

DISCIPLINE BROCHURE

Construction Engineering

**BG
&E**
Part of SYSTRA

BG&E is an international civil and structural engineering consultancy recognised for delivering **innovative, award-winning designs** that prioritise practicality and constructability.

With a team of more than 800 people across 16 offices — spanning Australia, New Zealand, South East Asia, the United Kingdom, and the Middle East — we deliver the highest standard of service across our disciplines.

Clients consistently return to us for our responsiveness and proven ability to provide tailored solutions on complex and challenging projects. This is reflected through industry recognition, client commendations, and numerous awards.

In 2025, BG&E joined forces with SYSTRA, a global leader in public transport and mobility engineering. This partnership expands our technical capability, strengthens our international networks, and support long-term growth across major infrastructure markets and the complex buildings sector.



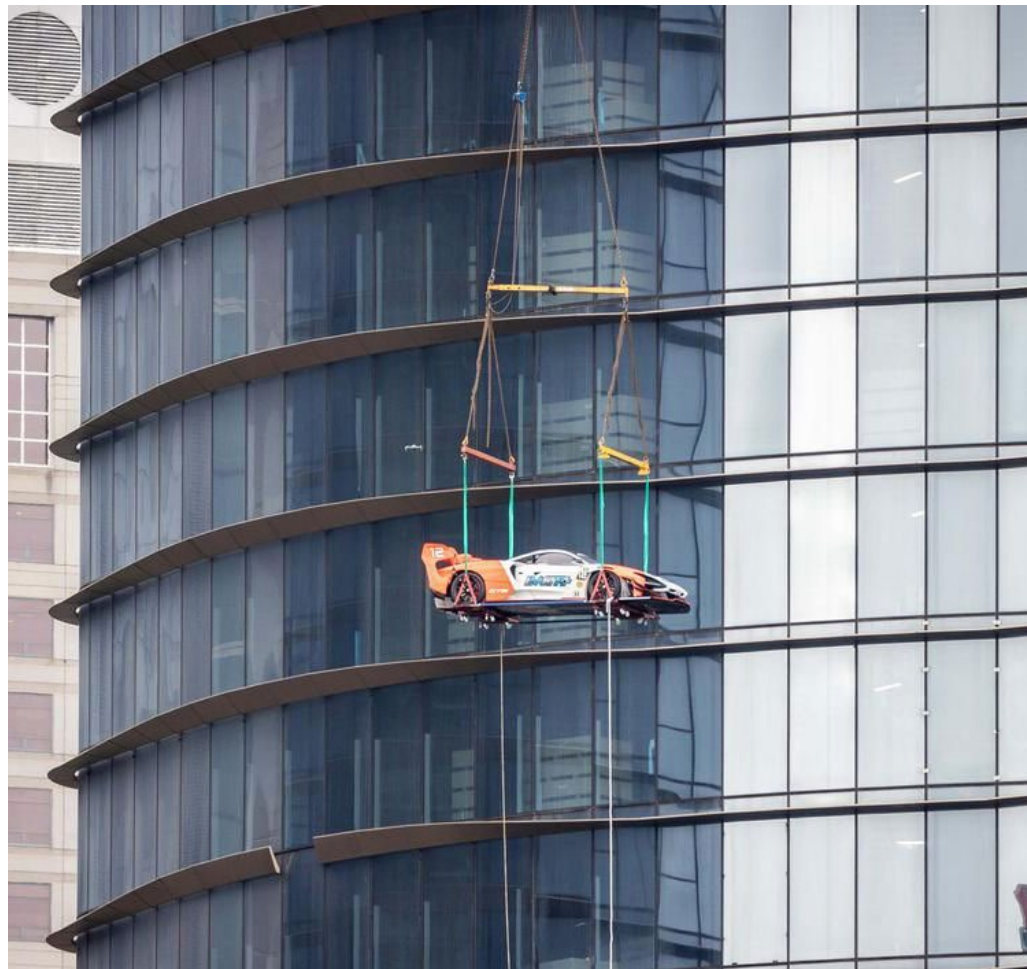
Safe & Innovative Solutions

In a city where skylines are aglow with the lights of bustling development, the significance of robust construction engineering and well designed temporary works, that guarantee both safety and buildability, are front of mind for our clients and partners.

