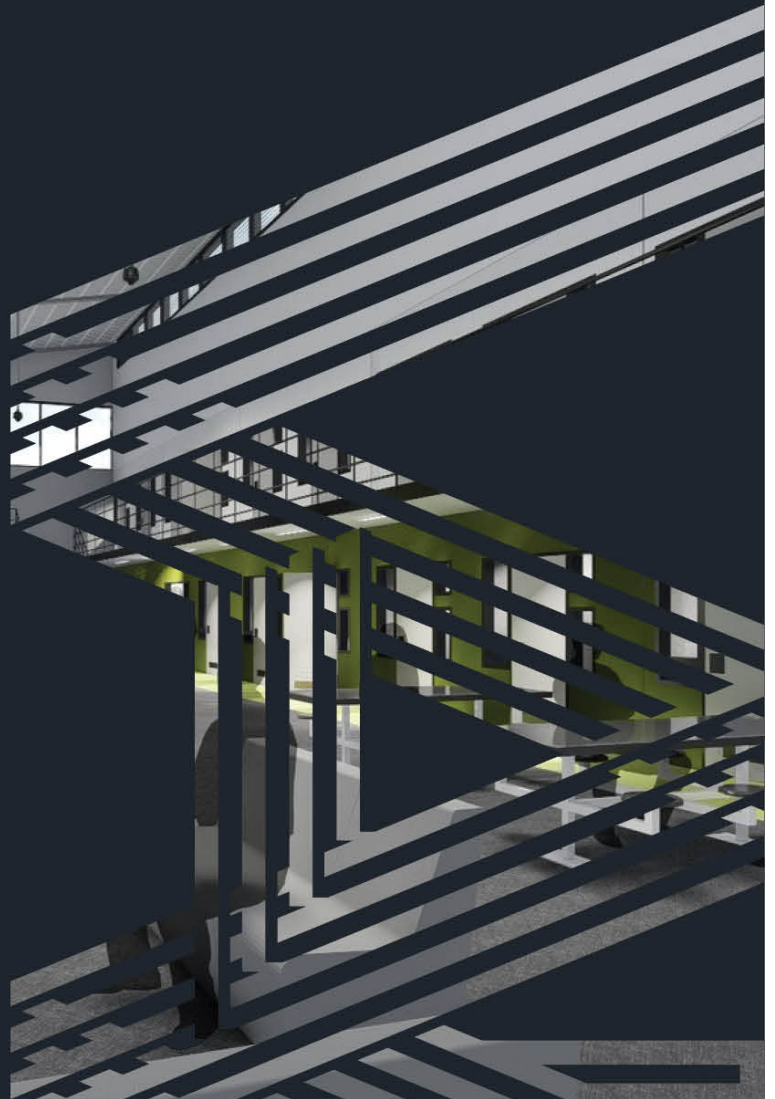




SMARTER
HVAC
SOLUTIONS
Built in certainty



VAE Group Capability

Prisons and Correctional Centres

January 2021

CORRECTIONS
CAPABILITY

PRISONS AND CORRECTIONS EXPERTISE

The VAE Group have extensive experience in the Prison and Correctional Centre sector throughout Australia and New Zealand (NZ). Our experience includes new construction projects as well as upgrades and retrofits within operational facilities.

New Construction

VAE have been involved in the design and construction of multiple new correctional centres as well as major expansion projects to existing centres. These projects have provided valuable lessons learnt in the complexity of construction in the correctional environment, including working across multiple work fronts, safety in design and the unique plant configuration required for systems operating in the correctional environment. We understand that design and equipment selection need to cater for ease of maintenance, and the plant access restrictions that will be encountered during the air conditioning system's lifecycle.

Upgrades and retrofits

Our upgrade and retrofit project experience have brought a strong understanding of the operational risks involved in working within both medium and high-security correctional facilities. In particular we understand the impact of stringent control of access to site, equipment / tooling inspections and the impact on site productivity.

VAE understands the need for close coordination and communication with all stakeholders. Logistical challenges are planned and executed with a collaborative, flexible delivery approach that can adapt to the constantly changing environment on site.



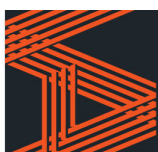
VAE are the leaders in safety across our industry. We take every measure to ensure employees and sub-contractors are never exposed to unnecessary risk. This is managed via our three-cornered approach to safety – **Safe at Work, Safe at Home and Mental Health.**

Our 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 place of work and back home again 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 AS/NZS4801 and OHSAS18001. This system is audited by SAI Global and is integrated with our Quality Management System to ensure policy consistency.



