VAE GROUP

SMARTER HVAC SOLUTIONS

Built in certainty

VAE Group Capability

Airports

June 2022

AIRPORT EXPERTISE

Airports are complex environments that demand a throughout knowledge of the risks associated with working both landside, and airside.

VAE has proven capability and a strong record of accomplishment in working to deliver airport projects, we understand the unique environment and challenges involved in working in airports, particularly the critical need for:

- ✓ Security
- ✓ Safety for passengers, airport personnel and contractors
- ✓ Close coordination and communication with the broad range of stakeholders in an airport environment including appreciation of the public, airport operations personnel, security, and aircraft operations
- ✓ Risk associated with airside related works, particularly with Foreign Object Debris (FOD) risk management
- ✓ Minimising downtime and providing swift response to any issues that may arise
- ✓ The limited windows of time available for conducting work within the airport environment

VAE SAFETY

VAE are leaders in safety across our industry. We take every measure to ensure our employees and subcontractors are never exposed to unnecessary risk. This is managed via our three-cornered approach to safety – **Safe at Work** | **Safe at Home** | **Mental Health**.

VAE employees are well trained, well equipped, and competent. We ensure our staff can identify and treat risk before it happens. It's critical and a fundamental requirement that our employees get to their workplace, and back home safely.

VAE emphasises vehicle maintenance, proper licenses and ensures that our staff are fit and capable no matter where they are. We encourage that safety skills learned on the job are also life skills used both at work and at home.

We are committed to this safety philosophy and have implemented an accredited OHS Management System that complies with ISO 45001. This system is audited by SAI Global and is integrated with our Quality Management System (ISO 9001 compliant) to ensure policy consistency.