We excel in providing innovative, customised designs for projects of all sizes and briefs, with a proven track record of versatile solutions that defy standard, budget-focused approaches to meet the needs of unconventional projects.

For example, in 2023, we coordinated the crane lift of a three million dollar McLaren supercar into the 54th floor penthouse in Melbourne — a delicate operation that involved meticulous review of the car's rigging arrangement to ensure a secure and level lift.

*Sapphire by The Gardens (McLaren Supercar Lift) —
Melbourne, VIC, Australia.*



Our team operates from various locations across the globe — and our key strength lies in our ability to handpick the most qualified individuals for the job, regardless of where they are based, which ensures the seamless execution of your project, free from state based model disruptions.

We collaborate with property sector clients to deliver temporary and permanent works, construction methodology development, façade restraint, and capacity assessments.

For clients in the thriving transport sector, encompassing private and government entities, we offer temporary works, load rating and capacity assessments, and valuable construction support.

*Sapphire by The Gardens —
Melbourne, VIC, Australia.*



Services: Transport Infrastructure

From major infrastructure projects to high rise property towers, we recognise the critical need to keep pace with various construction industry standards and safety regulations as projects increase in complexity and scale.

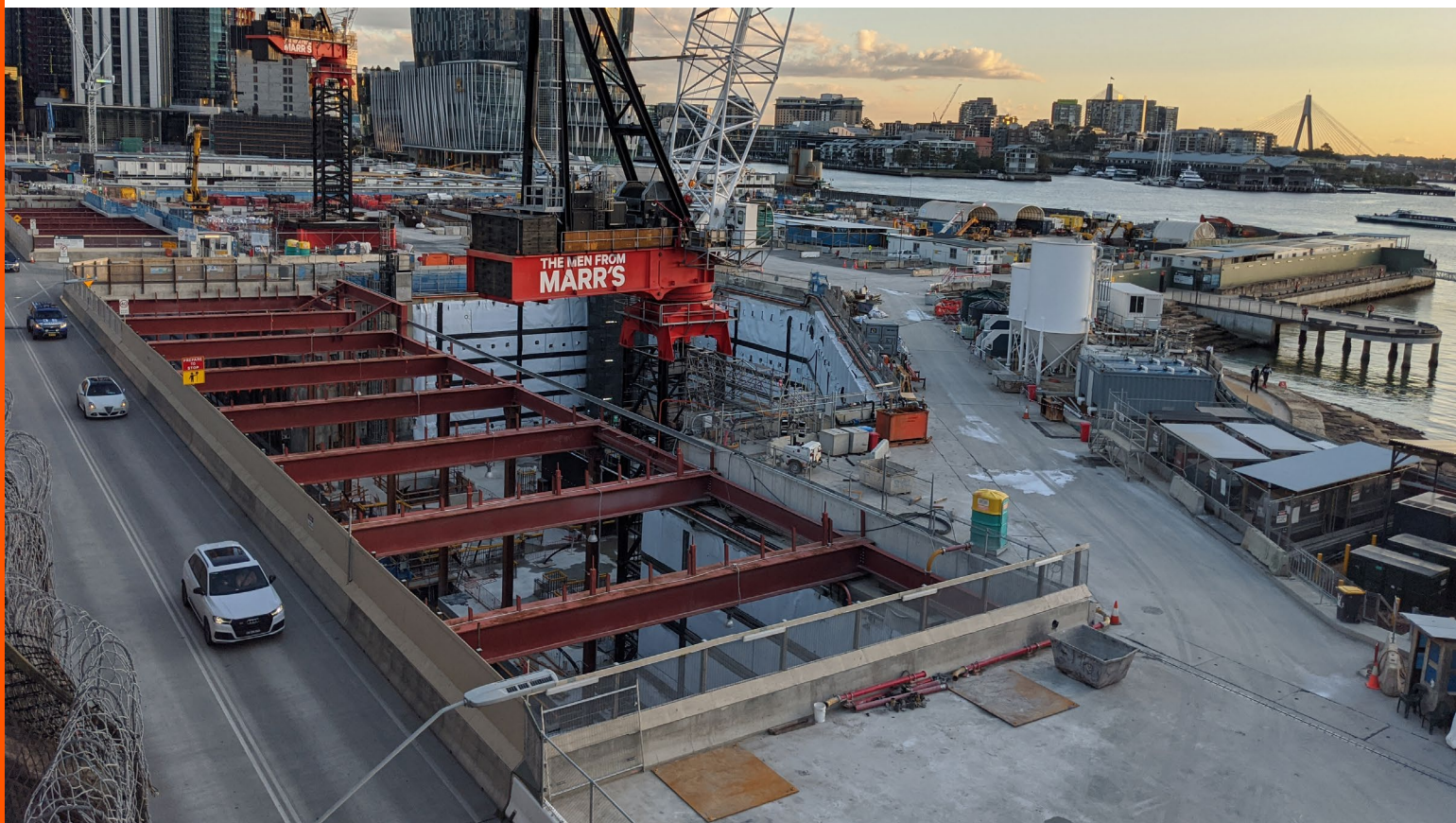
CONSTRUCTION SUPPORT

- Construction reviews.
- Construction staging and sequencing.
- Staged geometric and deflection control.
- Lift studies.
- Movement of heavy loads.

LOAD RATING & CAPACITY ASSESSMENT

- Load rating of existing and new bridges.
- Capacity assessment of existing bridges.
- Capacity of bridge with crane loads.