Waikeria Prison Development PPP

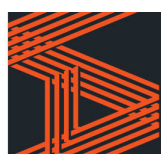
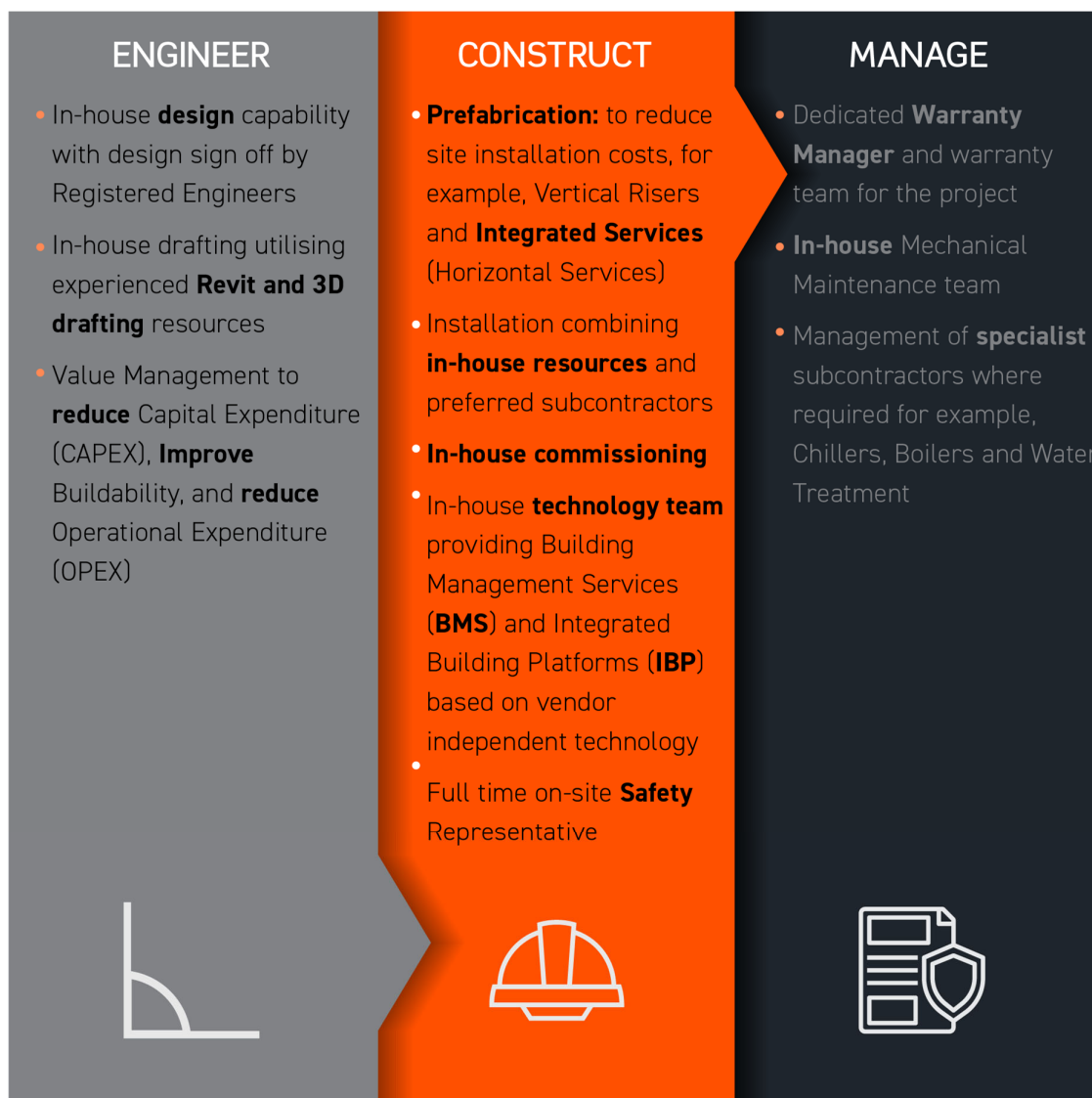