Certified System — OHS ISO 45001 — SAI GLOBAL

Certified System — Quality ISO 9001 — SAI GLOBAL

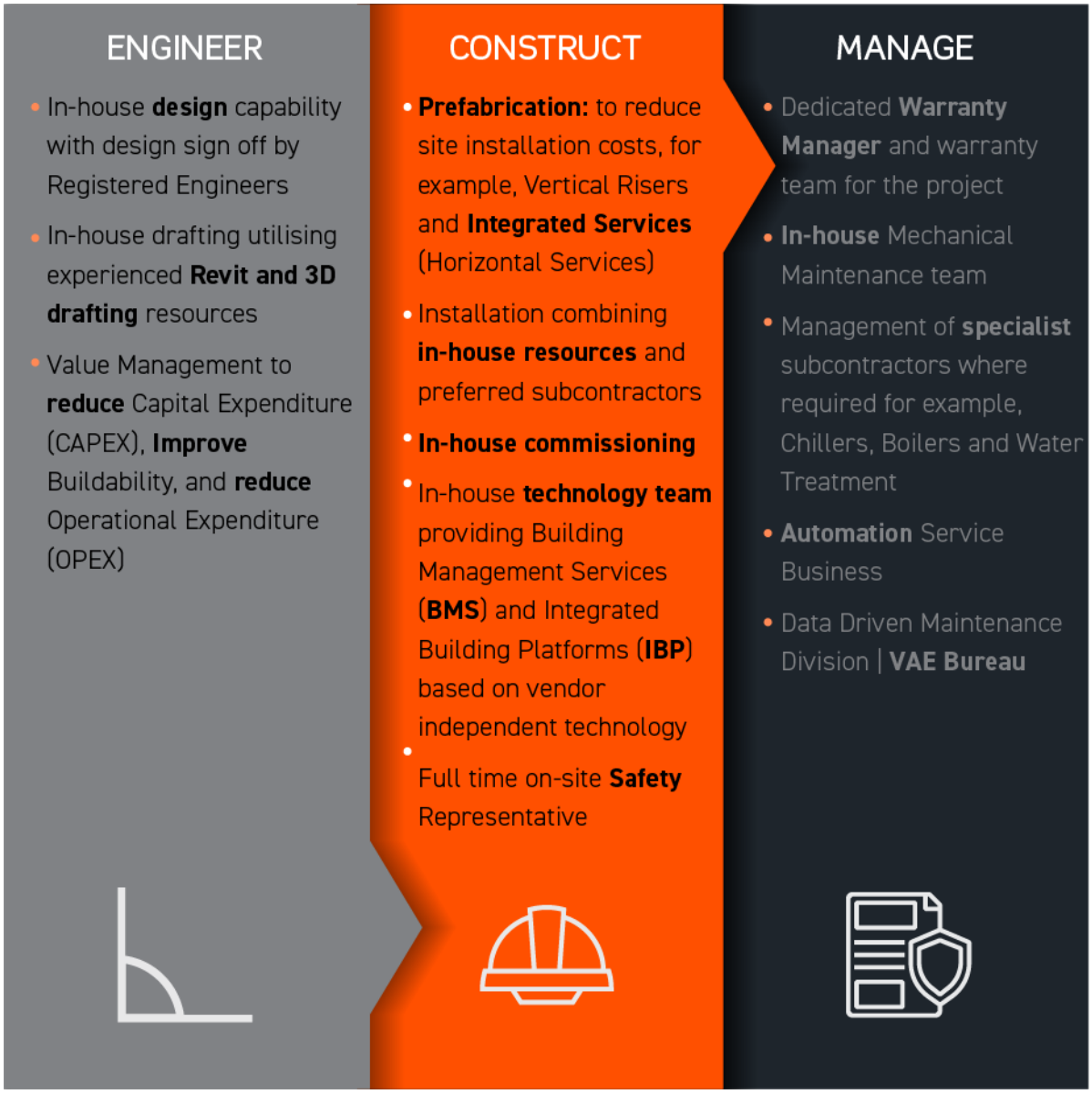
Brisbane Airport

Engineering, Design & Delivery Capabilities

VAE utilise in-house resources to perform the Engineering, Design, Construction and Defects Liability Period management of the mechanical services installation for projects. In addition, all commissioning services are carried out by VAE staff.

VAE have a dedicated 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).



Recent Airport Projects

RAAF Base Darwin – Defence Air Traffic Control Complex (AIR 5431)		
Client: Lend Lease	**Contract Value $3.47m**	**Completion: 2020**

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.

Lend Lease engaged VAE Group to undertake the major mechanical works to an extension of the existing Airfield Systems Complex (ASC), new 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.

The new ATC tower 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 existing tower will be demolished following the commissioning of the new facility.

The ASC upgrade includes a substantial extension to the existing building to accommodate future equipment for Phase 3, whilst existing equipment remains operational.

Key Achievements:

- Extension to existing mechanical systems whilst maintaining existing Air Traffic Management operations
- Temporary plant diversions, and demolition works within a logistically complex site

Image source © Commonwealth of Australia, Department of Defence

Cairns Airport T2 Domestic Terminal Upgrade		
Client: Hutchinson	**Contract Value $2m**	**Completion: 2020**

Cairns Airport is the second busiest regional centre in Australia and following many years of passenger growth the redevelopment of the domestic terminal was needed. The redevelopment project was carried out over nine separable portions, whilst keeping the airport fully operational.

Hutchinson Builders engaged VAE Group to complete the Mechanical Services and Building Management System (BMS) upgrades on the $29.4M T2 Domestic Terminal upgrade.

The upgraded terminal provides a wide range of customer experience improvements with the departure's hall boosting capacity with additional seating and an improved layout, simplifying navigation of the terminal for passengers. An additional 2,000 square meters of dining and retail options have also been devoted to showcasing the best of Tropical North Queensland to the world.

The mechanical services upgrades were delivered by VAE's Cairns Branch office working with the local Cairns Hutchies team. Our ongoing commitment to the Far North Queensland community and local employment was key in VAE being awarded this project.

Images courtesy of Hutchinson Builders

Brisbane International Airport – Chilled Water Infrastructure Upgrade		
Client: BAC	**Contract Value: $450K**	**Completion: 2021**

The Brisbane Airport International Terminal Building (ITB) was originally constructed in 1995. It is forecast to experience significantly higher passenger growth (post COVID) throughout its remaining life and building expansion projects are being planned which will result in increased cooling demand. As a result, the Chilled water infrastructure serving the terminal required an interim solution pending a future, more comprehensive, system upgrade.