- Strengthening for construction loads.
- Bridge refurbishment.

*Barangaroo Station Excavation &
Hickson Temporary Road Bridge —
Sydney, NSW, Australia.*



TEMPORARY WORKS

- Secant piled walling.
- Sheet piling.
- Cofferdams formwork.
- Travellers launching.
- Nose tower crane supports.
- Temporary water retaining structures.
- Temporary retaining walls.
- Temporary roads.
- Temporary drainage.
- Services relocation and protection.
- Casting bed for launching and pre-tensioned girders.
- Temporary pedestrian bridges and accessways.
- Jacking or pulling of bridges.
- Braking and restraining of bridges.
- Formwork and falsework design.
- Temporary bearings and side guides.
- Temporary piers and supports.
- Temporary restraints of bridge girders.

*Melbourne Metro —
Melbourne, VIC, Australia.*





Fortitude Valley School —
Brisbane, QLD, Australia.

Services: Property

We take pride in our market leading expertise in construction techniques, developed through a long history of delivering practical engineering services to contractors.

CONSTRUCTION SUPPORT

- Construction reviews.
- Connection designs.
- Construction staging.
- On-site construction engineering support.

CAPACITY ASSESSMENT

- Structural assessment and verification.
- Capacity of structures with crane loads.
- Strengthening for construction loads.

FAÇADE RESTRAINT

- Existing façades in new buildings.

TEMPORARY WORKS

- Lifting of precast structures.
- Lifting frames.
- Support platforms.
- Tower crane supports.
- Personnel and materials hoists supports.
- Formwork hoists supports.
- Climbing concrete boom pumps supports.
- Formwork design and verification formwork.
- Stripping sequences.
- Jacking and preloading.
- Gantry girders.
- Demolition staging.
- Demolition support and restraint structures.
- Redesign of permanent works, including temporary construction requirements.
- Design of temporary access requirements.