Delivery Capabilities

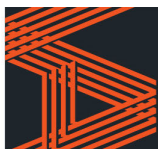
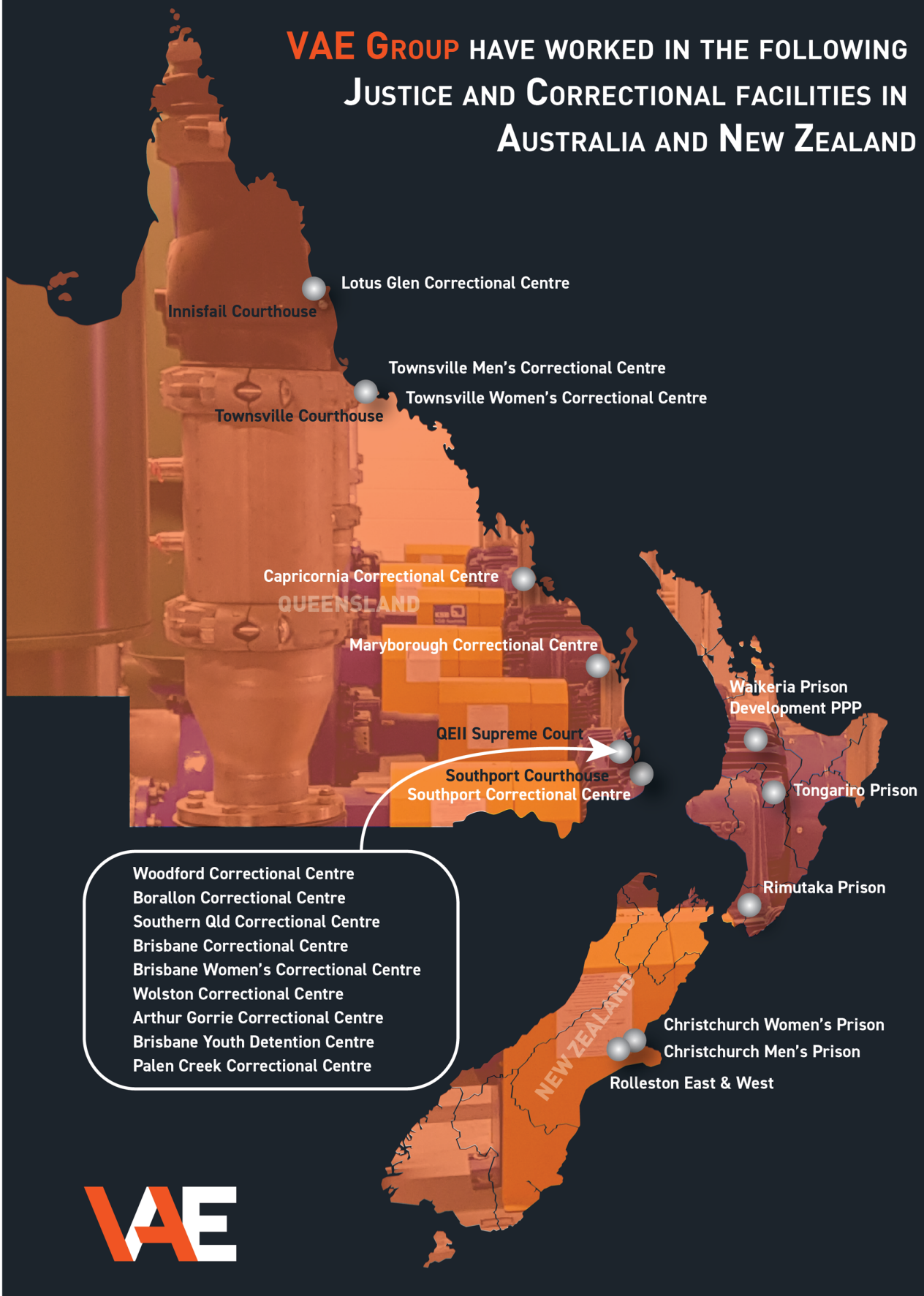
VAE have our own in-house resources to carry out all Engineering, Design, Drafting and Construction activities for Mechanical Services projects we perform. Importantly, all commissioning activities are carried out by our in-house VAE commissioning team.

VAE has a rigorous process to validate any potential subcontractors and suppliers involved in our projects including financial and organisational capability, technical ability, and record of accomplishment.

Our processes ensure that we provide “**Built-in certainty**” for our entire project delivery team.



VAE GROUP HAVE WORKED IN THE FOLLOWING JUSTICE AND CORRECTIONAL FACILITIES IN AUSTRALIA AND NEW ZEALAND



Project Experience

Waikeria Prison Development Public Private Partnership (PPP)

Client: CPB Contractors

Contract Value \$28m

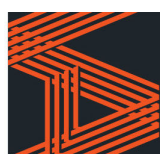
Completion: 2022

The new Waikeria Corrections and Treatment facility is located on the existing 1200-hectare Waikeria Prison site in the Waikato region of New Zealand's North Island and is due for completion in 2022.