Brisbane Airport Corporation (BAC) awarded VAE the Design and Construct (D&C) contract to decommission Chillers 1, 2 and 5 in the Central Energy Plant (CEP) and provide interconnecting pipework and pumping to the Northern Energy Plant (NEP). The existing CEP Chillers were retained as a back-up to the chilled water supply from NEP, to ensure there is a level of redundancy.

The project involved a full scan of the existing plantroom and 3D modelling which was conducted by our in-house VAE drafting team to provide a up to date 3D model of the completed project.

Brisbane and Cairns Control Towers – Air conditioning upgrade

Client: Badge Construction	Contract Value $4.4m	Completion: 2017

VAE Group were engaged by Badge Construction to remove the AHUs in the control towers at the Brisbane and Cairns Airports. The project was undertaken in a live airport environment, with critical risk factors to control tower operations.

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

Key Achievements:

- VAE developed project specific removal/installation procedures to AAS standards
- AHUs were disassembled in order to be transported up the building in the lift, and reconstructed on-site
- No interruption to Airport operations at either airport site
- No loss of conditions at either airport site
- VAE were awarded the Chiller Replacement Projects at Cairns and Melbourne airports, due to client satisfaction on these projects

Brisbane and Melbourne Air Traffic Operations Building Chiller Replacements

Client: Badge Construction	Contract Value $3.69m	Completion: 2018

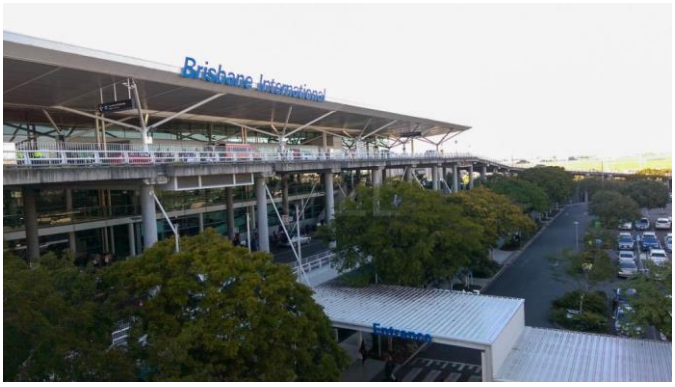
After successful completion of the Air Traffic Control Tower Replacement Projects in Brisbane and Cairns, Badge Construction contracted VAE Group the Chillers at Brisbane and Melbourne Airports.

The project consisted of replacement of chillers and cooling towers within the operations buildings whilst keeping the centre fully operational.

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 two nights to ensure no disruption to Airport operations.

Brisbane International Terminal – Fire System Review

Client: Brisbane Airport Corporation (BAC)	Contract Value $700k	**Completion: 2017**



VAE Group were engaged by Brisbane Airport Corporation to conduct a total function test on the fire and smoke management systems at the Brisbane International Airport Terminal to ensure AS1851-2012 compliance. VAE provided and implemented a solution to any instances of non-compliance.

VAE presented a multi-disciplinary team of Project Manager, Engineers, Tradespersons, and Commissioning Technicians due to the numerous interfaces between fire, mechanical and electrical systems.

Collaboration with Brisbane Airport Corporation (BAC) personnel, especially Customs and Security were essential to the successful delivery of this project.

Key Achievements:

- VAE consistently won Best Contractor on Site throughout the duration of the project
- Project completed on-time and on-budget
- Lead Coordination of BMS – Electrical, Fire, and Security Contractors
- Provision pf a AS1851-2012 compliant system
- Successful collaboration between trades and airport customs and security

Brisbane Domestic Terminal – Fire Control Upgrade Project

Client: Broad Construction	**Contract Value $1.52m**	**Completion: 2019**

VAE Group were engaged by Broad Construction to upgrade essential services systems from a seven (7) zone strategy to a 22-zone strategy. Scope of audit, redesign and modification includes 46 switchboards, 480 HVAC devices, 400 access control devices and associated switchboard and interfaces to the Building Management System (BMS). No disruption to airport operations was essential to this project's success.

