benefits.



REVIT model design by VAE, showing prefabrication design of services risers - Christchurch Acute Services Building



Prefabricated Seismic rated risers ready to transport for Christchurch Acute Services Building

Critical environment - Case Studies



RAAF BASE DARWIN - DEFENCE AIR TRAFFIC CONTROL COMPLEX (ATSC)

Client: Lendlease \$3.47m

The AIR 5431 Defence Air Traffic Control (ATC) Complex project is an Australian Defence Force project located at select bases across the nation, upgrading the Air Traffic Control Towers.



Lendlease engaged VAE to undertake the major mechanical works to an extension of the existing Airfield Systems Complex (ASC), new Air Traffic Control Tower (ATC) and new Energy Building at Darwin International Airport. As well as an extension to the chilled water plant serving both the existing and new buildings. All work was carried while the existing Control Tower serving RAAF Darwin and Darwin International Airport remained operational

The new ATC tower complex is a 50m high multi-level facility accommodating a control cabin, external observation deck and a crew rest area, amenities, kitchenette and plant room. The mechanical plant provides N+1 redundant services to the complex.



Image source © Commonwealth of Australia, Department of Defence

RAAF BASE TINDAL AIR TRAFFIC CONTROL - STAGE 14

Client: Lendlease \$3.3m

RAAF Base Tindal is Australia's most remote major Defence establishment, located 15km south of Katherine in the Northern Territory.



Lendlease engaged VAE Group to provide a stand-alone air conditioning system to the new Air Traffic Control Tower and Air Systems Complex (ASC) buildings at RAAF Base Tindal, including a new chilled water plant, thermal storage, and air handling plant. The mechanical plant includes N+1 redundancy to the complex.

As this project was carried in in a live defence facility, VAE closely collaborated with the RAAF and Lend Lease to provide minimal programmed disruptions, in order to reduce required interruptions to flight operations during construction and subsequent commissioning of the complex.

Critical environment - Case Studies

Brisbane & Cairns Airports Control Tower - Air Conditioning Upgrades

Client: Badge Construction

\$4.4M

VAE were engaged by Badge Construction to remove the and upgrade the existing Air Handling (AHU) plant that serves the control towers at the Brisbane and Cairns Airports. The project commissioned by Airservices Australia was undertaken in a LIVE environment while the Towers continued to service the airports. Downtime and system reliability were critical risk factors to ensure continued control tower operation.

VAE completed the AHU removal without interruption to Air Services through staged removal of existing units and reconstruction of new units on-site, minimising downtime and maintain operational conditions.



Brisbane & Melbourne Air Traffic Control Operations Buildings Chiller Replacement

Client: Badge Construction

\$3.69m

Following the successful completion of the Air Traffic Control Centre Air Conditioning upgrades, at Brisbane and Cairns Airports



Badge Construction were contracted to replace the Chillers serving the Brisbane and Melbourne Airports Air Traffic Control Centres.

The project consisted of replacement of chillers and cooling towers within the operations buildings while keeping the facilities fully operational. The chiller water plant is based on an N+1 design based on the critical nature of the facility

The successful completion of the project required thorough pre-planning and coordination with multi stakeholders and pre-fabrication off site to allow the removal and replacement of the chillers in each location over multiple nights within a very small time window to ensure no disruption to Airport operations.



Critical environment - Case Studies



Shell QGC Operations Data Centre - Chinchilla

Client: Hutchinson Builders \$2.78M

VAE were engaged by Hutchinson Builders for the Design & Construction of the Shell (formerly Queensland Gas Corporation) Chinchilla Operations and Data Centre project located in Chinchilla Central Queensland.

The centre controls and monitors key infrastructure including production wells, field compression stations and water treatment facilities for the Shell natural gas production from the Surat Basin.

The Mechanical Services serving the centre is based on a 2N (fully duplicated) redundancy design for highly critical facilities.

The mechanical services consists of :-

- Four Off Air-Cooled Chillers
- Six Off CRAC units serving the data centre
- Associated air handling plant serving the office and amenities areas
- Ventilation systems
- Dual redundancy on the HVAC controls on the data centre



Exxon Mobil - Hides Gas Conditioning Plant

Client: CBI Clough JV PTE Ltd \$15M

VAE Group were engaged by Exxon Mobil to undertake the design and construction of the mechanical services in the operations centre, staff accommodation, medical centre, dining and recreation facilities of the plant.

VAE delivered the detailed design using Building Information Modelling (BIM) to meet Exxon Mobil's global engineering and project delivery standards, which provided opportunity for prefabrication of plant in modular form offsite. Modular Design & Construction enabled containerised shipment, with installation by local PNG workers with limited trade skills.

Critical environment - Case Studies

Centre for National Resilience Brisbane (CNRB)

Client: Multiplex

\$9.9M

The Centre of National Resilience, Brisbane (CNRB) was a rapidly constructed facility to provide increased resiliency to government during pandemic conditions. This state-of-the-art facility comprises a diverse range of buildings, each designed to serve a critical purpose in strengthening resilience during a pandemic or national emergency e.g. COVID 19 or a major natural disaster event. Construction of the facility included :-

- **Completely Offsite Constructed Modular Accommodation Buildings:** Entire air conditioning systems were manufactured offsite and transported to the site as prefabricated units. VAE undertook the intricate task of interconnecting power, Building Management Systems (BMS), and common ducts for exhaust, among other crucial components.
- **Partially Complete Offsite Modular Accommodation Buildings:** These buildings were a 'Shell', where VAE 'joined the dots' to create a complete solution. VAE completed the final connections of duct and pipe, grilles and flex, vacuum systems, and refrigerant charging, and finally, commission the system.
- **Main "Stick" Buildings:** The backbone of the CNRB, these 12 distinct buildings (Grey in the below pic), house critical functions such as healthcare facilities, kitchens, drop-off points, and communication hubs. In these instances, VAE adheres to traditional installation methods, ensuring that the air conditioning systems meet the highest standards of reliability and performance.

The image to the left is from the Building Management System (BMS), provides an idea of the scale of the project.



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