The project comprises a new purpose-built prison facility, delivering accommodation for 500 prisoners. The facility includes an integrated secure mental health treatment precinct providing world-class care for an additional 100 prisoners.

VAE's scope of work includes:

- Central Chiller Plant – consisting of four air-cooled chillers, chilled water pumps and pipework
- Central Hot Water Generation Plant – consisting of four high efficiency boilers, ventilation, and pipework
- HVAC Systems – for all (29) buildings, including specialised four hour rated maximum secure grilles and secure penetrations for services
- Electrical for Mechanical – Mechanical switchboards (MSSB's) including all cabling and support systems, Fire System Interface
- Testing and Commissioning



Rapid Deployment Prisons, New Zealand

Christchurch Woman's | Christchurch Men's | Tongariro | Rolleston East & West | Rimutaka

| | | |
|----------------|-----------------------|---|
| Client: Decmil | Contract Value \$9.9m | Completion: Stage 1 Oct 19/Stage 2 July 20 |
|----------------|-----------------------|---|

The New Zealand Department of Corrections Rapid Deployment Prison project was based on the design and installation of rapidly deployable “modular” prison cells that are fabricated off-site and then “assembled” on site allowing the department to rapidly increase prison capacity by an additional 976 prison beds.



VAE were engaged on a design & construct basis for the full mechanical element of works including Christchurch prisons (Rolleston, Christchurch Men's & Christchurch Woman's), Upper Hutt (Rimutaka) and North Island (Tongariro) prisons. The modular cells were prefabricated offsite & shipped to the various prison sites. VAE prefabricated the mechanical services in New Zealand

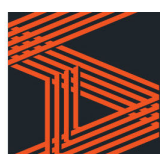
(off-site) and then transported the completed modules to the prison sites, improving productivity and reducing site safety risk.

The project was delivered in stages :-

- Stage 1:- The Rolleston Prison consisting of two x126 bed modular units, and Tongariro Prisons consisting of one x126 bed module.
- Stage 2:- The Christchurch Men's (two modules), Christchurch Women's (1 module) and Rimutaka (2 modules) consist of x600 beds in total.

Key Achievements:

- VAE's engineering input into the modular design/ truss design allowed for most of the installation works to be completed whilst roof cassettes were on the ground, reducing the working at heights safety risk, whilst realising construction time benefits.
- All off-site fabrication carried out in New Zealand.
- VAE's lead coordination efforts ensured all clashes with other services were rectified prior to installation works beginning.
- Due to the modular off-site design installation was completed well in advance of other trades reducing congestion on site with other services.
- The vast geographic distances between sites (both North & South Island) created substantial coordination and logistic challenges for the Project team including design, procurement, site delivery & mobilisation to site.



Borallon Training and Correctional Centre

VAE Client: BAS

Contract Value \$3.3m

Completion: April 2018

Located at Borallon, Queensland approximately 15 minutes from Ipswich, Borallon Correctional Centre is a high-security 492-bed facility. VAE Group were engaged by the Department of Housing & Public Works - Building and Asset Services (BAS) to provide the HVAC solution to the proposed centre upgrade. The project included upgrades to air conditioning, ventilation, smoke management and automatic controls to 18 cell blocks, all executed within the live prison. The “live” environment required a high level of coordination with multiple stakeholders for logistics and pre-planning of construction activity.



VAE were able to provide an alternative mechanical design, providing BAS with significant cost savings and a more efficient mechanical system that was easier to construct, commission and maintain. Based on our project experience with other correctional centres, VAE were able to advise on the optimal design solution for the upgraded smoke exhaust/purge systems.

VAE provided a complete turnkey BMS package with high level monitoring of the HVAC plant and automated smoke control louvre systems.

Key Achievements:

- VAE’s engineering input into the mechanical design reduced cost significantly and provided a more efficient mechanical system.
- The project was delivered in a collaborative environment with close coordination and communication with multiple stakeholders.
- Minimal disruption to the “live” high-security correctional environment.



Brisbane Youth Detention Centre – Additional Capacity Detention Centre (ACDC)

Client: QBuild

Contract Value \$6.7m

Completion: 2020

VAE were awarded the Additional Capacity Detention Centre (ACDC) project by the Department of Housing and Public Works in October 2019.