Services: Tower Cranes

BG&E's specialist tower crane team has successfully designed and documented hundreds of tower crane foundations and ties across various regions — including Australia, South East Asia, Europe, and the Middle East.

ESSENTIAL FOR MAJOR CONSTRUCTION PROJECTS

Tower cranes are vital for any significant construction project, enabling the efficient movement of materials to necessary work areas. They are indispensable in constructing high rise towers — designed to self-climb and increase in height as the building progresses. Their steel truss masts often utilise ties back to the building, stabilising the structure against construction loads and lateral wind forces.

FOUNDATION & STABILITY CONSIDERATIONS

The foundation of a tower crane requires meticulous planning at the project's outset, taking into account specific site constraints, ground conditions, and loading requirements. Special attention is also needed for tower ties to ensure seamless integration with the permanent works.

OUR EXPERTISE

Our team of experts possesses the experience and tools necessary to deliver high quality, cost effective tower crane designs for your next project.



*ICD Brookfield —
Dubai, UAE.*

Our services include:

- Ground bearing or pile supported foundation design.
 - Structural steel tie design, including member sizes and connection details.
 - Design of steel crane grillage supports.
 - Verification and modification of permanent works to withstand temporary crane loading.
 - Design of crane climbing and recovery sequences.
- Lift design assessment.
 - Construction support for crane design elements.
 - Third party reviews and certification.

*ICD Brookfield — Dubai, UAE.
One Palm — Dubai, UAE.*



*Elephant & Castle Development —
London, UK.*





*TwentyTwo Bishopsgate — London, UK.
Drift Residences, Main Beach — Surfers Paradise, QLD, Australia.*

Services: Jumpform Design

Our specialist jump form design team employs robust systems and processes to ensure all necessary analyses and checks are conducted efficiently and cost effectively.

OUR EXPERTISE

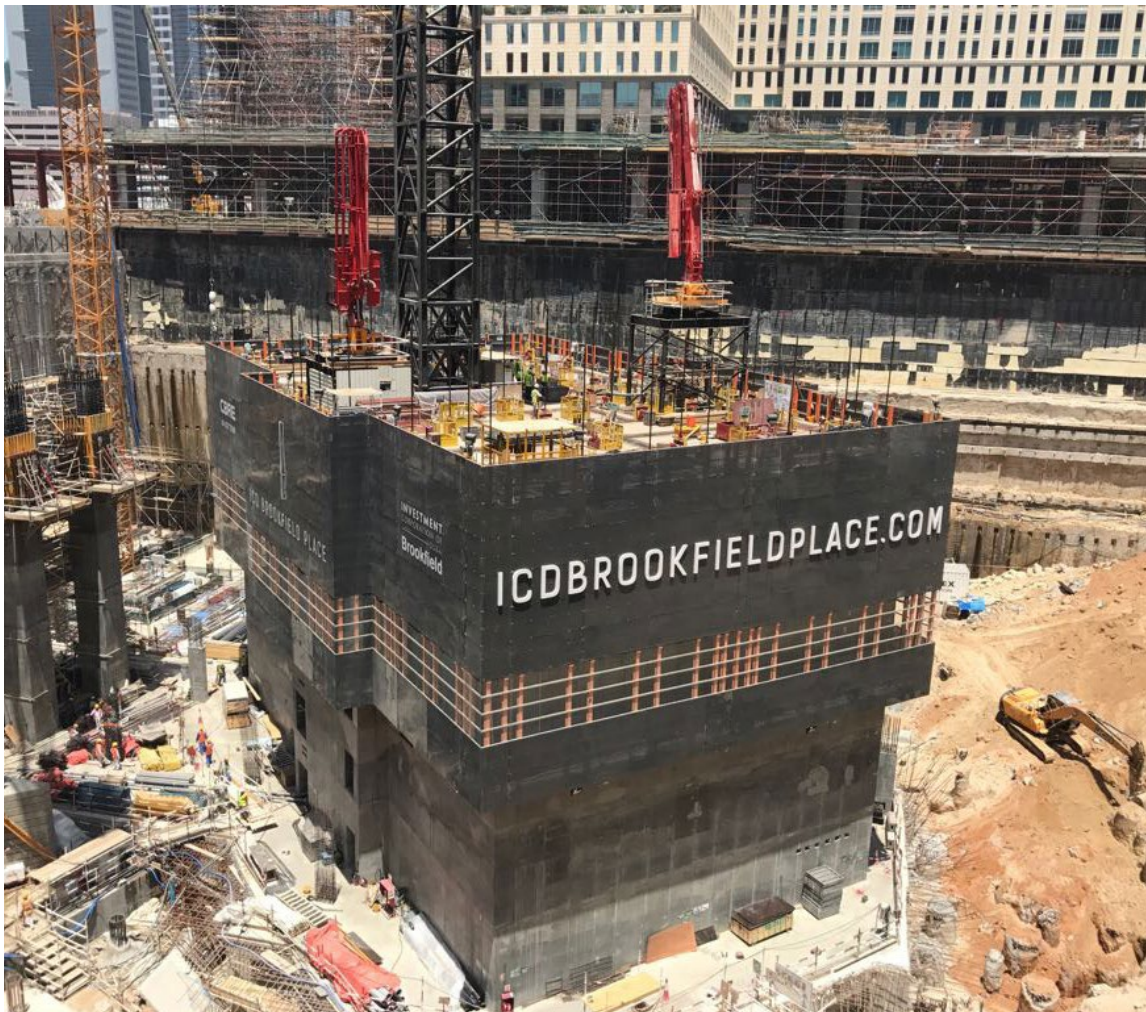
Our expert team have successfully designed, verified, and overseen the construction of hundreds of jump form systems Australia, Europe and the Middle East.