VAE Group developed a Master Fire Matrix to allow compliance testing and recording, we prefabricated the wiring assemblies off-site to minimise installation and testing time on site. We held daily start up meetings with all trades to ensure adherence to procedures and to the program, resulting in a successful project outcome for all stakeholders

Key Achievements:

- On Lost Time Injuries (LTI's)
- No interruption to airport operations
- Lead coordination of BMS, Fire and Electrical trades

Brisbane Domestic Terminal Building – RV4 & 5 AHU Replacements Stage 1		
Client: BAC	**Contract Value $2.1m**	**Completion: 2018**

VAE Group were engaged directly by Brisbane Airport Corporation (BAC) for the removal of seven AHUs serving Virgin Terminal space. VAE replaced these units with new AHUs, upgraded existing ductwork, BMS and plantroom power and lighting. The associated chilled water pipework and air diffusion to the Domestic Terminal were also upgraded to cater for the new plant.

Rather than using a crane airside, which had operational limitations, VAE disassembled the AHUs in situ to allow removal off-site through the terminal building. Over 130 new architectural linear diffusers were replaced within a bladed ceiling within the operational terminal building.

The project was undertaken in a live airport environment, with no disruption to airport operations throughout the duration.

Key Achievements:

- VAE won the 2018 Brisbane Airport Corporation CEO's award for Safety
- Project completed on-time and on-budget
- Lead Coordination of BMS – Electrical, Fire, and Security Contractors
- No disruption to airport, or Virgin Australia operations
- Successful collaboration between trades and airport customs and security

Darwin International Airport Main Terminal Plantroom Upgrade Stages 1-3		
Client: Darwin International Airport	**Contract Value $1.48m**	**Completion: 2019**

Stage 1,2 & 3 of the Darwin International Airport (DIA) Main Terminal AHU Replacement Programme consisting of 15 Air Handling Units replaced over three stages.

Stage 1

In 2017 Select services were engaged by Darwin International Airport to undertake the first of three plantroom upgrades. Stage 1 consisted of the demolition and removal of five Air Handling Units (AHU), and the fabrication / installation of five new AHU's, Chilled Water (CHW) reticulation, Mechanical Services Switchboard (MSSB) and Building Management System (BMS)

All works were carried out in a live airport terminal environment and coordinated for minimal plant shutdowns (4 Hour shutdown window) ensuring no disruption to airport operations.

Due to logistical constraints the AHUs were coordinated to arrive flat packed and were then assembled within the plantroom.

Stage 2

Following the successful completion of Stage 1, Select Services were engaged on Stage 2. The second stage included the demolition, removal, and replacement of six Chilled Water AHU's and associated pipework and ductwork.

The new replacements AHUs were prepared, labelled, and packaged in the Select Services Winnellie workshop, then transported to site where they were individually rebuilt within the plantroom. All new CHW reticulation, duct transitions, and BMS were installed adhering to strict Airport security and OHS requirements.

All work was planned and coordinated to be undertaken in a live airport environment with no disruption to airport operations.

Stage 3

After completing Stage 1 and 2, Select Services were engaged by DIA to undertake the Stage 3 works in the Eastern Plantroom.

This plantroom consisted of four new Chilled Water AHU's, duct modifications and Building Management Systems (BMS) extensions.

Stage 3 also involved plantroom structural modifications.

Upon successful completion all plantrooms were resurfaced to all exposed floor areas.

RAAF Base Tindal (Department of Defence) – Air Traffic Control Stage 14		
Client: Lend Lease	**Contract Value $3.3m**	**Completion: 2018**

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

Lend Lease 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 handing plant.

VAE collaborated with the RAAF and Lend Lease to provide programmed disruptions, in order to reduce required interruptions to operations.

Image source © Commonwealth of Australia, Department of Defence

Key Achievements:

- Successful delivery of mechanical services in a very remote location, in an operational Defence facility
- Pre-fabrication of AHUs to minimise onsite labour
- In-house Building Management System (BMS), including advanced graphics to assist in remote diagnosis

Image source © Commonwealth of Australia, Department of Defence