This project consists of an extension to the existing Brisbane Youth Detention Centre with the provision of mechanical services to five (5) buildings including Accommodation, Kitchen, Laundry, General Learning and Maintenance buildings.

The construction works was carried out within a “live” correctional centre that continued to operate at full capacity during the ACDC extension. The mechanical services comprised of a combination of chilled water fan coil units, and DX systems to provide air conditioning as well as smoke exhaust control to the accommodation building.

VAE were also contracted under the ACDC project to install the underground chilled water ring main to the neighbouring New Youth Detention Centre (NYDC) project.

Key Achievements:

- The project was delivered in a collaborative environment with close coordination and communication with multiple stakeholders.
- Minimal disruption to the “live” correctional centre.



Capricornia Correctional Centre

| | | |
|-------------------------|------------------------|------------------|
| Client: CPB Contractors | Contract Value \$13.2M | Completion: 2021 |
|-------------------------|------------------------|------------------|

The Capricornia Correctional Centre is located 20km north of Rockhampton, Queensland. The high-security facility currently includes 410 cells, and once the \$241m expansion is complete, a total of 348 new cells, will be added.

VAE Group were engaged by CPB Contractors in two stages: -

- Early Works Air Handling Unit upgrades to ten (10) existing secure blocks and five (5) existing residential blocks
- Main Prison works - Construction of the additional new prison buildings

Early works

VAE conducted a comprehensive plantroom audit and risk assessment prior to work commencing onsite. This identified the tight spatial requirements and access issues for replacing the existing Air Handling Units (AHUs). Our delivery methodology involved the replacement AHUs being ordered as complete assemblies, delivered off-site in Rockhampton followed by disassembly, and packaging ready for re-assembly onsite. The replacement units were reassembled in situ together with the associated ductwork, pipe connections, electrical fit-off, controls and commissioning.

Main Prison works

The major prison expansion works consisted of: -

- New central chilled water plant and underground pipework reticulation to all new accommodation and administration blocks
- New air conditioning plant to all prison blocks (8 medium security, and 2 high security blocks) including smoke control and purge ventilation to prison accommodation buildings.
- New air conditioning and ventilation of associated administration, visitors, industries and recreation buildings



Key Achievements:

- Installation of approximately 300m of new underground pre-insulated Chilled Water (CHW) pipework, roughly 60m of which was tunnel-bored under the live correctional centre fencing.
- Completed new CHW Central Energy Plant (CEP) with four new high-efficiency Smardt Chillers and stainless steel EVAPCO cooling towers.
- Air conditioning to new 13 new prison blocks including medium and high security accommodation
- Air conditioning / ventilation to 5 new support buildings including kitchen, laundry, medical and processing buildings



Correctional Centre Smoke Exhaust Upgrade Program

Arthur Gorrie | Brisbane | Brisbane Women's | Capricornia | Lotus Glen | Maryborough | Townsville Men's | Townsville Women's | Wolston Correctional Centres | Southern Qld (Gatton)

| | | |
|-------------|---|----------------------------|
| Client: BAS | Contract Value \$9.2m (in aggregate) | Completion: 2017 - ongoing |
|-------------|---|----------------------------|

Building Asset Services (BAS) originally engaged VAE to perform smoke exhaust functional performance testing across multiple Queensland Correctional Centres to confirm compliance to minimum smoke exhaust levels. Following this testing VAE were awarded the design and construct smoke exhaust upgrades for those Centres that didn't meet current compliance.

VAE designed the modifications required to ensure the smoke exhaust systems achieved a minimum of 350l/s per cell when operating in a smoke exhaust mode. The scope of works consisted of a mix of ductwork modifications to reduce static pressure losses, motorised dampers on the non-cell areas, such as the kitchen and laundry's, variable speed drive installations on existing fans, and in some cases new fans.



The existing fire services were upgraded as part of the design highlighting the important interface between fire services and mechanical services for life safety systems within the Correctional facilities.

In the last 12 months our works have broadened to include the below services:

- Principal Contractor Management of fire contractors upgrading VESDA (smoke detection) systems to the secure blocks.
- Fire matrix development.

Key Achievements:

- Strong understanding of the operational risk involved in working within a live correctional centre environment, provided Corrections with a flexible delivery approach that could adapt to change.
- Minimal disruption working in multiple live, high-security correctional centres throughout Queensland
- The fire services works have further enhanced our strong understanding of the important interfaces between fire services and mechanical services for life safety systems within the Corrections environment