Our typical services related to jumpform design include:

- Structural analysis and design: comprehensive structural analysis, member and connection design, review, verification, and certification of bespoke jumpform systems, including staged analysis during various construction stages and form configurations (e.g. erection, pouring, and jacking).

- Environmental and construction loading considerations: assessment of appropriate environmental loading conditions and construction loading, including provisions for concrete placing booms and material setdowns.
- BIM integration: seamless integration of jumpform analysis and design with BIM workflows to ensure an efficient design process.
- Permanent structure checks: evaluation of permanent structures to support jumpform loads.
- Construction phase services: shop drawing review of jumpform elements and site inspections to ensure correct installation.

*ICD Brookfield —
Dubai, UAE.*



4 Parramatta Street —
Parramatta, NSW, Australia.



Why Partner With Us?

At BG&E, we understand that choosing the right partner for Construction Engineering and Temporary Works is crucial for project success. Our proven track record of excellence reflects our dedication to delivering exceptional results.



Reduction in
Material Quantity



Reduction in
Programme



Optimisation
of Design



Ensure Design is
Constructable



Identify &
Mitigate Risk



Quality Control
Standards

Industry Sectors We Service



Aged Care



Arts & Culture



Aviation



Commercial
& Office



Data Centres &
Mission Critical



Defence



Education



Entertainment
& Leisure



Healthcare



Heritage &
Refurbishment



Hotels &
Accommodation



Mixed-Use



Ports & Marine



Rail, Stations
& Over Rail



Renewables
& Energy



Residential



Roads, Bridges
& Tunnels



Sports, Stadia
& Recreation



Transit Oriented
Development



Water
Infrastructure

At BG&E, we are united by a common purpose — we believe that truly great engineering takes curiosity, bravery and trust, and is the key to creating extraordinary built environments.

Our team of more than 800 highly skilled people, in offices across Australia, New Zealand, Singapore, the United Kingdom and Middle East, design and deliver engineering solutions for clients in the Property, Transport, Ports and Marine, Water, Defence, Energy and Resources sectors.