



**CAA ENGINEERING**

Delivering Infrastructure of the Future

# Data Centre Densification and Optimisation



# Challenges of Densification

Upgrading and densifying a live data centre can be among the most challenging and complex projects in the construction industry.

## Your Challenges

- As-built documentation is not complete or accurate.
- Upgrades required to live electrical and mechanical plantrooms.
- Clashes with services, structure, architecture.
- Onerous Electrical Authorities and SSDA planning approvals.
- Structural upgrades to support increased equipment weight.
- Live data halls cannot be disrupted.

## Our Services

- Verification of as-built documentation on site.
- Scoping and design management of live plantroom upgrades.
- Clash resolution and services coordination.
- Management of authority approvals.
- Management of consultants, incl structure and architecture.
- Disruption planning with internal and external stakeholders.

## Our Experience

- Experience on site as site engineers, project managers & services managers working for builders, mechanical and electrical subcontractors and asset owners.
- Project management experience; end-to-end scoping and tendering of complex projects for contractors and clients.
- Experience as services managers managing clash detection and resolution in both Revit and 2D.
- Experience managing authority approvals as client reps.
- Design management leading large teams of consultants.
- Experience sitting within our clients' offices, working as part of the operations & facility management teams. We are good at keeping internal and external stakeholders happy.

Photo: 3 x HV Boards, RMUs,  
7 x 4000amp MSBs




Photo: Data hall hot aisle



# Data Centre Capability Statement

## Project Highlights



### Canberra



Status ✓ Complete	Value \$ \$150m	Duration ⌚ 1 year	Contract Type ⚙️ MC
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#### Key Info

Client	Confidential
Sector	Defence
Role	Building Services Manager, John Holland

#### Details:

- 30MW data centre Data Centre Facility across 2 buildings.
- The first 20MW building was 3 storey concrete precast structure which housed 4 data halls. 2N HV / LV solution including water cooled Data Halls with 2N thermal storage tanks. The first Data Centre in Australia to achieve Uptime institute "Tier 4 rating" concurrently maintainable.
- The second 10MW building was a 2 storey Steel Structure which included the National Control and Command centre

### Sydney



Status ✓ Complete	Value \$ \$800m	Duration ⌚ 2 year	Contract Type ⚙️ D&C
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#### Key Info

Client	Next DC
Sector	Colo
Role	Senior PM for Next DC

#### Details:

- S2 – 40MW facility; Multiple Data Hall fit outs (\$5m): Combination of 4 projects delivered simultaneously within the S2 facility. This included White Space fit out, 2 x Cages and Rack Ready. 12 – 20 week program durations working in live a facility during COVID restrictions.
- S3 - 80MW facility : Delivery of ICT infrastructure into S3 facility. Working with the wider S3 project team we were responsible for delivering the Active component of the ICT network within the facility. Inclusive of Agg racks, compute and server racks, Fibre cabling and Active equipment to support the Security, SCADA and corporate networks.

### Sydney



Status ✓ In-Progress	Value \$ \$800m	Duration ⌚ 2 years	Contract Type ⚙️ ECI
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#### Key Info

Client	Global Switch / DigiCo
Sector	Colocation
Role	Site Engineering for DigiCo

#### Details:

- 120MVA upgrade of live data centre including both liquid cooled (DtC) and air-cooled data halls.
- Design coordination of new services, modification of existing services. Structural reinforcing, along with review of staging methodology. Design assistance and Revit coordination to ensure nil-disruption of live data halls.
- Verified existing site infrastructure including service routes, sizing and locations against existing drawings and 30% Schematic Design.

### Sydney



Status ✓ Complete	Value \$ \$15m	Duration ⌚ 15 months	Contract Type ⚙️ D&C
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#### Key Info

Client	Digital Realty SYD14
Sector	Hyperscale Fit Out
Role	Superintendent / Client -Side PM

#### Details:

- 16MW data centre, across 2 x 8 MW data halls
- Bespoke build for Google Cloud in a live environment, requiring extensive coordination and integration with onsite team.
- Perimeter Security is rated for ballistic protection and vehicular ramming
- Dark fibre network between surround Data Centres to centralise security and monitoring of mission critical services
- Design to meet federal SSEC level requirements

More Info: <https://www.caaengineering.com/blog>

# OUR TEAM



**Martin Simpson**  
Director/Technical Project Manager  
[Profile](#)

With 25 years in the construction industry Martin is an analytical and performance-driven professional with extensive experience leading high value, Mission Critical Engineering Projects for many sectors of the Industry working for FM Service Providers, Main Contractors, Clients, Design Consultants and has demonstrated expertise within Critical Engineering Environments such as Data Centres, Casinos, Hospitals, Integrated Resorts and Airports.



**Elliot Hartridge**  
Technical Project Manager  
[Profile](#)

Elliot brings with him 15 years of experience across multiple sectors within the building and property industry with a strong skill set of services asset renewal and strategic master planning. His experience on site and providing client facing management of major infrastructure and asset renewal and asset capture projects in complex and live environments such as Airports, Wharfs, Data Centre, Casinos, Gallery's and Zoo's are complemented with his trade background and construction project management honours degree.



**Carl Sheffer**  
Technical Project Manager

Carl has over 13 years construction industry experience across universities, hospitals, industrial and transport projects working to deliver mechanical, electrical, fire and hydraulic projects.

He has a degree in Mechanical Engineering, experience working as an embedded part of a University FM team and experience working for mechanical and electrical contractors and Builders before moving client side, allowing him to offer advice that is both practical and commercially sound.



**Marc Baradhi**  
Technical Project Manager & Senior Electrical Engineer

Marc is a results-driven, technically-minded professional with over 16 years experience in the construction and engineering industry.

He has held a multitude of roles spanning Data Centres Design & Project Management, Electrical Building Services Consulting, and Power Plant Engineering, and has successfully delivered a diverse range of small to mega-scale projects across APAC and the Middle East - data centres, commercial, healthcare, residential, aged care, hospitality, educational, and power generation.

Marc holds a B.Eng. (Hons) in Elec. Eng., a Dip. PM., the Accredited Tier Designer (ATD) and Data Centre Certified Associate (DCCA) certificates, and is working towards his CPEng. credential.



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# About Us

CAA Engineering Services is a Technical Project Management company that specialises in the end to end delivery of Building Services Projects.

The CAA team has significant experience upgrading live data centres from air-cooled data halls to liquid-cooled (DtC) data halls. We have been on-site working for Main Contractors, Subcontractors and Asset Owners in multiple roles: Project Management & Delivery, Design Management, Facilities Management and Site Engineering.

We have delivered multiple BMS upgrades, Fire System upgrades, air conditioning plantroom upgrades, High Voltage, Low Voltage, Telecommunications and Electronic Security Projects. We typically work as an embedded part of our clients' teams, communicating with stakeholders, managing disruption and permitting processes and have been personally responsible for cost, time and quality.

Unlike other project managers, we focus exclusively on Mechanical, Electrical, ICT, Security, Fire & Hydraulic services projects. We act as subject matter experts on building services and collaborate closely with our consultants & contractors to ensure installation is swift & fault free.